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Greg Kester – Director of Renewable Resource Programs April 28, 2014

Mr. Mike Tollstrup California Air Resources Board 1001 "I" Street Sacramento, CA 95814 E-mail: <u>mtollstr@arb.ca.gov</u>

Re: California Wastewater Climate Change Group Comments on the Proposed First Update to the Climate Change Scoping Plan: Building on the Framework

Dear Mr. Tollstrup:

The California Wastewater Climate Change Group (CWCCG) appreciates the opportunity to comment on the Proposed First Update to the Climate Change Scoping Plan (Proposed Scoping Plan). The CWCCG is a statewide group of municipalities that collect and treat over 90 percent of municipal wastewater in California, many of whom also provide recycled water services and actively participate in the beneficial use of biosolids and biogas. The CWCCG's mission is to address climate change policies, initiatives, and challenges through a unified voice advocating for wastewater community perspectives. CWCCG members are focused on helping the State achieve its multiple mandates and goals by 2020. These include: (1) providing 33 percent of the State's energy needs from renewable sources; (2) reducing carbon dioxide equivalent emissions to 1990 levels; (3) reducing the carbon intensity of transportation fuel used in the State by 10 percent; and (4) recycling 75 percent of the solid waste generated in the State.

The original intent of the Proposed Scoping Plan was to define the California Air Resources Board (ARB) climate change priorities for the next five years and lay the groundwork for reaching post 2020 goals (i.e., interim and 2050 goals) set in Executive Orders S-3-05 and B-16-2012. Not only is the Proposed Scoping Plan tasked to show California's progress toward meeting the near-term 2020 greenhouse gas (GHG) emissions reduction goal as defined in the 2008 Scoping Plan, it will also align the State's mid- and longer-term GHG reduction strategies with other State policy priorities for nine economic sectors (energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green buildings, and the cap-and-trade program).

As in the Discussion Draft, there continues to be a lack of actions identified in the Proposed Scoping Plan specific to opportunities for the wastewater community and publicly owned treatment works (POTWs). We provide our key comments and recommendations below for your consideration to improve the draft Proposed Scoping Plan, as well as a table providing a summary of CWCCG recommendations by economic sector. Attached to this letter, we provide more detailed background information and support for our comments and suggested recommendations for your reference.



### Wastewater and Methane Emissions

One of the issues of most concern to CWCCG members we had identified in our comment letter on the Discussion Draft. Figure 3 on Page 24 shows California's 2011 Anthropogenic Methane Emission Sources. The figure shows "wastewater" as the State's fifth largest source of anthropogenic methane – this simply is not true as stated.

We estimate that nearly 70% of the "wastewater" methane emissions in Figure 3 are from septic systems **not owned or operated by municipalities**. We provide the figure below as an example – this figure is based on EPA's 2011 Inventory of U.S. GHG Emissions and Sinks, showing septic system methane emissions separate from municipal centralized system emissions. In Table 8-9 of the U.S. Inventory, the methane emissions from industrial sources are broken down according to each industrial sector, but no similar division is shown for domestic sources. Septic systems contribute most of the methane emissions from domestic sources in the U.S. In 2008, the National Association of Clean Water Agencies (NACWA) recommended that domestic wastewater emissions be broken down into emissions from septic systems and centralized systems. Since 2009, EPA has divided domestic emissions between septic and centralized systems, which more clearly illustrates and summarizes the emission sources.

CWCCG recommends separating septic system emissions from the estimate of "wastewater" related emissions consistent with how these emissions are treated in the U.S. Inventory. This will improve CARB's inventory by accounting for emissions that are within a wastewater agencies operational boundaries.



Distribution drawn from EPA's assumptions in the **INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990 – 2011, Chapter 8, pages 8-17 to 8-19 ,** EPA 430-R-13-001, link: www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Chapter-8-Waste.pdf



The centralized system methane emissions are primarily related to natural processes in lagoons/ponds (29.4%) and incomplete combustion of digester gas (3.1%).

### Underestimated Fossil Fuel Methane Emissions

CWCCG agrees that monitoring and measurement efforts are a crucial component of the AB 32 regulatory process as stated in **Section II.D.** *Greenhouse Gas Monitoring Efforts.* However, Page 27 states that "ARB is also expanding the (GHG monitoring) program to include flux chambers and controlled tracer release studies to study large area sources such as landfills, wastewater treatment plants, oil and gas extraction fields, natural gas leakage from pipelines, and other fugitive emission sources." Studies led by Columbia University have shown we cannot expect to understand each POTW's emission profile based on the use of flux chambers alone – it requires a very comprehensive program.

In addition, results from recent studies performed in the L.A. Basin show that POTWs are not one of the major underestimated methane sources in California. The major source of methane in the L.A. Basin is leaking of fossil fuels from geologic formations, natural gas pipelines, oil refining, and/or power plants.<sup>1,2</sup>

CWCCG highly recommends this effort be done in cooperation with the wastewater community (i.e., CWCCG members) and include POTW staff who have experience with this type of work. The cooperation should be in the form of workgroups to establish work plans, as well as review of data and reports.

#### Progress toward 2020 GHG Emissions Reduction Target

One of the objectives for updating the AB 32 Scoping Plan is to show California's progress toward meeting the 2020 GHG emissions reduction goal. While CARB presented the "GHG Emissions Trend" (slide 18 of the Kickoff Workshop) showing a downward trend in the State's annual GHG emissions from 2008 on, data was not available for review and we know this can partially be explained by the economic downturn. Unfortunately, Appendix B does not show the percent contributions of each control/ reduction measure toward the annual reductions, rather it provides a qualitative discussion on the status of programs developed or being developed under each measure. CWCCG agrees that planning is needed now in order to design policies to meet post 2020 goals, however **CWCCG strongly recommends that CARB fully disclose the status of the GHG reduction measures by 2016, provide an opportunity for review by external parties, and identify key contributors to the GHG emissions reductions before adopting an approach to achieve reductions beyond the 2020 goal (i.e., 2030 and 2050).** 

#### Post 2020 GHG Emissions Reduction Targets

To develop post 2020 (i.e., 2030 and 2050) emissions reduction strategies, CARB identified nine economic sectors for laying the groundwork. The wastewater community has opportunities that span most sectors and contribute toward multiple post 2020 goals simultaneously. CWCCG agrees that setting 2030 and 2050 targets is necessary for developing policy measures and regulations that provide for long-term certainty businesses need for financial planning purposes, such as for building infrastructure to process waste streams. However, there are also challenges or barriers that prevent POTWs from fully contributing toward each economic sector. In the table below, CWCCG provides comments by sector as well as specific recommendations for CARB's consideration.

<sup>&</sup>lt;sup>1</sup> Peischl, J., et al. (2013), Quantifying sources of methane using light alkanes in the Los Angeles basin, California, J. Geophys. Res. Atmos., 118, 4974–4990, doi:10.1002/jgrd.50413.

<sup>&</sup>lt;sup>2</sup> Townsend-Small, A., S. C. Tyler, D. E. Pataki, X. Xu, and L. E. Christensen (2012), Isotopic measurements of atmospheric methane in Los Angeles, California, USA: Influence of "fugitive" fossil fuel emissions, J. Geophys. Res., 117, D07308, doi:10.1029/2011JD016826.



Economic Sector	CWCCG Comment/Recommendation
Energy	CWCCG will continue to work with CalRecycle and CARB on developing the necessary incentives
	(including offset protocols), addressing long-term risks to public agencies, and reducing cost and
	regulatory (including permitting) barriers to get in place the necessary equipment for pre-processing
	hauled-in waste streams to a digestible form, infrastructure for anaerobic digestion, and equipment
	necessary for processing biogas into a pipeline grade or transportation fuel.
	The draft Proposed Scoping Plan does not specify opportunities for cogeneration systems at POTWs -
	there are only general recommended actions for the energy sector on pages 51 and 52. CWCCG
	encourages CARB to consider POTWs for existing and future opportunities with cogeneration systems
	and bioenergy generation projects, and supports CARB, CPUC, and CEC in their efforts to examine
	interconnection issues, as well as research, development and demonstration of bioenergy and
	cogeneration technologies.
Transportation	CARB staff has calculated that transportation fuels from wastewater biogas may have the lowest carbon
	intensity available. In support of recommended actions on pages 64 and 65, CWCCG would like to work
	with CARB, CPUC, CEC, and CDFA to identify opportunities for and barriers to installing on-site facilities
	for direct energy production from biogas and/or conversion of biogas to transportation fuel and lead the
	way for federal efforts. CWCCG also supports:
	• Leveraging public funding to invest in this area to help ensure that wastewater biogas is used to
	produce ultra-low carbon fuels and clean, renewable electricity instead of flaring (i.e., wasting) a
	valuable fuel supply.
	Development of the low-solids low carbon fuel standard pathway, acknowledging the use of
	wastewater biogas.
	CPUC finalizing rules allowing biomethane injection into natural gas pipelines.
Agriculture	Studies have shown that land applied highly treated sewage sludge (biosolids) and organic waste serve to
	increase carbon storage in the soil to which it is applied compared to synthetic fertilizer controls and
	retain water, in turn requiring less irrigation. CWCCG recommends that this type of carbon storage be
	considered for inclusion in the Proposed Scoping Plan and the Agriculture focus working group paper in
	Appendix C.
Water	CWCCG would like to work with:
	SWRCB and CPUC to develop incentives by 2015 for resource-recovery related wastewater
	treatment projects.
	SWRCB and RWQCB in determining how to modify policies and permits by 2016 to achieve
	conservation, water recycling, stormwater reuse, and wastewater-to-energy goals.
	In addition, CWCCG supports the state's efforts to develop sustainable financing opportunities for water
	and wastewater energy efficiency and renewable energy projects within the next five years being one of
	the ten action items listed in the Water focus working group paper of Appendix C (i.e., Governor Brown's
	Water Action Plan).
Waste	CWCCG is working with CalRecycle and CARB to estimate and include the substantial existing anaerobic
Management	digestion capacity available at POTWs as it is available for immediate use to receive hauled-in organic
	waste streams in support of the state goal to recycle 75% of solid waste by 2020. Preliminary data
	suggests that the vast majority of POTWs with anaerobic digestion have some level of excess capacity
	that can be leveraged.
	CWCCG will continue to work with CalRecycle and CARB on developing the necessary incentives (such as
	offset protocols and cap-and-trade GHG Reduction Funds), addressing long-term risks to public agencies,
	and reducing cost and regulatory (including permitting) barriers to get the necessary infrastructure for
	both compost and anaerobic digestion in place.
Natural and	The key recommended actions and inter-agency workgroups for natural and working lands should
Working Lands	consider use of biosolids from PUTWs as a means for carbon sequestration and fire prevention.
Short-Lived	No comments or recommendations at this time.
Climate Pollutants	
Green Buildings	NO comments or recommendations at this time.
Cap-and-Trade	Lowertment Plan by the Biognarmy Acceptation of California which addresses for the provide the biognarmy
Program	investment Plan by the Bioenergy Association of California which addresses funding needs for bioenergy
	projects and the production of transportation fuel from digester blogas at wastewater treatment plants.



Again, CWCCG appreciates the opportunity to provide comments on the draft Proposed Scoping Plan. We want to emphasize that POTWs have opportunities to be significant renewable energy providers, suppliers of a marketable renewable organic fertilizer/soil amendment product, suppliers of a sustainable (drought-proof) water supply, and environmental stewards of our natural and working lands. In many cases, all that is lacking is the funding to develop the appropriate infrastructure and technological support to make these projects a reality.

Please contact me if you have any questions at (925) 705-6404 or <u>sdeslauriers@carollo.com</u>. We welcome the opportunity to further discuss the wastewater community's position.

Sincerely,

Sarah a. Dalamsters

Sarah A. Deslauriers Program Manager California Wastewater Climate Change Group



### Post 2020 GHG emissions reduction goals

As mentioned in the main body of the letter, this attachment provides more detail and background in support of the comments summarized in the table provided above by economic sector.

#### Energy (generation, transmission, and efficiency)

The energy sector is one of the State's largest contributors to GHG emissions; therefore, this sector represents a significant opportunity for making improvements. CARB identified various recommended actions for the next five years (and beyond) to which POTWs can make significant contributions. By increasing the production and use of biogas at POTWs, numerous co-benefits are provided including:

- (1) Reduced fossil GHG emissions through the increased capture and utilization of biogas.
- (2) Increased production of renewable energy displacing fossil fuel use, which helps meet the renewable portfolio standard (RPS) goals.
- (3) Avoided landfill methane emissions from decomposition of high-strength waste (e.g., food waste).
- (4) Production of low and potentially net negative carbon intensity fuels designed to meet the low carbon fuel standard (LCFS).

In addition, increased energy generation and cogeneration (i.e., combined heat and power - CHP) capacity at POTWs may provide the most reliable (i.e., sustainable) source of distributed generation currently available, with the added benefit that POTWs will always need to be located relatively close to the customers they serve (be a local source of energy). Resource recovery and energy generation activities are generally conducted onsite at the treatment facilities, making energy generation and distribution at numerous treatment facilities a key component to distributed generation.

Many POTWs already have anaerobic digestion infrastructure in place, and they are increasingly providing the option to receive hauled-in organic waste (such as fats, oils, and grease (FOG) and food waste) and processing it prior to anaerobically digesting it. Enabling POTWs to accept more FOG and food waste would reduce the need for its disposal at landfills, reduce GHG emissions from landfills, and increase biogas production. This is just one example of a project that can be done within the wastewater community providing many co-benefits.

In order to maximize the benefits associated with these activities, CWCCG will continue to work with CalRecycle and CARB on developing the necessary incentives, addressing long-term risks to public agencies, and reducing cost and regulatory (including permitting) barriers to get the necessary equipment for pre-processing hauled-in waste streams to a digestible form, infrastructure for anaerobic digestion, and equipment necessary for processing biogas into a pipeline grade or transportation biofuel in place. CWCCG supports and encourages CARB's efforts to develop a low-cost interconnection process for distributed generation by 2015. CWCCG also supports a CPUC proceeding to continue to streamline state jurisdictional interconnection processes to create a low-cost interconnection process for distributed generation, as well as CEC's efforts to explore similar streamlined processes for interconnecting distributed generation in publicly owned utility systems. CWCCG encourages the CPUC and CEC to consult as appropriate.

Unfortunately, the draft Proposed Scoping Plan does not specifically acknowledge opportunities for bioenergy and CHP systems at POTWs, but the energy focus group paper in Appendix C acknowledges renewable digester gas (or biogas). Instead, there are general key recommended actions for the energy sector on pages 51 and 52. **CWCCG encourages CARB to consider POTWs for existing and future** 



opportunities with CHP systems and bioenergy generation projects, examining interconnection issues, as well as research, development and demonstration of bioenergy and CHP technologies.

### Transportation System

CWCCG supports the Governor's Executive Order B-16-12, as well as CARB's coordination with the U.S. EPA on national GHG standards for medium- and heavy-duty trucks. For heavy, long-range applications where electrification of a fleet is not practical, low carbon sources of energy (such as wastewater biogas) will be necessary.

CWCCG members can help this sector (and the State) achieve GHG emissions reduction goals for 2020, as well as RPS and LCFS goals, through production of renewable transportation fuel from wastewater biogas. **CARB staff has recently calculated that transportation fuels from wastewater biogas may have the lowest carbon intensity available (as low as negative 63 grams carbon dioxide equivalent (CO<sub>2</sub>e) emissions per megajoule). In addition, CWCCG supports the following key recommended actions on pages 64 and 65:** 

- By 2018, the CPUC, CEC, CDFA, and ARB will evaluate and adopt the necessary regulations and/or policies to further support commercial markets for low-carbon transportation fuels, including but not limited to development of large-scale renewable and low-carbon production facilities through continued funding for infrastructure;
- Leverage available public money (including ARB's AB 118 Air Quality Improvement Program, CEC's AB 118 Alternative and Renewable Fuel and Vehicle Technology Program, and Cap-and-Trade auction proceeds to ARB for low carbon transportation) to scale-up clean technology markets and strategies and ensure necessary infrastructure investments. This requires ARB, CEC, CPUC, and CDFA to support growing markets for clean passenger transportation, advanced technology trucks and equipment, and low-carbon transportation fuels and energy, including any necessary infrastructure.

We would like to work with CARB to identify opportunities for and barriers in installing on-site facilities for direct energy production from biogas and/or conversion of biogas to transportation fuel. Investment in this area will help ensure that wastewater biogas is used to produce ultra-low carbon fuels and clean, renewable electricity instead of flaring (i.e., wasting) a valuable fuel supply, which will also contribute to long-term reduction goals for criteria pollutants.

#### Agriculture

CWCCG supports the inclusion of nitrogen management (specifically, developing replacement fertilizing materials that reduce GHG emissions) to improve water quality and provide other co-benefits. Land application of biosolids should be considered an efficient recycling practice that avoids use of fossil fuel intensive synthetic fertilizer (requiring approximately 0.22 gallons per pound of inorganic nitrogen) and improves carbon sequestration in the soil. Studies have shown that land applied finished compost and anaerobically digested sewage sludge (biosolids) and organic waste serve to increase carbon storage in the soil. Over a 34-year reclamation project (Tian et al, 2009), the mean net soil carbon sequestration was 1.73 (0.54-3.05) megagrams of carbon per hectare annually in biosolids-amended fields as compared with -0.07 to 0.17 megagrams of carbon per hectare annually in fertilizer controls, demonstrating a high potential of soil carbon sequestration by the land application of biosolids. CWCCG recommends that this type of carbon storage and fertilizer alternative be considered for inclusion in the Proposed Scoping Plan and additional research be conducted to evaluate its full potential as a carbon offset project.





In addition, as the Bioenergy Interagency Working Group starts promoting the input of digester biogas into natural gas pipelines and bioenergy into the electric grid in 2015, the group should coordinate its efforts with CWCCG and CPUC as we are both currently working to promote input of wastewater biogas into natural gas pipelines.

Tian, G.; Granato, T. C.; Cox, A. E.; Pietz, R. I.; Carlson, C. R.; Abedin, Z. *Soil carbon sequestration resulting from long-term application of biosolids for land reclamation*. J. Environ. Qual. 2009, 38, 61–74.

#### Water

CWCCG appreciates CARB acknowledging wastewater as a "resource for energy production and environmental protection" and agrees with CARB's plan to look into "funding programs that capture multiple benefits, including energy efficiency, water quality, and water supply" as stated in the Kickoff Workshop. We also agree that Integrated Management Plans need to be a priority, considering alternative water supplies (such as recycled water and stormwater) and alternative energy supplies as well as energy efficiency and conservation measures. The draft Proposed Scoping Plan's key recommended actions have improved (relative to the Discussion Draft) in terms of future funding, technology, and administration for these types of projects and the wastewater community is an essential component.

CWCCG supports and would like to work with the:

- State Water Resources Control Board (SWRCB) and California Public Utilities Commission (CPUC) on developing incentives by 2015 for resource-recovery related wastewater treatment projects.
- SWRCB and Regional Water Quality Control Boards (RWQCB) to modify policies and permits by 2016 to achieve conservation, water recycling, stormwater reuse and diversion (i.e., green infrastructure) and wastewater-to-energy goals.

As detailed in the comments provided for the other economic sectors, POTWs have opportunities to significantly contribute toward achieving multiple State goals by 2020 and 2050. However, there are regulatory and financial barriers that are preventing POTWs from realizing their full potential as renewable energy providers, suppliers of a marketable renewable organic fertilizer/soil amendment product, suppliers of a sustainable (drought-proof) water supply, and environmental stewards of our natural and working lands. In many cases, all that is lacking is the funding to develop the appropriate infrastructure and technological support to make these projects a reality.

In addition, the fourth paragraph on page 71 of the draft Proposed Scoping Plan makes reference to 2001 electricity and natural gas consumption for the conveyance, treatment, and end use of water and wastewater stating:

"Approximately 19 percent of the electricity and 30 percent of non-power plant natural gas consumption (in the State) is used by the water sector."

CWCCG recommends stating this is referencing 2001 data. If CARB intends to use this data as a baseline for future reductions, we recommend updating the estimates with the help of the water and wastewater industry to understand the current consumption level prior to CPUC's water-energy nexus rulemaking in 2016.

Finally, CWCCG also supports the state's efforts in the Water Action Plan (Appendix C) developing the ten actions to take place over the next five years in order to lay the groundwork for California's water



and water-energy future (i.e., 2050), including developing sustainable financing opportunities for water and wastewater energy efficiency and renewable energy projects.

## Waste

The CWCCG applauds CARB for acknowledging anaerobic digestion as a viable alternative for processing organic and green waste streams and on equal footing with composting. We agree with the Waste Management Sector Plan's statement that anaerobic digestion products include biogas, soil amendment/synthetic fertilizer alternative, and compost, which can be used as soil amendment (alternative to synthetic fertilizer) and as an alternative daily cover for landfills. The use of the resulting soil amendment/fertilizer also has the added benefits of increasing carbon storage in the soil, preventing soil erosion, and reducing fire hazard. Each of these uses of anaerobic digestion and compost products contribute to one or more of the State's 2020 goals in reducing solid waste at landfills, reducing GHG emissions, and increasing renewable energy production. We believe that the combined use of anaerobic digestion to create energy followed by compost can create the largest net benefit from both a waste minimization and air quality/climate perspective.

CWCCG will continue to work with CalRecycle and CARB to estimate and include the substantial existing anaerobic digestion capacity available at POTWs in the Waste Management Sector Plan as it is available for immediate use to receive hauled-in organic waste streams. Preliminary data suggests that the vast majority of POTWs with anaerobic digestion have some level of excess capacity (also considering codigestion) that can be leveraged. The California Association of Sanitation Agencies is currently conducting a survey to determine the existing available anaerobic digestion capacity, co-digestion activities and potential future capacity for anaerobic digestion and power generation at POTWs.

In addition to existing available anaerobic digestion capacity at POTWs, these facilities have infrastructure in place to handle wastewater from the dewatered digestate and the processing of digested solids including the effective management of biosolids and biogas management facilities for generation of heat and power. Finally, operators at these facilities are trained to operate anaerobic digestion facilities ensuring little disruption in operations and a quality product.

CWCCG will continue to work with CalRecycle and CARB on developing the necessary financing, funding, and incentive mechanisms (including offset protocol development for recycling, composting, anaerobic digestion, and biomass), addressing long-term risks to public agencies, and reducing cost and regulatory (including permitting) barriers to get the necessary infrastructure for both compost and anaerobic digestion in place. However, permitting and construction requirements that have been enacted in various parts of the State have resulted in project planning, permitting, and construction taking six or more years to complete. Cost increases as a result of the delays and additional requirements have soared for these projects making their economic viability a significant question. CWCCG would like to participate in the working group formed by CalRecycle and CARB to address permitting challenges and streamline the multi-agency review of new and expanded infrastructure.

Finally, CWCCG supports the use of cap-and-trade proceeds for GHG reductions from the organic waste sector and we applaud CalRecycle's leadership in this area. We encourage CalRecycle to ensure the emphasis is kept on projects that achieve greater GHG reductions. To do so, we suggest giving a higher weight to GHG emissions reductions and taking a life cycle approach when estimating GHG emissions reductions for each project to account for use of anaerobic digestion and compost products.

Additional comments specifically addressing items in the Technical Document referenced were provided in a comment letter on the draft Waste Management Sector Plan submitted to CalRecycle July 12, 2013.



CWCCG agrees that it is important to manage our forests to maximize net benefits and we support the effort to enhance and maintain the capacity of natural and working lands to sequester and store carbon as part of the Actions for 2020 and post 2020 targets. Protecting forest ecosystems provides many cobenefits, including improved water quality and supply, wildlife habitat, air quality protection, recreation values and more. Benefits should extend to POTWs since the use of biosolids to reclaim fire-ravaged land and to reduce the potential of future fires is a proven but underused strategy (adopted in Santa Ana Regional Water Quality Control Board Emergency Resolution following the Freeway Complex Fires of 2008). The key recommended actions and inter-agency workgroups for natural and working lands should consider use of biosolids from POTWs as a means for carbon sequestration and fire prevention.

#### Cap-and-Trade Program

For potential inclusion in the Cap-and-Trade Investment Plan, CARB requested that the Bioenergy Association of California (BAC) develop a bioenergy investment plan. CWCCG has been coordinating with BAC on the development of this plan and supports the recommendations specifically addressing the funding needs for bioenergy projects and the production of transportation fuel from wastewater biogas at POTWs.