c/o California Association of Sanitation Agencies
1225 Eighth Street, Suite 595
Sacramento, CA 95814

May 26, 2016

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

Submitted electronically:
http://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=slcp2016&comm_period=N

Re: California Wastewater Climate Change Group and California Association of Sanitation Agencies Comments Regarding the Proposed Short Lived Climate Pollutant Reduction Strategy

Dear Chairman Nichols and Board Members:

The California Wastewater Climate Change Group (CWCCG) and California Association of Sanitation Agencies (CASA) appreciate the opportunity to comment on the Proposed Short Lived Climate Pollutant (SLCP) Reduction Strategy (Proposed Strategy). The CWCCG and CASA are statewide groups of municipalities that collect and treat over 90 percent of municipal wastewater in California, many of whom are located in and serve disadvantaged communities. Our joint mission is to address climate change policies, initiatives, and opportunities through a unified voice advocating for wastewater community perspectives.

We largely support the conclusions and recommendations in the Proposed Strategy and appreciate the recognition articulated that the wastewater sector is part of the solution. Specific requests and recommendations to further enhance the Proposed Strategy are offered below. We welcome the opportunity to further discuss and clarify all of these issues with ARB as appropriate.

Our members are focused on helping the State achieve its mandates and goals, including:

- Reducing carbon dioxide equivalent emissions to 40% below 1990 levels
- Providing 50% of the State's energy needs from renewable sources
- Reducing carbon intensity of transportation fuel used in the State by 10 percent
- Effectively eliminating organic waste disposal in landfills
- Increasing soil carbon under the Healthy Soils Initiative and Forest Carbon Plan
- Reducing short-lived climate pollutant emissions

In addition to providing the essential public service of wastewater treatment, we have the unique ability to provide tangible SLCP reductions by utilizing existing infrastructure for accepting and processing diverted organic waste from landfills and creating useful byproducts (electricity, biofuels, and biosolids). **CASA estimates that up to 3,825,000 wet tons (75%) of the food waste, as well as fats, oil and grease (FOG), currently landfilled in the State could be received and processed by wastewater agencies through anaerobic digestion (AD).** This could be achieved with ancillary infrastructure improvements and policy support.

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To implement organic diversion projects and fast track achievement of State goals, capital investments will be needed at wastewater treatment plants for ancillary infrastructure, which could include:

- Receiving facilities for the acceptance of food waste and FOG.
- AD upgrades for improved mixing and heating.
- Methane gas conversion technology to utilize the increased volume of biogas that will be generated.
- Biogas cleaning and related technology to ensure compliance with emission limits, production of transportation fuel, or injection into the common carrier pipeline.
- Effective means to recycle the increased quantity of biosolids that will result from management of diverted organic waste via AD.

These investments are in addition to the need for funding for organic waste collection programs and infrastructure and preprocessing facilities, which will, in most cases, be located separately from wastewater facilities. However, the advantages of AD at wastewater facilities with available capacity are that the digesters themselves already exist, and therefore the cost to bring a project on line will be less than if similar digestion capacity were built at a new facility. Finally, projects at wastewater facilities should be able to come on line far more quickly than new facilities that must be sited, permitted, designed, and constructed from scratch.

The following specific comments on the Proposed Strategy are organized by category.

Economic Analysis Revisions are Needed for More Accurate Wastewater Sector Cost Estimates

In our review of the capital and operations and maintenance cost estimates used in the Economic Analysis, we have found:

- The assumptions are not explicitly defined for each line item and may result in inaccurate estimates of cost requirements.
- Proposed costs that are too low, such as for pipeline interconnection and scrubber equipment.
- Revenue assumptions that are overly optimistic, including the tipping fee at wastewater treatment plants, low carbon transportation fuel revenue, and revenue for the value of biosolids products.

It is our experience that costs can be highly variable depending on the system size, complexity, age of the facility, geographic location, and quality and type of feedstock material. Therefore, it is appropriate to consider a range of costs for specific elements of the Economic Analysis. In Appendix A, we provide specific comments on assumptions used in the Economic Analysis and recommend ranges of costs to consider for the wastewater related elements.

We will contact you to continue actively working with ARB staff to ensure the Economic Analysis reflects accurate wastewater treatment plant costs and revenues. The results will support determining appropriate allocations of funding to the wastewater sector for implementing waste diversion projects.

Funding Allocation Recommendations to Fast Track Achievement of State Goals

CalRecycle and the California Department of Food and Agriculture (CDFA) estimate that $100 million per year for the next five years are needed to build the necessary infrastructure in the waste sector to meet the landfill organic diversion goals. We believe this estimate could be too low. Solid waste industry representatives have estimated the range will be up to $2 billion by 2020. This indicates that there is a potential significant funding gap if the Proposed Strategy goals are to be met. Either way, investing in AD projects at wastewater facilities is a value proposition for the State since the digesters already exist and

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a smaller investment will be needed to make this capacity usable for hauled organic wastes that are suitable for co-digestion at wastewater facilities.

CASA respectfully requests that FY 2016-17 Cap-and-Trade allocations be revised to allocate a specific subset of Cap-and-Trade funds for wastewater sector projects. Specifically:

- Support an increase in Cap-and-Trade fund allocations to the CalRecycle Organics Grant Program.
- Dedicate portions of that funding to allow for public-private partnerships.
- Direct CalRecycle to increase the grant cap to up to $10 million or more per project and increase the percentage of project costs that can be paid for through the program.
- Allow project costs to include project elements related to energy and biosolids utilization.

Making Use of Existing Capacity and Biogas Utilization

The ARB correctly points out in the Proposed Strategy that wastewater treatment plants are part of the solution in reducing SLCPs. However, we strongly request the deletion of the suggested regulatory approach of 'requiring' the wastewater sector to take diverted organics in recognition that it does not address the real challenge facing the State. The issue is not the willingness of wastewater treatment plants to accept organic waste streams, but the timely creation of the infrastructure and markets needed to make this enterprise successful, as recognized in the subsection calling for collaboration to overcome barriers. The latter approach would be far more beneficial and we look forward to working with CARB on the financial and regulatory barriers identified in the Proposed Strategy.

Ensuring Biosolids Utilization

Currently there are numerous county ordinances (not based on sound science or public policy) that limit the land application of biosolids in unincorporated parts of those counties. In addition, the option of using biosolids as alternative daily cover at landfills may be eliminated by 2025. As the Proposed Strategy underscores, **building a market that supports multiple options for beneficial use of biosolids is vital** and the State will need to provide strong support at all levels of government, as well as funding, to ensure such markets are enabled and promoted.

We understand that ARB is coordinating with CDFA and other agencies working on the Healthy Soils Initiative to quantify the benefits of using compost and other soil amendments (such as biosolids). We strongly encourage ARB to work with the Water Boards and CASA to include biosolids and biosolids compost in building healthy soils and understanding the significant body of research already conducted which demonstrates the plethora of benefits from their land application.

In summary, support and funding are needed to advance these practices. We strongly recommend allocation of Cap-and-Trade auction proceeds and additional incentives to fund the diversion of organic waste from landfills to wastewater plants. We also agree that the State needs to build market certainty and value for energy, fuel, biosolids, and other products from wastewater facilities.

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Thank you for your consideration of these comments. Please contact us if you have any questions at (916) 446-0388 or via email at gkester@casaweb.org and sdeslauriers@carollo.com. We look forward to working together as proactive partners on our multitude of shared objectives.

Sincerely,

Greg Kester
CASA Director of Renewable Resource Programs

Sarah A. Deslauriers, P.E.
CWCCG Program Manager

cc: Scott Smithline – Director, CalRecycle
Wade Crowfoot, Martha Guzman-Aceves, Graciela Castillo-Krings – Governor Brown's Office
Ryan McCarthy - ARB
Fran Spivy-Weber, Felicia Marcus, DeeDee D'Adamo, Tam Doduc, Steve Moore, Tom Howard, Scott Couch, Johnny Gonzales - Water Boards
Ashley Conrad-Saydah – CalEPA
Howard Levenson - Deputy Director, CalRecycle
Jamie Ormond, Commissioner Sandoval - CPUC
Rob Oglesby - CEC
Karen Ross – Secretary, CDFA
Jenny Lester Moffitt – Deputy Secretary, CDFA
Julia Levin – Executive Director, BAC
Bobbi Larson – Executive Director, CASA

Estimated Costs and Revenues for Individual Wastewater Treatment Facility Projects - Proposed vs Recommended

Economic Analysis, Table 19 Components	Capital Cost (per project)		Average Annual O&M Cost (per project)		Comments
	Proposed	Recommended	Proposed	Recommended	
Organic Pre-Processing Facility and Facility Upgrades	$8,000,000	$7,000,000 - 16,000,000	$800,000	$700,000 - 1,600,000	**It is unclear what the proposed capital cost includes.** We have provided a recommended range of costs based on information from several wastewater agencies (LACSD, CMSA, EBMUD, etc.). The range of costs includes food waste pre-processing and anaerobic digestion facility upgrades & equipment, receiving, polisher, feeding system, and engineering, construction & project management.
CNG Vehicles (2)	$500,000	$500,000	$50,000	$50,000	Matched proposal estimates (per LACSD).
Organic Waste Transportation			$450,000	$1,000,000	The recommended cost is based on information from LACSD.
Biosolid Processing			$975,000	$800,000-?	It is unclear what the proposed O&M cost includes. In order to provide an accurate estimated cost range, we need to know if it includes thickening, anaerobic digestion, dewatering, drying, further treatment (i.e., composting), or all of the above. We also need to understand how the biosolids/digestate will be managed following treatment. The recommended cost provided is based on information from LACSD.
Biosolid Transportation			$425,000	$40-80/wet ton	The cost for transportation of biosolids ranges from $40 to $80 per wet ton. The basis of the proposed O&M cost is the 2014 SoCal average reflecting both the gate fee and the transportation cost = $53.94/ton. Therefore, the annual O&M cost would be based on total wet tons hauled per year.
Pipeline	$3,000,000	$1,000,000	$150,000	$100,000-150,000	For biogas supply pipeline, gas monitoring equipment, engineering and design, permits, labor, and gas testing.
Pipeline Interconnection	$1,000,000	$2,000,000-3,000,000	$50,000	$100,000-150,000	In discussions with providers over the last three years, it has been said repeatedly that interconnection costs in CA will be closer to $2,000,000-3,000,000.
Biogas Upgrading		$1,500,000-3,000,000	$1,400,000	$3-7/1000 scf	The proposed O&M cost is based on the $ per 1000 scf of onsite-biogas conditioning for dairy operations. However, the source document states this value represents both capital and O&M costs. We have separated the capital from the O&M costs and provide recommended capital and O&M costs. See comment below for "on-site biogas upgrading system."

Economic Analysis, Table 24 Components (Assumptions Used for Developing Capital and O&M Costs for Table 19)					
On-site biogas upgrading system		$1,500,000-3,000,000	$8/1000 scf	$3-7/1000 scf	The proposed O&M cost estimate is based on a single 2005 paper presenting both Capital and O&M costs for upgrading biogas from a 1,500-cow dairy at $8.12 per 1000 scf, with a full range between $5.46 and $8.56 for an 8,000-cow dairy. Capital costs range from $1,500,000 - $3,000,000 for wastewater treatment facilities, and the O&M costs need to be estimated based on wastewater treatment plant cost data. We have provided a recommended range for the O&M cost.
On-site utility natural gas pipeline interconnection	$1,000,000	$2,000,000-3,000,000	5%	5%	In discussions with providers over the last three years, it has been said repeatedly that interconnection costs in CA will be closer to $2,000,000-3,000,000.
Organic processing station	$8,000,000	$1,000,000-5,000,000	10%	10%	The proposed cost estimate was based on CMSA's digester upgrades and co-digestion project totalling $7,650,000. However, the FOG and food waste receiving facility cost $1,900,000. EBMUD's program cost $5 million for the food waste receiving station, $1.3 million in interconnection fees, and $30 million for new gas turbine. A receiving station ranges from $1,000,000 to $5,000,000, and is dependent on the size, geographic location, system complexity, etc. This cost range is based on the findings above and from a FOG Receiving Station Feasibility Study completed for the City of Albuquerque in which ten facilities with receiving stations were surveyed, most of which were located in CA. Facilities included EBMUD's new receiving station, Fresno, Sacramento Regional, Hyperion (pilot), Gwinett County (GA), Johnson County (KS), and Gresham (OR). **It is unclear what is intended to be included in this cost estimate.** If there is other equipment assumed to be included in the "organic processing station," those costs will need to be added to the recommended cost ranges, but the total may remain below the proposed cost used for this analysis since it appears to include digester upgrades.
Anaerobic digester (100,000 TPY capacity)	$20,000,000	$6,000,000-8,000,000	10%	10%	**We need clarification on whether the proposed cost is for a single or multiple anaerobic digesters that provide treatment for 100,000 wet tons per year.** The recommended capital cost is for a **single digester** accepting ~100,000 wet tons per year ranges from $6,000,000 to $8,000,000. This cost range is based on recent estimates developed for South San Francisco (~76,000 wet tons per year) and Union Sanitary District (146,000 wet tons per year).
Biosolid disposal ($/ton)			$54	$40-80	**We need clarification on what is included in the proposed $ per wet ton.** The basis of the proposed O&M cost is the 2014 SoCal average reflecting both the gate fee and the transportation cost = $53.94/ton. The range is from $40 to $80 per wet ton (based on 2014 SCAP Biosolids Survey). Therefore, the annual O&M cost would be based on total wet tons hauled per year.

Appendix A

Revenues	Unit Cost				
Tipping fee at AD facilities ($/ton)	$65	$20-65			The proposed tipping fee at AD/wastewater treatment facilities of $65 is highly optimistic. Waste Management charges $80 per wet ton for pre-processing for organics diversion compared to $40 per wet ton for disposal. In contrast, CMSA charges $20/ton for food waste. A survey needs to be completed to provide an accurate estimate of the current and needed fee for receiving solid organic material (food waste) at wastewater treatment facilities. Tipping fees for FOG are usually in $/gallon and the solids content can vary widely. For example, $0.08/gallon at EBMUD and Gresham, but others cannot charge this much. Others charge $0.01/gallon (Riverside) to $0.03/gallon (Fresno). This fee can vary signficantly. Recommended cost ranges are based on information from: http://nepis.epa.gov/Adobe/PDF/P100LDEL.pdf
Tipping fee at WWTPs for solid organic material ($/ton)	$65	$20-65			
Tipping fee at WWTPs for liquid organic material ($/gallon)	-	$0.01-0.11			
Low Carbon Fuel Standard credits ($/MT)	$100	$40-60			LCFS credits have risen to $100+ per credit only in the last six months. It is overly optimistic to assume the LCFS credits will maintain this value. We recommend assuming a range more representative of the last year's values = $40-60.
RINs ($/unit)	$1.85	$1.33			RINs are $1.33 per credit for 2016, which is double the value of 2014 and 2015. While we expect the demand to increase for RINs, we recommend assuming $1.33 in the Economic Analysis.
Composted Biosolids ($/ton)	$12	TBD			The original title ("Biosolids ($/ton)") did not reflect the type of cost this represents according to the source document - we have suggested a new title based on the source cited. **However, we cannot identify what the proposed cost is based on from source document.** The average price per ton of compost (none of which include biosolids) is $21.35 in 2009 dollars.

Costs assumed in Co-EAT that serve as a basis to assumptions in the Economic Analysis					
Pre-processing equipment	$450,000	$1,000,000-5,000,000			Is this meant to represent a receiving station cost? See comments above about costs for receiving stations. Note that costs are considered for receiving FOG and/or food waste as part of the "Organic processing station."
H2S scrubber tank	$5,000	$150,000 - 250,000			The proposed capital cost is very low and we do not know the basis for such a low estimate. The cheapest H2S scrubber tank for use at a wastewater treatment facility is estimated to be $100,000. However, for it to function properly the cost needs to include associated piping which increases the cost estimate up to $250,000. A recent installation in Fresno cost $166,000.
H2S scrubber media (Sulfa Treat)	$5,760	$1-3/lb			What is the basis for the proposed capital cost? Media is approximately $1-3 per lb, and should be based on the weight of media needed per year.
Digester vessel ($/gallon)	$9	$7.50-9			The proposed cost estimate for a digester vessel is based on engineering quotes from Brown & Caldwell. The proposed unit cost seems reasonable, considering the SSF and USD unit costs referenced in comments above are roughly $7.5-8 per gallon of digestion capacity.