



SMUD

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VIA E-MAIL: CCWORKSHOPS@ARB.CA.GOV

Mr. Sam Wade
Ms. Mary Jane Coombs
Office of Climate Change
California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

Re: Sacramento Municipal Utility District's Comments on Cap Setting and Data Review Workshop of April 28, 2009

Dear Mr. Wade and Ms. Coombs:

The Sacramento Municipal Utility District (SMUD) appreciates this opportunity to comment on preliminary cap setting and data review issues. SMUD supports the goals of Assembly Bill 32 and the efforts of the California Air Resources Board (CARB) to achieve those goals in a cost effective manner. After attending the workshop on April 28th and reviewing the presentation and other background information, SMUD provides the following comments:

- Hydroelectric variability significantly impacts California's electric sector emissions. The impact of successive dry years (and wet years) can be accommodated by a reserve of hydroelectric allowances that can be auctioned following each water year to either augment the supply of allowances in dry years or withhold unneeded allowances during wet periods.
- Considering that statewide levels of Renewable Portfolio Standard (RPS) procurement are currently at 12-13% and are unlikely to achieve 2010 goals, CARB should work closely with sister agencies to gain a better understanding of the factors that will influence the projections of expected level of renewable energy production in 2012.
- The process of planning, permitting and constructing the transmission and renewable energy resources needed to reduce the carbon produced by the electricity sector has been more difficult than was envisioned when these policies were put in place. The conditions that have caused these delays have not been resolved. A realistic response to this situation would be to begin with a flatter downward cap trajectory followed by steeper reductions in later years.
- Because CARB should expect few reductions in transportation sector emissions from either the Low Carbon Fuel Standard (LCFS) or delayed vehicle efficiency standards prior to 2015, it should implement a fee on such emissions to achieve real reductions ahead of 2015.

- Economic modeling must address lead times for infrastructure, market dynamics with introduction of transportation and natural gas, and relationships between sectors that may affect timing of reductions
- CARB should base its 2012 electric sector emissions projections on the California Energy Commission's (CEC) Integrated Energy Policy Report (IEPR) demand forecasts and update the cap late in 2011 based on updated CEC forecasts.
- In setting the cap, CARB should harmonize cap reductions with rules by the CEC and CARB to encourage the use of tradable renewable energy credits (RECs) and facilitate a market for affordable, firmed renewable energy imported into California.
 - I. **Hydroelectric variability significantly impacts California's electric sector emissions. The impact of this variability can be accommodated by setting the cap within a narrow band together with creating a reserve of hydroelectric allowances that can be auctioned following each water year to either augment the supply of allowances in dry years or withhold unneeded allowances during wet periods.**

SMUD suggests that rather than a precisely defined series of annual caps, a narrow band around the cap value be provided each year between 2012 to 2020. The value ultimately employed would be set in May or June based upon an independent report on the water supply for hydroelectric generation for each year. In years with dry precipitation conditions, the cap would be slightly increased, with more allowances released, and in wet years, fewer allowances would be released and the cap would be lowered slightly.

The lingering impact of two successive severely dry years or wet years would also be accommodated by auctioning a portion of the reserved allowances in the subsequent recovery year to accommodate the need to restore reservoir levels. Based on historical data, this situation has a low likelihood of occurrence (less than 5% probability), but modeling of climate change in California in the coming decades suggests progressive drying and as a result, that successive dry years will become a more common problem. A reserve of hydroelectric allowances would further mitigate the impacts of hydro-variability on allowance prices.

- SMUD Requests that CARB Use Narrow Bands Around Caps

SMUD suggests that the *desired average annual emissions from capped sources by period* concept be slightly enhanced. Rather than providing a single-valued annual cap, SMUD asks that CARB provide a narrow band or cap range. The width of this band would be determined by the availability of California hydro-generation. For SMUD alone, annual hydro-generation ranges between 750 GWh in the driest years to over 2,500 GWh in the wettest years, resulting in an emissions swing of nearly 20% up or down in a given year.

The determination of the number of reserved allowances would be based upon independent data and standards established and vetted by recognized subject matter experts, including the State Water Resources Control Board (SWRCB) and the Department of Water Resources (DWR). The index values produced by these agencies would be based upon the cumulative water year conditions as measured in April, and prior year recovery conditions. CARB, in conjunction with

SWRCB, DWR, and the CEC, should determine what an acceptable level of reserved allowances would be to ensure that price volatility due to hydro-variability is minimized.

- o SMUD Recommends that Any Water Index Relief Mechanism Instituted for the Cap-setting Process be Extended One Year Beyond Any Exceptional Period

Because of hydro-generation's value in supporting other generation resources, operators must conserve water in the winter and spring for later use during the summer. Therefore, operators have an incentive not to generate from hydro resources during the winter and spring and instead refill reservoirs. This means that, as of January 1, any storage or "carryover" from the previous year will have a significant influence on hydro-generation in the following year.

The amount of foregone winter and spring generation will depend on this carryover storage. After two severely dry years, there is a carryover storage deficit which must be replenished in order for the resource to be maximized by July 1. This means that two or more severely dry years will cause a lingering impact into any subsequent year. Therefore, a portion of the allowances that are reserved based on hydro conditions must be available to accommodate a recovery year following two extremely dry years.

- o SMUD Encourages CARB to Work Closely With the CEC to Understand Historical Relationships between California and Northwest Hydropower Generation

Because of the importance of hydroelectricity to California and the Northwest, and because of the substantial variability in hydroelectric production in both regions, CARB should evaluate the potential for extremely dry years to impact not just emissions in California, but also emissions associated with imports, and the potential for shortages of allowances in linked markets.

Understanding the historical correlations between the Northwest hydroelectricity supply and California's own hydroelectric generation, as well as the sources of California's energy during dry years and the sources of energy used to fill in during dry years in the Northwest, are necessary to fully understand whether having a firm cap that ignores hydro-variability is appropriate for these interdependent regions. SMUD strongly encourages CARB to work closely with the CEC and appropriate agencies in the Pacific Northwest to determine what if any flexibility mechanisms should be built into the California cap to accommodate extremely dry hydro conditions in both regions.

II. Considering that statewide levels of RPS procurement are currently at 12-13% and are unlikely to achieve 2010 goals, CARB should work closely with sister agencies to gain a better understanding of the factors that will influence the projections of expected levels of renewable energy production in 2012.

The current deficit of renewable energy in California relative to RPS targets impacts where the cap should be set. California utilities are way behind in achieving 20% by 2010. The most recent estimates for statewide levels peg RPS status at approximately 11-13% for both investor-owned utilities (IOUs) and publicly-owned utilities (POUs). Making up this shortfall would represent a 7-9% decrease in carbon emissions in just one year – a dramatic and unlikely achievement. Based

on the most recent estimates, POUs are at 11.4% RPS, while IOUs are at 12.7%.¹ The CPUC's July 2008 RPS Quarterly Report specifically states that actual renewable development to achieve the 20% by 2010 goal is slow.² CARB must be firmly realistic about what progress the electricity sector as a whole can make in reaching its RPS targets by 2012, or risk a dysfunctional allowance market when the cap-and-trade program begins.

In particular, SMUD notes that actual data regarding RPS investment and achievement, which is both complete and reliable, may not be available until after CARB has set a cap and allowance allocation has occurred. Therefore, having reliable projections of the likely timing of RPS investment will aid CARB in setting the emissions cap at achievable levels.

III. The process of planning, permitting and constructing the transmission and renewable energy resources needed to reduce the carbon produced by the electricity sector has been more difficult than was envisioned when these policies were put in place. The conditions that have caused these delays have not been resolved. A realistic response to this situation would be to begin with a flatter downward cap trajectory followed by steeper reductions in later years.

SMUD has reviewed the Western Climate Initiative's (WCI) cap-setting methodology and finds that WCI's proposed cap that declines "in a uniform straight line from the start of the program"³ is not a realistic means of achieving the greenhouse gas (GHG) reduction goals in California. Instead, SMUD asks CARB to maintain the GHG emissions cap on a flat or at least gradual trajectory that is based on expected timing of achieving interim RPS targets. This initial slower start will be followed by a steady decrease in order to reflect the realistic timing in developing new renewable generation facilities and transmission lines.

SMUD notes that siting new renewable resources in California has become an increasingly complex and time-consuming endeavor. The siting process for solar generation projects can be expected to take over two years.⁴ Transmission lines to access these and other renewable resources can take up to 10 years. This does not include the additional time it takes to develop a project prior to filing for permits let alone the time needed to actually construct and bring the projects on line. The permitting process for solar projects at the Bureau of Land Management (BLM) is not in any better shape, as evidenced by BLM's need to create the Solar Energy Development Programmatic Environmental Impact Statement (PEIS) to help expedite the permitting process.

Rapid development of renewable resources is vital to achieving RPS requirements.⁵ However, a recent analysis by the CPUC acknowledges that these goals will be nearly impossible to achieve without major "process reform." A May 5, 2009 presentation by the CPUC entitled "33% RPS Implementation Analysis: Preliminary Results" ("CPUC RPS Analysis") indicates that the State will need 75,000 GWh of new renewable generation, in addition to the existing 27,000 GWh

¹ SMUD notes that it expects to meet the 2010 goal of 20% RPS procurement.

² July 2008 RPS Quarterly Report at page 4

³ WCI Design Recommendations for the WCI Regional Cap-and-Trade Program, Section 2 at 28.

⁴ See status of the following three projects in permitting review with the California Energy Commission, Ivanpah Solar, Carrizo Energy Solar Farm and Beacon Solar Energy Project at <http://www.energy.ca.gov>.

⁵ See Senate Bills 1078 and 107 and Executive Order S-14-08.

already in place, as well as *seven* new major transmission lines in order to meet the 33% RPS goal by 2020. (CPUC RPS Analysis at 3.) The CPUC RPS Analysis presents three timelines to meet the goal and in only one scenario did the CPUC determine that 33% RPS could be achieved by 2020 and that was assuming successful implementation of process reform and no delays due to external risks. (*Id.* At 9) Using what it called the “most realistic scenario,” the CPUC RPS Analysis concluded that the State will not achieve 33% RPS anytime before 2025. (*Id.*)

The timing and efficacy of “process reform” is uncertain at best. The hurdles to accelerating the RPS are now well understood and cannot be ignored. These challenges must inform the cap trajectory. The CPUC’s analysis of the realities of achieving 33% by 2020 makes it clear that an initially flat or gradual cap trajectory is needed to allow for the carbon reductions from greater RPS investment to kick in to reduce the carbon content of electricity supplies in California. A straight line trajectory from 2012 to 2020 is not a logical policy in response to the facts on the ground.

A paper published by the Harvard University John F. Kennedy School of Government strongly endorses this type of approach to cap-setting. “In addition, gradually phased-in targets provide time to incorporate advanced technologies into long-lived investments. Because of the long-term nature of the climate problem and because of the need for technological change to bring about lower-cost emissions reductions, it is essential that the caps constitute a long-term trajectory.”⁶ SMUD believes that an initially flat or gradual cap trajectory will allow utilities and renewable resource developers to initially invest and develop new technologies on a smaller scale to determine their feasibility, and then invest greater amounts of money as the technology becomes proven and reliable.

IV. Because CARB should expect few reductions in transportation sector emissions from either the Low Carbon Fuel Standard (LCFS) or delayed vehicle efficiency standards prior to 2015, it should implement a fee on such emissions to achieve real reductions ahead of 2015.

Meeting the caps for the second and third compliance periods depends heavily on expected reductions for California’s largest sector, transportation, as well as in the natural gas sector. Together, these sectors represent more than half of the emissions that will ultimately be subject to a cap. The complementary policies that address these sectors, and in particular the transportation sector, will see the vast majority of their reductions in the final compliance period, and very few reductions in the first compliance period (2012 – 2014). The Low Carbon Fuel Standard has more than 60% of its cumulative impact in the final compliance period (2018 – 2020), and the same is likely true for the vehicle efficiency regulations, which require vehicle fleet turnover to achieve the full benefit. For the CARB to avoid loading the vast majority of the reductions under the cap into the final compliance period, the transportation and natural gas sectors should be assessed a revenue-neutral fee in the first compliance period. The fee would encourage these sectors to actually reduce emissions below business as usual before they enter into the cap, and could aid compliance in later compliance periods by directing proceeds to

⁶ Robert N. Stavins, *Addressing Climate Change with a Comprehensive U.S. Cap-and-Trade System*, Harvard University John F. Kennedy School of Government, January 2008, at 6.

transportation and natural gas related emissions reduction activities. Encouraging reductions out of these sectors earlier than 2015 or 2018 would greatly reduce the risk of the state missing California's overall 2020 emissions target.

While the transportation and natural gas sectors are considered "capped sectors" by CARB, their exemption from reduction requirements in the first compliance period risks eliminating the benefit of the emissions reductions from the electric and industrial sectors which are actually subject to the cap in 2012. Business as usual growth in the transportation and natural gas sectors could generate as much as an additional 10-12 million tonnes per year of CO2 emissions by 2015. Expected reductions from the electricity and industrial sectors, under a straightline reduction trajectory are likely to be in the 6 -12 million tonnes range. In other words, excluding the transportation and natural gas sectors from the cap could erase much if not all of the savings achieved by capping the electricity and industrial sectors in the first compliance period. The result would be that in 2015, the state would be no closer to accomplishing its 2020 target than it was in 2012. This is why SMUD suggests that adoption of a fee for the transportation and natural gas sectors is an important tool to show real progress in the early years of the program.

V. Economic modeling must address lead times for infrastructure, market dynamics with introduction of transportation and natural gas, and relationships between sectors that may affect timing of reductions.

SMUD supports the need for economic analyses to inform CARB and all capped entities on important quantitative elements to be considered in setting the yearly California GhG emission's cap. In the April 28th Cap Setting Workshop, staff discussed the need for such an analysis under the general term "Compliance Pathway Analysis". This analysis should inform how fast and in what increments the cap should be lowered between 2012 and 2020. Besides giving a quantitative basis to the apparent time competitive qualities of harvesting low hanging fruit versus waiting for market forces to drive change, the analysis should aim to illuminate both market dynamics and foreseeable issues in GhG reduction supply.

SMUD recommends that the following issues be adequately addressed in the Compliance Pathway Analysis or other analyses as appropriate:

- Market dynamics (price volatility and other issues) associated with more than a 100% increase in capped emissions expected from the introduction of the transportation and natural gas sectors three years into the compliance program. In particular, differing demands for allowances, different development timeframes for mitigation options, and price elasticities of these sectors should be included in the model.
- Inter-sectoral responsiveness and trading opportunities (or demand pinch points). For example, it might be tempting to assume that foreseeable lag times in providing infrastructure in one sector could be "covered" by allowances available at reasonable cost in another sector. However, without analysis of realistic lead times or characterization of seasonal or other time variant characteristics of specific, capped entities and their temporal relationship to those other capped entities, such assumptions are without logical basis.

- Long lead times and critical milestones for permitting and building electric sector infrastructure for both supply side renewable energy and energy efficiency improvements, essential transmission, penetration of building code improvements, fleet turnover in the transportation sector, and ramp-up of delivery of energy efficiency in the natural gas sector are all factors that should be considered in CARB's chosen economic analyses.

VI. CARB should develop a cap which is dependent on the rate of economic recovery, such that a faster rate would trigger a higher cap, and a slower rate, a lower cap.

Economic activity drives the growth in demand for energy and the resulting GhG emissions. As CARB plans to set the cap for 2012 based on the projected GhG emissions in that year, it is critical that the projection is based on the best and most up-to-date economic forecast. For the electricity sector, the projection should be based on the best demand forecast and on sound assumptions of economic conditions for 2012 and beyond.

Economic conditions can have a significant impact on electricity demand. For example, the CEC is projecting a 10% percent reduction in energy consumptions by 2018 due to the current economic recession when compared to the 2007 forecast.⁷ Using SMUD's own experience, the current recession had reduced its electricity demand by 2% below the expected energy sales for 2009.

Electricity demand forecasting in California has a substantial history of using well established methodology and procedures. The CEC develops and presents their forecast in their IEPR every other year and updates it in between years. An important part of the IEPR is the demand forecast. The forecast is based on both individual utility forecasts and the CEC's own internal modeling and is then reviewed in formal regulatory proceedings. The forecast considers economic conditions, renewable energy plans and energy efficiency plans. The CARB should use the IEPR forecast as the basis for estimating electricity sector demand levels.

In terms of timing, the next complete CEC forecast will be finalized by August 2009 and should be updated in August 2011. There will be a simplified update in the interim year 2010. CARB should set an initial cap for 2012 based on the 2010 forecast, but adjust it using the August 2011 forecast update prior to the start of the cap and trade program. Providing this initial cap estimate in advance should allow utilities to develop compliance plans based on estimated levels of allowances. The true-up in late 2011 should help ensure that cap levels most closely match actual 2012 emissions levels.

VII. In setting the Cap, CARB should harmonize cap reductions with rules by the CEC and CPUC to encourage the use of tradable RECs and facilitate a market for affordable, firmed renewable energy imported into California. Without such harmonization, the use of REC's to meet the California RPS could limit the usefulness of the RPS as a tool in reducing emissions from the electricity sector.

SMUD notes that the CEC permits imports of firmed renewable energy whereby renewable attributes are matched with imported firming energy that is not necessarily from the renewable energy source (matching contracts). The CPUC is currently considering whether to allow use of

⁷ 2009 IEPR Draft Energy Demand Forecast, Chris Kavalec, California Energy Commission, May 4, 2009

tradable renewable energy credits (TRECs).⁸ To date, despite the eligibility of these types of transactions, CARB has not weighed in on how they will be treated from an accounting and emissions cap perspective. SMUD believes that the avoided emissions value of that generation should follow the REC. However, imports of firmed renewables energy will effect CARB's cap-setting decision. If utilities use fossil-fired resources for firming, then CARB must decide whether these emissions must be added to the cap.

SMUD advocates an approach where CARB assigns a zero GHG emissions value to firmed renewable energy brought into California. This would mean that the emissions from matching generation would not be factored in for cap-setting purposes. If instead, CARB assigns emissions to imported and firmed renewable energy, such a decision would mean that California ratepayers would be spending money via the RPS to lower another state's GHG emissions inventory, rather than California's. It would also mean that retail providers would be unable to meet their RPS targets with RECs if those imported RECs had no value in terms of reducing the State's GHG footprint because such contracts would not adequately protect ratepayer interests. This would, in turn, chill further investment in new, out-of-state renewable energy supplies because California ratepayers would not receive the full value of the imported renewable energy.

CARB should harmonize cap reductions with rules by the CEC and CARB to encourage the use of TRECs and facilitate a market for affordable, firmed renewable energy imported into California. In setting the cap, SMUD therefore requests that CARB assign a zero GHG emissions value to firmed energy when it is imported with RECs.

VIII. Summary

SMUD appreciates this opportunity to provide comments to CARB, and is hopeful that in developing its thoughts on cap-setting, CARB will consider its ideas on the timing of infrastructure development, hydro-electricity allowance reserve, transitioning to an economy wide cap, as well as our suggestions for necessary components of economic modeling and possible means of cap adjustment based on economic recovery. We look forward to working with CARB in ensuring a cap is set that meets all of the objectives of AB32.

Respectfully submitted,

/s/

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cc: Corporate Files

⁸ March 26, 2009 draft of the CPUC's Proposed Decision Authorizing Use of Renewable Energy Credits for Compliance with the Renewables Portfolio Standard