

GHG Reduction Potential with Compost Applications

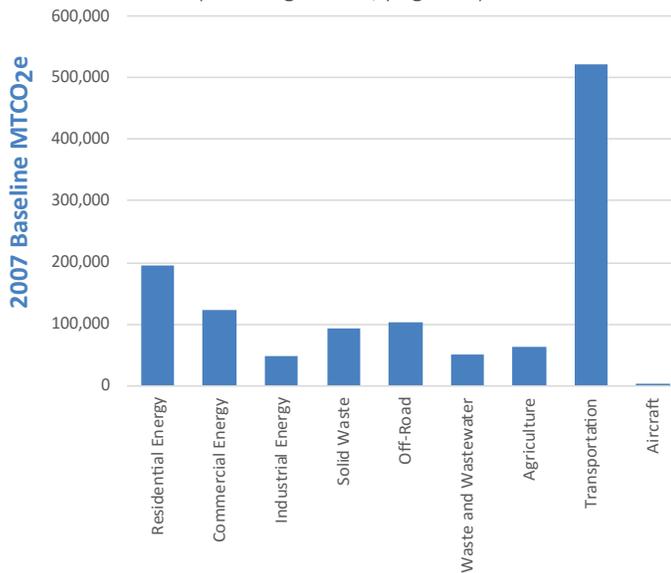
Santa Barbara County

Rangeland and cropland compost application projects could play a significant role in helping Santa Barbara County reach its **2015 Energy and Climate Action Plan** (ECAP) targets. Background data from the ECAP are summarized below. An analysis of potential greenhouse gas (GHG) reduction through compost application is summarized on page 2.

MTCO₂e - Metric tons of carbon dioxide equivalent

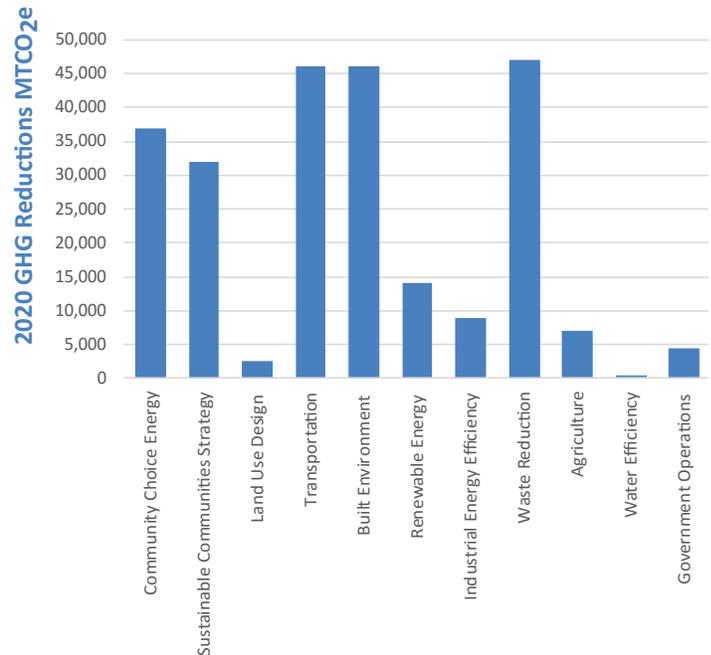
2007 Inventory Summary

Emissions from unincorporated county sources
Total 1,192,970 MTCO₂e
(ECAP Figure 3-1, page 3-5)



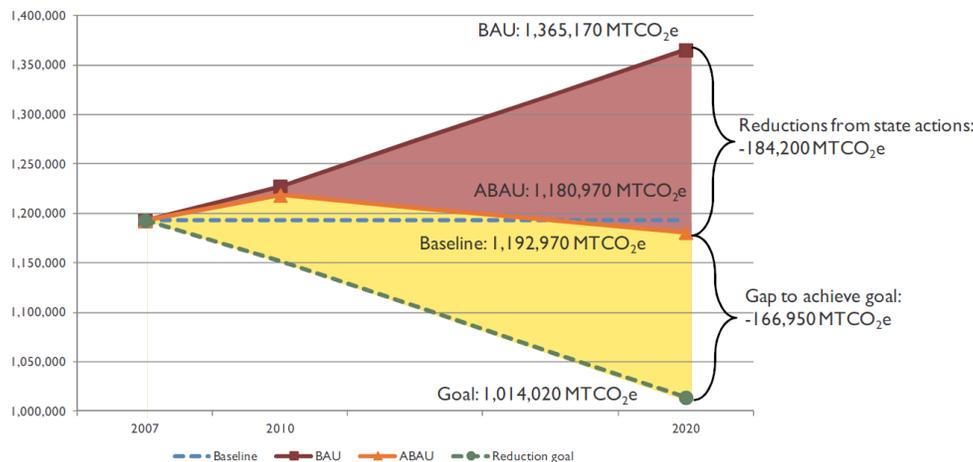
GHG Reduction by Topic

(ECAP Figure 4-1, page 4-5)



Comparison of Business-as-Usual and Adjusted Business-as-Usual Emissions

(Annual MTCO₂e emissions 2007–2020, ECAP Figure 3-4, page 3-14)



One of the ECAP's primary goals is to achieve a community-wide GHG reduction target of 15% below 2007 baseline emissions by the year 2020. Implementation of the ECAP, including both community and government operations measures, can reduce emissions by approximately 17% below baseline levels by 2020, based on reasonable goals and assumptions and conservative participation rates. Achieving these reductions requires a broad mix of creative and effective measures (shown by topic above) that meet local priorities.

According to the ECAP, compost application projects would be categorized as an **Agricultural Protection and Preservation (AG-6)** greenhouse gas reduction measure (pg. 4-40). These measures are designed to *“facilitate the increased use of policies to protect carbon-sequestering environments and to support local resource-based industries. Carbon-sequestering environments can help to mitigate GHG emissions by acting as a local carbon dioxide “sink.” Supportive measures do not produce direct, measurable GHG reductions. GHG emission reductions from supportive measures are not tracked, quantified or relied upon to meet the ECAP’s reduction target.”*

However, ECAP specifically references organizations such as the Cachuma Resource Conservation District as a key partner in developing supportive measures including the following Action Items related to AG-6 goals: 1) Support development of carbon sequestration programs and 2) Support development of a GHG credit system.

Even though compost application projects and their resulting GHG reduction via carbon sequestration are not currently directly applied towards ECAP reduction targets, they could still be useful in helping Santa Barbara County achieve the ECAP goals. It is important to note that ecosystem modelling has indicated that a single ¼" application of compost will continue sequestering carbon for 20+ years. Therefore, treating additional acres each year will result in a cumulative increase in the amount of CO₂ removed from the atmosphere.

Potential Annual Increase of Soil Carbon Sequestration

with 1/4-inch compost application on private, federal, state and other working lands in Santa Barbara County

Ownership	Acres Suitable for Compost Application	% of Total	Potential MTCO ₂ e Sequestered Annually*
Private	242,759	90%	356,370
Federal	19,546	7%	28,694
State	2,450	1%	3,597
Other	4,833	2%	7,095
Totals:	269,588	100%	395,755

*assumes 1.49 MTCO₂e/acre/year from photosynthetic capture as above; values increase significantly if compost C is included.

The following estimates are provided to illustrate the potential impact these projects could have within the ECAP framework:

Agricultural Sector Offset

Treating 42,309 acres of rangelands with a single ¼" application of compost would offset the emissions of the Agricultural Sector (62,110 MTCO₂e, not including the Off-Road Agricultural Equipment emissions). This could be implemented over a five year period by treating 8,462 acres each year with 296,165 cubic yards of compost (148,082 ± tons) annually applied at different sites (2016-2020 growing seasons).

Reduction Target “Gap”

Treating 113,726 acres of rangelands with a single ¼" application of compost would meet the 166,950 MTCO₂e reduction target (15% below 2007 baseline, or Target “Gap”). This could be implemented over a five year period by treating 22,745 acres each year with 796,083 cubic yards of compost (398,042 ± tons) applied annually at different sites (2016-2020 growing seasons).

Acres and Compost Required to Meet Targets

Goal	Emissions Reduction Goal MTCO ₂ e	Acres Required	Cubic Yards of Compost Required	Tons of Compost Required
Ag. Sector Offsets	62,110	42,309	1,480,824	740,412
"Gap" Target	166,950	113,726	3,980,416	1,990,208

Resource Recovery Project at Tajiguas

Assuming 16,000 tons (32,000 ± cubic yards) of compost production from the Resource Recovery Project at Tajiguas that would be suitable and available for compost application projects, 914 acres could be treated annually. Over a five year period (2016-2020 growing seasons), a total of 4,571 acres could be treated by 2020. This would sequester approximately 20,428 MTCO₂e by 2020 or 33% of the Agricultural Sector emissions or 12% of the total “gap” emission reduction goal.

Conclusions

There appears to be ample opportunity to implement compost application projects on private lands in Santa Barbara County. Availability of compost might be a limiting factor and should be studied further. Agencies such as the Cachuma Resource Conservation District and other partnering organizations are well-positioned to mobilize and enroll private landowners in efforts to achieve the County’s ECAP goals.