

Electricity and Natural Gas Sector Description For Public Distribution

AB 32 Scoping Plan

August 21, 2008

Introductory Information

Sector Background

The energy sector consists of electricity and natural gas; including electricity generation, combined heat and power, and electricity and natural gas end uses for residential and commercial purposes. Use of electricity and/or gas for industrial purposes, and emissions involved in the extraction, refining, and transportation of fuels are discussed in the “Business and Industry” sector.

1) The location and/or geographic extent of the sector as it would pertain to the Plan

Retail energy providers discussed in this Plan are in-state. Impacted generation facilities included in some of the measures may be located in or out of state. Impacted energy end users are all located within California.

2) Unique considerations or issues with sector

- This sector is unique due to the vital nature of the commodities it delivers to Californians. Electricity and natural gas are considered essential products for daily life of consumers, similar to access to clean water, and unlike other products which may be more discretionary such as consumer items. Therefore, there is little opportunity for substitution of energy provision through other means. In addition, distribution of natural gas and electricity are by definition monopoly services provided by a variety of companies under public oversight. These characteristics heighten the need to ensure thoughtful and careful attention to regulation of these sectors.

Sector Overview

3) Proposed emission reduction pathway for the sector

California has a long history of leading the nation in clean energy and efficiency programs, and has already implemented many regulatory programs to manage energy use and reduce the carbon footprint of the energy sector. These programs include utility energy efficiency, the Renewable Portfolio Standard (RPS), state building and appliance codes and standards, and many other programs. These programs helped California keep per capita electricity use steady (or even declining) for several decades and will continue to be cornerstone of California’s

ongoing efforts to curb greenhouse gases. Energy efficiency has proven to be the most cost effective option to manage energy costs throughout the supply chain from production to consumption. In addition, California has recently implemented the Emissions Performance Standard (EPS) and the California Solar Initiative (CSI).

Our building and appliance codes and standards requirements will continue to ensure that the design and construction of commercial and residential buildings are energy efficient and that electricity end-use consumers can purchase appliances that use minimal amounts of energy and water. The energy agencies have adopted a goal of zero-net-energy usage for new residential buildings by 2020 and new commercial buildings by 2030. Statewide and utility programs will provide the incentives and outreach necessary to show builders and consumers how to reduce their energy usage through cost effective measures.

The state has set a goal of obtaining all cost-effective energy efficiency through a mix of utility and business programs. This goal will have to be met through new programs, incentives, delivery systems and technologies.

The RPS and EPS and other energy programs will continue to chip away at California's greenhouse gas emissions by requiring that California's energy mix continues to include a significant portion of clean energy. Successful implementation will require new large-scale transmission and complementary new generation to make the system reliable.

The Self Generation Incentive Program for Distributed Generation incentives for small combined heat and power projects, and favorable tariffs for renewable distributed generation installations will continue to provide emissions reductions and provide incentives for new projects of these kinds.

By 2020, California will implement new market mechanisms, regulations, and incentive programs that will further curb California's emissions associated with the energy sector. The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) have both adopted broad recommendations to ARB for a multi-sector cap-and-trade program that includes the electricity sector, and are currently going through the process to provide more detailed implementation recommendations. Consideration of an offset market is part of the process.¹

Incentives continue to be an essential component of many of the regulatory demand side programs to encourage consumer reductions in

¹ See CPUC rulemaking R.06-04-009 or CEC docket 07-OIIP-01 for detailed documents in these comprehensive proceedings.

energy use and investment in clean energy systems in order to reduce overall load and emissions from this sector, and to encourage investment in new technologies. California is also looking to market based programs to encourage emissions reductions.

4) The potential for leakage from the sector

The energy sector is vulnerable to emissions leakage resulting from imported power that does not meet the same emissions requirements for power generated within California. This issue has been addressed in existing energy sector programs such as the Emissions Performance Standard (EPS).

The energy sector cap-and-trade program recommendations under development will address leakage issues to ensure that in-state and out-of-state power are treated and accounted for similarly.

Recommendations already made to continue existing programmatic strategies for reducing emissions will help address the leakage issues. In addition, the recommendation adopted by the CPUC/CEC on March 13, 2008 for a “deliverer” method of cap and trade market design for the electricity sector is designed to address leakage from the sector.²

5) Role of local, state, and federal government

The CPUC has clear authority to regulate investor owned utilities (IOUs) and their activities. The public owned utilities (POUs) are largely self-governed but have some Legislative goals related to renewables and energy efficiency. The CEC tracks much of the POU activities related to demand side management and renewable energy purchases. The CA ARB provides air regulation over in-state generation facilities.

The CPUC has the authority to enforce regulatory programs for the IOUs and has done so successfully for programs such as energy efficiency, the RPS, and the EPS. The CPUC has limited authority over direct access retail providers. No agency has clear authority over the publicly owned utilities, although the CEC is largely responsible to track POU activities. The ARB has regulatory authority over air emissions associated with in-state energy generation.

The Public Resources Code requires the Energy Commission to adopt standards for building and appliance energy efficiency. Local government planning and building departments enforce the standards, with support from the Energy Commission.

² See CPUC Decision D.08-03-018.

In the Joint CPUC/CEC recommendations in D.08-03-018, the two Commissions recommend that programmatic requirements for energy efficiency and renewable portfolio standards be applied to all entities that provide electricity to retail consumers in the state, regardless of their regulatory structure. See that decision for more discussion of these issues. Extension of mandatory programmatic targets to some entities by ARB may require statutory augmentation.

The CPUC has plenary regulatory authority over the IOUs. The CPUC has also set IOU incentive mechanisms for many of the regulatory programs such as energy efficiency and the RPS. In addition, in many cases, the CPUC requires compliance filings to ensure that the IOUs are meeting their requirements and goals. For POUs, they are governed locally and no state agency currently has authority to enforce any energy efficiency or renewable targets. The authority may exist under AB 32 for ARB to assert this role, but we have not analyzed this potential in detail. Again, see D.08-03-018 for more discussion of these issues.

The CPUC has existing authority over IOUs to continue existing programs and to introduce new programs as appropriate. Authority over the POUs may be needed to ensure that their goals are met.

Currently, the RPS requirements for all entities are limited to 20% by 2010. The regulatory agencies cannot require provision of renewables by electric utilities in excess of 20% without additional legislation. If a 33% RPS is determined to be an important strategy for meeting AB 32 goals, legislation will be required.

In every legislative session, there are hundreds of bills that address the energy sectors. At this time, it is impossible to tell which proposals are likely to succeed.

6) Public-private interface

No agency holds clear authority over direct access retail providers so their contributions towards reduction goals are largely voluntary and unenforceable, except where specifically required by statute, such as in the RPS. Private merchant generators and marketers are affected by IOU regulatory requirements for power purchases and in-state generators are subject to CARB air pollutant requirements.

The cap and trade program under development is largely meant to encourage private sector involvement to encourage emissions reductions.

Existing RD&D programs, and incentive focused programs are meant to stimulate innovation and adoption of new technologies. Many of the renewable and energy efficiency programs provide venues for public-

private collaboration as does the development of the building and appliance codes and standards.

7) Interaction with other sectors

Energy overlaps and interacts with most other sectors of the economy, because most businesses use energy to produce their products. There are a number of key areas of interaction that have been recognized in the structure of the Climate Action Team subgroups and other policy actions to date. These are:

- Water-energy interactions. As has been widely noted, the pumping, treatment, and conveyance of water to consumers in California are extremely energy intensive. The State Water Project alone is the single largest electricity consumer in the state. The relevant agencies (DWR, SWRCB, CEC, CPUC, and ARB, are working together to identify policy options for addressing this issue.
- Energy-transportation interactions. Electricity and natural gas represent two alternative fuels for the transportation sector that are less GHG-intensive than gasoline or diesel use. Opportunities may exist for significant penetration of alternative-fueled vehicles that increase energy-related emissions while reducing overall emissions.
- Energy-forestry or energy-agriculture interactions. Opportunities exist to use biomass from forests or agricultural waste for electricity production. In addition, in some cases methane can be captured for direct injection into natural gas pipelines.
- Energy-waste management interactions. Electricity can also be generated from landfill gases.
- Energy-land-use interactions. The way land-use planning and decision-making are done in California can have profound implications for electricity and natural gas usage.
- Energy-green-building interactions. Green building initiatives for commercial construction and retrofits have impacts on electricity and natural gas use.

8) Integration with regional, national, or global programs

Existing regulatory programs have shown significant leadership. Many of our energy efficiency, renewable energy, building codes and standards requirements, and the EPS have been adopted by other states. Central to the cap-and-trade programs currently being developed for consideration is linkages with other states, nationally, and internationally. This effort is also being coordinated with the Western Climate Initiative.

The recommendation for a cap and trade system to include the electricity sector in D.08-03-018 and to include the deliverer as the point of regulation was recommended specifically because of its expandability to a

regional or national approach. See the decision for more discussion of this issue.

9) Consideration of longer-term goal for 2050

The energy sector programs are designed to provide incentives and market pressures to move to the next generation(s) of technology and to encourage behavioral changes needed to meet the 2050 goal.

Emission Reduction Strategies

10) Description of the sector's emission reduction approach

The CPUC and the CEC recommend that the ARB adopt a number of policies and requirements for GHG emissions reductions from the electricity and natural gas sectors in California.³ These recommendations should be adopted as part of ARB's scoping plan for its further work in implementing Assembly Bill (AB) 32, which requires that statewide GHG emissions be reduced to 1990 levels by 2020.

In particular, we recommend that ARB adopt a mix of direct mandatory/regulatory requirements for the electricity and natural gas sectors and a cap-and-trade system that includes the electricity sector. We recognize that, under AB 32, ARB has the ultimate responsibility to determine the appropriate design and mix of mandatory and market-based programs to reduce GHG emissions, as prescribed in the law. We also recognize that, prior to adopting any market mechanisms, ARB must find that such mechanisms meet the tests outlined in Part 4 and Part 5 of AB 32.

Our task is to give ARB our best formulation of approaches to the electricity and natural gas sectors so that they may be evaluated along with other options for regulating California GHG emissions. We expect that ARB will fulfill the requirements of Part 4 and Part 5 of AB 32 with our advice and recommendations in mind.

We also recommend that implementation of all aspects of our recommendations to ARB regarding mechanisms to ensure real GHG reductions in the electricity and natural gas sectors should be regularly monitored and enforced, with mechanisms built in for monitoring, rapid identification of problems, and tools to react to, correct, or penalize non-compliance.

In addition, we continue our commitment to work in collaboration with other states and provinces in the Western Climate Initiative to design a cap-and-trade system for the West. The timeframe set for the Western Climate Initiative to agree on a design framework and principles is quite similar to ARB's AB 32 timeframe. Thus, we are confident that we can develop our California policies to

³ These recommendations and additional detail are included in CPUC Decision 08-03-018.

be compatible with a regional cap-and-trade system and in cooperation with our partners in the Western Climate Initiative.

11) How were emission reduction measures developed or evaluated?

The measures were developed through a public processes at the CPUC and/or CEC. In addition, the Legislature requires many of the measures such as the EPS, CSI, and the RPS. Note that in the case of almost all of the measures identified, the CPUC and/or CEC has a separate proceeding and stakeholder process associated with each measure. In most cases, these are ongoing and/or periodic proceedings designed to manage these measures and policy initiatives. Some programs, such as energy efficiency, have specific cost effectiveness tests and evaluation, measurement, and verification requirements. The CPUC and CEC cap and trade program recommendations will have final consideration by ARB. ARB is holding public meetings that include discussion of this option.

Measures included in the Scoping Plan are those currently underway or approved, those required by the Legislature, and those identified as promising but needing further consideration and review.

Many of the measures have met cost effectiveness tests and/or been identified as components of an economically and environmentally balanced energy portfolio. The measures are currently undergoing a modeling process subject to public participation that will provide additional information for some measures. More information was presented by Energy and Environmental Economics (E3) under contract to the CPUC, and is available in the record of proceeding R.06-04-009.

12) Ensuring real, permanent, quantifiable, verifiable, and enforceable reductions

Energy usage reduction (MWhs and therms) and low- or zero-GHG energy production will be the primary measurement to ensure that AB 32's goals are met. GHG emissions from the sectors will be reported according to ARB's mandatory reporting regulations. In most cases, GHG emissions from in-state power production can be measured directly; emissions associated with imported power will have to be estimated based on best-available data. For natural gas combustion, emissions can be estimated directly based on sales of natural gas to consumers.

The CPUC typically requires verification of compliance with regulatory requirements for IOUs and also has enforcement capabilities, largely through incentives and penalties. Similar requirements should be put in place for other retail providers that are subject to Scoping Plan requirements. POUs are required to report to the Energy Commission annually on the status of their energy efficiency programs (AB 2021, Statutes of 2006) and RPS programs (SB 107, Statutes of 2007).

In the case of IOU regulatory programs failing to achieve expected results, program modifications can be made or more aggressive requirements could be implemented. In the case of cap and trade, total reduction requirements could be increased through a variety of programmatic design changes.

Demand side programs such as energy efficiency and conservation not only reduce emissions but also result in reduced bills for customers participating in such programs as well as reduced infrastructure investment costs. Energy efficiency continues to be the most cost effective of the options with a host of co benefits for the ratepayers and for the environment.

Both energy efficiency and renewable energy programs have resulted in new industries that are developing technology and expertise to manage this growing area of interest to consumers of all sizes.

13) Early Action Measures, Discrete Early Action Measures, CAT Early Action Measures

The Energy Sector measures that were considered CAT Early Action Measures because they were already underway include: Building standards, appliance standards, IOU energy efficiency programs, IOU 20% RPS requirements, the California Solar Initiative, SGIP program, and the EPS.

14) Public Solicitation Measures

Measures submitted through the ARB's public solicitations were either already included (solar hot water heating, water energy issues) or have been added as measures (biomethane).

Most of the measures in the ETAAC report are in the Energy Action Plan such as energy efficiency, 33% RPS, distributed generation, combined heat and power, solar initiatives, and carbon capture and storage.

- *ETAAC recommends CPUC involvement in the following additional activities and/or strategies:*
 - Industrial, Commercial, and Residential Energy Use:
 1. Reinstigate direct access. ETAAC believes this will enable customers to increase their clean electricity purchases beyond the current RPS levels.
 2. Expand utility load reduction rebates to include such technologies such as solar refrigeration and energy storage technologies.
 - Electricity and Natural Gas Sectors:
 1. LED energy efficiency programs. Because LED technology suitable for general illumination is estimated to be several years away from full commercial status, ETAAC's suggests

- that the California Institute for Climate Solutions conduct much of the RD&D to bring these technologies to fruition.
2. Competitive Renewable Energy Zones. Establish geographic areas throughout the state to be developed for clean energy resources.
 3. Smart Grid Technology for renewables and clean vehicles. Grid should be developed to include two-way flow energy and data in order to allow customers to respond to price signals.

We appreciate ETAAC's identification of new measures and potential for specific technologies. Many of their recommendations would be considered as part of the RD&D efforts associated with energy efficiency, renewable energy, and the transportation sector. The CPUC also expects to develop long-term plans in coordination with other agencies to ensure aggressive energy sector contributions to the 2050 targets.

We anticipate that the energy sector will continue to make significant investments in clean energy resources and energy efficiency investments. The CEC and CPUC are still in the process of analyzing the reductions that can be cost-effectively delivered from the sector as a whole.

15)Public health effects—Effects on air quality

While we have not addressed criteria pollutants or toxic emissions in our program development in detail, these measures will likely result in decreased overall emissions since the focus is on demand side reductions and clean energy investments that would be made in place of traditional fossil fuel facilities.

16)Environmental justice impacts

We have not directly addressed health or economic effects on low income communities. However, many of our programs have components specifically targeted to benefitting low income communities and customers. Rates are reduced for low income customers. Energy efficiency and the CSI program both have programs designed for low income customers. In addition, we anticipate the design of a cap and trade program will include elements to ensure low income communities and their concerns are addressed.

The CPUC has multiple opportunities for public comments, both written and oral, in its decision making process. Similarly, the CEC has multiple venues for public participation. All of our decisions are informed by an extensive public process that affords opportunities for both written and oral comments.

Summary and Conclusions

The bedrock of an emissions reductions strategy will consist of (1) energy efficiency in buildings and appliances and (2) new renewable energy, to serve both future growth and retirement of older, fossil-fired resources. A second level

of the strategy will consist of building the necessary supporting transmission and clean, non-renewable generation.

Furthermore, there are cost-effective technologies available today, and innovative research is constantly adding to the pool of options. In fact, part of the energy strategy is to foster development of new low carbon commercial opportunities. Inclusion of this sector in a regional or national cap-and-trade system, together with appropriate mandates and incentives, can provide the impetus needed to get these technologies into the hands of consumers and transform the energy sector.

California can serve as a model for the nation by demonstrating that dramatic greenhouse gas reductions are not only possible, but can also be accomplished without economic upheaval. To date, our clean energy programs have largely been instituted through regulations implemented by the CEC and CPUC. A cap and trade program is intended to foster a vibrant carbon market which will create strong economic incentives for generators and purchasers of electricity to reduce their carbon footprint above and beyond regulatory measures. Indeed, we believe that California's market system will create economic efficiencies that are currently not present, and many companies will identify opportunities to lessen their carbon footprint while increasing their bottom line. Finally, forward-thinking companies, many no doubt in California, will find that their technology innovations can be exported to other states and nations, thereby creating economic benefits that will ripple through the economy.