APPENDIX B
Page 1

An Incentive Framework For Utility Procurement of Energy Resources Modeled After Cap-and-Trade Principles of the Sky Trust

1. Introduction and Summary

The purpose of this concept paper is to propose an incentive framework for investor-owned utility (IOU) procurement of energy resources that would: 1) explicitly account for the tradeoffs in costs (including externalities) related to resource options, both supply- and demand-side, 2) reflect the need to reduce California's dependence on fossil fuels for a variety of environmental, security and price volatility reasons, 3) provide a transparent yardstick for least-cost energy procurement and 4) create a funding source for energy efficiency programs that would drive utilities to conserve at the upstream level.

The term "procurement" is used in this paper to refer to one of the major responsibilities of the IOUs—to serve as electric and natural gas portfolio managers for their service territories, a task that involves assembling a mix of demand- and supply-side resources and contracts. The proposed framework would apply to the procurement practices of the large IOUs under the CPUC's jurisdiction, i.e., Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company and Southern California Gas Company. It encompasses the full range of energy procurement activities undertaken by these IOUs: electric power and natural gas procurement via bilateral contracts with individual suppliers or from wholesale energy markets, procurement from resources located in-state or out-of-state, and procurement from facilities owned and operated by IOUs or by other entities.

This concept paper utilizes the cap-and-trade principles of the Sky Trust proposal described in Peter Barnes' book "Who Owns the Sky?" The Sky Trust draws from experience with the Alaska Permanent Fund, which was established to manage the oil revenues on state-owned lands in the 1970s and distributes an annual dividend to each Alaskan. The Sky Trust concept has also served as the model for the Consumer Fiduciary Corporation proposed under the Climate Stewardship Act (S.139) and the non-governmental trustee for permit auctions proposed under the Clean Power Act of 2002 (S.556).

Briefly, under the proposed framework the CPUC would establish short- and long-term procurement goals for energy efficiency and renewable resources in its rulemaking proceedings, in coordination with other State agencies. For example, the CPUC might determine that the combination of cost-effective energy efficiency and

"least-cost and best fit" renewables should result in zero-growth in carbon-based energy procurement over the next five years.[1] The CPUC would express this goal in the form of annual limits on carbon-based energy procurement over the same period. As discussed further below, the utilities would be required to hold (tradeable) allowances to procure carbon-based energy up to the CPUC-established limits. The CPUC, or a Trust set up by the CPUC for this purpose, would issue the allowances at a price that is market-based (e.g., established through auction), on an annual basis.

Allowance costs would be added to other costs of carbon-based energy and would be reflected in all utility procurement decisions. Allowance costs would also become an integral component of the avoided costs used in cost-effectiveness and "least cost-best fit" evaluations when considering energy efficiency and renewable energy proposals or projects. The issuance of allowances and associated costs of those allowances would also become an integral component of the CPUC's policies to promote energy efficiency programs on the gas-side, and to evaluate the cost-effectiveness of those programs relative to the costs of additional slack capacity, additional interstate pipeline reservation charges and emergency reserves of natural gas.

Ratepayers would pay for the allowance costs through rates (just as they do for all other reasonable and prudent costs of energy procurement), but the funds generated through these ratepayer collections would be set aside specifically to fund energy efficiency programs. In this way, the higher costs that ratepayers pay for the utility's procurement of carbon-based energy are "recycled" to fund energy efficiency programs. This funding would substitute for a large part (if not all) of the ratepayer funding for energy efficiency that is currently collected through procurement rates and the public goods surcharge. That is, the cost of allowances would not be additive to the amount of funding for energy efficiency currently in rates. In fact, the total amount of ratepayer collections would not change at all.

The utility's overall performance in energy procurement would be evaluated based on achieving the targets established for specific types of preferred resources (e.g., energy efficiency and renewable resources) as well as on performance targets established for long-term portfolio costs—including the cost of allowances. The proposed framework creates a strong incentive for utilities to aggressively pursue cost-effective energy efficiency and least-cost/best-fit renewable resources by: (1) limiting the amount

[1] California Senate Bill (SB) 1078 established the California Renewables Portfolio Standard (RPS) Program, with a stated intent of attaining a target of 20 percent renewable energy for the State of California. To reach that goal, the legislation requires an increase in procurement of renewable energy of at least 1 percent per year, and directs the CPUC to establish a process for determining the "least-cost and best-fit" renewable resources for this purpose. (See, in particular, Public Utilities Code § 399.14(a)(2)(B.)

of carbon-based energy the IOUs (collectively) would be allowed to include in their resource portfolios, and (2) establishing a market value via tradeable allowances for those limits against which to measure all non carbon-based alternatives. Monetary incentives/penalties could be structured based on these same parameters, coupled with periodic independent audits. In this way, the CPUC would create the financial motivation that IOUs lack under cost-of-service regulation to factor the full cost of resource options (including allowances) into all procurement decisions.

Sections 2-5 present a brief overview of the Sky Trust, discuss the objectives for utility energy procurement, elaborate on the proposed incentive framework in greater detail, and consider the issue of procurement performance and utility financial incentives in that context. Several issues and questions are raised throughout this paper for further consideration. The paper is followed by a "question and answer" attachment designed to further clarify the proposed framework.

2. The Sky Trust: A Brief Overview[2]

In brief, under the Sky Trust proposal carbon emissions are limited upstream (i.e., where carbon enters the economy), which has the same effect as limiting the supply of fossil fuels. However, rather than resulting in higher prices that produce windfalls to energy producers (as did the OPEC limitations on fossil fuels in the 1970s), the Sky Trust framework then "recycles" the rent from the limited supplies to all citizens via a Trust dividend. Emission rights are given to the Sky Trust, which periodically sells them to producers and importers of fossil fuels in the form of tradeable allowances. The Sky Trust then distributes the resulting revenues back to its citizens.

Variations of this Sky Trust proposal have been presented in numerous forums discussing climate change issues and related legislation. Below is an excerpt from a 2001 study by the Congressional Budget Office (CBO) that illustrates the concepts very well:

> "Under this proposal, domestic producers and importers of fossil fuels would be required to hold allowances equivalent to the amount of carbon dioxide that is eventually released from the fuels they sell. An emission target would be set at 1.346 billion metric tons of carbon, the amount emitted from fossil-fuel combustion in the United States in 1990. The

[2] Suggested reading for more information on the Sky Trust concept: "Who Owns the Sky?" by Peter Barnes and background material available at: www.cfed.org/sustainable_economies/common_assets/index_skytrust.html.

> government would sell allowances for that target through an auction and would set a price ceiling of $25 per allowance…. The government would initially use 75 percent of its auction revenue to make equal annual payments to each legal resident of the United States. The remaining 25 percent would be used to compensate regions, companies, or consumers adversely affected by the policy. For example, some of those funds could be targeted toward coal-mining regions that would suffer declines in local employment because of the policy. The portion set aside for compensation would be phased out over 10 years, after which all of the revenue would be used for lump-sum payments to U.S. residents."[3]

Although the Sky Trust has been presented and debated in the context of climate policy, it offers a useful incentive framework for utility energy procurement as well, with appropriate adaptation. Our initial thinking is outlined below.

3. Objectives for Utility Energy Procurement

The goal of this effort is to motivate IOUs to "do the right thing" with respect to energy procurement choices, i.e., to procure least-cost supply-side resources and make cost-effective demand-side investments, taking into account the environmental costs (or benefits) of various resource options. This is clearly consistent with the CPUC's statutory mandate:

> "The Legislature finds and declares that, in addition to other ratepayer protection objectives, a principal goal of electric and natural gas utilities' resource planning and investment shall be to minimize the cost to society of the reliable energy services that are provided by natural gas and electricity, and to improve the environment and to encourage the diversity of energy sources through improvements in energy efficiency and development of renewable energy resources, such as wind, solar, biomass and geothermal energy." (Public Utilities Code § 701.1(a).)

In May 2003, the CPUC, California Energy Commission (CEC) and the California Power Authority jointly adopted the Energy Action Plan, which echoes the policies articulated above:

---

[3] *An Evaluation of Cap-and-Trade Programs for Reducing U.S. Carbon Emissions*, A CBO Study, June 2001, p. 16. Available at www.cbo.gov.

> "The goal of the Energy Action Plan is to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies, including prudent reserves, are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers."[4]

The Energy Action Plan also articulates the commitment of these three agencies to, among other things, "minimizing the energy sector's impact on climate change,"[5] and supporting "the most cost-effective and environmentally sound strategies, including consideration of global climate change."[6] In addition, the Energy Action Plan envisions a "loading order" of energy resources that would first "optimize all strategies for increasing conservation and energy efficiency to minimize increases in electricity and natural gas demand" and second, meet new generation requirements "first by renewable resources and distributed generation."[7]

In terms of specific pollutants, of significant concern to regulators and the public today is the environmental damage caused by carbon dioxide (CO_2) emissions—an inescapable byproduct of fossil fuel burning and by far the major contributor to greenhouse gases. Unlike other significant pollutants from power production, CO_2 is currently an unpriced externality in the energy market. Other significant air pollutants from power production, such as sulfur dioxide emissions, nitrogen oxides and particulate matter are regulated under the Federal Clean Air Act and corresponding State legislation. These emissions are "priced" in the sense that energy generators must purchase some type of allowance or credits (or install abatement equipment) to offset the impact of these emissions from their operations. In contrast, CO_2 is not consistently regulated at either the Federal or State levels and is not embedded in energy prices. In the discussion that follows the terms "fossil-fuel" and "carbon-based" energy procurement are used interchangeably to emphasize the need to recognize this externality and account for it in the utility's natural gas and electric power procurement decisions.

Most importantly, California needs a framework for procurement incentives that recognizes the importance of reducing California's dependence on fossil fuels—for a variety of environmental, security, and price volatility reasons. Programs to promote

---

[4] Energy Action Plan, p. 1. A copy of the Energy Action Plan is available at www.cpuc.ca.gov.

[5] *Ibid.* p. 2.

[6] *Ibid.*, p. 3.

[7] *Id*.

"clean" supply-side technologies, energy efficiency and demand-response programs, initiated in the 1970s and revitalized in recent years in response to energy crises, all recognize this need. Therefore, CPUC's procurement framework and incentive structure for IOUs should reflect the need to reduce carbon-based energy procurement over time.

The concept of placing a monetary value on externalities associated with energy production is certainly not new—in fact, the CPUC is in the process of updating avoided costs for use in resource evaluation to reflect externality adders, per Decision (D.) 03-04-055. Avoided costs refers to the cost that the IOUs would incur "if not for" energy efficiency investments, i.e., the cost to meet customers' energy needs through IOU supply-side generation, power purchases or natural gas procurement. The CPUC has developed avoided costs for this and other procurement purposes for many years. The concept is well established in CPUC proceedings.

However, there is currently no practical linkage between the consideration of externalities in evaluating the cost-effectiveness of energy efficiency, in selecting the "least cost and best fit" projects under the Renewables Portfolio Standard, and in determining the appropriate size and composition of the utilities' non-renewable supply portfolios—on either the electric or natural gas side of energy procurement.[8] The procurement incentive framework proposed in this paper is intended to create a such a uniform yardstick for procurement decisions and resource evaluation. Moreover, it does this in a way that will drive utilities to conserve at the upstream level, i.e., in assembling the mix of supply- and demand-side resources and contracts in their energy resource portfolios. It has a unique, added advantage of recycling ratepayer expenditures *back to ratepayers*, in the form of funding for energy efficiency measures in their homes and businesses. As discussed further below, this recycling of ratepayer expenditures results in a procurement incentive framework that *does not increase utility revenue requirements, customers' rates or bills.*

4. The Framework: Procurement Targets, Tradeable Allowances and The Energy Efficiency Trust

The CPUC is in the process of establishing annual and multi-year renewable energy procurement goals and energy efficiency savings targets for each investor-owned

[8] Per D.03-06-071, the avoided costs that will be used for project selection under RPS are based on the costs of a natural gas generator. Under the framework proposed in this paper, the cost of allowances would be added to this RPS market price referent.

utility, based on least-cost considerations.[9] *Under the proposed framework, these efforts would also be expressed as corresponding limits to carbon-based energy procurement.*

For example, in a recent draft report, the California Energy Commission (CEC) presents various targets for annual energy savings from economic energy efficiency with corresponding growth levels in electricity production over the 2004 to 2013 period, including a zero-growth scenario.[10] When coupled with renewable portfolio targets, this type of study could be augmented to present the corresponding growth levels in carbon-based energy production, including natural gas procurement. In other words, the "inverse" of the effort to establish renewable and energy efficiency targets is to establish annual procurement targets (limits or caps) on carbon-based energy procurement.[11] Such limits would vary by year, and be ratcheted down over time as the relative share of energy efficiency and renewable energy resources increases in the utilities' procurement portfolios. In order to incorporate tradeable allowances into the procurement framework, the annual cap on carbon-based procurement would need to apply to the combined procurement portfolios of PG&E, SCE, SDG&E and SoCalGas.

Clearly, there will be considerable debate over the level of carbon-based energy procurement that will be "allowable" in each year, and over time. In addition, there will be debate over whether single year or multi-year allowances should be auctioned at the outset. For example, in one variation of the Sky Trust proposal, two types of allowances would be sold: (1) emission permits that entitled holders to produce a unit of carbon in a particular year, and (2) emission "endowments" that entitled holders to an emission permit each year forever.[12] The debate over these issues is the natural outgrowth of current discussions over near- and long-term targets for renewable resources and energy efficiency. What is new to the discussion is what form a cap on carbon-based procurement should take: Should it be a cap on the tons of CO_2 emissions associated with utility procurement? Should it be based on the level of kilowatt hours and therms that the utilities procure from carbon-emitting resources, and would separate caps be

---

[9] These issues are being addressed in the CPUC's Procurement and Energy Efficiency Rulemakings, R.01-10-024 and R.01-08-028.

10 Proposed Energy savings Goals For Energy Efficiency Programs in California, California Energy Commission Staff Report, October 27, 2003. It is not clear why this document did not also address savings goals for natural gas, since such targets have historically been an integral part of ratepayer-funded energy efficiency programs on the gas-side.

[11] This analogy does not take into account procurement from nuclear plants, an issue that will need to be explored further in discussions about whether (and if so, how) to refine this framework for power purchases from nuclear-powered facilities.

[12] *An Evaluation of Cap-and-Trade Programs for Reducing U.S. Carbon Emissions*, A CBO Study, June 2001, Chapter 3, footnote 2.

needed for natural gas procurement (therms) versus electric power purchases (kilowatt hours)? Are there other options to consider? Also new to the discussion is the best way to monitor and report the level of carbon-based energy procurement by the utilities, whatever form of cap is established.

These issues will require further thought and exploration, and should build on current experience with cap and trade programs and recent literature on the topic. For the purpose of illustrating the procurement framework in this concept paper, it is assumed that the cap will apply to the total kilowatt hours and therms that IOUs are allowed to procure from carbon-emitting resources. In some instances (such as electric power purchases from the wholesale market), it may be somewhat challenging to specify the carbon-based component of "blended" power purchases. However, there should exist sufficient data from the Independent System Operator and other industry sources to obtain real-time information or make reasonable assumptions about those quantities.

The trade component of this cap-and-trade procurement framework involves auctioning allowances to the IOUs. The CPUC could run the auction or establish a Trust for this purpose. The Nuclear Decommissioning Trust is an example of a trust established by the CPUC for the purpose of managing ratepayer collections earmarked for a specific purpose. In keeping with the Sky Trust model, the framework presented in this paper would have the CPUC establish an "Energy Efficiency Trust" to conduct the auction. It is so named because of the manner in which the proceeds from the auction will be recycled.

The Energy Efficiency Trust would establish a bidding process for tradeable allowances—that is, the right to procure carbon-based energy up to the annual procurement limits established by the CPUC. The IOUs would bid for these allowances with ratepayer funds. The proceeds from the sales of these allowances would, in turn, be used to fund energy efficiency programs, thereby reducing (or eliminating) the ratepayer collections currently needed to fund these programs through the public goods charge and procurement rates. The result of the auction would be a dollar cost to the utility for the right to purchase or produce carbon-based resources to meet customer needs. The cost would be expressed in dollars per kilowatt hour and dollars per therm, and added to all other costs of carbon-based energy procurement, for daily dispatch decisions, resource acquisition (via energy contracts with third parties or utility-owned facilities) and in evaluating the energy savings from demand-side resources. The limits on carbon-based fuels and associated cost of allowances would also be considered in the context of natural gas supply decisions, such as the acquisition of emergency natural gas reserves.

Figure 1 shows how the Sky Trust's "scarcity rent recycling" would work under the proposed energy procurement framework. On the left side of the diagram, you see that ratepayers pay more for burning fossil fuels, by paying "permit fees" for the CO_2 allowances that the IOUs must now purchase to based on their procurement of carbon-based energy for customers. But, as the right side of the diagram shows, these payments are then "recycled" to fund energy efficiency programs that benefit ratepayers.

In essence, the recycling of payments for CO_2 allowances becomes a paper trade for utility book keeping: The Commission credits the energy efficiency program account by the amount of ratepayer funding that comes in from the sale of allowances. Figure 2 illustrates how this works. On the left side, you see that ratepayers currently fund energy efficiency programs designed to displace more expensive supply-side resources at a level of approximately $500 million per year.[13] This level of funding is generated via a non-bypassable surcharge on each customer's bill. The surcharge is levied on a per kWh and per therm basis.

Under the proposed framework, the proceeds from selling the CO_2 allowances to the IOUs would substitute for some (or all) of this funding, depending upon the number and price of allowances sold. This is shown on the right side of Figure 2. Funding for energy efficiency programs would still be allocated to customers on a per kWh and per therm basis. The total level of ratepayer funding for energy efficiency would not change—just the manner in which some of the funding is generated. In the example presented in Figure 2, the customer bill would show two separate nonbypassable surcharges. One charge reflects the rate that will recover the authorized energy efficiency budget *less* the proceeds from CO_2 allowances ($400 million). The second reflects the rate that will recover the utility costs of CO_2 allowances ($100 million). They add up to the rate that would have been on the customer's bill to fund the authorized level of energy efficiency, with or without the sale of allowances ($500 million). Alternatively, the Commission could just show a single nonbypassable surcharge on the bill that would recover the authorized level of energy efficiency ($500 million). Either way, ratepayer collections (utility revenue requirements) would not change, and individual customers would not experience any changes to their current rate levels because of limits to fossil fuel procurement and the auction of CO_2 allowances.

---

[13] This annual figure does not include funding for low-income energy efficiency programs, which provide eligible low-income residents with energy efficiency services free of charge, i.e., without requiring any customer contribution to the costs of the installed measures, energy-efficient appliances or other services. These programs are not required to be cost-effective relative to supply-side alternatives (and generally are not). They are funded for equity reasons. These low-income customers are also eligible for rate discounts under the California Alternate Rates For Energy ("CARE") program.

Figure 1

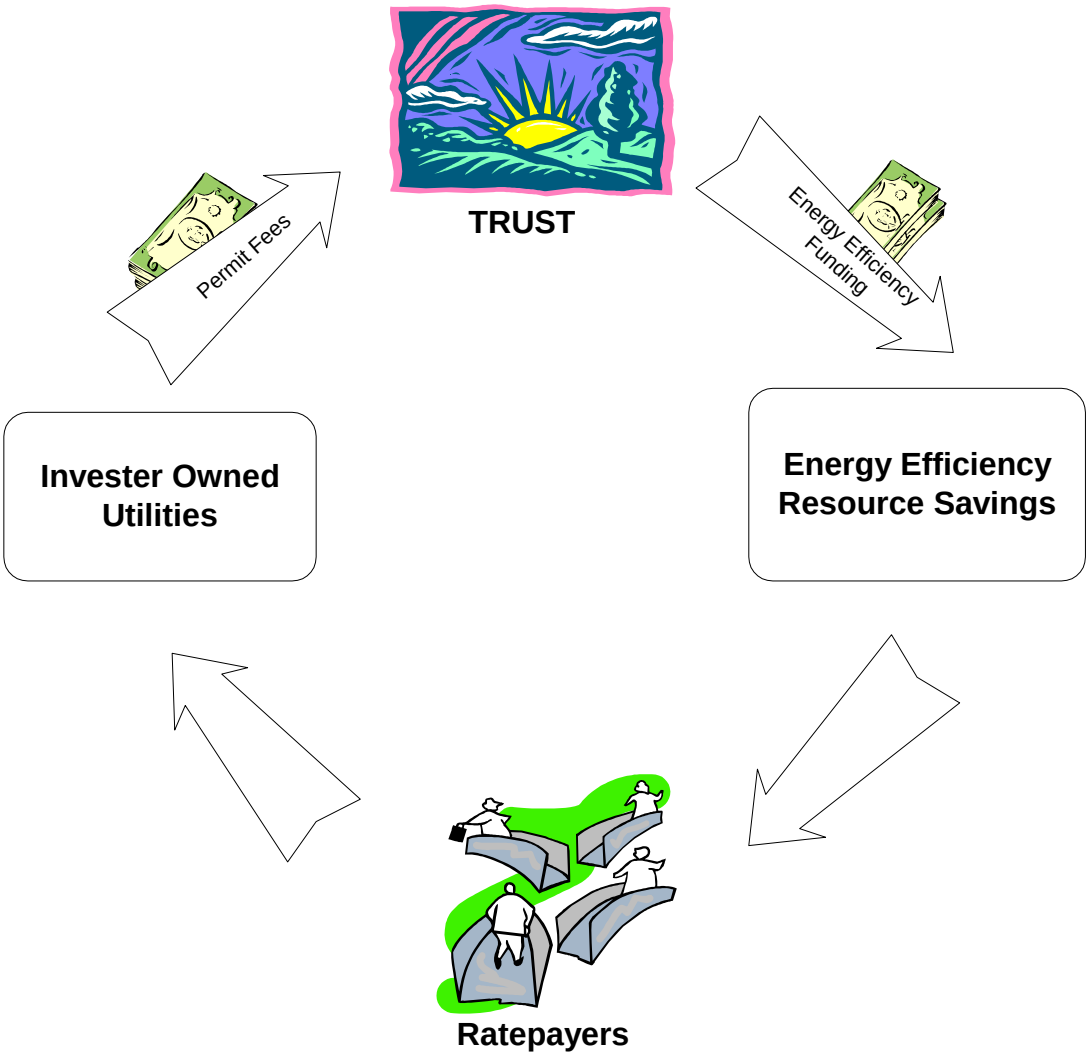
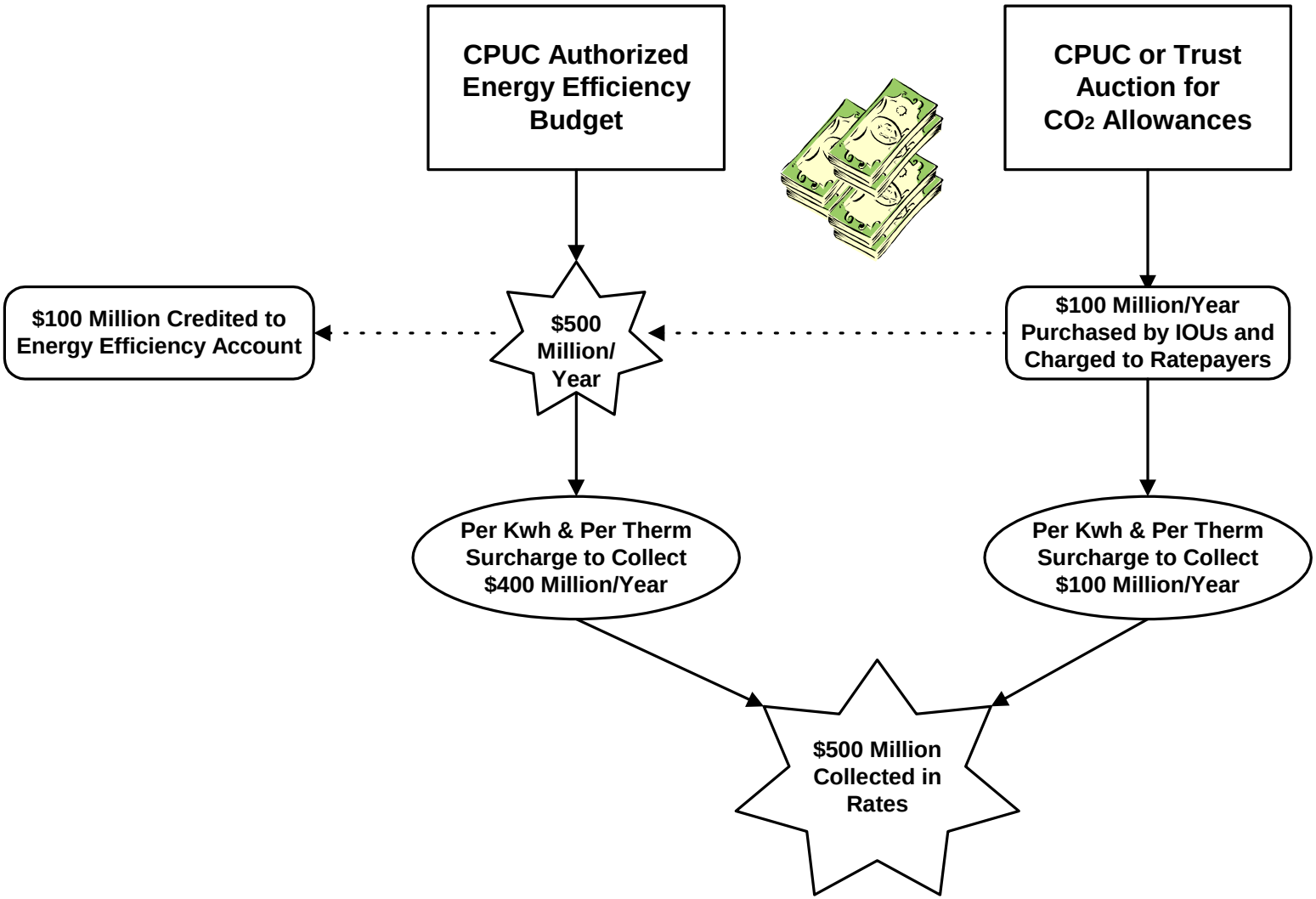

TRUST
Permit Fees
Energy Efficiency Funding
Invester Owned Utilities
Energy Efficiency Resource Savings
Ratepayers

Figure 2


CPUC Authorized Energy Efficiency Budget
CPUC or Trust Auction for CO_2 Allowances
$100 Million Credited to Energy Efficiency Account
$500 Million/ Year
$100 Million/Year Purchased by IOUs and Charged to Ratepayers
Per Kwh & Per Therm Surcharge to Collect $400 Million/Year
Per Kwh & Per Therm Surcharge to Collect $100 Million/Year
$500 Million Collected in Rates

As described above, at least some of the ratepayer funding for energy efficiency would now be generated from the auction of CO_2 allowances. In this way, the proposed framework creates a funding source that will drive utilities to conserve at the upstream level. Under the current procurement framework, the Commission simply authorizes a budget for energy efficiency and a per kWh and per therm charge is put into place to collect that amount. There is currently no link between the funding mechanism for energy efficiency and the policy goal of conserving fossil fuels. It is also important to note that the proposed framework *does not impose any added costs on producers of fossil fuel generation (utility or non-utility) or natural gas suppliers,* whether their facilities are located in-state or out-of-state, based on the amount of fossil-fuel production or tons of CO_2 emissions from their generation facilities. Nonetheless, by limiting the amount of carbon-based energy that IOUs can procure each year, the market for fossil fuels will be limited over time. In this way, one could argue that it disadvantages both in-state and out-of-state fossil-fuel generators and natural gas suppliers. However, any proposal to implement the Energy Action Plan will have the same impact. This is because the Energy Action Plan explicitly defines a "loading order" for both natural gas and electric generation, starting with the preferred resources of "conservation and energy efficiency." Renewable resources and distributed generation follow conservation and energy efficiency to meet new generation needs. This puts both natural gas supplies and fossil-fuel generation in the residual role of filling remaining energy needs, which will (by definition) be limited. The proposed framework is simply one approach to putting this loading order into practice. It does not create new policy—it simply is one strategy for implementing a policy that has already been adopted in 2003 by three state agencies.

Finally, the framework outlined above does not presuppose that the Energy Efficiency Trust *administers* energy efficiency programs, once the auction funds are collected. The issue of administrative structure for energy efficiency programs is being addressed by the CPUC in Rulemaking (R.) 01-08-028. However, the proposed framework appears to be compatible with any of the administrative options currently under consideration, including continued utility administration.

5. Utility Performance and Incentives

If the utility were a private unregulated business in a competitive market, a discussion of performance and incentives would not be needed: The private firm would make the necessary trade-offs among energy resources based on their costs (including the costs of allowances for carbon-based resources), without any further inducements. If it did not, the firm would soon lose out to competitors in the market that do a better job at

generating profits (and shareholder earnings) in meeting customer demands. That would be inducement enough.

However, IOUs operate under "cost-of-service regulation", where they earn a CPUC-established rate-of-return (which includes a financial return to shareholders) based on each dollar of capital investments, such as generation and distribution plant. That is, they are given the opportunity to earn the CPUC-authorized return if they keep their costs at the levels projected during their general rate cases. If costs increase (adjusted for sales fluctuations) relative to the general rate case forecasts, they earn less, and vice versa. For non-capital expenditures (such as those related to energy procurement contracts, utility plant operating costs and wholesale energy purchases), utilities do not earn financial returns for their shareholders under cost-of-service regulation. These costs represent a dollar-for-dollar "pass through" to ratepayers, unless the CPUC concludes based on after-the-fact reasonableness reviews that the costs were imprudently incurred. Experience indicates however, that such reviews are infrequent, resource-intensive and very difficult to undertake.

To take the place of extensive reasonableness reviews, the CPUC has recently established upfront standards for utility energy procurement that include directives to "administer all contracts and generation resources and dispatch the energy in a least-cost manner".[1] The CPUC is also in the process of reexamining its ratemaking policies with respect to natural gas utilities in order to ensure that ratemaking incentives "conform to the new policies of this Commission…to promote energy efficiency programs and maintain and preserve enhanced infrastructure to meet California's demand for natural gas in the long-term."[2] In addition to energy efficiency, the CPUC identifies "renewable energy programs" as the type of demand-reduction efforts that it expects to increase to address natural gas supply issues.[3] The CPUC intends to address approaches to incentive mechanisms for overall energy procurement in this new rulemaking, and has directed that any such mechanisms being considered for specific resource types (e.g., energy efficiency) and new ratemaking policies regarding natural gas supplies be coordinated with this effort.[4]

The procurement framework described in this paper creates a strong incentive for California electric and natural gas IOUs to aggressively pursue energy efficiency and

---

[1] D.02-10-062, p. 51.

[2] See Order Instituting Rulemaking (OIR) 04-01-025, issued on January 22, 2004, p. 23.

[3] *Ibid*. p. 2.

[4] See the coordination language in today's Order Instituting Rulemaking.

renewable energy alternatives by physically limiting the amount of carbon-based energy they (collectively) would be allowed to include in their resource portfolios. However, this attribute alone may not be sufficient to motivate utility managers to be as diligent as possible in minimizing ratepayer costs and risks, given the cost-of-service realities described above. For example, the current regulatory structure may not provide sufficient motivation for an IOU to bid for allowances with the ratepayers' bottom line in mind. Unless the CPUC regularly reviews utility portfolio management decisions, there may also be insufficient financial motivation for the IOU to consistently minimize long-term procurement costs on behalf of its ratepayers.

In sum, the incentive framework proposed in this paper does not necessarily obviate the need to also consider financial earnings/penalty incentive mechanisms. However, this framework offers two distinct advantages, relative to the financial incentive approaches taken by the CPUC in the late 1980s to mid-1990s. First, by reformulating the resource targets for renewable energy and energy efficiency into specific limits on carbon-based energy procurement, this framework creates a direct incentive for the IOUs to conserve at the upstream level--on both the electric and natural gas side of utility procurement. Second, it creates linkages across resource types in two dimensions: resource procurement targets and resource valuation. This will make it easier for regulators to evaluate the procurement performance of the utilities and establish resource-specific incentives that can be calibrated effectively to overall procurement goals.

A detailed consideration of what form these financial incentives might take is beyond the scope of this paper. However, in general terms, the utility's overall performance in energy procurement could be evaluated based on achieving the targets established for specific types of preferred resources (e.g., energy efficiency and renewable resources) as well as on performance targets established for long-term portfolio costs—including the cost of allowances. Monetary incentives/penalties could be structured based on these same parameters, coupled with periodic independent audits. In this way, the CPUC would create the financial motivation that IOUs lack under cost-of-service regulation to factor the full cost of resource options (including allowances) into all energy procurement decisions.

ATTACHMENT 1

An Incentive Framework for Utility Procurement of Energy Resources Modeled After Cap-and-Trade Principles of the Sky Trust

Questions and Responses

Q1. Under the Sky Trust concept, monetary dividends are paid to individual citizens each year from the proceeds of the auction. How would dividends be paid under this incentive framework?

A1. The proposed framework does not pay monetary dividends in the same way as the Sky Trust model, for two reasons. First, it could be unwieldy to try to establish a mechanism that paid out money (or issued a refund utility bills) to each customer from the auction proceeds each year. Second, and more importantly, if the proceeds from the auction were paid out to customers in the form of "take home" payments or refunds on their bills, the CPUC would have to create new charges and increase rates to implement the framework. By recycling the proceeds from the auction of CO_2 allowances (paid for by ratepayers) to displace energy efficiency funding that is already on the bill (paid for by ratepayers), the proposed procurement framework does not create new charges or higher rates. The "dividend" to ratepayers is in the form of reductions in energy procurement costs and in California's reduced dependence on fossil fuels.

Q2. But ratepayers currently fund energy efficiency programs, and reap the benefits of those programs, without having the IOUs purchase any of CO_2 allowances. Why do you need them?

A.2. The proposed framework makes explicit what the CPUC and other agencies have been trying to accomplish in fragmented bits and pieces to promote least-cost resource procurement, and thereby establishes a much clearer and consistent approach. For example, the CPUC has established a renewables "set aside" (in response to statutory requirements) and is in the process of establishing savings goals for energy efficiency, by IOU service territory. It is also in the process of updating avoided costs to reflect the costs of CO_2 emissions that are not reflected in market rates, using publicly available data from other regional markets such as the Oregon Climate Trust.

The proposed framework brings these efforts together into a comprehensive framework for procurement incentives. As discussed in the paper, establishing targets or set asides

for preferred resources is the "flip side" of establishing limits on fossil fuel procurement. So why not take that next step and make those limits explicit? Similarly, rather than estimate the value of CO2 reductions based on other markets for allowances, why not establish one in California, and update the values based on actual experience? Moreover, the proposed framework requires the utilities to put ratepayer money "on the table" in the form of purchased allowances when they choose fossil fuels over other alternatives. This is a much more powerful incentive to conserve at the upstream level than using an avoided cost yardstick "after-the-fact" to evaluate portfolio performance.

Q3. Isn't this proposal really a CO_2 tax?

A3. No. This is neither a producer nor an end-user tax. Under the proposed framework, producers of fossil fuel generation (utility or non-utility) do *not* pay out any additional money based on fossil-fuel production or tons of CO_2 emissions. As described in the paper, consumers (ratepayers) also do not experience any increases in their energy rates or monthly bills under this proposal. In contrast, a CO_2 tax on either the end-user or producer would result in higher production costs and consumer bills.

Q4. Doesn't this proposal disadvantage fossil fuel generators in other ways?

A4. As discussed in the paper, by limiting the amount of fossil fuel generation or natural gas that IOUs can procure over time, this proposed framework will limit the market for fossil fuels in California. In this way, one could argue that it disadvantages both in-state and out-of-state fossil fuel generators or natural gas producers. However, any proposal to implement the Energy Action Plan will have the same impact. This is because the Energy Action Plan explicitly envisions a "loading order" of energy resources that would first "optimize all strategies for increasing conservation and energy efficiency to minimize increases in electricity and natural gas demand" and second, meet new generation requirements "first by renewable resources and distributed generation."[1] This puts fossil fuel resources in the role of filling residual generation or natural gas needs, which will—by definition--be limited. The proposed framework is simply one approach to putting this loading order into practice. It does not create new policy—it simply is one strategy for implementing the policy that has already been articulated by three separate state agencies.

Q5. Since so much of California's electricity carbon is out of state coal and gas, won't this proposal create competitive disadvantages versus other states?

[1] Energy Action Plan, p. 3.

A5. For the reasons discussed above, the proposal does *not* increase costs to IOU or third party fossil fuel generators (or natural gas suppliers), whether located in-state or out-of-state. Nor does it increase costs to end-users (ratepayers) in California because of the recycling approach described in the paper. It also does not represent a departure from current energy policy in California, for the reasons discussed in A4. Therefore, we see no basis for concern that this proposal will create a competitive disadvantage to California.

Q6. The proposed framework focuses on valuing the environmental costs of fossil fuels, especially CO_2 emissions—what about the environmental costs associated with hydroelectric, wind and other renewable resources?

A6. Nothing in the proposed framework is intended to suggest that adverse environmental impacts and costs associated with renewable energy technologies should be ignored. But addressing those costs does not lend itself to establishing a market auction for allowances/ permits. For one thing, the environmental impacts associated with renewables are usually very specific to the project (land use or noise impacts, for example). Therefore, it makes the most sense to consider any adverse environmental impacts of renewable projects within the RPS selection process itself. This could be accomplished by quantifying those impacts (and associated costs) for each proposed project, and comparing the total cost of each project relative to each other and to the market referent. As mentioned in the paper, the CPUC's adopted market referent is the cost of a natural gas generator, and under the proposed framework the cost of CO_2 allowances would be added to these costs. In this way, the "least-cost, best-fit" projects can be selected while fully taking into consideration the relative environmental costs of the renewable projects under consideration.

Q7. Under what auction method would the value of the CO_2 allowances be determined?

A7. The proposed framework does not specific this level of detail. We recognize that there have been various cap-and-trade auction methods proposed and implemented over the years. We leave to further discussion and exploration what method (or methods) would be appropriate for this particular auction. It should be noted that only four entities (PG&E, SoCal, SCE and SDG&E) would be bidding for allowances across the IOUs' collective service territories, under the proposed framework. If separate annual caps are established for natural gas and electric procurement, then there would be three entities (SCE, SDG&E and PG&E) bidding separately for the allowances for carbon-based electric procurement and three entities (SoCal, SDG&E and PG&E) bidding separately for the allowances for natural gas procurement. This will warrant careful consideration

of auction procedures and other methods to ensure that the cost of allowances is not distorted because of the limited number of bidders.

Q8. Should there be a price ceiling on the cost of allowances?

A8. This is another issue to be addressing in a subsequent implementation phase. Establishing a price ceiling on the allowances would seem to create an arbitrarily low value on emission costs, particularly since it is not clear how that ceiling would be established. However, some cap-and-trade proposals in the literature do include a price ceiling.[2] The pros and cons of price caps should be further discussed along with all the other details concerning the auction procedures. One reason that a cap might be considered is to keep the revenues coming in from allowances (paid by for ratepayers) in balance with ratepayer funding for energy efficiency programs so that there is no increase in rates associated with this framework. (See Figure 2.) However, it is probably unlikely that allowance purchases would exceed half a billion dollars per year. Moreover, even if they did, rates and customer rates and bills would still not increase if the proceeds from the auction were also used to offset program costs associated with renewables and distributed generation incentives, or public interest energy research. Like energy efficiency program funding, these program costs are currently paid for by ratepayers in rates through the public goods charge.

Q9. Does the proposed incentive framework apply to both the core and the non core sectors of the natural gas market, or only the core sector?

A9. The term "core/non-core" refers to the two broad sectors in the natural gas market, resulting from gas industry restructuring efforts in the mid-80s/early 90's. "Core" customers are those for whom the natural gas utility continues to purchase and procure natural gas. "Non-core" customers are generally larger customers who elect to purchase their own gas supplies and arrange the transport of natural gas over interstate pipelines. By definition, the IOU procures natural gas only for core customers (or former noncore customers who have elected to return to the core sector). Therefore, since the procurement incentive framework proposed in the paper applies only to IOU procurement activities, the annual limits on carbon-based energy (and corresponding allowance trading) would apply to procurement activities of the *natural gas IOUs* for their core

[2] See for example, *An Evaluation of Cap-and-Trade Programs for Reducing U.S. Carbon Emissions*, A CBO Study, June 2001, p. 16, and footnote 2.

customers.[3] The annual limits would be based on projections of how much of core demand could be met by optimizing natural gas conservation and energy efficiency, or by undertaking other natural gas demand-reduction efforts.

It should be noted, however, that the use of natural gas for electric generation is a major contributor to the growth of natural gas demand in California.[4] The proposed framework would address this aspect of natural gas usage through the annual limits (and corresponding allowance trading) on the *electric IOUs* procurement of carbon-based generation.

In sum, this framework *directly* applies carbon-based limits to natural gas procurement for core customers and *indirectly* applies those limits to natural gas procured as an input to electric generation for sale to (or use by) IOUs. However, this framework does not address natural gas procurement by non-core customers for their own usage. Whether or not the proposed framework should be modified to address this sector of carbon-based fuel consumption should be considered in the workshops.

Q10. The proposed framework is characterized as an approach to implementing current energy policies, such as the resource loading order articulated in the Energy Action Plan. Aren't there other ways to accomplish these policies?

A10. There very well may be. The purpose of the proposal is to instigate a rigorous dialog over a procurement incentive framework that will be consistent with the Energy Action Plan and Legislative mandates. That dialog should include the consideration of alternative approaches to the cap-and-trade framework proposed in the paper. Some alternatives that come to mind are: (1) a pure "cap" approach to fossil fuel procurement, without any allowances (2) a CO_2 per energy production unit (kWh/therm) standard for the IOUs entire procurement portfolio, and (3) an avoided cost standard for all resource procurement that incorporates CO_2 emission costs, but does not establish those costs through an IOU cap-and-trade auction. The proposal presented in the paper should be discussed along with these alternatives (and others), and their relative advantages and disadvantages should be fully explored in this proceeding.

---

[3] On the electric side, the IOU procures energy for all customers at this time (all customers are "core" customers), so the distinction between core and non-core is currently not applicable to electric utility procurement.

[4] OIR 04-01-025, issued January 22, 2004, p. 17.

(END OF APPENDIX B)