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DATE: January 21, 2010

TO: SJVUAPCD Governing Board

FROM: Seyed Sadredin, Executive Director/APCO
Project Coordinator: Scott Nester

RE: **APPROVAL OF THE DISTRICT'S REGIONAL ENERGY EFFICIENCY STRATEGY**

RECOMMENDATION:

Approve the District's Regional Energy Efficiency Strategy (REES) with the following goals and actions:

Goals:

1. Provide District expertise and resources to develop energy efficiency programs and strategies that maximize emissions reductions in the San Joaquin Valley.
2. Pursue funding opportunities for research and energy efficiency projects throughout the Valley.
3. Provide material assistance to Valley entities seeking grant assistance, and provide leadership in coordinating advocacy efforts at the state and federal level to ensure that the Valley receives its fair share of energy efficiency funding.
4. Establish strong partnerships with energy agencies, municipalities, utilities, and other stakeholders in order to inform and educate residents, businesses, and communities as to energy efficiency opportunities.
5. Make every effort to understand and accommodate the existing roles of partners to ensure that there is no duplication of efforts related to energy efficiency.

Actions:

1. Pending an award and contract with the California Energy Commission (CEC), oversee the administration of \$4.9 million in State Energy Program (SEP) grant funds to develop the Saving Energy Efficiency Dollars (SEED) comprehensive

residential retrofit program for the counties of Kern, Fresno and San Joaquin. Present the contract for your Board's authorization upon CEC approval, tentatively expected to occur March 18, 2010. Consider similar opportunities with other Valley jurisdictions upon request by those jurisdictions.

2. Pending award and contract with the CEC, oversee the administration of \$4 million in ARRA Energy Efficiency and Conservation Block Grant funds for small jurisdictions in the San Joaquin Valley. Present the contract for your Board's authorization upon CEC approval, tentatively expected to occur March 18, 2010.
3. Incorporate an energy efficiency element in the District's Healthy Air Living outreach initiative to encourage businesses and municipalities to design and implement energy waste minimization efforts similar to that adopted by the District (See Attachment A).
4. Develop a comprehensive informational and educational website that will allow users to easily access programmatic information related to energy efficiency and air quality.
5. Continue staff-level collaboration with the CEC Public Interest Energy Research project to develop modeling mechanisms to include emissions reductions from energy demand reduction measures for State Implementation Plan (SIP) credits.
6. Develop a scope of work to engage Valley universities and colleges in the analysis of regionally-specific energy efficiency potential with emphasis on efficiencies in the agricultural sector, especially related to the pumping of water.
7. Continue to secure and administer incentive grants for clean energy generation facilities, such as solar, and energy efficiency projects aimed at reducing energy consumption at residences, businesses, and municipal facilities.
8. Secure funding for the design and execution of a Valley-specific regional analysis of potential energy efficiency savings and emissions abatement opportunities by sector utilizing the expertise of Valley colleges and universities.

BACKGROUND:

On June 21, 2007, your Board adopted a "dual path" strategy to attain the federal standards for ozone in an expeditious fashion. This dual path strategy included the *2007 Ozone Plan* to satisfy legal mandates under the federal Clean Air Act, and the *Fast Track Action Plan* designed to be a dynamic non-regulatory air-quality management strategy to capitalize on evolving technologies, market opportunities, and public funding mechanisms to accelerate attainment of air quality standards prior to the 2024 federal deadline.

One of the measures identified in the Fast Track Action Plan is Energy Conservation with the goal of advancing energy conservation and efficiency measures in the Valley to reduce emissions and improve air quality. Towards that end, the District through this Regional Energy Efficiency Strategy (REES) is embarking on a regional, non-regulatory approach to programmatically encourage and incentivize energy efficiency and conservation in residential, commercial, municipal, and industrial sectors throughout the Valley.

While the District's Regional Energy Efficiency Strategy will specifically benefit the Valley through improved air quality and reduced energy costs, it will also position the Valley for optimal participation in new state and federal initiatives and funding opportunities to promote green jobs and technology, and reduce greenhouse gas emissions. In February 2009, Congress passed the American Recovery and Reinvestment Act of 2009 (ARRA). This legislation dedicates approximately \$45 billion to energy efficiency and renewable energy projects and programs nationwide, as appropriated through the Department of Energy (DOE). California is expected to receive \$3.7 billion of these DOE funds.

In conjunction with the REES, and to serve as a role model, the District also evaluated its own energy efficiency and conservation practices. Through the efforts of a District Energy Conservation Committee established to evaluate the internal energy policies and usage patterns, the District identified no- or low-cost energy conservation and waste minimization opportunities within its facilities. Many of these measures can be readily applied in other businesses.

Beginning in January 2009, District staff began developing the REES. Staff presented the general strategy concept to the Fast Track Task Force on July 16, 2009. District staff sought input and acceptance for the Draft REES from Valley stakeholders during a videoteleconference workshop held on September 2, 2009. Subsequent to the public workshop, staff presented the REES and ongoing funding opportunities to the SJVAPCD Environmental Justice Advisory Group (September 21, 2009) and the SJVAPCD Citizens Advisory Committee (October 6, 2009). In general, comments received were very positive regarding the potential benefits of the REES.

DISCUSSION:

As a regional agency with active and effective relationships with a variety of public and private sector entities throughout the Valley, the District is in a unique position to play a leadership role in facilitating a coordinated regional approach to promoting energy efficiency. Additionally, the District's vast technical expertise and success in securing and administering substantial funds for incentive grants provide essential elements for a successful regional strategy. Reliance on District resources is especially critical under

current economic circumstances where most municipalities are experiencing dramatic cutbacks in staffing and finances.

The REES will be implemented through a coordinated and collaborative process that will engage regional partners and stakeholders, including potential recipients of proposed tools and programs. Towards that end, the District will: (1) work in a regional framework to educate energy users as to the financial and air quality benefits of energy efficiency, identifying regional barriers that have prevented maximum utilization of energy efficiency options in the past; (2) work closely with Valley utilities, other public and nonprofit agencies, and local energy experts to leverage the maximum support, services, expertise, and funding for unlocking energy efficiency potential; and (3) develop a reliable and sustainable funding stream to incentivize energy efficiency and encourage development and utilization of new energy efficiency technologies.

The REES represents a significant step forward in the District's efforts to reduce emissions through non-regulatory measures and programs. The potential for criteria pollutant emissions reductions related to reduced energy use is significant, especially in the Valley given a climate with higher-than-average heating and cooling days compared to other regions of California. To understand and potentially quantify the emission reductions attributable to energy efficiency measures two factors must be considered: generation (the supply) and consumption (the demand). The REES lays the groundwork for aggressively encouraging and incentivizing clean energy options on the generation side and energy efficiency on the consumption side.

Electricity Generation and Emissions: The majority of electricity generated in California, the U.S. and globally is accomplished by the combustion of fossil fuels, which in turn produces byproduct emissions including regulated criteria pollutants, specifically oxides of nitrogen (NOx) and sulfur (SOx). The amount of such emissions depends on the specific "mix" of fuels used in the production of electricity. According to the U.S. EPA's Emissions & Generation Resource Integrated Database (eGRID), the United States average NOx and SOx emissions produced per megawatt-hour of electricity is 2.0 and 5.5 pounds, respectively. California, on the other hand, has a much lower criteria pollutant emission production rate given its long-standing regulatory and renewable energy commitment. In California, the average NOx and SOx emissions produced per megawatt-hour is 0.6 and 0.5 pounds, respectively. Despite the ability to quantify the emissions produced from a given set of power plants within a region or state, the regional quantification of emission reductions attributed to reducing the local consumption of that electricity is less straightforward.

Regional quantification of efficiency-derived emissions reductions is complicated because the import and export of electricity across state and regional boundaries fluctuates on a daily and hourly basis to account for the supply and demand of electricity. While the source of "baseload" electricity is relatively consistent, during peak load periods, such as during mid-day summer when extra electricity is needed to meet critical cooling and refrigeration needs, additional and immediate demand is met

through the sale of electricity produced by “peaker” power plants. District staff will continue to refine methods of regional quantification of emissions reductions. Staff has participated in CEC-supported research through the Public Interest Energy Research (PIER) group to quantify emissions reductions from energy demand reduction measures. This collaborative process will hopefully result in a methodology for including such emissions reductions as SIP credit. Phase Two of this research will continue in 2010.

Despite the complexities of electricity generation, given basic assumptions it is fairly straightforward to calculate potential emissions reductions given an assumed percent of energy use reduction. As shown in Table 1, the potential estimated NOx emissions attributable to reduced electricity consumption in the Valley is on par with the most recently adopted regulatory measures. It is important to note that the emissions reductions will benefit the air basin in which the electricity is produced (i.e. where the source power plant is located). Because the Valley is a net importer of electrical energy, only a percentage of the reductions identified in Table 1 for Energy Efficiency will benefit the Valley, while all of the NOx reductions from adopted rules benefit the Valley.

Table 1 – NOx Emissions Reductions		
Emission Reduction Measure		NOx Reductions tons/day
Rule 4320	Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5.0 MMBtu/hr	3.3
Rule 4307	Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr	1.2
Rule 4308	Boilers, Steam Generators, and Process Heaters – 0.075 MMBtu/hr to Less than 2.0 MMBtu/hr	2.8
Rule 4902	Residential Water Heaters	1.0
Rule 4354	Glass Melting Furnaces	3.2
<i>Energy Efficiency</i>	<i>Assuming average reduced electricity use of 20% in the residential sector & 15% in the non-residential sector. Based on 2007 consumption data and 2005 data for non-baseload electricity emission factors.</i>	2.8*

* Does not assume any transmission loss; includes emissions reductions outside of the SJV.

Electricity Consumption & the Potential for Savings: Reducing emissions on the generation side requires significant capital expenditures. By contrast, energy efficiency can yield substantial reductions in emissions at little or no net cost and often with the added benefit of reducing operating costs. The potential monetary savings and emissions reductions through reduced energy consumption and energy efficiency measures in all sectors are well documented at the national level. In a 2009 report, *Unlocking Energy Efficiency in the U.S. Economy*, McKinsey & Company stated,

“Energy efficiency offers a vast, low-cost energy resource for the U.S. economy – but only if the nation can craft a comprehensive and innovative approach to unlock it. Significant and persistent barriers will need to be addressed at multiple levels to stimulate demand for energy efficiency and manage its delivery across more than 100 million buildings and literally billions of devices. If executed at scale, a holistic approach would yield gross energy savings worth more than \$1.2 trillion, well above the \$520 billion needed through 2020 for upfront investment in efficiency measures (not including program costs). Such a program is estimated to reduce end-use energy consumption in 2020 by 9.1 quadrillion BTUs, roughly 23 percent of projected demand, potentially abating up to 1.1 gigatons of greenhouse gasses annually.”

All of the efficiency measures used to calculate the cost savings in emissions reductions in this study are measures that pay for themselves over the useful life of the improvement.

In the San Joaquin Valley, the potential for reductions in energy use is significant. The majority of the Valley is within Climate Zone 13. Unlike the more temperate climates of the coastal and south coast regions of California, the Valley experiences more heating and cooling days than these other regions. Additionally, there is a significant number of homes (55 percent) built prior to 1983 and the introduction of California Title 24 building codes; many of these homes are likely operating at sub-optimal efficiency levels. The savings potential per dollar spent on a retrofit in the Valley is very high given a dramatic improvement in performance. Significant emissions reductions could be captured at relatively low cost; in the residential retrofit market, a 20 percent reduction in energy use is relatively easy to accomplish with no- to low-cost homeowner actions such as: conversion to compact fluorescent lightbulbs, minor adjustments to thermostat temperatures, improved insulation, and window shading. Higher reductions can be attained with investments into energy efficiency appliances and heating, ventilation, and air conditioning (HVAC) units.

Similar no- and low-cost behavior modifications, actions, and retrofits can also assist the non-residential sector. As an example, the Ceres Unified School District implemented an energy conservation program in 2008. Through some fairly common-sense actions, such as better thermostat management, turning on equipment only as needed, completely shutting down equipment at night, closing doors when HVAC is on, and avoiding the need to control the temperature in unoccupied rooms, the school district realized savings of \$350,000 for the first year of implementation. This equated to a 24 percent kWh usage reduction and a 25 percent avoidance of energy costs. The realized savings more than paid for the salary of an Energy Manager for the School District to continue savings and motivation opportunities.

In order to understand the needs and realities of other agencies and businesses, the District began a self-assessment process to address waste minimization and energy

efficiency in its facilities. Through the assistance of an Energy Conservation Committee comprised of representatives from all District departments, the District adopted its own Energy Efficiency and Waste Minimization Strategy (Attachment A).

REES Components: To meet the identified goal of the REES, the staff has identified three components that will be necessary to build a robust and comprehensive energy efficiency strategy: 1) Outreach, education and information; 2) effective energy decision-making tools and programs; and 3) grants, incentive funding, and support for energy efficiency improvements and innovations.

Outreach, Education & Information

The primary focus of the REES, in coordination with regional partners, will be to reach out to Valley residents, businesses, and municipalities to inform them of energy efficiency opportunities that will not only reduce valley emissions, but in most cases will result in lower energy costs – a “win-win” opportunity. The District can serve in this educational capacity through both broad and targeted outreach components.

District staff have already integrated components of energy efficiency outreach into the Healthy Air Living (HAL) campaign, which has been expanded to an all-year effort. Beginning with the Summer 2009 HAL Business Summits and HAL Air Quality Chats, staff provided information relating air quality and energy efficiency and provided basic energy efficiency strategies for everyday energy savings.

As the REES develops, staff will expand opportunities for outreach to target other segments of the Valley population, including but not limited to: local governments, minority small businesses, neighborhood groups, and regulated source groups in the industrial and agricultural sectors. This targeted outreach will help focus resources to those sectors that either need the most assistance or have significant potential for energy savings through energy and resource efficiencies.

The District can also serve as a significant resource for tracking the latest information, programs, grants and rebates associated with energy efficiency and conservation. The District will develop and maintain a comprehensive website and database, linking users to existing and new programs at the regional, state and federal levels.

Another vital role for the District will be to facilitate research efforts to better understand the energy efficiency needs and potential in the Valley. Such research will help the District and others provide more effective energy efficiency opportunities while maximizing associated emissions reductions.

Decision-making Tools & Programs

Through the REES, the District will help develop a variety of tools and programs to assist multiple sectors of the Valley in reducing energy consumption, criteria

pollutant emissions and GHG emissions, all while saving money for energy end-users. Critical to the success of the REES is the integration of these programs with existing programs. The District, in cooperation with its regional partners, will develop energy efficiency products and strategy templates for multiple sectors within the Valley, including the residential, commercial and municipal sectors. Especially in the municipal and commercial sectors, these strategies can be expanded to include complementary emissions reductions opportunities through fleet modernization or building new fleets with “green” transportation options. Such strategies will be synchronized with existing and future grant programs offered by the District.

Grants, Incentives & Support

The District actively seeks every opportunity to apply for grants and provide incentives that are consistent with the overarching need to reduce criteria pollutant emissions in the Valley. Through the incentive program, the District is able to reach out to mobile source operators to reduce emissions. Since the announcement of ARRA funding, District staff have taken every opportunity to apply for additional funding, especially for those funds dedicated to diesel mobile sources and infrastructure for alternative fuels and alternative vehicles. District staff is actively seeking potential partnerships with the public and private sectors partners to apply for additional ARRA funding. These partnerships will help ensure that the Valley establishes an infrastructure of renewable energy resources for a sustainable energy future. For application opportunities beyond those available as ARRA funds, public and private partners can look to the expertise of District staff for technical assistance in the grant application process, letters of support from the air quality perspective, and grant administration for regional partners.

For the long-term, the District will build a broad spectrum of assistance options for all sectors of the Valley expanding as much as possible into energy efficiency and renewable energy. It will be important for the District to foster and maintain its regional partnerships and infrastructure to maximize the effectiveness of all assistance options.

REES Implementation: As stated previously, the full development and implementation of the REES will require effective and comprehensive coordination with entities and programs both within the Valley and at the state level. As the District begins to coordinate activities and facilitate the development of energy efficiency programs and opportunities in the Valley, a critical step will be to inform and educate the public. Certainly, there are a significant number of websites and information portals available to property owners and residents within the Valley; however, many of these are program-specific. As we begin to coordinate energy efficiency activities across program boundaries, the District will explore the opportunity for creating a website that helps users to connect program opportunities and understand the connection between air quality, energy efficiency, and transportation efficiency.

A valuable informational and analytical tool that the District will pursue as part of the REES will be a regional analysis of potential energy efficiency savings and emissions abatement opportunities by sector, similar to studies released by McKinsey & Company. At the national level, these studies have proven to be pivotal information sources for policymakers and others to quantify and visualize the balance of measures necessary for GHG abatement and identifying the potential national net cost savings from energy efficiency measures. These studies have also identified the likely barriers that are preventing the realization of such efficiency potential. Similar information, compiled and evaluated on a regional level specific to the Valley, will provide similar quantification and visualization benefits. Currently, the District plays a vital role in the collection and inventory of emissions and emissions reductions in the Valley; the District will expand the use of this expertise through the REES in developing this tool. Much of the energy use in the Valley is tied to agriculture and water distribution. The comprehensive analysis will help in identifying the efficiencies to be gained within this vital sector of the Valley economy. As an informational tool, the analysis will help to educate the general public as to the effect that end-use energy efficiency can have on individual energy cost savings and regional air quality. To complete such an analysis, the District will look to the expertise of Valley colleges and universities, as well as regional energy efficiency experts.

Beyond these informational tools, the District will look for further chances to expand opportunities for program coordination and development through both state and federal grant opportunities. In response to expanding energy efficiency opportunities, the District will, 1) evaluate the opportunities for shifting existing funding to energy efficiency activities, when allowed by the original funding source, and 2) evaluate the possibility for using energy efficiency as a criterion in awarding grants where appropriate.

REES Activities & ARRA Grants: The District has already pursued time-sensitive grant funding appropriated through the CEC and DOE. At the national level, both stimulative and regulatory actions are in play to reduce GHG emissions. District staff were quick to initiate grant applications related to alternative fuels, vehicles and infrastructure, as well as additional diesel engine replacement funds (DERA) made available through ARRA funding. To date, these initial efforts have secured \$7.2 million in grant awards.

The District is also participating as lead applicant and grant administrator for the following CEC and DOE opportunities:

CEC Energy Efficiency and Conservation Block Grants for Small Jurisdictions, PON-09-001

The District is contracting with the San Joaquin Valley Clean Energy Organization (SJVCEO) to apply for, implement, and administer approximately \$4.5 million in EECBG funds made available to at least 37 small jurisdictions in the Valley. The majority of the funding will be used to retrofit municipal facilities with lighting and

other cost-effective energy efficiency retrofits. Several jurisdictions will be able to take advantage of PG&E's LED Streetlight Replacement Program using these funds. The District's role will be to coordinate the application process given the identification of appropriate projects by the SJVCEO. Upon award of the funds, the District will be responsible for monthly reporting to the CEC as to the progress of installation of energy efficiency projects as documented and verified by the SJVCEO. The District will also be responsible for invoicing to the CEC and reimbursement payments to contractors once payment is remitted from the CEC. The District will collect an approximate 5 percent administrative fee to cover the staff time for reporting and program management. This application was submitted on January 12, 2010, with awards anticipated no later than March 31, 2010.

CEC State Energy Program California Comprehensive Residential Building Retrofit Program, RFP# 400-09-403

The District is contracting with ConSol, Inc. to develop and implement a Comprehensive Residential Building Retrofit Program, "Saving Energy Efficiency Dollars" (SEED), of behalf of the Counties of Kern, Fresno, and San Joaquin along with several municipalities within those counties. The program aligns with the jurisdictions' use of AB 811 municipal financing through the statewide California Communities JPA. Through this program, energy efficiency retrofits will be coordinated with financing, rebate, and service opportunities in the community, and certified contractors. A significant component of the program will be the collection of energy efficiency data with each retrofit. Upon award of the funds, the District will be responsible for monthly reporting and invoicing to the CEC. The District will collect an approximate 9 percent administrative fee to cover the staff time for reporting and program management. This application was submitted on December 21, 2009, with the notification of awards scheduled for February 11, 2010.

FISCAL IMPACT:

For the current fiscal year, the District will conduct the work associated with the REES utilizing current staffing levels. To date, the existing FY2009-10 budget has also provided sufficient funding for engagement with regional jurisdictions and entities toward the pursuit of ARRA-related funding for energy efficiency projects and programs. Appropriate budget resolutions will be presented for your Board approval upon receipt of grant awards that the District has applied or will apply for. These grants are expected to include sufficient funds to pay for the related District administrative costs. Work in future years will be subject to your Board's approval of annual fiscal budgets that will include adequate appropriations for the associated costs, if any. The District's Energy Efficiency and Waste Minimization Strategy is expected to result in measureable savings in utility and fuel costs.

Attachment A

San Joaquin Valley Air Pollution Control District Energy Efficiency and Waste Minimization Strategy

- Summer temperature settings: The best balance of staff comfort and energy conservation will be achieved at a summer temperature setting of 75 F, which is situated in the lower half of the ASHRAE recommended thermal comfort range of 74 to 78 F.
- Use of fans: Use portable or ceiling fans to efficiently address differences in personal temperature preferences.
- Winter temperature settings: The policy of warming the building to 70 F prior to morning occupancy is replaced with a 68 F. The temperature when AC units are activated in winter will be changed from 75 F to 76 F.
- Building energy audit: Conduct a thorough energy audit of the Fresno facility, including window thermal efficiency, insulation levels, and HVAC system efficiency.
- Lighting: The District to invest in T-8 lighting in the Fresno facility at a rate that balances electricity cost savings with the cost of new T-8 bulbs and ballasts. At the same time, the use of reflector lenses in fixtures should be investigated. Where possible, ceiling lighting should be cut back and more efficient LED desktop lighting should be provided where appropriate.
- Equipment use: Staff members must shut down all unnecessary lights, printers, copiers, computers, and fax machines when leaving work. The District will also investigate where reductions in the number of printers and copiers can be made. Reduce the number of video monitors that are powered on at public meetings commensurate with the number of participants. Assign staff to monitor and ensure adherence to this policy.
- Energy use for fleets and commuting: Incorporate GPS technology in field staff vehicles to help minimize Vehicle Miles Traveled by District staff through a more efficient deployment of resources.