Compost in California Planning

A Review of Compost Strategies in Planning Documents

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People, Food and Land Foundation (PFL) conducted a systematic review of general plans (GPs) and climate action plans (CAPs) for all cities and counties in California. Identifying the contexts in which compost is mentioned in these major planning documents provides an understanding of how planners view and value compost, as well as identifies potential opportunities for improved compost planning at the local and regional level.

Planning Process in California

All cities and counties in California have municipal planning departments that evaluate the needs of their communities to guide the overall growth and development within their jurisdiction.[1] The overarching guide to land use within a jurisdiction is the General Plan. Planning decisions influence new residential developments, local transportation infrastructure, water and waste processing facilities, and socioeconomic programming. Zoning and land use ordinances are among many tools planners use to guide development. The GP is the primary document guiding the changes and decision-making of that jurisdiction for both cities and counties. The GP is a legally binding document that must include nine mandatory elements: land use, housing, circulation, conservation, open space, noise, safety, and most recently, environmental justice and air quality. GPs benefit local communities by outlining intentions to promote better projects, streamline processes, and improve access to and use of available resources.[2] Despite its available, renewable potential, organic waste is rarely treated as such a resource. Like other natural resources, organic material must be appropriately managed and processed for cities and their surrounding counties to benefit from its reuse as compost or energy.

A city or county may choose to go beyond what is legally required by the state and adopt a CAP in addition to their general plan. A CAP does not hold the same legal ground as a general plan does. However it can highlight the sustainability goals that the jurisdiction has chosen to prioritize and support. As part of a CAP, the city or county will generally conduct a greenhouse gas inventory to determine which sectors cause the most emissions, then use that information as a guide to consider what changes would most impact the overall sustainability of their community. CAPs often list organic waste diversion, including composting as one method for that diversion, as a potential strategy for reducing emissions under the “waste management” sector, which generally only accounts for 5-10% of a city’s total emissions. However, applying properly finished compost to soils can support additional carbon sequestration if correctly applied to soils, making it a tremendous dual-benefit strategy to help reach emission reduction goals.

1 https://www.memphis.edu/planning/about/what-is-city-planning.php
2 https://lci.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf

Research Methods

PFL conducted a comprehensive analysis of general plans (GP) and climate action plans (CAP) for all cities and counties in California, identifying mentions of the term "compost." The most recent GPs and CAPs were found within city and county websites. All mentions of compost were noted and categorized under the most frequent themes (including waste diversion and education) and PFL's additional priorities (such as compost application and farm access to compost). Once this data was collected, it was analyzed to contextualize how compost is represented in planning, using simple percentages and comparisons.

Results: Compost in General & Climate Action Plans

Table 1 provides an overview of PFL findings, outlining the type and percentages of plans that mentioned the word "compost."For plans that did mention compost, the context in which it was mentioned was categorized, recorded, and converted into a percentage. For example, 54% of city general plans mentioned compost, and 70% of those plans mentioned it as a waste diversion tactic only, lacking information on its soil health, carbon sequestration or community benefits. General mentions of compost within introductory or descriptive paragraphs were not counted towards these subcategories. For a plan to be considered as one that mentions compost through one of the defined subcategories, it had to be mentioned through an actionable goal, policy, strategy, action, or program. A plan that states "compost can be applied to soil to increase soil fertility and aid in carbon sequestration" but has no actionable policies outlined on how the city or county intends to apply compost to soils would not be included in the "compost application" category.

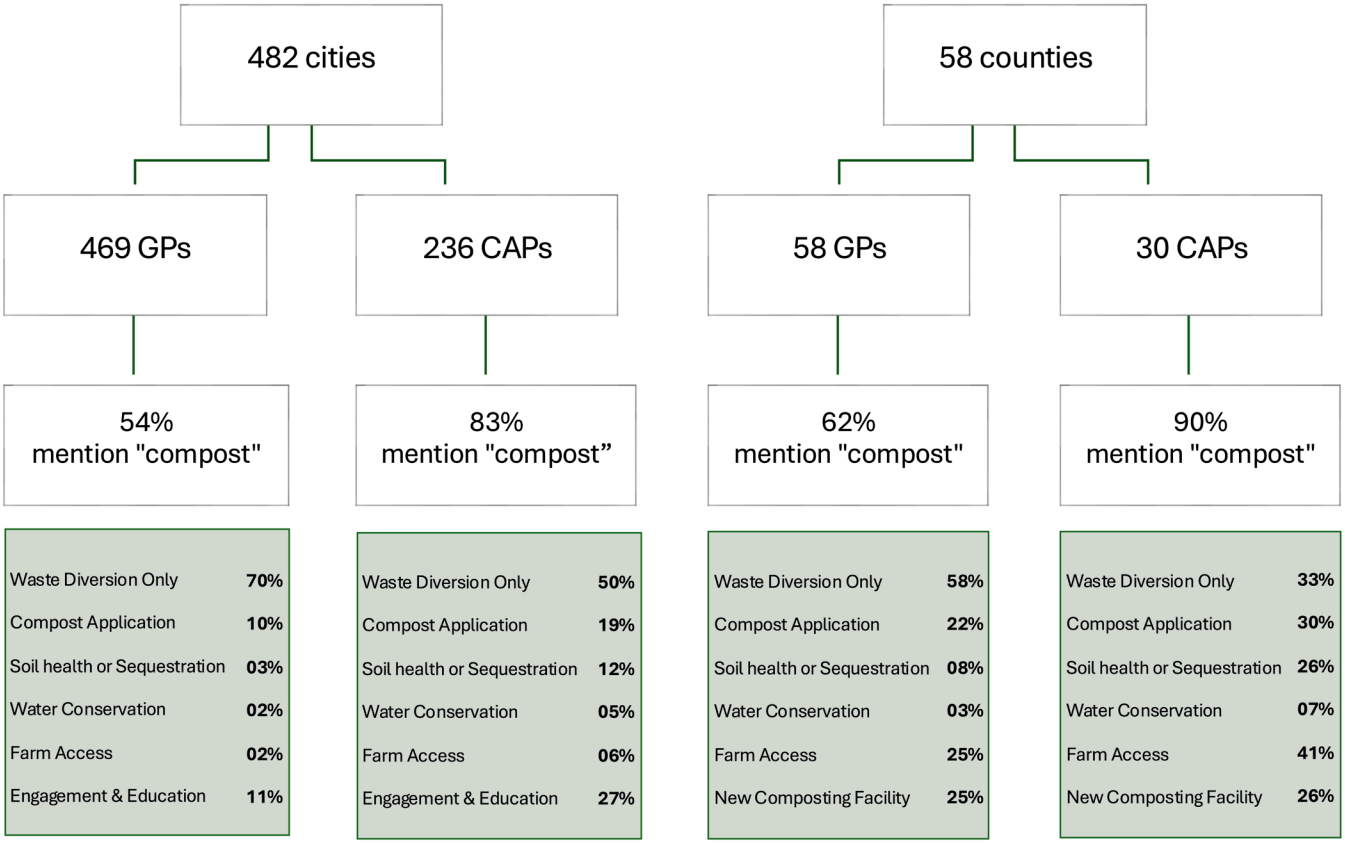

Table 1: Results from planning document analysis.

City-Level Analysis Results

City-level results showed that compost was mentioned more often in CAPs than in GPs, with only 54% of GPs mentioning "compost," despite the state-wide implementation of SB 1383 in 2022. Comparatively, 83% of CAPs mentioned compost, though it should be noted that only about half of California's cities have adopted a CAP. The jump from 54% of compost mentioned in GPs to 83% of compost mentioned in CAPs indicates that city climate action planners are looking towards organics diversion via composting as a potential emission reduction strategy. CAPs were also more likely to have a more holistic understanding of compost as something other than waste diversion, with 19% mentioning compost application to soils compared to 10% of GPs. However these percentages of non-waste diversion strategies for compost are currently very low across all city plans. CAPs most often mentioned compost under the Waste sector, and GPs predominantly mentioned it in Public Service Elements. This indicates that overall, cities are most interested in using compost, if at all, as a strategy for diverting "waste" from landfills. Managing organic materials for high-quality end-use products outside of traditional waste systems is not yet seen as a priority for the long-range planning of cities, and there remains an opportunity to plan for the responsible management of organic materials as a natural resource.

The relatively few mentions of compost application to soils in both GPs and CAPs suggest that city planners are more aware of the emission reduction benefits from the creation of compost (primarily reducing methane by keeping organics out of landfills) rather than the use of compost as a soil amendment with tremendous climate benefits (primarily carbon sequestration, i.e., drawing carbon dioxide out of the atmosphere and holding it in soil for long periods flood reduction and heat resilience). About half of city-level plans that did mention compost application did so in the context of using it for city-owned lands. The City of Lake Forest's GP, for example, plans to "explore opportunities to collect and compost organic matter… [and] when feasible, distribute for use in parks, medians, and other municipal areas" (2020), while the City of Fremont's CAP plans to "use locally produced compost on landscape projects and apply compost regularly on city landscapes for sequestration, water retention, soil erosion control, and weed abatement" (2023).

Community education on sustainability is often a key component of CAPs and is not considered within the traditional purview of GPs. This aligns with our findings that CAPs were more than twice as likely to plan for composting education programs. Policies that were vague (i.e., "educate public about compost") or only mentioned compost education in terms of waste diversion (i.e., "teach the public to separate compostable waste") were not included in this categorization. The analysis only counted examples of more robust education, such as programs that include composting workshops, publicly available resources on and support for backyard composting, or demonstrations at community composting facilities.

Lastly, only 2% of CAPs at the city level made any mention of providing compost to local farms and agricultural producers, whether urban or rural. The following examples do explicitly make the connection between organic materials management and agriculture. The City of Davis' CAP states the city will create carbon farm plans for city-owned agricultural lands and include compost application as a sequestration method. They also suggest educational outreach on sustainable farming practices to tenant farmers (2023). The City of Livermore's CAP similarly plans to implement carbon farming projects using SB 1383-compliant procured organic materials (2022). The City of Kerman's GP states that the city shall "encourage agricultural operations to incorporate best management practices to reduce particulate emissions, including organic composting" (2020). 17% of city-level CAPs were noted to have policies or strategies to encourage local gardening, and those often included a composting component. Although not all policies on improved access to gardening explicitly plan to use those spaces for composting, it did indicate that cities are proactively planning for sites where small-scale composting could take place.

County-Level Analysis Results

County-level plans showed dramatically different results. CAPs were still more likely to mention "compost" than GPs. However, counties were more likely to mention compost in both plans than cities. 62% of county GPs and an impressive 90% of county CAPs mentioned compost. County plans were also more likely to frame compost as more than just a waste-diversion tactic, with 22% of GPs and 41% of CAPs mentioning increasing access and use of compost for agriculturalists, and 25% of GPs and 30% of CAPs explicitly planning for compost application to soils, mostly on agricultural lands. Counties most often specify the need to support compost use for agricultural practices to avoid open agricultural burnings, reduce the use of synthetic fertilizers, or expand carbon farming initiatives. Compared to cities, which sometimes planned for compost application to city-owned lands, only a few counties specified applying compost to county-owned lands, such as parks and open spaces. Counties were generally more concerned with compost application to agricultural lands, whether county or privately owned.

The intersection between carbon sequestration and organic material management is the most present in county CAPs. Themes of improved compost access for farmers, support for carbon farming projects, and support for composting activities on farms are all present. Santa Barbara County's CAP noted that compost is already distributed to local agricultural operations to aid water retention and soil health, and they plan to pilot a "Compost Application Expansion Program." The program will allow the county to study the application of compost on rangeland and orchards for improved vegetation, soil health, and carbon storage and use the results to guide future planning processes.

About 25% of county-level GPs and CAPs mentioned planning for or building composting facilities, but they provided little information on the locations and capacity scale of these facilities. Some city planning documents also mentioned plans for new facilities, though they often stated that these plans required coordination with their respective counties. These trends may indicate a general intention to consolidate and centralize composting into fewer, larger-scale commercial facilities that require more space and mechanization and may be subject to regulations that limit potential building sites to only industrial or agricultural zones.

Discussion of Planning Results & Key Takeaways

The results of this analysis indicate a lack of robust compost-lifecycle planning at the city and county level, which provides an opportunity to shape this space by shifting the framing from waste diversion to resource development. Compost is a valuable bioresource that is worth developing for its unique role in soil nutrient, carbon, and water cycles. The data shows that planners often entirely omit compost from the planning process, and when compost is mentioned, it is usually only as a stand-alone tool for waste diversion. A few examples of holistic, integrated compost planning stand out. Those case studies are shared at the end of this section. Overall, however, the general results of this analysis may indicate the following:

1. Planners, particularly at the city level, tend to lack a holistic understanding of the full lifecycle of compost and, therefore, emphasize compost creation over compost application to soils.

2. Planning documents indicate an over-reliance on building centralized composting facilities rather than supporting decentralized, diversified composting operations.

3. Planning documents often lack structured coordination between urban and rural areas in regard to returning potential nutrients back into agricultural soils. Using food materials from urban areas to support on-farm compost operations in rural areas will make a more nutrient-rich compost, which can then be applied in surrounding rural agricultural lands and rangelands where closing the nutrient loop is vital for soil health.

4. There is a lack of consistent goal setting between general plans and climate action plans when it comes to planning for compost creation and use, indicating potential disconnects within local and regional planning departments. There is no clear correlation between cities that plan for composting creation and cities with existing composting operations.

COMPOST AS A REPLACEMENT TO AGRICULTURAL BURNINGS

Many agricultural communities conduct a practice called “agricultural burnings” as a method to reduce crop and woody residue from agricultural fields before the new growing season. Open agricultural burning in California has significant health impacts due to the release of air pollutants, including fine particulate matter, carbon monoxide, volatile organic compounds, and greenhouse gases like carbon dioxide. These pollutants can affect public health by increasing respiratory issues, increasing risks of heart attacks, strokes and other cardiovascular diseases, and allergic reactions.

The following planning documents were flagged for having strategies in them that offer compost creation with agricultural residue as an alternative to agricultural burnings:

County of Tulare CAP

County of Mariposa CAP

County of Tuolumne CAP & GP

County of Ventura CAP & GP

City of Corning GP

City of Mount Shasta GP

Town of Paradise GP

City of Shasta Lake GP

City of San Luis Obispo GP