CALIFORNIA ASSOCIATION of SANITATION AGENCIES
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January 17, 2017

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

Submitted electronically:
https://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=2016slcp&comm_period=N

Re: California Association of Sanitation Agencies Comments Regarding the Revised Proposed Short Lived Climate Pollutant Reduction Strategy

Dear Chairman Nichols and Board Members:

The California Association of Sanitation Agencies (CASA) appreciates the opportunity to comment on the Revised Proposed Short Lived Climate Pollutant (SLCP) Reduction Strategy (Revised Proposed Strategy).

CASA is an association of local agencies, engaged in advancing the recycling of wastewater into usable water, and the generation of renewable energy, biosolids, and other valuable resources. Through these efforts we help create a clean and sustainable environment for Californians. Our members are focused on helping the State achieve its 2030 mandates and goals (also referred to as the Governor's Five Pillars), which include:

- Reducing SLCP emissions
- Providing 50% of the State's energy needs from renewable sources
- Reducing carbon intensity of transportation fuel used in the State
- Effectively diverting organic waste from landfills
- Increasing soil carbon and carbon sequestration under the Healthy Soils Initiative and Forest Carbon Plan

We largely support the conclusions and recommendations in the Revised Proposed Strategy and appreciate the recognition articulated that **the wastewater sector is part of the solution for methane reduction**.

In addition to providing the essential public service of wastewater treatment, we have the unique ability to provide tangible methane 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 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.

To quickly implement organic waste diversion projects and fast track achievement of State goals, capital investments are needed at wastewater treatment plants, which may include:

- Receiving facilities for the acceptance of food waste and FOG
- AD upgrades for improved mixing and heating
- Biogas cleaning and related technology to ensure compliance with emissions limits, production of transportation fuel, or injection into the common carrier pipeline
- Effective means to recycle the increased quantity of biosolids resulting from management of diverted organic waste via AD

These investments are *in addition* to the need of funding for organic waste collection programs and infrastructure and preprocessing facilities, which will, in most cases, be located separately from wastewater facilities.

The advantages of using AD capacity at wastewater treatment facilities are:

- The digesters themselves already exist, as does technology to utilize the generated methane, therefore the cost to bring a project online will be significantly less than if similar digestion capacity were built at a new facility.
- Projects at wastewater facilities should be able to come online far more quickly than new standalone facilities that must be sited, permitted, designed, and constructed from scratch.
- New AD projects often need to construct onsite wastewater treatment facilities at considerable expense in order to treat the liquid waste streams from the AD process. At existing wastewater plants, these liquid waste streams can be cost-effectively treated using existing infrastructure.

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

Revisions Needed in the Economic Analysis to Increase Accuracy of Wastewater Sector Cost Estimates

In our review of the revised proposed 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
- Revenue assumptions do not take into account brokerage fees

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. We provide specific comments in Appendix A on assumptions used in the Economic Analysis and recommend ranges of costs to consider for the wastewater related elements.

We will continue to actively work with ARB staff to ensure the Economic Analysis reflects accurate wastewater treatment plant costs and revenues. The results can be used to develop appropriate allocations of funding to the wastewater sector for implementing organic waste diversion projects (as discussed in the next section).

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 by each agency to build the necessary infrastructure in the waste sector to meet the landfill organic waste diversion goals. However, solid waste industry representatives have estimated the range will be up to $2 billion by 2025. This indicates a potential significant funding gap in order to satisfy the Revised Proposed Strategy goals. Investing in AD projects at wastewater facilities is a value proposition for the State since the digesters already exist and a smaller investment is needed to make this capacity usable for hauled-in organic wastes that are suitable for co-digestion at wastewater facilities.

CASA respectfully requests that Cap-and-Trade revenues be allocated to wastewater sector projects. Additionally, we ask ARB to:
- Increase Cap-and-Trade fund allocations to the CalRecycle Organics Grant Program.
- 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.
- Dedicate portions of the funding to allow for public-private partnerships.
- Allow project costs to include project elements related to biogas and biosolids utilization.

Ensuring Biogas Utilization
The ARB correctly points out in the Revised 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 to '*require*' the wastewater sector to accept diverted organic waste 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, it is the timely creation of the infrastructure and markets needed to make this enterprise successful.

Developing the infrastructure to accept and anaerobically co-digest diverted organic waste streams with biosolids at wastewater treatment plants, as well as managing digestion byproducts (e.g., utilization of renewable natural gas in a sustainable manner such as injection into a pipeline or as a transportation fuel), requires new markets for investors to ensure these projects are viable. To fully finance these projects, outside funding is needed from sources such as the Cap-and-Trade Program.

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 under Senate Bill 1383. As the Revised 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 and CDFA to:**
- Include and explicitly reference biosolids and biosolids compost as soil amendments as helping to achieve all of the objectives of the Action Plan in the Healthy Soils Initiative.

- Work with CASA to understand the significant body of research already conducted which demonstrates the plethora of benefits from the land application of biosolids, including increased water retention resulting in reduced need for irrigation, increased soil carbon, improved soil tilth, and increased crop yields.
- Restore the sections from the previous version (Proposed Strategy) considering forest-related sources of black carbon emissions. As was acknowledged in the Proposed Strategy, wildfire represents the largest source of black carbon emissions in California. The frequency of large fire events will likely increase by the end of the 21st century as the climate changes and as fuels supporting more severe fires accumulates. Land application of biosolids to at-risk forests represents a tremendous opportunity to not only prevent forest fires, but to increase carbon sequestration and build the soil organic matter in support of the Forest Carbon Plan. CASA is also working proactively with universities, research organizations, regulators, and its members to demonstrate and quantify the benefits of utilizing biosolids to reclaim fire ravaged land, and requests continued support and funding from all regulatory agencies for this effort.

Local Air District Objectives and State Climate Change Mitigation Mandates

We understand the intent is to develop projects that focus on the reduction of SLCP emissions without increasing criteria and toxic air pollutants in order to protect public. However, there is an **urgent need for coordination between ARB and local air districts** to discuss the potential barriers to overcome in order for both local and state objectives to be met and avoid unwarranted terminal road blocks for SLCP-reducing projects. For example, there is a pilot project being considered at one of our member's facilities that is partially funded by a state agency grant to receive food waste for co-digestion in their existing anaerobic digesters. The project is in direct response to and supports recent legislative mandates established in AB 32, SB 32, AB 341, AB 876, AB 1826, and SB 1383. The mandates require the diversion of organics from landfills to reduce methane emissions, anaerobically digest the organics to generate biogas, and support the Governor's push to produce at least 50 percent of our energy needs from renewable sources and reduce the carbon content of transportation fuel, all in an effort to mitigate climate change. The project is also consistent with the 2030 Target Scoping Plan Discussion Draft and the Revised Proposed Strategy. Each document explicitly supports using existing infrastructure such as digesters at wastewater treatment facilities as part of the overall solution to mitigate climate change. However, the project is at a standstill while the local air district re-evaluates the permit limits initially recommended.

We agree with the Revised Proposed Strategy's call for coordination between ARB, CalRecycle, CDFA, local air districts, and the wastewater sector. **We strongly encourage ARB to also work closely with CASA (*especially during the rule development under SB 1383*) to ensure projects that have the capability of significantly contributing to SLCP emissions reductions and other state mandates are not terminated based on unlikely increases in local air pollutants and/or due to unwarranted changes in existing permit conditions that adversely impact operations.**

CASA appreciates the opportunity to provide comments on the Revised Proposed Strategy. We want to emphasize that POTWs have opportunities to provide cross-sector benefits and to be:

- Suppliers of a marketable renewable fertilizer/soil amendment product in the form of biosolids.

- Suppliers of a low carbon fuel.
- Significant renewable energy providers.
- Environmental stewards of our natural and working lands.

Each of these can significantly contribute toward reductions in SLCPs. In most cases, all that is lacking is the funding to advance these practices. We strongly recommend allocation of Cap-and-Trade revenue to wastewater projects through allocating additional revenue to CalRecycle to fund the diversion of organic waste from landfills to wastewater treatment plants. We also agree that the State needs to build market certainty and value for the use of biosolids and other bioproducts from wastewater facilities.

Thank you for your consideration of these comments on the Revised Proposed Strategy. Please contact me if you have any questions at (925) 705-6404 or via email at sdeslauriers@carollo.com. We look forward to working together as proactive partners on our multitude of shared objectives.

Sincerely,

Sarah A. Deslauriers, P.E.
CASA Climate Change Program Manager

cc: Mary Nichols – Chair, California Air Resources Board
Ryan McCarthy – California Air Resources Board
David Mehl – California Air Resources Board
Cliff Rechtschaffen – Senior Advisor to Governor Brown
Martha Guzman-Aceves – Governor Brown's Office
Max Gomberg – State Water Resources Control Board
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Scott Smithline – Director, CalRecycle
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Rob Oglesby – California Energy Commission
Ashley Conrad-Saydah – Deputy Director, California Environmental Protection Agency
Jamie Ormond, Commissioner Sandoval – California Public Utilities Commission
Jenny Lester Moffitt – Deputy Secretary, California Department of Food and Agriculture
Karen Ross – Secretary, California Department of Food and Agriculture
Julia Levin – Executive Director, Bioenergy Association of California
Bobbi Larson – Executive Director, California Association of Sanitation Agencies
Greg Kester – Director of Renewable Resource Programs, California Association of Sanitation Agencies

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

Economic Analysis, Table 28 Components for Existing Anaerobic Digestion Facility	Capital Cost (per project)		Average Annual O&M Cost (per project)		Comments
	Proposed	Recommended	Proposed	Recommended	
Organic Pre-Processing Facility and Facility Upgrades	$12,000,000	$7,000,000 - 25,000,000	$1,200,000	$700,000 - 3,000,000	**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 receiving facilties, pre-processing (*contamination removal*) equipment, digester feeding system, and anaerobic digestion facility upgrades, and engineering, construction & project management. Each WWTP and each organic waste stream has unique characteristics that will dramatically impact the cost of organics processing. The cost range does not include any expansion to the wastewater treatment facilities biosolids handling systems. Some WWTPS may have existing excess capacity within their anaerobic digesters, but may not have capacity at dewatering facilities or other components of their biosolids handling facilities.
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.
Organic Waste Anaerobic Digestion & Biosolid Processing			$975,000	$300,000 - $800,000 - ?	Costs are highly variable based on the existing processes at the WWTP. The recommended cost range provided is based on information from LACSD and EBMUD.
Biosolid Transportation & *Use/Disposal*			$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	$3,000,000	$150,000	$100,000-150,000	For biogas supply pipeline, gas monitoring equipment, engineering and design, permits, labor, and gas testing.
Pipeline Interconnection	$3,000,000	$2,000,000-3,000,000	$150,000	$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		$1,500,000-12,000,000	$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 having widely varying costs that are not directly applicable to WWTPs. The source document states this value represents both capital and O&M costs. We separated the capital from the O&M costs and provide recommended capital and O&M cost ranges. See comment below for "on-site biogas upgrading system."

Economic Analysis, Table 30 Components for New Anaerobic Digestion Facility	Capital Cost (per project)		Average Annual O&M Cost (per project)		Comments
	Proposed	Recommended	Proposed	Recommended	
Anaerobic Digester	$20,000,000		$2,000,000		**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). We agree the average annual O&M Cost (per project) is approximately 10% of the capital cost.
Organic Processing Facility	$12,000,000	$7,000,000 - 25,000,000	$1,200,000	$700,000 - 3,000,000	**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 receiving facilties, pre-processing (*contamination removal*) equipment, digester feeding system, and anaerobic digestion facility upgrades, and engineering, construction & project management. Each WWTP and each organic waste stream has unique characteristics that will dramatically impact the cost of organics processing. The cost range does not include any expansion to the wastewater treatment facilities biosolids handling systems. Some WWTPS may have existing excess capacity within their anaerobic digesters, but may not have capacity at dewatering facilities or other components of their biosolids handling facilities.
CNG Vehicles (2)	$500,000	$500,000	$50,000	$50,000	Matched proposal estimates (per LACSD).
Organic Waste Transportation			$900,000	$1,000,000	The recommended cost is based on information from LACSD.
Digestate Processing			$975,000	$300,000 - $800,000 - ?	Costs are highly variable based on the existing processes at the WWTP. The recommended cost range provided is based on information from LACSD and EBMUD.
Digestate Transportation			$420,000	$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	$3,000,000	$150,000	$100,000-150,000	For biogas supply pipeline, gas monitoring equipment, engineering and design, permits, labor, and gas testing.
Pipeline Interconnection	$3,000,000	$2,000,000-3,000,000	$150,000	$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		$1,500,000-12,000,000	$2,500,000	$3-7/1000 scf	The proposed O&M cost is based on the $ per 1000 scf of onsite-biogas conditioning for dairy operations having widely varying costs that are not directly applicable to WWTPs. The source document states this value represents both capital and O&M costs. We separated the capital from the O&M costs and provide recommended capital and O&M cost ranges. See comment below for "on-site biogas upgrading system."

Economic Analysis, Table 33 Components (Assumptions Used for Developing Capital and O&M Costs)					
On-site biogas upgrading system		$1,500,000-12,000,000	$7/1000 scf	$3-7/1000 scf	Capital costs range from $1,500,000 - $12,000,000 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 preliminary range for the O&M cost.
On-site utility natural gas pipeline interconnection	$3,000,000	$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	$12,000,000	$7,000,000 - 25,000,000	10%	10%	**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 receiving facilties, pre-processing (*contamination removal*) equipment, digester feeding system, and anaerobic digestion facility upgrades, and engineering, construction & project management. Each WWTP and each organic waste stream has unique characteristics that will dramatically impact the cost of organics processing. The cost range does not include any expansion to the wastewater treatment facilities biosolids handling systems. Some WWTPS may have existing excess capacity within their anaerobic digesters, but may not have capacity at dewatering facilities or other components of their biosolids handling facilities.
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 $80 per wet ton (based on 2014 SCAP Biosolids Survey). Therefore, the annual O&M cost would be based on total wet tons hauled per year.
Revenues	**Unit Cost**				
Tipping fee at AD facilities ($/ton)	$65	$20-65			The proposed tipping fee at AD/wastewater treatment facilities of $65 is highly optimistic. Waste Management charges the City of Los Angeles $80 per wet ton for pre-processing food waste that is then delivered to LACSD as an engineered slurry compared to $40 per wet ton for landfill disposal. In contrast, CMSA charges local hauler Marin Sanitary $20/ton for food waste that has been pre-processed by a third party and EBMUD takes pre-processed food waste (of lower quality than CMSA's) at $45/ton. 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 $0.03/gallon (Fresno). This fee can vary signficantly.
Tipping fee at WWTPs for solid organic material ($/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 are less than $100 per credit. It is overly optimistic to assume the LCFS credits will return to and maintain $100 per credit value. We recommend assuming a range more representative of the last year's values = $40-60 and **include broker fees** to accurately estimate the net revenue.
RINs ($/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 $1.33 in the Economic Analysis and **include broker fees** to accurately estimate the net revenue.
Composted Biosolids ($/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.