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August 4, 2013

Ms. Carol Mortensen, Director
Department of Resources Recycling and Recovery
1001 I Street
Sacramento, CA 95812

**RE: Draft Waste Sector Management Plan
Comments on the Composting and Anaerobic Digestion Technical Paper**

Dear Director Mortensen:

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 respectfully submit the following comments on the Composting and Anaerobic Digestion technical paper for the Draft Waste Sector Management Plan and are in strong support of policy drivers and investment that will enhance the diversion of organic waste to bioenergy, biofuels, and composting.

CCC will be submitting comments on the 2013 Update to the AB 32 Scoping Plan. The 2013 Update provides a great opportunity to better integrate policies and programs across all sectors to achieve the most significant greenhouse gas reductions and other co-benefits. Whereas CRRC comments on this Technical Paper, our comments apply to the transportation and energy sectors as well. According to CalRecycle and CARB Recycling, Reuse and Remanufacturing Technical Paper, the *"Waste Sector"* includes all municipal and commercial solid waste-related activities (e.g., collection, processing, recycling, remanufacturing, treatment, or disposal) from generation to final disposition of the material within California. *The Overall Vision on the Plan* is to build infrastructure for a low-carbon system in California and improve the sustainability of the California infrastructure.

CCC recognizes that the Technical Paper provides diverted tonnage amounts based on a 50% diversion rate and a 75% diversion rate split among composting and anaerobic

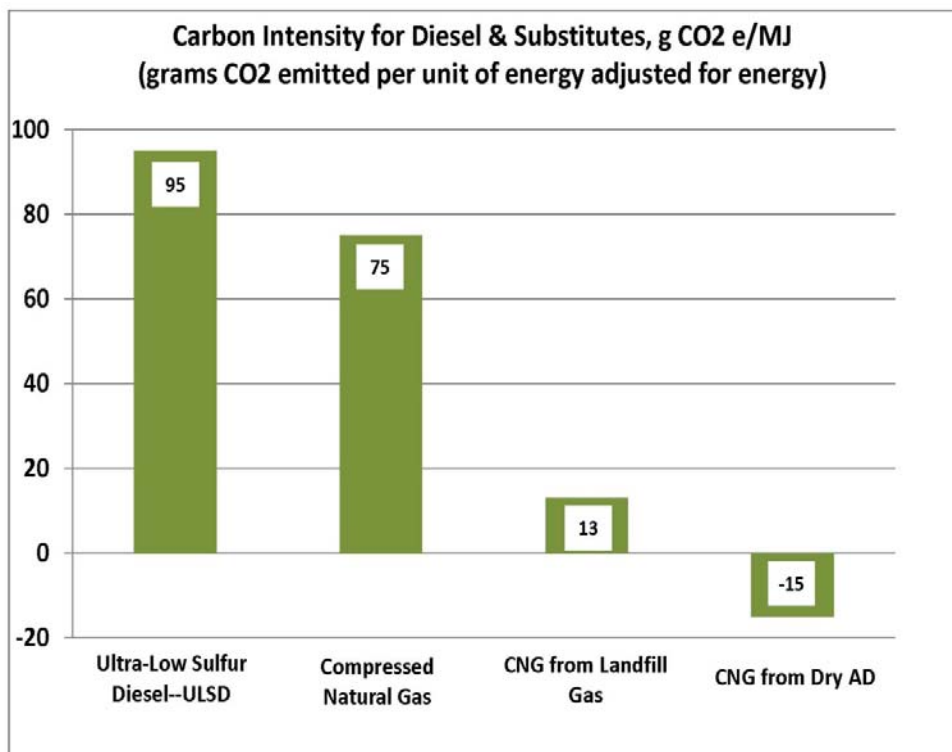
digestion to provide the GHG assessment. It is this type of framework and analysis that is needed here and as part of the 75% Recycling Plan to create policy for the future, and CalRecycle should be commended.

CCC has the following comments specific to the Technical Paper:

Section 111.A – Collection – *Discuss fleet emissions, CNG trucks, low carbon fuel, and carbon negative fleets*

The compost and AD industry is a system which includes greenhouse gas (GHG) emissions from collection and processing with a company typically emitting 90% of their GHG from collection which is considered as Scope 1 direct emissions, and 10% of their GHGs as Scope 2 indirect emissions from the processing of the material. These GHG emissions are not allocated to the “Waste Sector” and are not landfill emissions. CARB has targeted the collection fleet for criteria pollutants reduction from diesel usage, and our industry has responded with newer trucks using CNG as the fuel of choice.

Today in California, there are over 15,000 collection vehicles in California, with over 2,000 plus collection vehicles running on CNG, or about 13% of the fleet. The South Coast Air Quality Management District (SCAQMD) adopted Rule 1193 requiring the use of CNG vehicles for all new refuse and recycling contracts, and a five-year phase-in for current contracts. SCAQMD reports that today there are over 1,850 CNG vehicles in the district, with a projected 4,500 CNG vehicles by 2020.

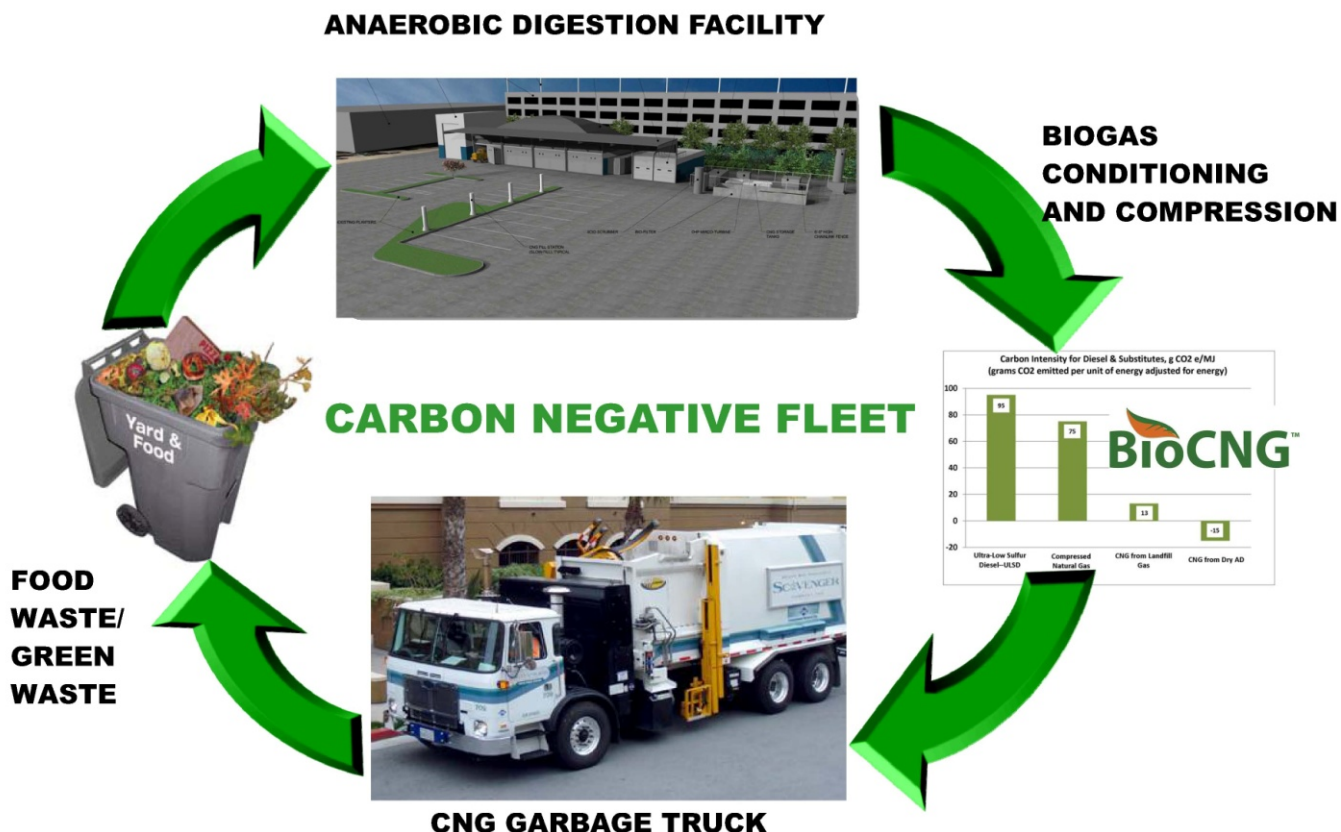


Using CNG fuel reduces GHG by 21% per truck compared to diesel as noted on the carbon intensity chart on the next page. Whereas the low carbon fuel standard only requires a 10% reduction in carbon intensity by 2020, switching to CNG fuel allows a 21% reduction per truck. The California Air Resources Board (CARB) studied the lifecycle analysis of diesel and substitutes for diesel, and adopted carbon intensity for each fuel type. The Low Carbon Fuel Standard

requires a 10% reduction in fuel carbon intensity from 2010 to 2020. As noted in the graph below, ultra-low sulfur diesel is 95 on the carbon intensity scale using units of g CO₂e/MJ, and pipeline CNG is 75 g CO₂e/MJ, a 21% reduction in greenhouse gases. CNG from landfill gas is 13 g CO₂e/MJ on the carbon intensity scale, or an 86% reduction in greenhouse gases. CARB staff has released a fuel path for renewable, or biogenic, CNG to be minus 15 g CO₂e/MJ for carbon intensity, as noted on adjacent chart.

CNG generated from the anaerobic digestion of food waste and green waste that is carbon negative, where the industry could have a carbon negative fleet run on the organic waste it collects. The mass of the digestate is reduced by 25% to 30% and is hauled to a permitted compost facility.

With a dramatic transition underway from diesel to CNG vehicles, there will be a demand for renewable CNG (RNG). Using RNG from biomethane has been declared to be carbon negative where a carbon negative fleet is possible. There is true innovation when the fleet that collects the organic waste can be fueled by the biomethane that is generated from the anaerobic digestion of the same organic waste it collects. We can close the organic loop locally as RNG is used to fuel our carbon negative fleet, and compost is used to grow our food. Having your fleet run on the commercial organics that it collects is the best possible outcome while fully utilizing the waste resources.



The cost for anaerobic digestion facilities go range from \$1.0 to \$1.4 billion by 2020, based upon the CalRecycle/CARB draft Technical Paper – page 5 which has the following tonnage allocation for AD:

- 2.5 million tons AD by 2020 is 1.38 MMTCO₂E reductions based on a 50% disposed of from 2015-2020 with half to composting and half to AD – This is a far assumption – based upon current policy (Strategic Directive No. 6) to divert half of the organics from landfills by 2020.
- 3.75 million tons AD by 2020 is 2.06 MMTCO₂E reductions based on a 75% disposed of from 2015-2020 with half to composting and half to AD, which could be part of the upcoming 75% Recycling Plan.

The potential cost of Strategic Directive No. 6 to divert 2.5 million tons of organics (50% food and 50% green waste) to AD is estimated:

- 40,000 TPY dry AD facility with CNG costs \$15 million each
- Need 65 AD facilities – that's \$1 billion
- Diesel gallon equivalent (DGE) is 400,000 per AD unit – with 65 units, about 26 million dge/year of carbon negative CNG could be produced.
- A Carbon Negative Fleet of 2,600 CNG collection vehicles could be fueled of the 15,000 statewide total fleet – which is about 17% of all CNG fleet by 2020

The potential cost of the 75% Recycling Plan to divert 3.75 million tons of organics (50% food and 50% green waste) to AD is estimated:

- 40,000 TPY dry AD facility with CNG costs \$15 million each
- Need 95 AD facilities – that's \$1.4 billion
- DGE is 400,000 per AD unit – with 95 units is 38 million DGE/year
- A Carbon Negative Fleet of 3,800 CNG collection vehicles could be fueled of the 15,000 statewide total fleet – about 25% of all CNG fleet by 2020

In Summary:

- It could cost \$1 billion to divert half of the 50% organic diversion by 2020 to AD and create 26 million dge to fuel 2,600 CNG trucks – or 17% of the statewide fleet could be carbon negative, if all went to CNG by 2020 with 1.38 MMTCO₂E GHG reductions
- It could cost \$1.4 billion to divert half of the 75% organic diversion by 2020 to AD to produce 38 million dge to fuel 3,800 CNG trucks – or 25% of the statewide fleet could be carbon negative if all went to CNG by 2020 with 2.06 MMTCO₂E GHG reductions

Section III .C – GHG Emissions

Table 2 that provide an estimate of the potential GHG reductions for diverting organic materials from landfills to composting/digestion. This is great work to add to the AB 32 Scoping Plan.

Section IV. Goals for increasing Composting and Anaerobic Digestion and Achieving GHG benefits

This section should also include targeting cap-and-trade auction proceeds for the funding programs for increasing Composting and Anaerobic Digestion and Achieving GHG benefits. CRRRC has submitted comments on the **Cap-and-Trade Auction Proceeds Fiscal Years 2013-2014 through 2015-2016**. We are grateful for the Administration's leadership on climate change issues and look forward to working together to help achieve the goals of AB 32. CRRRC strongly supports the Air Resources Board efforts to invest cap and trade proceeds into programs regarding Natural Resources and Waste Diversion, which the diversion of organic waste to bioenergy and composting, and organic waste to anaerobic digestion that produces a carbon negative fuel. Anaerobic digestion and composting are at the nexus of the AB 32 Scoping Plan adopted measures where commercial organic wastes are diverted from landfilling to generate renewable energy and negative carbon fuel, resulting in quality compost that is returned to sustainable agriculture in disadvantaged communities.

Section V. Challenges To Meeting Goals

Section B – Long-Term – Beyond 2020

- *Future research*

Research has already been identified and should be listed.

- Water efficiency/savings of using compost products
- Erosion control for SWPPP Caltrans projects
- Increase yields in crops

Section VI – Potential Solutions For Meeting Goals

- *Offsets*

Include the CAR Organic Waste Digestion Protocol and the Organic Waste Composting Protocol as CARB's compliance off-sets as has been requested annually for the last 2 years.

Currently, CARB has only four of CAR's adopted protocols for possible inclusion in the cap-and-trade program. Two of the protocols that are not currently being considered are the CAR Organic Waste Digestion Protocol and the Organic Waste Composting Protocol. The inclusion of these protocols would provide an incentive to expand food

waste diversion from landfills for treatment at anaerobic digestion (AD) and composting facilities. These efforts will help to meet the emission reduction goals of the Scoping Plan, which call for a 2 MMTCO₂e reduction from anaerobic digestion of waste and another 2 MMTCO₂e reduction from “Increase Production and Markets for Organics Products”. Meeting these two explicit goals requires increasing the capacity of these two organic treatment processes.

As of November 2012, CAR has already approved 18 Organic Waste Composting Projects and one Organic Waste Digestion Projects. It should be noted that although the reductions in greenhouse gases from these two CAR Protocols derive from avoided landfill emissions, there are significant ancillary benefits as well, such as:

- In the case of Organic Waste Digestion, the biomethane created is used either to generate renewable electricity or to produce a very low carbon intensity transportation fuel (CNG or LNG).
- The provision of compost to the agricultural industry, from composting facilities or digestate from anaerobic digestion, can play an important role in climate change adaptation. The increased use of compost can provide an important component of soil moisture management, reducing irrigation requirements. Since agriculture uses about 80% of California’s water supply, a small decrease in demand can create a significant source for other sectors and help farmers adjust to decreasing water availability.

CCC has provided detailed comments regarding the CARB/CalRecycle Technical Papers, which support the development of a low-carbon system in California today and improve the sustainability of the California infrastructure for tomorrow. Please find attached our submitted recommendations for potential investment concepts that will be needed to enhance growth of the organics processing segment of the Waste Sector, “White Paper to the California Air Resources Board: Investment of Cap and Trade Auction Proceeds – Diversion of Organic Waste to Bioenergy and Composting”.

We appreciate the opportunity to comment on these regulatory concepts and look forward to working with you through the completion of this rulemaking process.

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

Sincerely,



Neil S.R. Edgar
Executive Director

cc: Scott Smithline, Policy Director, CalRecycle
Jack Kitowski, Transportation, CARB
Howard Levenson, Waste, CalRecycle
Seikta Grant, Energy, CARB

Attachments: White Paper to the California Air Resources Board: Investment of Cap and Trade
Auction Proceeds – Diversion of Organic Waste to Bioenergy and Composting”

California Compost Coalition

WHITE PAPER INVESTMENT OF CAP AND TRADE AUCTION PROCEEDS DIVERSION OF ORGANIC WASTE TO BIOENERGY AND COMPOSTING



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February 25, 2013
Version 1.1

Executive Summary: Anaerobic digestion and composting are at the nexus of the AB 32 Scoping Plan adopted measures where organic wastes are diverted from landfilling to generate renewable energy and carbon negative fuel, and where quality organic compost is produced and returned to sustainable agriculture. The California Compost Coalition proposes the following Three-Year Investment Plan identifying programmatic investments of the Cap and Trade Auction Proceeds starting at \$38 million in FY 2013-2014 by diverting an additional 600,000 of organic waste and providing 1,200,000 tons of registered organic compost to sustainable agriculture, and increasing to \$62.5 million in FY 2015-2015 by diverting an additional 1,800,000 tons of organic waste and supplying 1,750,000 tons of registered organic compost to sustainable agriculture.

Compost Investment	<ul style="list-style-type: none"> • VOC Emission Reduction Credit Reimbursement Fund - \$15/ton • Natural Resources and Solid Waste Diversion • Implemented by CARB and local air districts • 2013-2014 \$3.0 million 2014-2015 \$4.5 million 2015-2016 \$6.0 million
Compost Investment	<ul style="list-style-type: none"> • BACT Compost Technology Incentive Payment - \$10/ton • Natural Resources and Solid Waste Diversion • Implemented by Cal-EPA, CARB and CalRecycle • 2013-2014 \$4.0 million 2014-2015 \$7.0 million 2015-2016 \$12.0 million
Bioenergy Investment	<ul style="list-style-type: none"> • Food Waste to AD Technology Incentive Payment - \$20/ton • Low Carbon Fuel, Clean Energy, Natural Resources and Waste Diversion • Implemented by CalRecycle • 2013-2014 \$4.0 million 2014-2015 \$8.0 million 2015-2016 \$12.0 million
Bionenergy Investment	<ul style="list-style-type: none"> • AB 118 Reauthorization • Low Carbon Fuel, Clean Energy, Natural Resources and Waste Diversion • Implemented by California Energy Commission • 2013-2014 \$15 million 2014-2015 \$15 million 2015-2016 \$15 million
Sustainable Agriculture Investment	<ul style="list-style-type: none"> • Organic Compost Use Fund - \$10/ton • Natural Resources, Water Use Efficiency, Environmental Justice • Implemented by California Department of Food and Agriculture • 2013-2014 \$12 million 2014-2015 \$15 million 2015-2016 \$17.5 million
Summary	<ul style="list-style-type: none"> • Anaerobic Digestion and Composting are at the nexus of AB 32 policies • Low Carbon Fuel, Clean Energy, Natural Resources, and Waste Diversion • Implemented by Cal-EPA agencies, CDFA, and local air districts • 2013-2014 \$38 million 2014-2015 \$49.5 million 2015-2016 \$62.5 million



The California Compost Coalition (CCC) is a statewide organization representing operators of private, independent facilities who are involved in the processing and composting of green and food wastes that include the diversion of organic waste from landfills to bioenergy and composting while promoting sustainable agricultural policies. CCC represents 15 permitted green waste and food waste composting facilities, and several anaerobic digestion facilities. CCC members process over 1,000,000 tons per year green waste and food waste, with major expansions underway to include more diversion of food waste and the development of anaerobic digestion facilities co-located at our composting facilities and material recovery facilities. Urban organic waste anaerobic digestion facilities are legally defined as composting, and are compatible with traditional windrow composting and covered compost systems since the digestate from anaerobic digestion – which is the remaining material after biomethane has been removed – needs to be further composted and matured to produce a quality compost soil amendment for sustainable agricultural use.

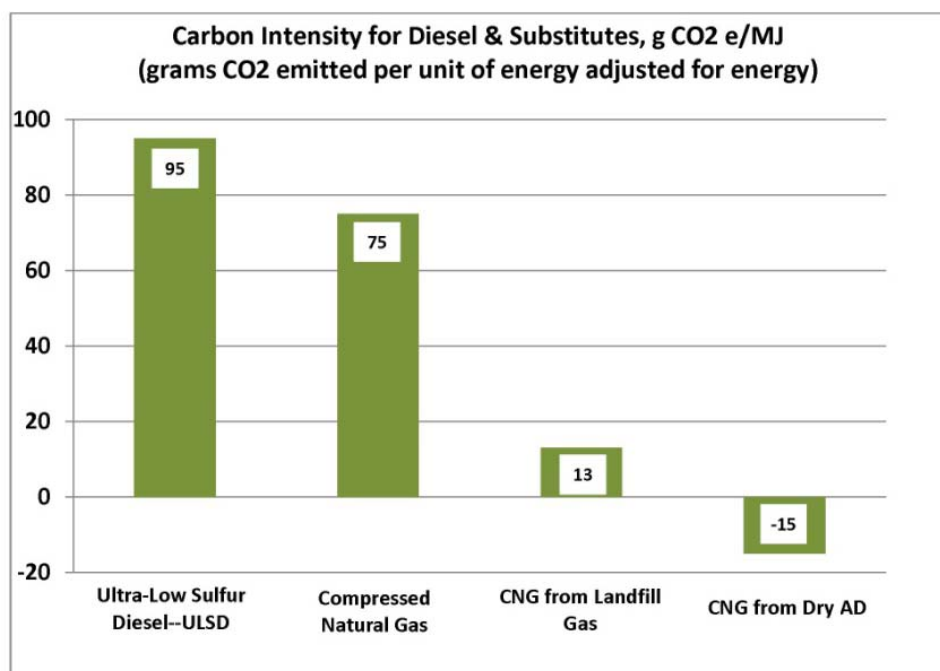
CCC hereby presents this White Paper to provide proposed details for the Investment of Cap and Trade Auction Proceeds Investment Plan for Fiscal Years 2013-2014, 2014-2015, and 2015-2016. This planning process facilitated by the Department of Finance with the California Air Resources Board is to include the examination of sustainable agriculture practices (including the development of bioenergy), and the diversion of organic waste to bioenergy and composting. CCC presents the following investment programs to be examined for funding.

At the nexus of AB 32: Anaerobic digestion and composting are at the nexus of the AB 32 Scoping Plan adopted measures (as noted in Table 1 below) where commercial organic wastes are diverted from landfilling to generate renewable energy and negative carbon fuel, resulting in quality compost that is returned to sustainable agriculture.

Table 1: AB 32 Scoping Plan adopted measures for renewable energy, low carbon fuel, and high recycling (million metric tons of carbon dioxide equivalents (MMTCO2E) in 2020)

Measure No.	Measure Description	MMTCO2E Reductions
C-21	Renewable Portfolio Standard	21.3
T-2	Low Carbon Fuel Standard	16
RW-3	High Recycling/Zero Waste <ul style="list-style-type: none">Mandatory Commercial Recycling (food waste recovery)Increase Production and Markets for Organics ProductsAnaerobic Digestion	5 2 2
	Total	46.3

- **Renewable Energy:** The increased use of renewable energy, from 20% in 2010 to 33% by 2020, is mandated to achieve 21.3 million metric tons of CO₂ equivalent reductions by 2020. Anaerobic digestion (AD) facilities create biomethane where typically one-third of the biomethane is converted to renewable energy to power the AD facility, with the remainder of biomethane converted to a carbon negative compressed natural gas (CNG) fuel.
- **Low Carbon Fuel Standard:** The Low Carbon Fuel Standard calls for a 10% reduction of the fuel intensity by 2020, where renewable CNG from an anaerobic digestion facility (using dry fermentation of food waste with green waste) has been determined by the California Air Resources Board to be minus 15 g CO₂e/MJ, or carbon negative, as shown in the figure below. CalRecycle, in the recently adopted Program EIR for AD facilities, has projected the need to develop 70 AD facilities processing 50,000 tons per year, or 210 AD facilities of 20,000 tons per year to meet the AB 32 Scoping Plan requirements. The statewide commercialization of AD facilities in this manner could yield 23.5 million diesel equivalent gallons per year, based upon feedstock consisting of a blend of 2.5 million tons per year of food waste with 1.7 million tons of green waste, or enough fuel for 1,800 CNG-fueled refuse and recycling vehicles. With over 6 million tons of food waste disposed of in 2008, the amount of renewable CNG could double to nearly 50 million diesel equivalent gallons per year, or enough for 3,500 vehicles. The organics collection industry could operate a carbon negative fleet with the deployment of AD technology where the CNG vehicle that collects the organic waste runs on the CNG generated from the organic waste it collects.



Renewable CNG Derived From Anaerobic Digestion Is Carbon Negative

- **Mandated Commercial Recycling:** Five million metric tons of CO₂ equivalent reductions are required by 2020, resulting from diverting about 1.5 million tons of waste from landfilling. Commercial food waste diversion will be phased in with the development of both food and green waste composting and AD facilities, to assist jurisdictions in complying with the mandated commercial recycling regulations which became effective on July 1, 2012. CalRecycle has adopted Strategic Directive No. 6 which targets 50% of the food waste to be diverted by 2020.
- **Anaerobic Digestion (AD):** AD projects are expected to provide two million metric tons of CO₂ equivalent reductions by 2020; where up to 210 AD Facilities at 20,000 tons per year will be needed by 2020. Anaerobic digestion represents the a bottom line strategy for the AB 32 Scoping Plan adopted measures where commercial organic wastes are diverted from landfilling to generate renewable energy and carbon negative fuel, and quality organic compost is returned to sustainable agriculture
- **Compost Use:** The use of compost is expected to reduce 2 million metric tons of CO₂ equivalent emissions by 2020. With air and water regulations pushing compost in-vessel, state-of-the-art food waste compost facilities are employing a covered aerated static pile (CASP) system— which is considered best available control technology (BACT) by air districts – where compost is covered and air is forced through the cover for aeration, cleansing the emissions with a biofilter prior to being released, significantly reducing volatile organic compounds (VOC) emissions (by over 80%), and minimizing odors. AD facilities produce a solid digestate after biomethane is recovered, which is typically 70% of the incoming food waste and green waste; where this digestate is a feedstock that is processed into quality compost for use in sustainable agriculture. Case studies have shown that compost use by farmers can reduce water use by up to 30% and significantly reduce the use of fertilizer. The decreased pumping of water and reduced fertilizer usage (minimizing nitrogen releases to both air and water) are key practices for farmers to reduce greenhouse gases and promote sustainable agriculture. The use of certified organic compost reduces the use of pesticides and petroleum-based fertilizers and decreases the impacts on disadvantage communities.

Development of the Cap-and-Trade Auction Proceeds Investment Plan: The State of California has invited participation in three public workshops in February 2013 to provide input on the development of an Investment Plan for the Auction Proceeds from the Cap-and-Trade program that would further reduce greenhouse gases (GHGs). The Department of Finance, in consultation with the CARB and other state entities, will develop and submit to the Legislature a three-year Investment Plan for the Auction Proceeds. The Investment Plan will identify the State's GHG goals and priority programs for investment of proceeds to support achievement of those goals. The proposed State Budget for 2013-14, as highlighted in the next section, includes a brief discussion of Administration priorities for investment, emphasizing investments in the transportation and energy sectors from which large reductions in GHG emissions are possible.

In addition to the transportation and energy efficiency sectors, areas to be examined during the planning process include sustainable agriculture practices (including the development of bioenergy), forest management and urban forestry, and the diversion of organic waste to bioenergy and composting. In these areas, the Administration seeks feedback on programs for potential investment that complement investments in transportation and energy efficiency.

Governor's proposed 2013-2014 Budget: The Governor released California's proposed Budget 2013-2014 on January 10, 2013, with the following statement regarding the investment of Cap-and-Trade Auction Proceeds.

Reducing Greenhouse Gas Emissions through the Investment of Cap and Trade Auction Proceeds

AB 32 established California as a global leader in reducing greenhouse gas emissions (GHGs). To meet the goals of AB 32, the state has adopted a three-pronged approach to reducing greenhouse gas emissions, including adopting standards and regulations, providing emission reduction incentives via grant programs, and establishing a market-based compliance mechanism known as Cap and Trade.

The Air Resources Board (ARB) held the first of three 2012-13 auctions on November 14, 2012, resulting in \$55.8 million in proceeds to the state. The auction of allowances directly allocated to independently operated electric utilities resulted in proceeds of \$233.3 million, which will be credited to customers. The other two auctions will occur on February 19, 2013 and May 16, 2013. In recognition of the state's initial experience with the first auction, the Budget only addresses the expenditure of auction proceeds of \$200 million in 2012-13 and \$400 million in 2013-14. Total revenues from the auctions may exceed these amounts

The first plan, when completed, will prioritize programs that significantly advance the goals of AB 32. While the specific details will be developed by the Administration after receiving input through the stakeholder process, the following areas are best suited for investment. Transportation is the single largest contributor to GHGs in California (38 percent), and reducing transportation emissions should be a top priority (including mass transit, high speed rail, electrification of heavy duty and light duty vehicles, sustainable communities, and electrification and energy projects that complement high speed rail). The electricity and commercial/residential energy is the second largest contributor of GHG emissions (30 percent), and the water sector is one of the largest users of electricity in the state. Encouraging energy efficiency projects with financing incentives such as the Property-Assessed Clean Energy (PACE) program will help individuals and families who need longer timeframes and simpler terms than traditional financing to pay for home energy improvements. Programs that reduce the energy used in the supply, conveyance and treatment of water throughout the state can significantly reduce GHGs while also saving water. Other areas to be examined during the planning process include sustainable agriculture practices (including the development of bioenergy), forest management and urban forestry, and the diversion of organic waste to bioenergy and composting. The investment plan will assure benefits to disadvantaged communities.

INVESTMENT PLAN PROPOSALS

The California Compost Coalition proposes the following Three-Year Investment Plan identifying programmatic investments of the Cap-and-Trade Auction Proceeds.

1. **Compost Investment: Emission Reduction Credit Reimbursement Fund**
2. **Compost Investment: BACT Compost Technology Incentive Payment**
3. **Bioenergy Investment: Food Waste to Anaerobic Digestion Technology Incentive Payment**
4. **Bioenergy Investment: AB 118 Reauthorization for Biomethane**
5. **Sustainable Agriculture Investment: Organic Compost Use Fund**

1. **Compost Investment:**
Emission Reduction Credit Reimbursement Fund - \$15/ton

In developing composting facilities to accept food waste, facility operators are typically required to purchase emission reduction credits (ERCs) to offset volatile organic compound (VOC) emissions, with one-time costs ranging between \$500,000 and \$2 million. These ERC costs have been a major factor in deterring compost facility development in many air districts. Instead, green waste and food waste continue to be hauled to remote areas of the state increasing transportation emissions. The Administration seeks feedback on programs for potential investment where the ***Compost Investment: Emission Reduction Credit Reimbursement Fund*** would be an investment in building composting infrastructure where the compost facility operator would receive reimbursement on the costs of ERCs from an account managed by CARB, in collaboration with the local air districts.

The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and the South Coast Air Quality Management District (SCAQMD) have adopted regulations for compost facilities that will require New Source Review for the permitting of new or expanded facilities, a precedent that has spread statewide wherever an air district is in non-attainment of ozone standards. Unfortunately, the New Source Review does not account for baseline emissions of food waste in landfills where fugitive emissions in the atmosphere have been documented. Composting food waste and green waste in a covered aerated static pile (CASP) system is considered to be Best Available Control Technology (BACT), with over 80% destruction of VOCs. New Source Review is required where the threshold of significance for VOCs is 4 tons per year in the SCAQMD, and 10 tons per year in the SJVUAPCD, the Bay Area Air Quality Management District (BAAQMD), and is predominant in other air districts statewide. Composting facilities utilizing CASP technology still emit significant VOCs requiring the purchase of ERCs (i.e., above thresholds), to what level is dependent on the size of the facility and the significance threshold of the local air district.

As shown in Table 2 below – for composting facilities installing and operating a CASP system which meets BACT requirements of 80% VOC reduction – a smaller facility (30,000 tons per year of organic waste) could emit from 18 to 56 tons per year (TPY) of VOC emissions; a moderate

facility (50,000 tons per year of organic waste) could emit from 30 to 93 TPY of VOCs emissions; and a larger facility (100,000 tons per year of organic waste) could emit from 60 to 186 TPY of VOC emissions.

In each case, ERCs must be purchased as offsets for the total amount of VOC emissions above the air district's threshold of significance, for the project, at costs ranging from \$6,000 to \$37,000 per ton.

Table 2: VOC Emission Estimates and Air District Parameters

Tons per Year of Compostable Organics	VOCs Using SJVAPCD Emission Factors (TPY)	VOCs Using SCAQMD Emission Factors (TPY)	SJVAPCD Cost		SCAQMD Cost		BAAQMD Cost	
			TOS ¹ (TPY)	ERC ² Cost (per ton)	TOS (TPY)	ERC Cost (per ton)	TOS (TPY)	ERC Cost (per ton)
30,000	55.9	17.9	10	\$21,000 ³ \$6,100	4	\$37,000	10	\$8,000
50,000	93.1	29.8						
100,000	186.2	59.6						

1. TOS = Threshold of Significance

2. ERC = Emission Reduction Credit

3. The \$21,000 is the 2010 cost and the \$6,100 is the 2011 cost. The other two District's ERC costs for VOCs changed very little.

4. BAAQMD requires ERC above 35 TPY – assume average emissions factors of SJVAPCD and SCAQMD

Assumptions: (1) Feedstock storage time is 2 days; (2) Overall control efficiency during active composting is 80%; (3) There are no emission controls during storage or curing

Table 3: Emission Factors per Air District

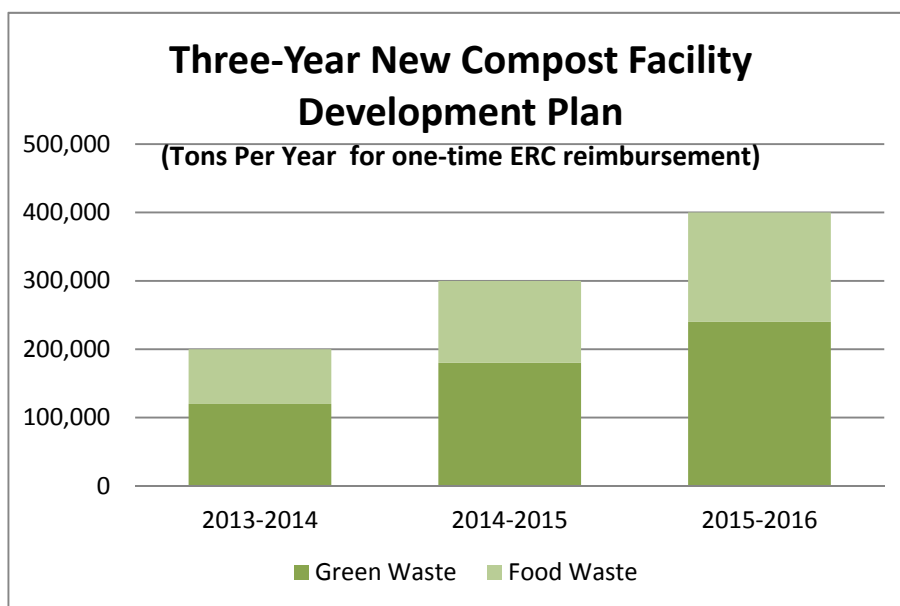
Operational Component	SCAQMD	SJVAPCD	BAAQMD
Feedstock Storage	1.063 lbs./ton/day	0	Regulations not adopted
Composting	5.14 lbs./ton	3.83 lbs./ton	
Curing	0.57 lbs./ton	0.425 lbs./ton	

A larger compost facility (as defined in Table 2) in the SCAQMD would need to purchase \$2.1 million in ERCs for VOCs; if located in SJVAPCD, the ERCs would cost \$1.1 million; and if located in the BAAQMD, the ERCs would cost \$700,000. A moderate compost facility in the SCAQMD would have to buy \$950,000 in ERCs; if located in SJVAPCD, the ERCs would cost \$500,000; and if located in the BAAQMD, the ERCs would cost \$212,000. Even a small compost facility in the SCAQMD could have to buy \$500,000 in ERCs.

The range of VOC ERC costs per ton of material composted varies: SCAQMD = \$16-21/ton in ERC offsets, SJVAPCD \$9-11/ton in ERC offsets, BAAQMD \$4-7/ton in ERC offsets. To satisfy the need to develop composting infrastructure to meet the current CalRecycle mandates required by 2020, each incremental one million tons of landfill-diverted organics will range in cost from \$4 million to \$21 million, requiring significant investment in this fund. An average ERC cost of

\$15/ton will be used to inform an investment plan for developing composting facilities in the SCAQMD and the SJVAPCD, due to the expected larger facility size required for financial viability.

In 2011, CalRecycle released their Organics Policy Roadmap in which it was projected that 28 more composting facilities, each processing 500 tons per day (or about 3.65 million tons per year of organics) would be needed by 2020 to achieve strategic goals. The typical larger compost facility of 100,000 tons per year would typically accept



up to 40% food waste (light green bar) mixed with 60% green waste (green bar), as depicted in the graphic above. With an industry projected incremental growth of adding nine large covered composting facilities over the next three years (200,000 tons of new capacity in 2013-2014, 300,000 tons of new capacity in 2014-2015, and 400,000 tons of new capacity in 2014-2015), compost facility operators would need to be reimbursed for the purchase of ERCs to operate an average of \$15/ton of organic material processed, a one-time reimbursement. Once ERCs are purchased, the compost operators are entitled to handle the permitted tonnage amount on an annual basis. This would be considered a one-time cost to purchase ERCs for new or expanded compost facilities.

CCC proposes the following three-year Investment Plan for the **Compost Investment: Emission Reduction Credit Reimbursement Fund** based upon bringing 200,000 tons of composting capacity on-line and increasing up to 400,000 per year where the compost facility operator gets directly funded for the ERC payments in a one-time reimbursement, as shown in Table 4. This plan will accommodate the diversion of 540,000 tons of green waste and 360,000 tons of food waste to newly permitted composting facility capacity over the next three years.

Table 4: Compost Investment: Emission Reduction Credit Reimbursement Fund

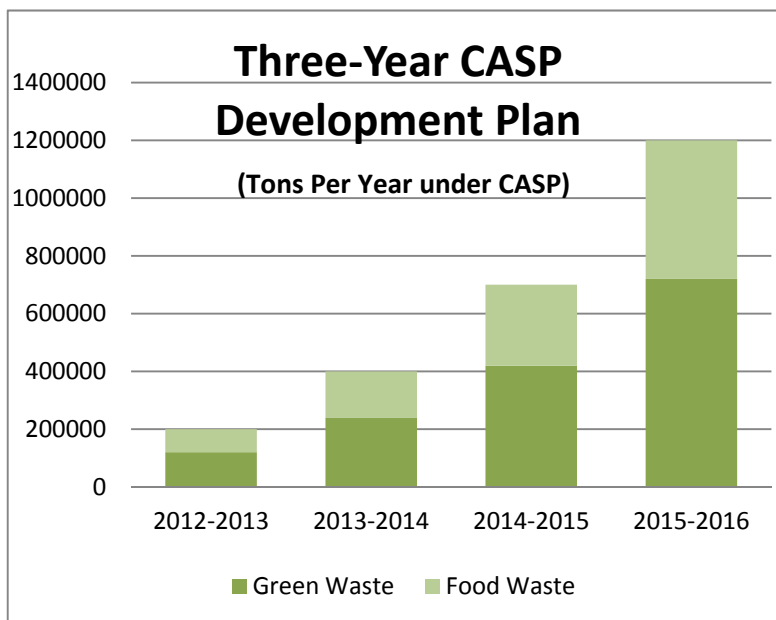
<i>Compost Investment: Emission Reduction Credit Reimbursement Fund</i>		
Budget Year	Organic Tons Composted	Budget at \$15/ton ERC
FY 2013-2014	200,000	\$3.0 million
FY 2014-2015	300,000	\$4.5 million
FY 2015-2016	400,000	\$6.0 million

2. Compost Investment:

BACT Compost Technology Incentive Payment - \$10/ton

In CalRecycle's Organics Policy Roadmap it was projected that 28 more composting facilities, each processing 500 tons per day (or about 3.65 million tons per year of organics) would be needed by 2020 to achieve strategic goals, as previously discussed.

There could be approximately 200,000 tons of compost using CASP technology by the end of 2012-2103 as shown on the adjacent graphics that would be eligible for a technology incentive payment. With an industry projected incremental growth of



adding just nine large covered composting facilities in the next three years; (200,000 tons of new capacity in 2013-2014, 300,000 tons of new capacity in 2014-2015, and 400,000 tons of new capacity in 2014-2015). Under this plan, compost facility operators would be provided an incentive payment of \$10/ton of organic material processed for using CASP that qualifies as BACT. The fund would be managed by Cal-EPA with the CARB and the local air district verifying BACT.

Under this proposal, existing and new compost facilities that have a obtained Solid Waste Facility Permit concurred with by CalRecycle, comply with Waste Discharge Requirements approved by their local Regional Water Quality Control Board, and that have installed CASP systems meeting local air district requirements would qualify for the "BACT Compost Technology Incentive Payment".

The SJVUAPCD (Rule 4566) and the SCAQMD (Rule 1133.3) have adopted regulations for composting facilities, require New Source Review for new or modified permits, and require new (or expanding) facilities to employ CASP systems. In developing composting facilities to accept food waste, in most areas of the state the facility operator would need to deploy state-of-the-art, CASP technology which has been considered to be BACT. The incremental cost to transition from a conventional open windrow technology to a CASP system has been estimated to range between \$10 and \$16 per ton (as determined by SJVUAPCD staff in their Cost Effectiveness Analysis for the development of Rule 4566 – Organic Materials Composting Operations, adopted August 18, 2011; excerpt shown in Table 5 below).

Table 5: SJVUAPCD – Rule 4566 Cost Effectiveness Analysis

Table 4: Engineered Controls Costs	
Feedstock Throughput (wet ton/yr)	Cost Averages by Throughput (\$/wet ton)
25,000	\$16.03
50,000	\$13.41
100,000	\$11.13
200,000	\$9.71

The Administration seeks feedback on programs for potential investment where the **Compost Investment: BACT Compost Technology Incentive Payment** as shown in Table 6 below, proposes a conservative \$10/ton incentive payment to the existing and new compost facility operators that develop CASP systems to accept food waste and green waste to meet BACT requirements. By 2015-2016, 1.2 million tons of organic waste could be diverted from landfilling with incentivized compost facility development.

Table 6: Compost Investment: BACT Compost Technology Incentive Payment

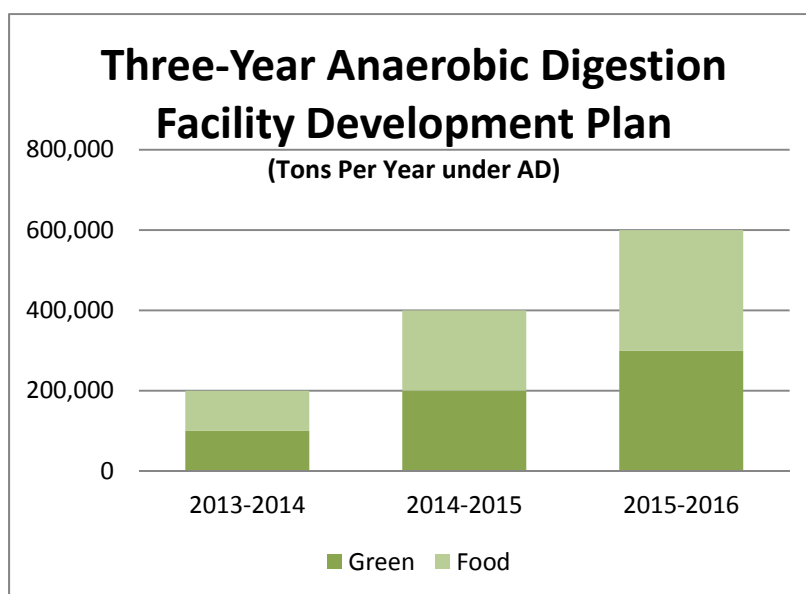
Compost Investment: BACT Compost Technology Incentive Payment		
Budget Year	Organic Tons Composted	Budget at \$10/ton for CASP
FY 2013-2014	400,000	\$4.0 million
FY 2014-2015	700,000	\$7.0 million
FY 2015-2016	1,200,000	\$12.0 million

3. Bioenergy Investment:

Food Waste to AD Technology Incentive Payment - \$20/ton

Anaerobic digestion represent the triple bottom line for the AB 32 Scoping Plan adopted measures where commercial organic wastes are diverted from landfilling to generate renewable energy and carbon negative fuel, and where quality organic compost that is returned to sustainable agriculture. CalRecycle released the Final Program EIR for Anaerobic Digestion Facilities where it was assumed that there will need to be 70 AD facilities processing 50,000 tons per year (or 200 tons per day) of organic waste by 2020 to achieve state goals, which would divert about 3.5 million tons per year of organic material and avoid 2 MMTCO₂e of GHGs as adopted in the AB 32 Scoping Plan. Assuming a ratio of 40% food waste to 60% green waste in a dry fermentation process, 1.5 million tons of food waste would need to be recovered in 2020.

Developers of AD Facilities are projecting tip fees of \$60/ton to \$80/ton, much more expensive than windrow composting and CASP composting technology. The incremental costs to develop AD facilities instead of a conventional open windrows or CASP systems is estimated to range between \$30/ton to \$50/ton. Landfill tip fees average \$30/ton to \$40/ton statewide and are dropping, where over 5 million tons of food waste is being buried. To develop an incremental amount of 200,000



tons per year of new AD processing to come on-line starting 2013-2014 (as shown in the graphic above), AD facility operators would need to be provided an incentive payment of a conservative \$20/ton of organic material processed for employing AD technologies instead of landfilling. This fund would be managed by CalRecycle.

Under this proposal, AD facilities must possess a Solid Waste Facility Permit, concurred with by CalRecycle, to handle food waste, comply with Waste Discharge Requirements approved by their local Regional Water Quality Control Board, and have the necessary Authority to Construct permits from the local air districts, in order to qualify for the "Food Waste to Anaerobic Digestion Technology Incentive Payment".

The Administration seeks feedback on programs for potential investment where the **Compost Investment: Food Waste to Anaerobic Digestion Technology Incentive Payment** of a conservative \$20/ton would provide an incentive payment to the AD facility operator to develop AD technology to accept food waste and green waste, on a recurring annual basis per the amount of tons processed during that year as shown in Table 7 below. By 2015-2016, 300,000 tons of food waste and 300,000 tons of green waste could be diverted from landfiling, producing enough biomethane to fuel a 500 vehicle carbon negative heavy-duty fleet.

Table 7: Compost Investment: Food Waste to Anaerobic Digestion Technology Incentive Payment

Compost Investment: Food Waste to Anaerobic Digestion Technology Incentive Payment		
Budget Year	Organic Tons Composted	Budget at \$20/ton for AD
FY 2013-2014	200,000	\$4.0 million
FY 2014-2015	400,000	\$8.0 million
FY 2015-2016	600,000	\$12.0 million

4. **Bioenergy Investment:** **AB 118 Reauthorization for Biomethane**

AB 118 funding provides about \$100 million annually to the California Energy Commission for projects that reduce greenhouse gas emissions and promote fuel diversity, where biomethane projects have been funded by AB 118 at an average of \$15 million per year. Unless reauthorized, AB 118 and its programs will sunset. The California Compost Coalition supports the reauthorization of the AB 118 funds. Renewable CNG from an anaerobic digestion facility (using dry fermentation of food waste with green waste) has been determined by the California Air Resources Board to be minus 15 g CO₂e/MJ, or carbon negative.

The Administration seeks feedback on programs for potential investment where the ***Bioenergy Investment: AB 118 Reauthorization for Biomethane*** reauthorizing the AB 118 investment by CEC with available grant funding to biomethane projects to generate carbon negative CNG at up to \$15 million per year, as shown in Table 8 below.

Table 8: Bioenergy Investment: AB 118 Reauthorization for Biomethane

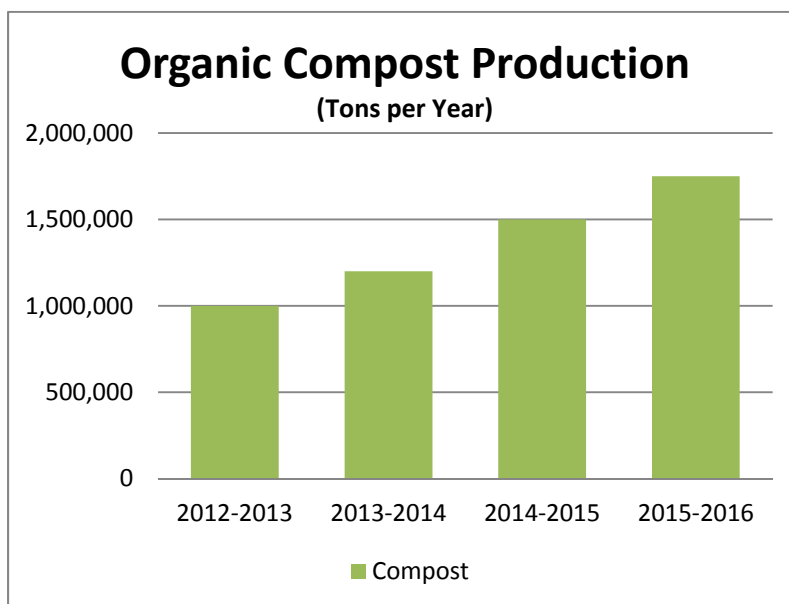
<i>Bioenergy Investment: AB 118 Reauthorization for Biomethane</i>		
Budget Year	Organic Tons Digested	CEC Grant (50% match)
FY 2013-2014	120,000	\$15.0 million
FY 2014-2015	120,000	\$15.0 million
FY 2015-2016	120,000	\$15.0 million

5. **Sustainable Agriculture Investment:** **Organic Compost Use Fund - \$10/ton**



The California Department of Food and Agriculture (CDFA) has been working to determine how compost is handled using new regulations developed under AB 856, which was passed in 2009 to tighten the regulation of organic fertilizers, following fraudulent activities by some liquid organic fertilizer producers. Beginning in January 2011, composters selling to Farm Use, which includes conventional agriculture, golf courses, and professional landscaping, were required to license their facilities and undergo annual inspections by CDFA. By January 2012, all products sold to organic farms required registration and review by CDFA to assure they meet state and federal organic standards. During 2012, all composters have been required to report tonnages quarterly for all materials – both in Farm and Non-Farm use – and pay \$0.0015 per dollar of sales in tax. It is estimated that one million tons of current compost production will be registered organic input material during 2012-2013, and that organic compost supply could grow by at least 20% per year.

Case studies have shown that compost use by farmers can reduce water use by up to 30% and significantly reduce the use of fertilizer. The decreased pumping of water and reduced fertilizer usage (minimizing nitrogen releases to both air and water) are key features for farmers to reduce greenhouse gases and promote sustainable agriculture. Plus, the carbon is sequestered in the soil. The use of registered organic compost reduces the use of pesticides and petroleum-based fertilizers and decreases the impacts to disadvantaged communities.



Under this proposal, farmers that use compost registered for organic use by CDFA would qualify for the “Organic Compost Use Fund”, to be administered by CDFA, where the farmer would be reimbursed \$10/ton.

The Administration seeks feedback on programs for potential investment where the **Sustainable Agriculture Investment: Organic Compost Use Fund** of a \$10/ton rebate would be paid to the farmers that use the organic compost to promote sustainable agriculture, as shown in Table 9 below.

Table 9: Sustainable Agriculture Investment: Organic Compost Use Fund

<i>Sustainable Agriculture Investment: Organic Compost Use Fund</i>		
Budget Year	Organic Compost Use	CDFA Budget
FY 2013-2014	1,200,000 tons	\$12.0 million
FY 2014-2015	1,500,000 tons	\$15.0 million
FY 2015-2016	1,750,000 tons	\$17.5 million