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COMPOST COALITION

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Recology

Greg Pryor
Recology

Will Bakx
Sonoma Compost

Christy Pestoni Abreu
UVR Compost

Michael Gross
Z-Best Composting

LEGISLATIVE &
REGULATORY AFFAIRS

Neil Edgar, Executive Director
Edgar & Associates, Inc.

Evan Edgar, Engineer
Edgar & Associates

Justin Malan, Legislative Lobbyist
EcoConsult

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Zero Waste Energy Development
Zero Waste Energy, LLC

January 27, 2017

Mary Nichols, Chair
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Re: Comments on the 2017 Climate Change Scoping Plan Update
- **Seven million more tons of compost use on irrigated croplands by 2030**
- **Compost and Anaerobic Digestion as most cost-effective measure**
- **Net Zero for the Waste Industry by 2030**

Dear Ms. Nichols;

The California Compost Coalition (CCC) is a statewide organization representing operators of permitted facilities involved in the processing and composting of green and food waste materials throughout California. On behalf of these companies, we have already submitted comments on December 2, 2016 Discussion Draft of the 2030 Target Scoping Plan Update and on the December 14, 2016 meeting on the Natural & Working Lands model. CCC supported SB 32 and SB 1383 and looks forward to the joint implementation of SB 1383 by CARB and CalRecycle in the regulatory process to divert 50% of all organics by 2020 and 75% of all organics by 2025.

CCC supports the overall vision and strategy set forth in The 2017 Climate Change Scoping Plan Update and the November 2016 draft of the Short-Lived Climate Pollutant Plan appreciate that these plans have been linked. Both of these plans need to develop a sustained funding mechanism to develop the multi-billion dollar infrastructure to develop over 100 facilities and to foster the use of compost on our working lands with a focus on irrigated croplands.

Composting and anaerobic digestion form the cement that binds the Governor's Five Pillars together. Eliminating organics from the landfills will mitigate methane generation as a short-lived climate pollutant to implement SB 1383 (Pillar 4), and instead, create biomethane power at anaerobic digestion facilities to generate more renewable energy to achieve the goals of SB 350 (Pillar 2) and carbon negative fuel for the CNG fleet that collects the organics and implements the Low Carbon Fuel Standard (Pillar 1) to displace diesel. The diverted food waste and digestate can be composted to sequester carbon and be integral to healthy soils (Pillar 5). Organic power and compost use have been deemed the most cost-effective greenhouse gas (GHG) reduction strategy that bonds all Five Pillars together. The California Legislative Analyst's Office determined the cost of composting and anaerobic digestion to be at just $9/ton of GHG reduction while the overall average is $57/ton.

1822 21st Street • Sacramento, CA 95811 • (916) 739-1200 • Fax: (916) 739-1216
Neil@californiacompostcoalition.org • www.californiacompostcoalition.org

Seven million ton of more compost use by 2030:

CCC would like to clarify the intent of the Scoping Plan language is that compost use should not be just for grasslands, but also for irrigated croplands, as we pointed out during the Public Workshop on Carbon Sequestration Modeling Methods and Initial Results for the Natural & Working Lands Sector at the December 14, 2016 meeting. Copied below is an excerpt from the Table in the working lands presentation by Alan V. Di Vittorio of Lawrence Berkeley National Laboratory on the CALAND model, where the modeling inputs low and high management scenarios for an incremental 10,000 acres each year, both for croplands (no till/cover crop) grasslands, would be adopting sustainable agriculture practices, adding a total of 260,000 acres by 2030. However, compost use on irrigated cropland was not specifically mentioned and needs to be identified. We support the use of metrics and goals setting to get to 2030, and specifically identifying compost use on irrigated cropland can accommodate a new 7 million tons in California. CCC added in the line items below the Table where 40,000 acres per year to 80,000 acres per years should be identified as low and high management scenarios.

According to CDFA, there are roughly 9 million acres of irrigated farmland, so if just 10,000 acres per year are targeted, only 130,000 acres of compost use on working lands would occur, representing only a 1.5% increase. According to UC Rangelands at UC Davis, there are 62.9 million acres of rangeland; pushing for another 130,000 acres would mean only a 0.2% increase. Neither could be classified as aggressive targets and barely qualify as a 'low management scenario', where agriculture could use all of the compost derived from organics recycling mandated by SB 1383 to mitigate methane, given more robust market development targets.

The following is recommended with supportive information to increase compost use:

- Include Irrigated Cropland (compost use) in the model with a low and high management scenario of 40,000 acres per year and 80,000 acres per year
- Grasslands – compost amendment (state/private) – Require CalTrans and Department of General Services and other state agencies to use compost following current state law and increase by over 10,000 acres per year

Compost use on irrigated croplands is the largest current market, estimated at over 1,000,000 acres per year, and yet is not included the CALAND model despite its huge potential growth.

- Low Management
    - Assumed - 1,000,000 acres baseline in 2017
    - 500,000 acres by 2030 to get 50% of new compost produced –
    - Add 40,000 acres each year
    - Possible 1.5 million acres using compost – 17% of all irrigated cropland
- High Management
    - Assumed - 1,000,000 acres baseline in 2017
    - 1,000,000 acres by 2030 to get 100% of new compost produced –
    - Add 80,000 acres each year
    - Possible 2.0 million acres using compost – 22% of all irrigated cropland

5

Management scenarios

- **These scenarios are applied to the baseline, from 2017-2030**

Activity	Low management	High management
Forests - fuel reduction, restoration (state/private)	60,000 ac/yr through 2030	175,000 ac/yr through 2030
Forests – reforestation is implicit in the model	Increase rate 15% above BAU by 2030 (assume 15% above BAU rate in each year to 2030)	Increase rate 30% above BAU by 2030 (assume 15% above BAU rate in each year to 2030)
Croplands – conserve soil C (no-till/cover crop)	10,000 ac/yr through 2030	10,000 ac/yr through 2030
Meadow restoration - rangeland (state/private)	10,000 acres by 2030	30,000 acres by 2030
Grasslands – compost amendment (state/private)	10,000 ac/yr through 2030	10,000 ac/yr through 2030
Delta Fresh Wetlands Restoration (state/private)	15,000 acres by 2030	30,000 acres by 2030
Coastal/Tidal wetlands restoration (state/private)	30,000 acres by 2030	60,000 acres by 2030
Urban – Increase urban tree canopy fraction	20% above current by 2030 (same as baseline)	40% above current by 2030
Ocean – restore eelgrass beds	5% above current levels by 2030	10% above current levels by 2030

Croplands (irrigated) compost amendment (CCC comments)	**40,000 ac/yr through 2030 3.5 million tons per year by 2030.**	**80,000 ac/yr through 2030 7 million tons per year by 2030**

AB 1045 and 5 million tons of Greenhouse Gas Reductions through compost use:

PRC 42649.87.b from AB 1045 states that California Environmental Protection Agency shall promote a goal of reducing at least five million metric tons of greenhouse gas emissions per year through the development and application of compost. Using the adopted emission factors, it would take 9.8 million tons of compost use to reach this requirement, diverting almost 17 million tons of organics from landfills. Calculations are provided on the next page. Cal-EPA should provide the metrics and needed programs to achieve this requirement. Applying compost on irrigated croplands could use 7 million tons of compost by 2030, and Caltrans and the other state agencies should be able to use the rest.

PRC 42649.87.b	5,000,000	$MTCO_2e$	from compost *use.*
Decreased Soil Erosion	0.25	$MTCO_2e$/per ton compost	
Decreased Fertilizer Use	0.26	$MTCO_2e$/per ton compost	
Decreased Herbicide Use	0	$MTCO_2e$/per ton compost	
	0.51	$MTCO_2e$/per ton compost	
9,803,922	**tons of compost to reach this goal**		
0.58	conversion from feedstock to compost		
16,903,313	tons of compost feedstock		
Source: https://www.arb.ca.gov/cc/waste/cerffinal.pdf			pg 19

Compost and Anaerobic Digestion as a Cost-Effective Measure

The LAO has determined that organics/recycling loans and organic composting/anaerobic digestion grants are among the most cost-effective (from $4/ton to $9/ton) where $57/ton is the average and the high has been up to $725/ton. Since December 2014, Edgar & Associates has provided similar data, utilizing a CO_2 reduction supply curve to the LAO, ARB and legislators, to show that compost/AD as one of the most cost-effective GHG reduction strategies, using the "marginal cost abatement" methodology. We are happy to see the LAO validate this work. This information needs to be presented in **Table III-3. Estimated 2030 Cost Per Metric Ton by Measure** showing compost and anaerobic digestion as an implementing measure of SB 1383 – Short-lived Climate Pollutant Plan, to divert organics from landfills.

Estimated Average Cost Per Ton of Reduction Varies Greatly

Program	Cost Per Ton[a]
Organics and recycling loans ★	$4
Forest health	4
Dairy digester research and development program	8
Organics composting/digestion grants ★	9
Forest legacy	10
Recycling manufacturing	15
Delta and coastal wetlands restoration	30
State water and efficiency and enhancement program	33
Clean vehicle rebates	46
Sustainable agricultural lands conservation	59
Mountain meadow ecosystems restoration	113
Urban and community forestry	116
Water-energy grant program	141
Affordable housing and sustainable communities	191
Single-family solar photovoltaics[b]	209
Transit and intercity rail capital	259
Single-family energy efficiency and solar water heating[b]	282
Large multifamily energy efficiency and renewables[b]	343
Enhanced fleet modernization program "plus-up"	414
Truck and bus voucher incentives	452
Incentives for public fleets pilot project for DACs	725
Overall Average	**$57**

LAO LEGISLATIVE ANALYST'S OFFICE

[a] Calculated as the amount of cap-and-trade funds awarded to a program divided by the total estimated greenhouse gas (GHG) emission reductions from the projects that receive cap-and-trade funds.
[b] Assumes GHG reductions at the midpoint of the administration's estimated range.
DACs = disadvantaged communities.

Net Zero from the Waste Sector by 2030:

The AB 32 Scoping Plan First Update was adopted on May 15, 2014 by the California Air Resource Board and includes the Net-Zero concept as copied below. Net-Zero has been defined by the California Air Resource Board as when an organization's avoided indirect emissions offset their operational emissions. By reporting the progression of operational vs avoided emissions, it is possible to demonstrate many solid waste and recycling companies have already achieved this goal. To meet Net-Zero, one's avoided GHG emissions must be greater or equal to one's operational GHG emissions.

The concept of Net Zero GHG Emission from the Waste Sector by Mid-Term was hallmark in the Fist Update in adopted in May 2014, and should be part of the 2017 Update, as we can achieve this goal much sooner with the diversion of organics from landfilling, and the use of recycled material in California manufacturing process.

Achieving Net-Zero GHG Emissions from the Waste Sector by Mid-term

Beyond 2020, additional reductions in GHG emissions from the Waste Sector will be needed to achieve a Net-Zero GHG emissions goal. To achieve these reductions, even greater diversion of organics and other recyclable commodities from landfills must be realized and further expansion and enhancement of the alternative non-disposal pathways must be developed. In addition, greater emphasis will need to be placed on reducing the volume of waste generated, recycling/reusing products at the end-of-life and remanufacturing these materials into beneficial products. To achieve Net-Zero, the direct GHG emissions from the Waste Sector would have to be fully offset by avoided GHG emissions. Avoided GHG emissions are reductions in life-cycle GHG emissions that would occur because waste is shifted from landfilling to alternative non-disposal pathways.

AB 32 Scoping Plan – First Update May 15, 2014

CCC supports the overall vision and strategy set forth in The 2017 Climate Change Scoping Plan Update and the November 2016 draft of the Short-Lived Climate Pollutant Plan appreciate that these plans have been linked. CCC respectfully request that CARB further evaluate our recommendations below to fully close the loop on recycling and composting with waste diversion to compost use in the one of the most recognized cost-effective GHG measure available:

- **Seven million more tons of compost use on irrigated croplands by 2030**
- **Compost and Anaerobic Digestion as most cost-effective measure**
- **Net Zero for the Waste Industry by 2030**

Should you have any questions, please contact me at (916) 739-1200.

Sincerely,

Evan W.R. Edgar

Regulatory Affairs Engineer

cc: Scott Smithline, Director, CalRecycle