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Re: Sacramento Municipal Utility District's Comments on Proposed First Update to the Climate Change Scoping Plan: Building on the Framework

SMUD appreciates the opportunity to comment on the Proposed First Update to the Climate Change Scoping Plan: Building on the Framework (2013 Scoping Plan). SMUD understands that AB 32 requires the Air Resources Board (ARB) to prepare a Scoping Plan to achieve the carbon reduction goals of the legislation, and that ARB is required to update that Scoping Plan every five years.

SMUD supports the proposed elements of the 2013 Scoping Plan, including the initial examination of Post-2020 goals and potential policies as part of the 2013 Scoping Plan. SMUD recognizes the imperative of reducing greenhouse gas emissions substantially over time. As a customer-owned utility, SMUD has a responsibility to protect our customers' long-term interests by avoiding their financial and physical exposure to climate change, as well as their short-term interests of ensuring delivery of affordable, reliable and clean electricity. To this end, the SMUD Board of Directors has adopted a 2050 goal for carbon emissions associated with serving our customer-owners with retail electric power service that aims to reduce these emissions to 10% of 1990 levels by 2050, exceeding the policy goal set by then Governor Arnold Schwarzenegger in Executive Order S-3-05.

SMUD's primary recommendation in these comments is that flexibility should be a guiding principle as the ARB examines potential post-2020 policies, particularly in the electricity sector. The main purpose of AB 32 and post-2020 goals is greenhouse gas reductions. This purpose is best served by simply making this overriding goal clear and then allowing for flexibility among the affected stakeholders and market sectors to achieve this goal cost-effectively, as directed by the Legislature in AB 32. The electricity sector is expected to be of primary importance in achieving post-2020 goals, with energy efficiency, renewable energy, and electrification of other sectors all contributing to GHG reductions. The electricity sector is also essential to economic progress and everyday life in the State, and subject to constraints of physics that impose a complicated second-by-second balancing of demand and supply. Different utilities in the State face different balancing issues in this regard, and hence keeping a focus on flexibility in the electricity sector will allow utilities to achieve the goals set for the sector while maintaining the vital service that electricity provides to the citizens of California.

SMUD comments further on the need for flexibility in post-2020 carbon policies, and provides additional comments on the 2013 Scoping Plan in the following sections.

I. For The Electric Sector, The 2013 Scoping Plan Should Include Flexibility As A Principle For Post-2020 Carbon Policies.

SMUD supports the development of a "... comprehensive greenhouse gas reduction program for the State's electric and energy utilities by 2016" [2013 Scoping Plan, page ES-5]. In particular, SMUD supports the concept that this plan will "... give utilities, electricity providers and a range of other businesses the flexibility and the right incentives to pursue the most innovative strategies to cut emissions" [2013 Scoping Plan, page ES-6]. This flexibility is important as we move past 33% renewables in 2020 to develop additional emission reductions, from additional investments in energy efficiency and low-carbon resources, and by reducing emissions in other sectors through the substitution of electricity as the primary fuel used in those sectors.

However, the significant changes that this involves in the electricity system, managing the constraints and requirements imposed by physics, implies that these steps must be taken with care, and that flexibility is of primary importance to allow these reductions to occur while keeping the system stable and productive. Important questions need to be addressed about how the electricity system operates in the future with additional intermittent wind and solar resources, which can provide power to the grid surprisingly differently from the perspective of basic physics than traditional steam or gas turbine generators. Inertia and electromagnetic field flow issues with these new resources must be considered.

The 2013 Scoping Plan does not always address these issues consistently. It mentions flexibility in several places as noted above, but SMUD believes that this concept should be elevated to the point where, in the "Key Recommended Actions" figure for the energy sector on page 51, flexibility should be added as one of the guiding principles for formation of the "emission reduction requirements" to be developed by the end of 2016 for the State's electric and energy utilities.

Another guiding principle that should be considered is simplicity, because complexity in existing policies tends to retard achievement. The focus should be on GHG reduction, rather than including other goals that end up adding complications to the structure.

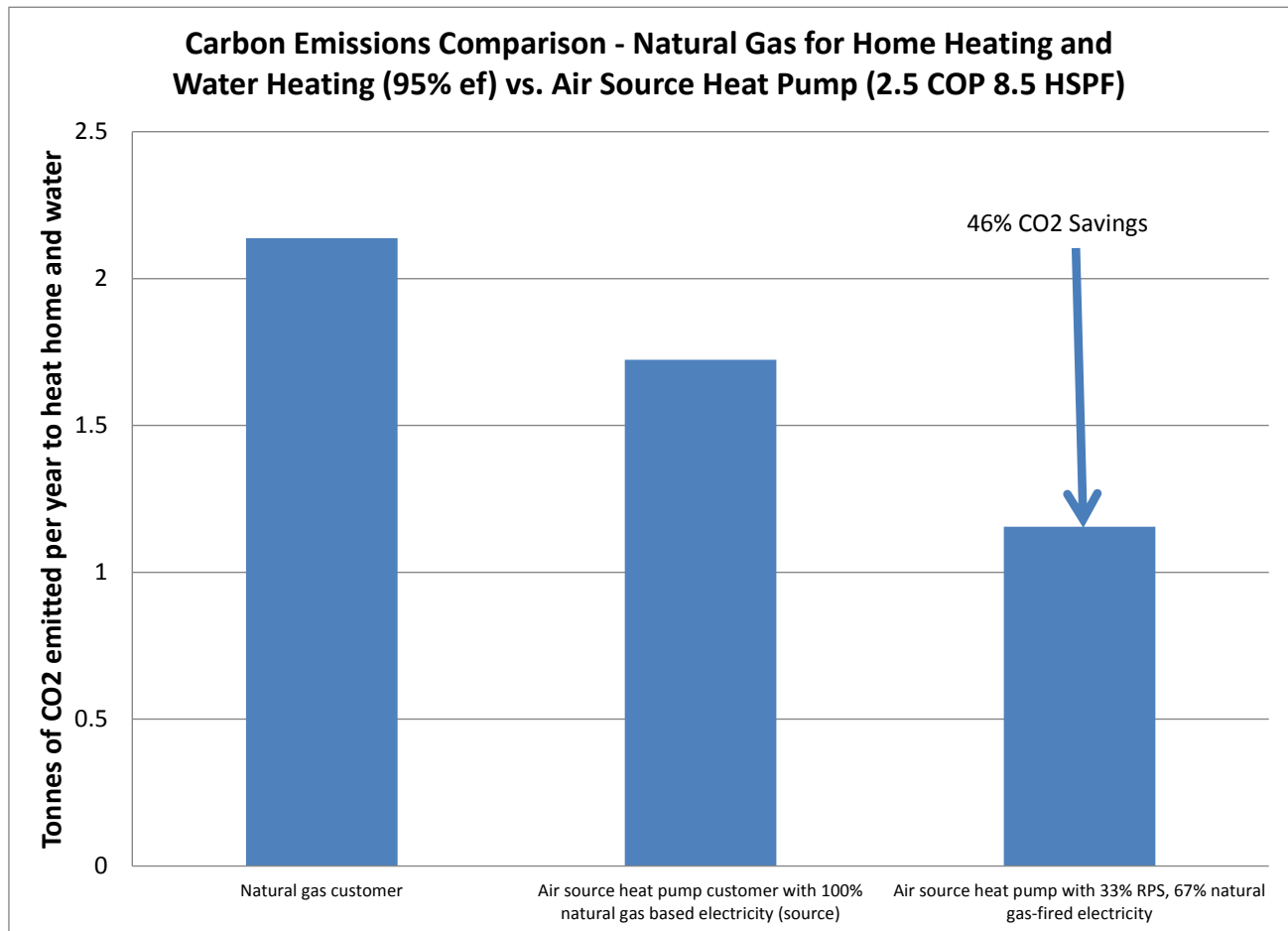
II. The 2013 Scoping Plan Should Consider How Electrification Of Energy Uses Currently Served By Distributed Combustion Of Fossil Fuels Can Contribute To 2020 and Post 2020 Goals

SMUD is a strong supporter of electric vehicles and other transportation sector electrification as a powerful tool to reduce GHG emissions in the State, along with criteria pollutants that derive from the State's current mix of mobile emission sources. However, state policy must provide long-term regulatory certainty to get automakers, utilities, and other stakeholders to provide stable investment in these emission reductions over time. Should electric vehicle incentive programs be stopped too soon, or be implemented in a manner where consumer incentives are uncertain from day-to-day, automakers and consumers will be significantly less committed to the nascent market. SMUD is pleased to see substantial recognition of the need for transportation electrification in the 2013 Scoping Plan, and in particular, an understanding that the market for electric vehicles, while expanding quickly, needs "... continued public commitment ... at this time to support full-scale commercialization and consumer acceptance of these vehicles" [2013 Scoping Plan, page 62].

But this is not the only area where electrification is necessary to achieve the State's GHG reduction goals – emission reductions from the widespread use of natural gas in the State must also be addressed, in both the residential and industrial sectors. The 2013 Scoping Plan acknowledges several recent reports that analyze the measures necessary to achieve the long-term 2050 target, most-often stating that substantial electrification of even residential and industrial natural gas use is required to achieve GHG reduction goals.

SMUD has been exploring some initial steps for electrification of our customers' fossil fuel use for water and space heating, where cost-effectiveness is becoming favorable due to technology enhancements in heat-pump technology. Heat pumps pump heat from one location to another, using electricity to run a heat pump or refrigeration cycle. Unlike simple natural gas and electric water heaters, which use the natural gas or electricity energy input to create heat, heat pumps use electricity to move heat – a more efficient process. The heat that is moved is most often ambient heat, from the air, ground, or water near the equipment, and this heat has no GHG associated with it. Heat pump technology is becoming more efficient, challenging the long-held belief that heating water or space with electricity is inefficient and not cost-effective.¹ The chart below provides an example of the GHG savings that are feasible today using high-efficiency heat pumps rather than fossil natural gas for water heating.

¹ Heat pump efficiencies are measured using Coefficient of Performance (COP), or Heating Season Performance Factor (HSPF) which averages out the COP over an entire heating season. HSPF measures the amount of BTU delivered per Watt-hr of electricity consumed, averaged over a heating season. High efficiency heat pumps have HSPF's that range from 8.5 up to 13.



SMUD agrees with the concept in the 2013 Scoping Plan that GHG emissions reductions from distributed natural gas use can be reduced not just by electrification of the end-uses involved, but also by substituting solar heating and cooling when appropriate and also by use of renewably-derived methane. The potential for all of these GHG-reduction measures should be explored impartially – they each will be more or less feasible and cost-effective depending on the specific circumstances. For example, solar water heating may be infeasible in some retrofit situations where trees, other shading, or roof orientations prevent sufficient solar heat gain. Using renewably-derived methane has the advantage of using the existing natural gas delivery infrastructure, rather than incurring expense to replace or abandon this system. Electric heat pump technology, as described above, may be most cost-effective in new construction or significant remodeling situations.

The 2013 Scoping Plan is for the most part agnostic concerning the different methods of achieving GHG reductions from distributed use of fossil natural gas – electrification, solar substitution, or renewable gaseous fuels. However, in the Electricity and Natural Gas Working Paper in Appendix C, a degree of favoritism is shown toward the solar thermal alternative, and it should be removed. On page 58 of this document, the 2013 Scoping Plan contains the following statement: “While many studies suggest industrial electrification and electrifying space and water heating as a necessary pathway, to

achieving the 2050 GHG reduction goal, solar thermal provides a better option for serving heating needs.” In this statement, the word “better” should be replaced with the word “alternative”. The following statement is also problematic, and should be removed in entirety, leaving the last sentence as stated.

It almost goes without saying that to the extent there is electrification of energy use in the transportation sector or of distributed fuel use in the residential and industrial sectors, which is used to reduce system-wide GHG emissions, there is an increased load in the electric sector will tend to increase the carbon burden for utilities. This is clearly beneficial overall, even without the expected de-carbonization of the electricity sector, because any increased GHG emissions will be more than offset by carbon reductions in the transportation fuel and distributed fuel sectors. Hence, ARB must find a way to administratively provide allowances or equivalent credit to electric distribution utilities to cover and properly incentivize this policy-driven, GHG-reducing, load growth.

III. The 2013 Scoping Plan Should Provide Greater Clarity On BioEnergy Measures

SMUD believes that bioenergy resources are essential in the long run to achieve the State’s GHG reduction goals, and so agrees with a focus on the potential contributions of bioenergy in the 2013 Scoping Plan. For example, biomethane put into the existing pipeline infrastructure and designated for use in local power plants provides GHG-free, renewable, dispatchable power to serve system needs, while utilizing existing infrastructure that would otherwise eventually be underused as we move toward the 2050 GHG target. In addition, biomethane can provide options for industrial customers and residential consumers using the extensive natural gas infrastructure in the state to use bioenergy for GHG-free industrial processes, heating and cooking applications. Industrial customers can already do this under the natural gas regulatory structure in the state, and use this as a Cap and Trade compliance mechanism. Consumers should have a similar choice, and be able to target their energy dollars voluntarily to designated use of pipeline bioenergy at their homes and businesses, in order to reduce their GHG contributions and contribute thereby to the State’s goals.

The 2013 Scoping Plan recognizes using gaseous biofuels as a strategy for GHG reductions in the electricity, transportation and other energy sectors. However, further clarity concerning State policy in this area could be achieved by adding the following to the 2013 Scoping Plan:

- Considering appropriate modifications to the constraints on out-of-state biomethane resources that have been enacted by AB 2196 and implemented by the CEC;
- Finishing implementation of pipeline biomethane injection protocols pursuant to AB 1900 in a manner that does not establish undue costs for development and injection of these resources;

- Including biomethane as one of the premier options for providing flexible, low-GHG integration of intermittent renewable resources, which is actually much more feasible and flexible than geothermal resources for this purpose;
- Actively allow consumers to have the choice through green pricing programs of using biomethane in their homes and businesses;
- Supporting research into the development of more biologically-derived fuels and fuels from artificial photosynthesis; and
- Considering the unique benefits of bioenergy use in distributed, small powerplants at dairies, landfills, etc., the criteria pollutant regulations for distributed generation, while important, currently do not recognize the benefits coming from the reduction of GHG emissions, remediation of local water and odor issues that these resources bring to the table in comparison to distributed fossil generation.

Page 66 of the 2013 Scoping Plan discusses the question of installing anaerobic digesters to reduce the methane emissions from the agricultural sector – a voluntary measure for the agricultural sector in the original Scoping Plan. The 2013 Scoping Plan indicates that the voluntary installation of digester facilities has not increased as expected. SMUD has tackled that problem in our service area by providing additional incentives for adding digesters at one local dairy, using revenues from the sale of surplus Cap and Trade allowances. SMUD now is purchasing power from four local dairies with digester facilities, and could provide insight about the barriers and challenges that dairies face when considering a digester project.

IV. The 2013 Scoping Plan Should Include Recommendations About Additional Offset Protocols

The 2013 Scoping Plan describes the Cap and Trade regulation in place in California, including discussing the flexibility to purchase “offsets” for a portion (up to 8%) of an obligated entity’s compliance obligation under the program [2013 Scoping Plan, page 93]. ARB has adopted five compliance offset protocols to date and is considering a sixth, and the 2013 Scoping Plan acknowledges that “... it is clear that there will not be enough offsets to meet the 2013-2020 maximum offset demand if every entity chose to use the maximum number of allowable offsets.” [2013 Scoping Plan, page 93]

SMUD is a strong supporter of offsets as a cost-effective method for helping to control costs under the Cap and Trade program. SMUD also believes that offsets help to bring other jurisdictions and economic sectors to the table to work on GHG emissions reductions, so supports broad acceptance of offsets from a wide geographic area and ARB policies to foster the maximum use of offsets in the Cap and Trade program.

With respect to developing and accepting offsets from a broad geographic area, SMUD has previously commented that the Cap and Trade Regulation allows consideration of offsets from a greater geographic footprint than any of the current offset protocols specifically

allow. In addition to considering additional protocols, ARB should consider expanding the geographic scope of the existing protocols, where appropriate.

A related topic is consideration of offsets from international deforestation avoidance, known as offsets from programs designed to Reduce Emissions from Deforestation and forest Degradation (REDD). Deforestation is a major source of GHG emissions, and REDD offsets are one way to provide funding and incentives to reduce or slow deforestation in areas where the economic or political will to act unilaterally is lacking. As acknowledged by the 2013 Scoping Plan, the Cap and Trade regulation already includes a placeholder structure for these kinds of offsets, and the REDD Offset Working Group provided recommendations to ARB about moving forward on these offsets in July of last year [2013 Scoping Plan, pages 95, 96]. The placeholder structure for REDD-type offsets has been included in the Cap and Trade regulation for three years, and SMUD believes that the ARB should act soon on bringing REDD offsets to the Cap and Trade table.

With respect to policies to foster the maximum use of offsets in the Cap and Trade program, SMUD has previously commented that the varied set of entities obligated under Cap and Trade would not likely in all instances take advantage of their respective abilities to procure and surrender offsets up to the maximum allowed. This is exacerbated by application of the 8% offset by compliance period, so that entities that have not taken the opportunity to procure offsets for the initial compliance period by the end of this year cannot make up that deficit going forward. The ARB should consider modifications to the Cap and Trade program so that the maximum use of offsets is fostered, either by entity or in the Cap and Trade program as a whole.

In order to ensure additional offset supply, the ARB should also continue to consider additional offset protocols for adoption (such as the Rice Cultivation protocol currently under consideration). The ARB should also consider mechanisms to support offset project development ahead of the official adoption of a compliance protocol, through mechanisms such as funding for demonstration projects and initial adoption of voluntary protocols in new areas (similar to the process for voluntary protocols prior to the current official compliance protocols). For example, SMUD is currently working on a protocol that involves sequestering carbon in the Sacramento Delta.

V. Treatment And Discussion of Publicly Owned Utility GHG-Reducing Programs And Roles

The 2013 Scoping Plan, along with the appendices, provides a fairly comprehensive picture of the status of the State's energy systems today and going forward, the contribution or impact of those systems in terms of GHG emissions, and the potential policies in place or being considered that would reduce those emissions from the sector. However, in several areas in the 2013 Scoping Plan, the description of POU efforts or contributions toward GHG reductions in the state is missing, or misstated. For example:

- Pages 42 and 43 of the 2013 Scoping Plan discusses in part utility energy efficiency programs, stating that IOUs have a long history of implementing

energy efficiency programs and that measurement and verification of these program results has been ongoing and is set to provide greater certainty concerning the State's commitment to these programs in the future. The document goes on to recommend: "*Similar progress and initiatives should be made in the publically-owned utilities (POU) territories*" [2013 Scoping Plan, page 43]. This statement leaves the impression that there has not been significant investment in energy efficiency programs in POU areas, nor been sufficient attention to measuring and verifying the savings from these programs. The CEC has ample evidence of POU investments in energy efficiency programs and measurement and verification, and some summary of that should be included in the 2013 Scoping Plan. In SMUD's case, our Governing Board has committed to achieving 15% savings from energy efficiency savings over 10 years, 50% higher than the State's 10% target that has been established, and extensive measurement and verification is used to document those savings.

- Page 46 of the 2013 Scoping Plan states that California has made substantial progress in developing new renewables for the RPS, and then discusses this progress solely in the context of the IOUs meeting the State's targets and adding generation. POU's have contributed significantly to these targets as well, increasing in the percentage of renewables supply for retail loads as fast or faster than the IOUs, and the absence of any description of this progress could leave the reader with the impression that the POU contribution has fallen short or is unimportant. Again, the CEC has ample evidence of the growth in POU renewable procurement over time that should be summarized in the 2013 Scoping Plan discussion.
- Page 52 of the 2013 Scoping Plan describes the streamlining of state jurisdictional processes to facilitate a simpler and lower-cost process for interconnection of distributed generation, and states one "key recommended action" for the energy sector as: "*The CEC [should] explore similar streamlined processes for interconnecting distributed generation in publicly-owned utility systems.*" POU's in general have a good record for interconnecting distributed generation in comparison to the IOUs. The referenced statement implies that the CEC should take some action to correct a problem or bring POU's up to the level of IOUs in this regard, when it is not clear any such problem or effort is required. POU Governing Boards would have the primary role in such an effort, and many of these Boards are engaging in or considering modernizing or streamlining interconnection rules already.
- Pages 6 and 7 of the Electricity and Natural Gas Working Paper in Appendix C describe efforts to implement demand response in California. Page 6 states: "*IOUs are responsible for implementing demand response programs*

under the oversight and evaluation of the CPUC.” Once again, this blanket statement ignores the efforts going on in the demand response arena in POU service territories. SMUD is developing a significant demand response portfolio (building on a long record of programs such as air conditioner cycling), and intends a rapid expansion of demand response in our service territory in the near future. SMUD’s demand response efforts are highly automated and have confident, observable results, and are able to more easily expand through enrollment of additional customers due to a design that does not include penalties when participation is different than expected, while still providing reliable demand response that can be counted on for planning purposes (Page 28 states that there would be concern about reliability without penalties – SMUD has avoided those concerns).

- Page 7 of this Working Paper in Appendix C also discusses Smart Meters, and other parts of the document mention the potential contributions of the “Smart Grid” to the GHG reduction goals. However, Page 7 is again specific to IOU activities, not including POUs. SMUD has made substantial progress in transforming the electricity grid in our service territory to a “smart grid”, with automated metering infrastructure, distribution circuit automation, and back office systems to make use of substantially increased information about how the grid is operating on a minute to minute basis.

SMUD again appreciates the opportunity to comment on the 2013 Scoping Plan.

/s/

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cc: Corporate Files