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South Coast Air Quality Management District

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BOARD MEETING DATE: July 8, 2011

AGENDA NO. XX

PROPOSAL: Proposed AQMD Energy Policy

SYNOPSIS: The Board directed staff to develop an energy policy to integrate air quality, energy security, and climate change issues in a holistic manner. Staff has developed a draft policy for the Board's consideration and has prepared this Board letter to provide additional background information.

COMMITTEE: Stationary Source, June 17, 2011

RECOMMENDED ACTIONS:

Adopt the attached resolution: AQMD Energy Policy

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Executive Officer

EC:PF:AK

Background

At last year's Board retreat, staff suggested the need for an integrated strategy to address diverse environmental objectives, such as attaining the health-based air quality standards, addressing environmental justice issues at the community level, achieving goals in California's Global Warming Solutions Act AB32, meeting the State Water Resources Control Board's regulation for Use of Coastal and Estuarine Waters for Power Plant Cooling CWA 316(b) (once-through-cooling), and meeting SB375 goals of integrating land use and transportation planning. Staff's presentation showed that zero

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and near-zero emission technologies, such as electrification, supported by greater applications of energy efficiency and renewable energy generation could be a significant strategy to address all the environmental objectives identified. The Governing Board then recommended developing a white paper that would lay out the AQMD's vision for integrating energy and air quality issues. To that aim, a brochure titled *Powering the Future – A Vision for Clean Energy, Clear Skies, and a Growing Economy in Southern California*, jointly prepared by AQMD, CARB, and SCAG was released late in May 2011.

Promoting zero and near zero emitting technologies is needed to achieve air quality standards within the Basin. As outlined in the 2007 AQMP, in order to meet the 1997 ozone standard of 80 ppb, an additional 67% of NO_x reductions are needed beyond all regulatory actions as of 2010; these needed reductions are shown as the “black box” area in Figure 1. To meet the more recent 2007 ozone standard of 75 ppb, an additional 75% of NO_x reductions are needed. Currently the U.S. EPA is reconsidering the 2007 ozone standard and is expected to finalize its decision by July 31, 2011, with a revised standard between 60 and 70 ppb. The lower standard will call for NO_x reductions of 90% beyond current regulatory actions.

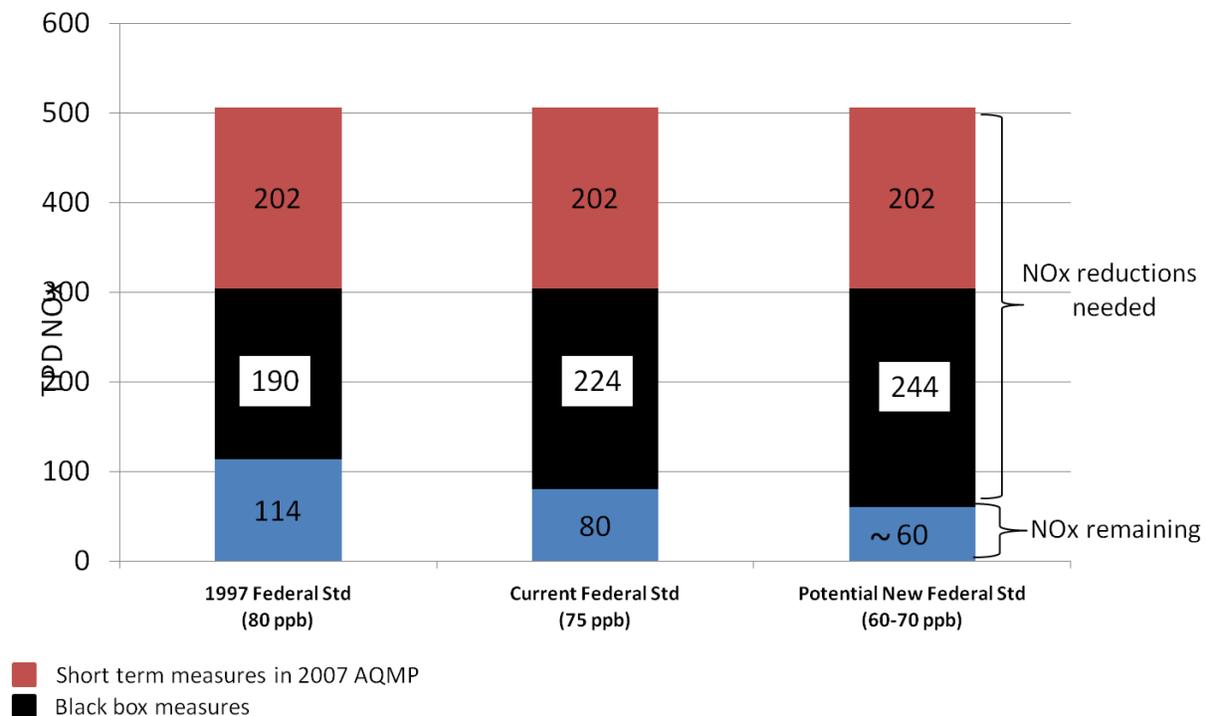


Figure 1: NO_x emissions and 8-hour federal ozone standards.

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The majority of NO_x emissions in the Basin derive from the transportation sector. It is therefore, necessary to find these reductions through technology improvements from this sector. While hybrid electric vehicles (HEV) and electric vehicles (EV) are expected to have significant market penetration in the next decade, this will require additional electricity infrastructure and generation. To address these environmental objectives and upcoming infrastructure needs, the Board at its March 2011 meeting, directed staff to develop an energy policy for their consideration that integrates air quality, energy security, and climate change issues in a holistic manner. The draft AQMD Energy Policy (Attachment A) incorporates these issues and will guide AQMD staff efforts in integrating energy usage planning with air quality issues.

Guiding principles and actions in the proposed AQMD Energy Policy are designed to complement other existing AQMD programs, policies, initiatives, and guiding principles. The AQMD Energy Policy is not a regulatory mandate such as the CEC Integrated Energy Policy Report (IEPR) nor, upon its approval by the Governing Board, will it be treated as regulation. The draft AQMD Energy Policy is formatted to provide information on current energy usage in the Basin, then a list of policies to guide AQMD efforts, and lastly a list of actions to be undertaken to support the policies. The following summary provides additional information and background on the AQMD Energy Policy.

Energy Usage

In developing the Energy Policy, it was necessary to assess the current energy usage within the Basin by energy type. This provided a detailed picture of energy usage, associated costs, and in-Basin emissions by each end use fuel type. For this analysis, the year 2008 provided the most recent year of energy data that could be obtained to provide the most complete picture of in-Basin energy usage. Electricity is considered an end-use energy type and is mostly imported into the Basin with the majority of in-Basin generation coming from natural gas-fired power plants. In 2008, close to 50% of total in-Basin energy consumption was attributable to the transportation sector, represented by diesel and gasoline, Figure 2. On a per capita basis the consumption of gasoline within the Basin is similar to the rest of the United States but overall per capita energy consumption is much less, Figure 3. This is in part due to efforts taken in California that have increased energy efficiency faster than the national level and also represents the milder climate in Southern California.

Due to a long history of stationary source controls, the sheer volume of vehicle usage and the slow rate of fleet turnover, the transportation sector accounted for 90% of in-

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Basin NOx emissions in 2008, Figure 4, and over 50% of the CO₂ emissions, Figure 5. In the context of air toxic pollution, diesel fuel used by the transportation sector contributes to approximately 98% of toxicity-weighted emissions in the Basin, Figure 5. A side by side comparison of energy usage within the Basin shows a disproportionate contribution of the transportation fuels to NOx and CO₂ emissions, and associated toxicity, Figure 7.

The current energy consumption in the Basin also comes with a significant price tag. In 2008, \$45 billion dollars was spent on fossil fuel usage within the Basin and the associated health cost from adverse air quality was estimated to be \$22 billion, primarily from the usage of transportation fuels. The compiled information in this review will be updated during each Air Quality Management Plan (AQMP) to track the progress of Basin energy usage.

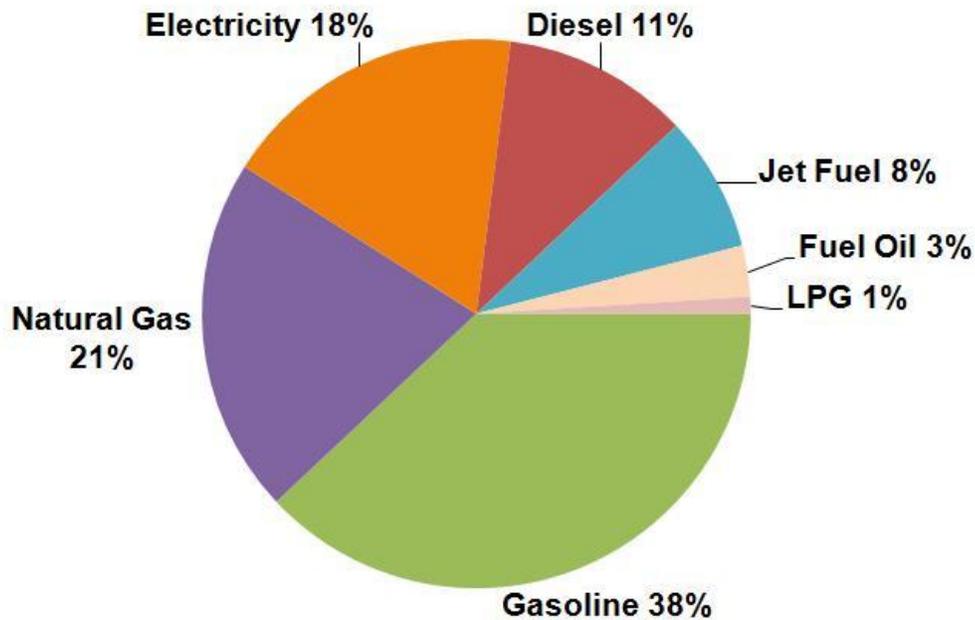


Figure 2: In-Basin energy consumption in 2008 by fuel type (total energy consumption is 2.2 quadrillion BTU).

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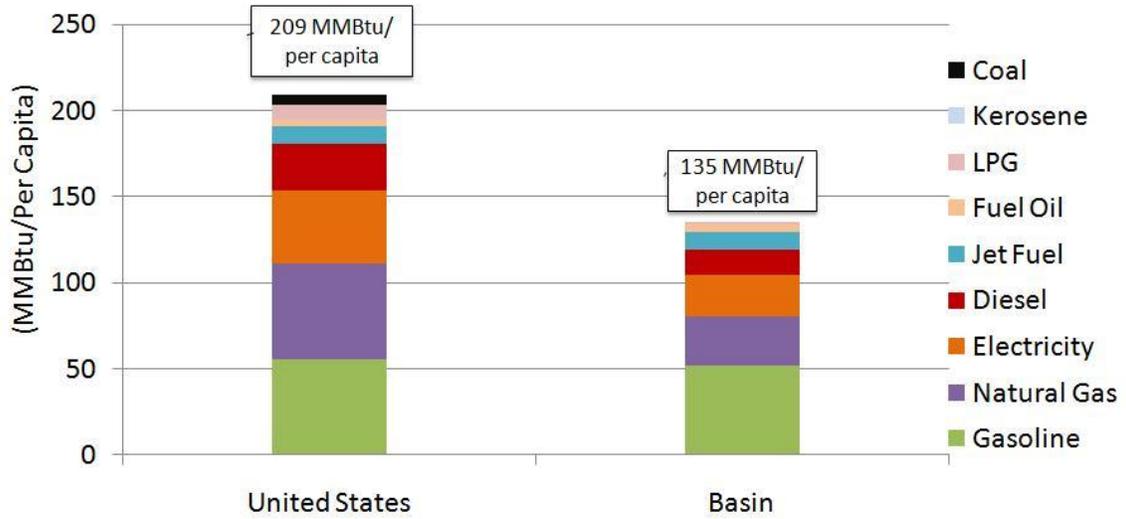


Figure 3: Per capita comparison of energy consumption within the Basin relative to overall United States.

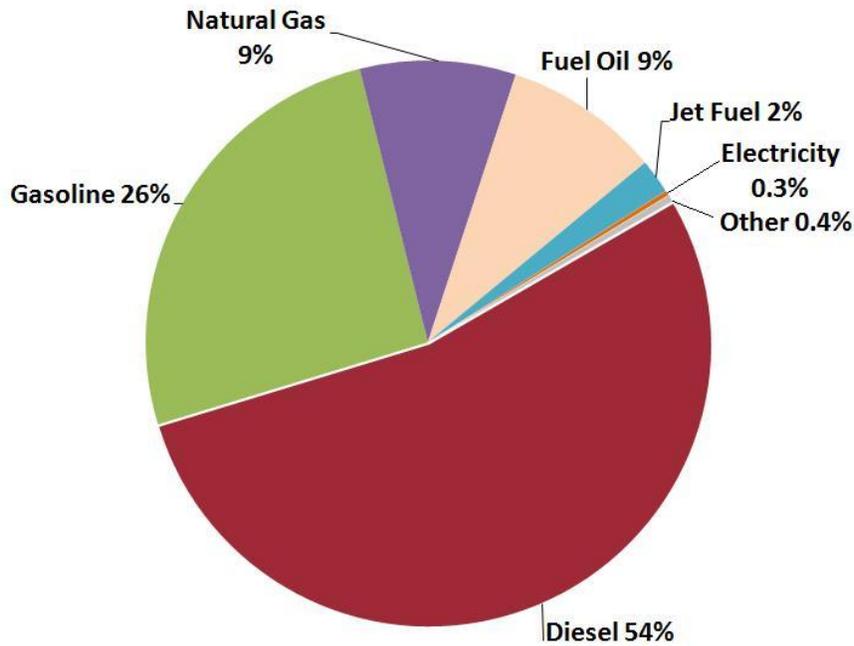


Figure 4: In-Basin NO_x emissions by fuel type in 2008 (Total NO_x is 860 TPD)

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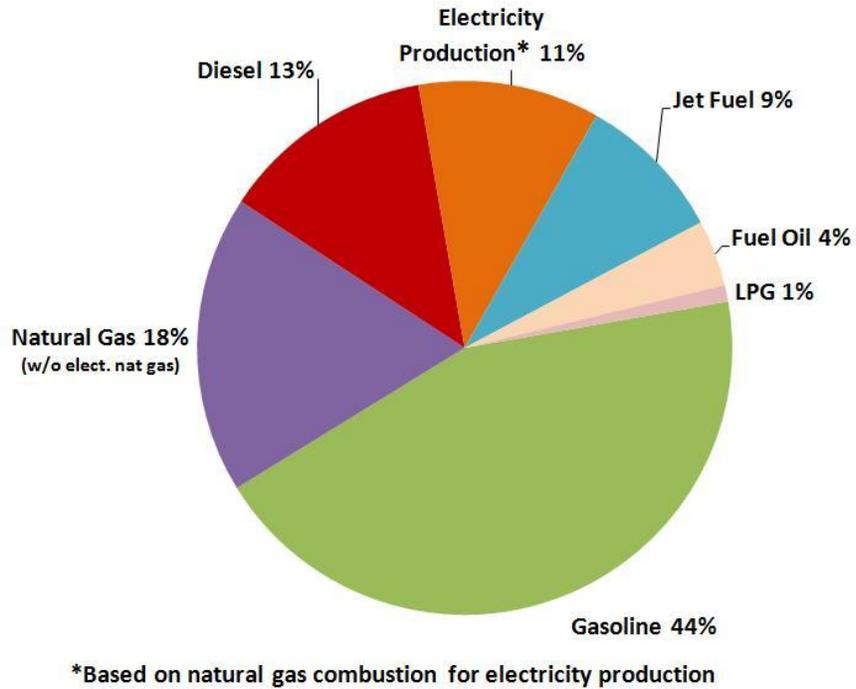


Figure 5: CO₂ emissions within the Basin in 2008 (Total = 135 MMT).

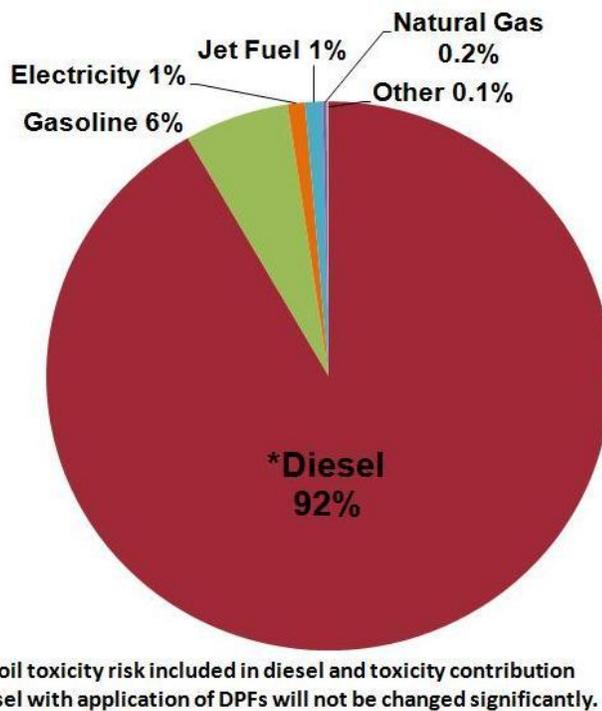


Figure 6: Toxicity weighted by fuel type for 2008.

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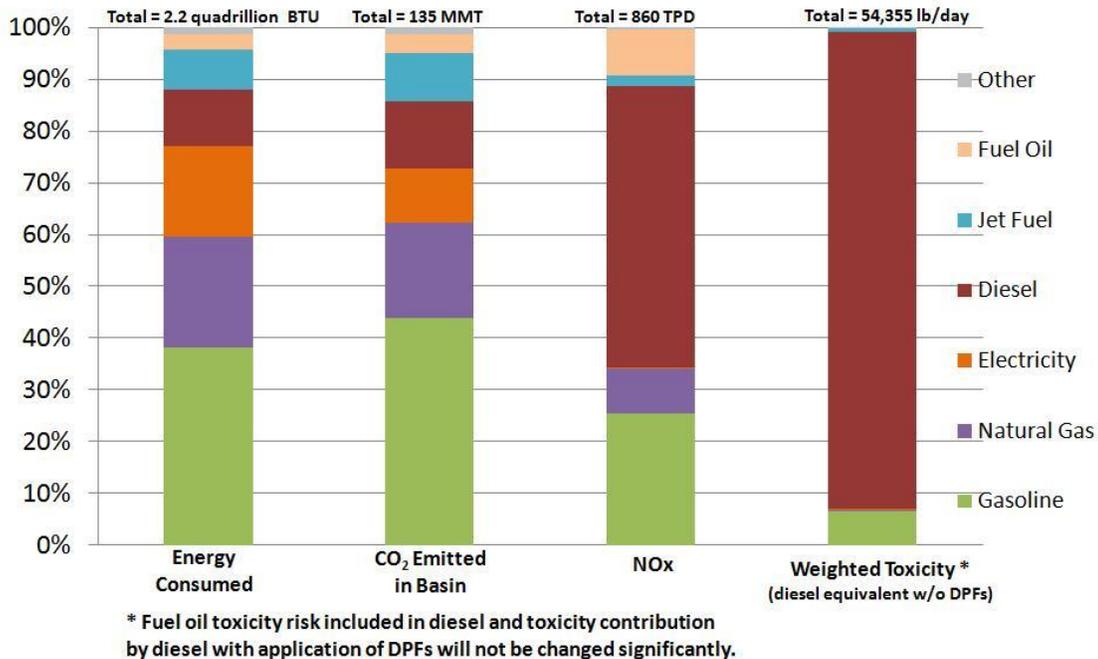


Figure 7: Comparison of year 2008 Basin energy consumption and corresponding emissions by fuel type.

Policies and Actions

The following energy policies are intended to provide general guidance to ensure an efficient, diverse, clean, and cost effective implementation of decisions and actions made by AQMD in each policy area. Each policy has related actions and is categorized into the following sections.

Integration of air quality, energy security and climate change objectives through promotion of zero and near zero emission strategies. Electrification of certain technologies can provide a means of achieving a zero emission or ultra-low emitting strategy. In many instances, electrification provides efficiency gains over traditional fossil fuel usage and helps provide energy security, some isolation from variability in fossil fuel prices, and localizes the dollars spent on energy. Electrification is not always the most efficient, technically feasible, and/or economical application; other ultra clean low emitting energy strategies will also be promoted and considered. Studies will be conducted to better understand which electrification and ultra-low emitting technologies can be incorporated in a cost effective and efficient manner, while also determining the additional capacity needs for implementing these technologies. The studies will also

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examine the potential benefits and/or impacts on ratepayers, especially small businesses. In combination with these studies, an action plan will be developed to implement electrification and near-zero emission technologies.

Within the transportation sector, hybrid electric and fully electric vehicles are rapidly becoming available and are demonstrating the much greater efficiencies that can be achieved over standard fossil-fueled combustion. The AQMD will seek faster implementation of these clean transportation technologies within the Basin by studying effective ways to provide funding mechanisms and incentives to support electrification of the transportation sector. The AQMD will also work with stakeholder working group(s) to standardize charging station installations at commercial and residential buildings as well as to develop an appropriate electricity rate structure for HEV/EV recharging. These efforts will expand the needed infrastructure by incentivizing electric vehicle charging availability.

Electricity demand within the Basin is going to increase as the transportation sector and other areas become more reliant on electricity. The promotion of demand side management programs will minimize the need for additional generation capacity through helping promote energy efficiency/conservation efforts and load-shifting measures. The better handling of variability in loads through implementation of new grid management programs will better utilize existing capacity. The AQMD Energy Policy advocates load shifting measures such as off-peak vehicle charging rate structure.

Energy Supply. Demand side management programs will reduce the need for additional electricity generation capacity. Some effective programs such as efficiency rebate programs and promoting off peak usage have already reduced overall electricity demand. As additional energy supplies are needed, promoting in-Basin renewable distributed generation will provide a clean source of power while avoiding emission tradeoffs between end-use combustion and power generation. Increasing distributed generation reduces the need for new central power plants. This also minimizes the need for additional transmission lines and associated infrastructure such as transformers and substations. The benefit of distributed generation helps minimize land use changes associated with large wind or solar power production and distribution.

Renewable distributed generation also provides an efficient transfer of power from supply to source by minimizing transmission line losses. Other benefits include providing a diverse portfolio of power generation, thus making electricity prices less dependent upon fossil fuel prices. Power generation from sun and wind has intrinsic variability that requires fossil fuel powered generation to smooth fluctuations and

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provide grid stability. Through promoting and studying electricity storage technologies, the generating variability associated with renewable power can be minimized, and system loads can be better met independent of production. In addition, the variability from sun and wind generation may also be coupled with another renewable resource such as biogas. Using biogas to produce power provides a unique opportunity due to the many different available sources available throughout the Basin. The usefulness and potential of biogas for power generation and as a fossil fuel replacement in other combustion processes will be further developed and demonstrated to ensure that criteria pollutants and air toxics from biogas combustion are minimized.

Recognizing new fossil fueled power plants will still be needed to complement renewable energy production and to implement requirements under the once through cooling requirements, AQMD will rely upon the existing state processes such as AB1318 and local POU commissions to determine regional fossil fuel power and capacity needs and with the type of generation needed (i.e. combined cycle or simple cycle). The AQMD will continue to ensure new fossil fueled powered electrical generating capacity in the Basin is the cleanest and most efficient through Best Available Control Technology (BACT) determination; the AQMD Energy Policy is not developing a new set of guidelines beyond BACT. In addition, the AQMD will continue to advocate maximizing cost effective mitigation in the surrounding communities that are potentially affected from the siting of new or repowered fossil-fueled power plants with increased emissions. This will continue to be done through discussions with the project proponent during the design phase and/or through CEQA commenting.

Educate and Incentivize. Consumer participation is essential to the success of this zero and near-zero emission strategy. Consumer choice can drive the market demand for zero or near zero emitting products as full implementation of this strategy cannot completely rely on regulatory actions. Educating the public on available clean efficient technologies and energy conservation will provide for cleaner air, cleaner water, and economic benefits. Partnering and participating in proceedings with local utilities and local government stakeholders will help with education, outreach, and also provide avenues for publicizing available incentives.

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Public Process

A public consultation meeting was held on April 27, 2011 to solicit input on the draft policy. Close to three dozen people attended the first meeting and provided comments. Comments were incorporated as they were received, and the revised draft AQMD Energy Policy was discussed at the Board Retreat on May 19, 2011 and a second public consultation meeting on June 9, 2011. *Comments received after the governing board retreat, the second public consultation meeting, and at the June 17, 2011 Stationary Source Committee will be incorporated prior to presenting the final draft at the July 8, 2011 Board meeting for consideration.* Upon approval of the AQMD Energy Policy, staff will report progress of the actions within the policy to the appropriate governing board and committee meetings.

A summary of the comments received to date are listed below:

Comment	Staff response
CONTENT	
<ul style="list-style-type: none">• Is the AQMD establishing a needs analysis in the Energy Policy for new power plants?	<ul style="list-style-type: none">• The AQMD is not establishing a regulatory mandate prior to building new power plants.• Needs for new power generation will be addressed by the ongoing AB1318 study and/or public owned utilities.
<ul style="list-style-type: none">• Does cleanest & most efficient fossil fuel technology preclude certain generation techniques such as simple cycle.	<ul style="list-style-type: none">• Staff will not use permitting to determine whether a single or combined cycle turbine will be used. Existing guidelines for BACT determination will be followed to ensure that whatever technology is used, it will be the cleanest possible with consideration for energy efficiency.

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<ul style="list-style-type: none"> • Converting to electrification is not always the best most efficient technology. 	<ul style="list-style-type: none"> • Includes zero and ultra low emitting technologies in the Energy Policy and does not prejudice any future technology. • Studies will be conducted to identify which applications of electrification or low emitting systems provides the greatest benefit.
<ul style="list-style-type: none"> • Will the Energy Policy establish a new regulatory review additional to CEQA? 	<ul style="list-style-type: none"> • No. • AQMD will discuss with project proponents during design and/or CEQA commenting to advocate maximum cost effective mitigation in the affected community.
PROCESS	
<ul style="list-style-type: none"> • More details describing the background on why the Energy Policy was developed and what the AQMD will use it for. 	<ul style="list-style-type: none"> • Prepared Board letter to include more details and background information
<ul style="list-style-type: none"> • More time is needed for public input 	<ul style="list-style-type: none"> • AQMD Governing Board approval was delayed until July meeting. • A second public consultation meeting on June 9, 2011 was added. • Presented Energy Policy at June Stationary Source Committee
<ul style="list-style-type: none"> • There should be more support for biogas 	<ul style="list-style-type: none"> • New action item for biogas added

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CEQA Applicability

The proposed AQMD Energy Policy is not required by law or any other regulatory agencies. Further, the action taken by the Governing Board does not constitute adoption or funding and, therefore, has no legally binding effect on any later activities. Consequently, the AQMD Energy Policy does not constitute a project, thus, no CEQA analysis is required. Action items in the Policy are, in effect, voluntary advocacy positions or planning studies for possible future actions. Therefore, the AQMD Energy Policy is exempt from CEQA pursuant to CEQA Guidelines §15262 – Feasibility and Planning Studies.

Socioeconomic Impacts

Socioeconomic impact assessments will be conducted as specific programs or work products are developed from actions listed in the AQMD Energy Policy.

Resource Impacts

Many of the actions outlined in the Energy Policy are part of AQMD's ongoing activities. There will be actions that may require additional resources such as outside technical consultant assistance, under which circumstances staff will bring these items before the Board for separate approval with public input.

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Attachment A

Draft AQMD Energy Policy

A Resolution of the Governing Board of the South Coast Air Quality Management District (AQMD) approving the AQMD Energy Policy.

WHEREAS, the Governing Board has directed staff to develop an Energy Policy to integrate criteria and toxic air contaminants, greenhouse gases, and energy issues to ensure clean air and a healthy economy;

WHEREAS, the Energy Policy will complement policies, guiding principles, and initiatives previously adopted by the Governing Board (i.e., Environmental Justice Guiding Principles and Initiatives, Climate Change Policy);

WHEREAS, the total end use energy consumption in 2008 within the Basin was 2.2 Quadrillion BTU (or 2.2 billion million BTU), with 82 percent from fossil fuels and 18 percent from electricity;

WHEREAS, of the total 2008 fossil fuel use, gasoline accounts for 38 percent (6.7 billion gallons), natural gas accounts for 21 percent (460,000 MMscf), diesel accounts for 11 percent (1.7 billion gallons), and other fuels (jet fuel, residual fuel, propane) account for 12 percent (2 billion gallons);

WHEREAS, the total electricity consumption within the Basin was 113,200 GWh (or 113,200 million kWh) in 2008, of which 30 percent was generated in Basin;

WHEREAS, the electricity generation capacity within the Basin currently online is an estimated 16,600 MW with over 85 percent from fossil fuels and less than 2 percent from renewable energy (i.e., solar, wind, biogas);

WHEREAS, the total NO_x emissions contribution from all energy types in the Basin during 2008 was 860 tons per day with 54 percent from diesel, 25 percent from gasoline, 9 percent from natural gas, 9 percent from residual fuel oil, 3 percent from other fossil fuels, and 0.3 percent from electricity production;

WHEREAS, the total direct CO₂ emissions contribution from all energy types in the Basin in 2008 was 135 million metric tons per year with 40 percent from gasoline, 22.5 percent from natural gas, 13 percent from in-Basin electricity generation, 11.5 percent from diesel, and 13 percent from other fossil fuels (jet fuel, residual fuel, propane);

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WHEREAS, the toxicity weighted emissions contribution from all energy types in the Basin in 2008 was 92 percent from diesel (without particulate traps and will be 88 percent once diesel particulate traps are in place for trucks and ships, includes fuel oil), 6% from gasoline, 1% each from electricity (burning natural gas) and jet fuel, 0.2 percent from natural gas and 0.1 percent from other fossil fuels;

WHEREAS, Executive Order S-3-05 was signed in 2005 and set targets for reducing greenhouse gas emissions to 1990 levels by the year 2020, and to 80 percent below 1990 emission levels by the year 2050;

WHEREAS, California passed SBX1-2 in April 2011 that will require utilities in California to increase the supply of electricity produced from renewable energy sources to 33 percent by the year 2020;

WHEREAS, total regional annual expenditure on fossil fuels within the Basin in 2008 is \$45 billion, of which petroleum (transportation fuels) accounts for 81 percent of this expenditure;

WHEREAS, total regional costs due to poor air quality were estimated to be \$22 billion per year based upon averaged air quality data from years 2005 to 2007; and

WHEREAS, 67 percent and 75 percent NO_x reductions beyond currently adopted regulations (as of 2010) are needed to meet the 1997 and 2008 federal ozone standards, respectively.

NOW, THEREFORE, BE IT RESOLVED, that the Governing Board directs staff to implement the following Policies:

- Promote zero and near zero emissions, through electrification and other ultra clean energy strategies, (including energy conservation/efficiency), to meet air quality, energy security, and climate change objectives;
- Promote electro-technologies and other near-zero technologies in both stationary and mobile applications to the extent feasible;
- Promote diversification of electricity generation technologies to provide reliable, affordable, cleanest, and sustainable electricity supply for the Basin in partnership with local power producers;
- Promote demand side management programs to manage electricity demand growth and to reduce the need for additional capacity. Such programs include,

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but are not limited to, energy conservation/energy efficiency and load-shifting measures;

- Promote in-Basin distributed renewable generation as part of sustainable community development to reduce reliance on imports or central power plants, and to minimize generation carbon footprint and cross-media environmental impacts;
- Promote electricity storage technology to improve the supply reliability and availability of renewable technologies;
- Require any new/repowered in-Basin fossil-fueled generation power plant, if deemed necessary by CARB, CEC, PUC, and ISO, or the governing board of a publicly-owned electric utility, as appropriate to be the cleanest and most efficient technology for the application ;
- Advocate maximum cost effective mitigation in the communities affected by emission increases resulting from the siting of new or repowered fossil-fueled power plants;
- Educate and incentivize the public to shift toward lowest emission technologies in personal choice; and
- Incorporate energy efficiency via AQMD's rule-making activities, advocacy, and CEQA commenting function.

BE IT FURTHER RESOLVED, that the Governing Board directs staff to implement the following Actions:

- Advocate for and/or support detailed technical studies to identify viable electrification technologies and associated electric energy and capacity needs to support an electrification strategy for the Basin;
- Conduct appropriate socioeconomic studies to identify the societal costs and benefits for implementing an electrification strategy, including but not limited to, small business impacts;
- Develop an action plan to develop and deploy electrification and near-zero emission measures for various sectors;

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- Conduct studies to identify measures to incentivize early introduction of electrification and near-zero emission measures and potential new transportation funding mechanisms to support substantial electrification in the transportation sector;
- Further develop and demonstrate technologies to maximize the use of biogas;
- Actively participate in CEC, PUC, and CARB proceedings to promote policies and regulatory actions that are consistent with the AQMD Energy Policy;
- Convene a stakeholder working group including, but not limited to, the building industry, local fire departments and building departments, and utilities, to develop a standardized specification for electricity recharging installation for residential and commercial building applications to facilitate greater plug-in electric vehicle (PEV) market penetration;
- Advocate a separate electricity rate structure that incentivizes off-peak charging for PEVs through the Statewide PEV Collaborative which is comprised of CEC, PUC, CARB, local air districts and utilities while being sensitive to potential impacts on rates for existing customers;
- Partner with local utilities and local government stakeholders to promote energy conservation/efficiency through local actions (i.e., building codes, zoning requirements, and incentive programs); and
- Compile and track energy use and supply profiles within the Basin in conjunction with each Air Quality Management Plan update.

BE IT FURTHER RESOLVED, that the Governing Board directs staff to periodically report progress (at least once a year) in implementing this policy to the appropriate Board committees.