DATE: May 2, 2013

TO: SJVUAPCD Governing Board

FROM: Seyed Sadredin, Executive Director/APCO
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RE: **ITEM NUMBER 8: CONSIDER THE NEED AND OPTIONS FOR REBRANDING THE DISTRICT'S RISK-BASED STRATEGY**

RECOMMENDATION:

Review the District's experience with implementation of your Board-approved Risk-Based Strategy and assess the need for rebranding the strategy and/or enhanced outreach and education.

BACKGROUND:

In September 2010, your Board adopted the District's groundbreaking Risk-Based Strategy (RBS). Your Board took this action in recognition of the fact that areas like the San Joaquin Valley and South Coast have mature air quality programs that have made considerable progress in reducing air pollutants on a mass basis. This progress has been accompanied by a steady escalation in costs per ton of pollution abatement. At the same time, new scientific discoveries are paving the way for more targeted, risk-based control strategies that deliver greater health benefits in a more cost-effective fashion. In other words, the strategy is designed to focus limited resources on measures that have been shown scientifically to provide the best benefit for public health. In response to this rapidly expanding body of scientific research, the risk-based approach is also gaining support from both U.S. EPA and the scientific community.

Industry representatives have largely embraced the Risk-Based Strategy, even though it targets certain sources for new air pollution control strategies. This is largely due to the fact that the Risk-Based Strategy provides an assurance of effective controls that produce real air quality benefits. On the other hand, the Risk-Based Strategy has

been met with resistance and skepticism from a number of air quality advocates. We believe this is partly due to past experience in other areas of the state in relation to risk management strategies deployed in highly impacted areas. Under those strategies, risk assessment was performed to justify an acceptable level of risk. Also, many advocates appear to be highly invested in maintaining the status quo, mass-based approach despite the potential of the strategy to deliver a net increase in overall health benefits.

Although air quality advocates have not put forward any scientific or policy-relevant evidence to refute the risk-based approach, this item is placed on today's agenda to look within and see if the District is failing in properly communicating the scope and purpose of the Risk-Based Strategy. The purpose of this agenda item is to discuss the District's experience to date with the Risk-Based Strategy, and explore the need, feasibility, and options for rebranding the strategy in a manner that is perhaps more descriptive of the District's intentions.

WHAT IS THE RISK-BASED STRATEGY?

The conventional mass-based regiment for attaining National Ambient Air Quality Standards (NAAQS) generally measures progress in protecting public health by comparing the total amount of emissions reduced on a Valley-wide basis to the Valley's target for total emissions needed for attainment based on modeling and worst-case projections. For example, under ozone NAAQS planning, progress is measured by the mass quantity of either NOx or VOC reduced across the Valley over time, regardless of the actual ozone concentration reductions and associated health benefits achieved by strategies throughout the Valley. In contrast to this broad approach for planning and measuring progress, the District implements its diverse control measures and strategies throughout the Valley with clear and quantifiable public health benefits that are not fully accounted for under the conventional approach. One recent example highlighting this disparity is the tremendous progress expected throughout the Valley in the course of implementing the *2012 PM2.5 Plan*, with 94% of Valley residents living in areas attaining the standard by 2017, years ahead of the 2019 attainment deadline. Under the conventional mass-based approach, localized air quality improvements and associated health benefits are not recognized, and the entire Valley is considered in nonattainment until 2019.

Additionally, driven by a rapidly expanding body of scientific research, there is now a growing recognition within the scientific community that from an exposure perspective, the NAAQS metrics for progress are a necessary but increasingly insufficient measure of total public health risk associated with air pollutants. In particular, control strategies for sources of PM2.5 and ozone do not necessarily account for qualitative differences in the nature of their emissions. For PM2.5, toxicity has been shown to vary depending on particle size, chemical species, and surface area. In the case of ozone, differences in the relative potency of ozone precursors, VOCs in particular, is not captured by a strict, mass-based approach to precursor controls. Thus, while the NAAQS and State Implementation Plan (SIP) process is motivated by public health, the process set

forward under the CAA does not guarantee that the public health benefits of control strategies will be maximized. In contrast, the Risk-Based Strategy does the following:

- Applies to regulatory, incentive, and outreach strategies
- Public health is the primary driver for prioritizing all clean air actions by the District
- Recognizes that risk to the public is not always proportional to the mass rate of emissions
  - Ultrafine particles versus coarse particles
  - Toxicity/carcinogens
  - Intake fraction/deposition fraction
  - NOx versus VOCs
  - NOx versus Ammonia reductions
  - Photochemical reactivity of VOCs
- Clean air strategies with the highest benefit to public health will be prioritized first regardless of mass, such as control strategies for the following:
  - Residential woodburning
  - Lawn care emissions
  - Gross-polluting vehicles
  - Diesel particulate emissions
- Greater weight given to emission reductions in Environmental Justice communities ("Action Zones")
- Greater weight given to reducing pollutants that are most effective in improving public health, such as:
  - NOx reductions versus VOC reductions (ozone)
  - NOx reductions versus ammonia reductions (particulates)
  - Directly emitted particulates versus secondary particulates
  - Fine particulates versus coarse particulates
- All decisions will be science based – District will continue to invest in Valley-specific research on population exposure and risk

In understanding the District's Risk-Based Strategy, it is also important to understand what the policy will not do:

1. Will not establish a new acceptable risk level
2. Will not delay attainment of mass-based air quality standards
3. Will not ask for a change in the form of the mass-based air quality standards
4. Will not delay establishment of standards, designations, or classifications

IMPLEMENTATION TO DATE:

The District has already incorporated the risk-based approach in a number of strategies developed and implemented by the District. The Risk-Based Strategy can be implemented within the constraints of the current federal Clean Air Act. In fact, in a recent PM2.5 implementation guidance memo (March 2012), EPA encourages states to

consider evidence from published literature indicating that reductions of direct PM2.5 have a greater health benefit per ton than reductions of other criteria pollutants, such as SO2 and NOx, and provides methods local air quality plans can use to maximize health benefits and minimize risk inequality. Specifically, the memo states that "…it is likely that SIPs for the 2006 24-hour PM2.5 NAAQS may need to include greater emphasis on reducing emissions from local sources as compared to plans to attain the 1997 PM2.5 NAAQS."

The following are examples of how the Risk-Based Strategy has been put into practice by the District:

- **Prioritized adoption of enhanced woodburning curtailment strategy and corresponding Check Before You Burn program (2008) –** Your Board's prioritization of Rule 4901 is one of the best examples of a District policy aimed at maximizing public health benefits. The residential woodburning curtailment and Check Before You Burn strategy under Rule 4901 has been the single most important strategy for reducing directly emitted PM2.5 where and when those reductions are most health-impactful, in residential neighborhoods during wintertime stagnation periods. As a recent example of this risk-based approach, your Board accelerated implementation of strengthened 4901 requirements in the *2008 PM2.5 Plan*. Even though the plan was developed to satisfy the federal 1997 PM2.5 standard (with a 24-hour standard of 65 µg/m³), the plan included a commitment to amend Rule 4901 in 2009 (with implementation in 2010) to align the wood-burning curtailment threshold with the newer, more stringent 2006 PM2.5 standard (with a 24-hour standard of 35 µg/m³). Furthermore, based on research reiterating the effectiveness of Rule 4901 in protecting public health, and combined with increased public support, the District amended and implemented Rule 4901 in 2008—one year ahead of the scheduled rule development and two years ahead of scheduled implementation. The amended rule further established the curtailment level lower than initially planned (to 30 µg/m³) to provide an extra margin of safety.

- **Prioritized adoption of enhanced woodburning curtailment strategy in *2012 PM2.5 Plan* –** During the recent adoption of the *2012 PM2.5 Plan* to address the federal 2006 PM2.5 standard (with a 24-hour standard of 35 µg/m³), your Board used the Risk-Based Strategy to further prioritize reductions by directing the District to accelerate the adoption of even more stringent curtailment requirements under 4901 to 2014, two years ahead of the plan's official 2016 implementation date, which was already well ahead of the federal attainment deadline of 2019.

- **Prioritized adoption of strategy commitment for reducing commercial charbroiling emissions in *2012 PM2.5 Plan* –** Emissions from commercial "under-fired" charbroiling restaurants are one of the single largest contributors of direct PM2.5 emissions. These emissions primarily consist of organic carbon and are generally emitted in highly populated urban areas. Health research

shows that these organic carbon emissions have high toxicity, with significant potential health impacts in neighborhoods during periods of stagnant air when emissions are trapped near the surface in these neighborhoods. Given the potential health benefits achieved by reducing emissions from these sources, your Governing Board adopted an aggressive, technology-forcing commitment in the *2012 PM2.5 Plan* to significantly reduce emissions by 2017, two years ahead of the federal attainment deadline of 2019.

- **Prioritized adoption of strategy commitment for reducing emissions from high-polluting residential and commercial lawn mowers** – Through the District's popular Clean-Green-Yard-Machine grant program, the District has replaced over 2,000 high-polluting gas-powered lawn mowers with clean electric mowers, thus decreasing the urban, localized health risks associated with the use of gas-powered equipment. The recently adopted *2012 PM2.5 Plan* includes a comprehensive strategy aimed at addressing lawn care-related emissions through a number of potential approaches, and the District has expanded its lawn care strategy to the commercial sector.

- **Grant funding priority for emissions reductions in environmental justice communities** – Environmental justice communities typically have a higher exposure risk to air pollution and are consequentially more vulnerable to the associated adverse health effects caused by poor air quality. Your Board has prioritized grant funding for emissions reductions that provide benefits for environmental justice communities. As a recent example of this prioritization, the Public Benefit Grants Program provides significant scoring consideration for projects that benefit environmental justice communities.

- **Grant funding priority for reduction of NOx emissions** – NOx is a criteria pollutant and a precursor to both ozone and particulates. The reduction of NOx in the Valley is vital for the District to expedite attainment of air quality standards and associated health benefits. Given its risk-based significance, the Public Benefit Grants Program and other grant programs have prioritized projects that maximize NOx reductions.

- **Grant funding priority for reduction of diesel particulate matter emissions** – Long-term exposure to high concentrations of diesel particulate matter (PM) emissions can result in harmful health effects. Given the carcinogenic and toxic impacts from diesel PM, the Risk-Based Strategy places great value on diesel PM reductions compared to other criteria air pollutants, and has prioritized funding through the Public Benefit Grants Program and other grant programs that maximize diesel PM reductions.

- **Grant funding priority for reduction in motor vehicle emissions through "Tune-In Tune-Up" vehicle repair and vehicle scrappage programs** – Emissions produced from vehicle travel significantly contribute to the air quality problem in the San Joaquin Valley, with mobile sources as the leading

contributor of air pollution in the Valley. Motor vehicle emissions are also one of the biggest sources of pollution in the Valley's urban population centers, and reducing vehicle emissions will provide for expedited public health benefits to Valley residents. Within this context, environmental justice communities facing the highest social and environmental vulnerabilities also face significant air quality and economic impacts resulting from the disproportionally higher number of older, high-polluting vehicles driven by residents of these communities. Given this risk-based significance, the District has prioritized grant funding for programs that reduce motor vehicle emissions, particularly in low income communities. Vouchers have been offered for the replacement of older high-emitting vehicles with newer cleaner vehicles, and the relatively new Tune-In Tune-Up program offers vouchers for emissions-related repairs to high-emitting vehicles. Tune-In Tune-Up has focused its outreach in Valley environmental justice communities and has received a large level of interest, with over 3,000 vehicle repair vouchers offered to Valley residents.

- **Grant funding for clean wood burning devices, particularly in environmental justice communities** – The District's Burn Cleaner Program helps Valley residents upgrade their current wood-burning devices and open hearth fireplaces to natural gas, propane gas, or clean pellet devices. The District offers a financial incentive to any interested resident and an additional incentive to low-income residents in environmental justice communities through a streamlined voucher program that involves partnering with interested retailers. The program has upgraded over 2,700 wood-burning devices.

- **Grant funding for clean school bus projects to reduce children's exposure to diesel PM** – School bus replacements and retrofits play a vital role in reducing school children's exposure to both cancer-causing and smog-forming pollution. Given the potential health benefits, your Board has prioritized the funding of school bus replacements and retrofits to help clean the Valley's school bus fleet, and has provided additional funding for school districts serving environmental justice communities.

- **Grant funding for technology advancement for projects that can reduce diesel particulates** – The District's recently adopted Technology Advancement Program provides grant funding to help demonstrate cutting-edge clean air technologies in the Valley, with prioritized funding for those technologies that help to reduce the most health impactful emissions, particularly diesel particulates.

- **Expanded outreach to environmental justice communities through permitting process** – Historically, the District has allowed extensive public review and input into the air quality permit issuance process, with procedures that extend beyond minimum state and federal requirements. The District has continued to enhance its permit issuance outreach efforts in environmental justice communities through increased workshops in those communities,

expanded multilingual outreach, and increased utilization of web resources to make project information more easily available.

- **Prioritizing NOx reductions over VOC reductions in *2007 Ozone Plan* –** NOx emissions reductions have been demonstrated through numerous research studies and modeling efforts to be the most effective control strategy (precursor) for reducing the formation of ozone in the Valley, with VOC reductions found to be much less effective than NOx reductions in reducing ambient ozone concentrations. The *2007 Ozone Plan* thus places great priority in reducing NOx emissions, and maximizes the reduction of ambient ozone concentrations and associated health benefits.

- **Prioritizing NOx reductions over ammonia reductions in *2012 PM2.5 Plan* –** NOx emissions reductions have been demonstrated through numerous research studies and modeling efforts to be the most effective control strategy for reducing the formation of secondary PM2.5 emissions in the Valley (precursor), with ammonia reductions found to be insignificant as a PM2.5 control strategy in the Valley. The *2012 PM2.5 Plan* thus places great priority in reducing NOx emissions, and maximizes the reduction of ambient PM2.5 concentrations and associated health benefits.

- **Timely air quality information provided to public through Real-Time Air Quality Advisory Network (RAAN) –** The District's innovative RAAN system uses real-time data from air monitoring stations throughout the Valley to provide hour-by-hour air quality updates to schools and other subscribers. Subscribers can use this information to make informed decisions and plan outdoor activities for times with the best air quality, reducing potential air quality health risks.

- **Tracking and sponsoring of health research** – The District has sponsored several Valley-based health research projects in recent years. In 2010–2011, the District sponsored a first-of-its-kind epidemiological investigation of health effects of air pollution in Modesto, Fresno, and Bakersfield. The study found that high PM and ozone concentrations clearly correlate to increased hospital and ER admission rates, especially for those 19 and younger. During 2011 and 2012, the District sponsored a follow-up epidemiological study to examine which of the chemicals found in Valley PM2.5 are most highly correlated with elevated ER and hospital admission rates. The District is also sponsoring a pilot study of PM 0.1 in Fresno, partnering with UCSF-Fresno, to investigate the quantity and spatial distribution of PM 0.1 plumes from motor vehicles, lawn care equipment, wood burning, and restaurants. The District will continue to seek out and fund research opportunities that further the understanding of PM2.5 and ozone impacts on public health.

CONCERNS RAISED BY AIR QUALITY ADVOCATES:

Despite well-documented scientific justification of the Risk-Based Strategy and efforts to communicate the public health benefits of this approach to the public, the District has experienced a surprising degree of resistance from the Central Valley Air Quality Coalition (CVAQ) to the strategy. This skepticism has been perplexing given the high level of research and empirical evidence supporting the strategy, not to mention repeated articulation of the scientific rationale in public meetings and workshops, including solid technical support from ARB staff and university researchers.

In understanding the skepticism from certain groups, it may be helpful to consider how the term "risk" has historically been used in air quality management. First, it is important to note the distinction between risk and hazard. Risk represents the probability that some negative event, the hazard itself, will occur. Over the history of the 1970 and 1990 Clean Air Acts and under other laws, a range of methodologies commonly referred to as risk assessment have been developed for the purpose of empirically estimating the potential hazard (i.e., the risk) associated with various sources of emissions. No matter how rigorous or beneficial, history has shown that the results of these project risk assessments are sometimes viewed by environmental justice and community advocates as either (1) ignoring certain risks not included in the statutory framework of the law, (2) not fully accounting for the spatial or demographic concentration of risk in nearby communities, and/or (3) adopting a threshold level for acceptable exposure levels that is considered to be unacceptably high. Several examples pointed to by air quality advocates as a flaw in this approach are neighborhoods around ports in southern California and refineries in the Bay Area where, in their view, risk assessment was used to establish an acceptable level of risk and justification for non-action. It is important to understand that the District's Risk-Based Strategy is not a risk management strategy. Instead, it is an approach aimed at identifying and prioritizing measures with the most benefit to public health.

Another area of concern to some air quality advocates seems to be related to a provision of the strategy that places emphasis on controlling pollutants with the greatest benefit for public health and de-emphasizing controls for pollutants that will not provide measurable improvement. Specifically, air quality advocates that see dairies as a major detriment to the environment dislike the fact that the control of ammonia emissions and VOCs receive lower priority under the Risk-Based Strategy given their ineffectiveness in reducing ambient ozone and particulates. Given the overwhelming scientific evidence, the District believes that there is ample justification supporting this approach. However, the District has an outstanding commitment to continue to consider new information as it becomes available, and change direction if warranted.

Ironically, the application of the Risk-Based Strategy to the implementation of the District's air quality strategies holds the potential to significantly reduce overall population risk as well as make a larger net reduction in exposure in environmental justice communities. In summary, the following overarching points regarding the purpose of strategy should be considered in this discussion:

1. The centerpiece rationale for the strategy is public health, not risk.
2. The outcome we are seeking to maximize is health benefits for the population.
3. Conversely, the outcome we are seeking to minimize is net public health hazard such as heart attacks and asthma.
4. The strategy itself refers to the prioritization of the most health-beneficial strategies, including control measures, incentive programs, public outreach, and other strategies.

IS REBRANDING NEEDED?

Arguably, enhanced education and better characterization can help alleviate the resistance and skepticism of certain air quality advocates. Notwithstanding the reaction by these advocates, rebranding of the strategy, including changing its name to one that more closely conveys its purpose and conducting additional outreach, may help District efforts to obtain broader support from oversight agencies and policymakers. However, a case can also be made that rebranding at this juncture may lead to confusion amongst other stakeholders, which could counterweigh part, if not all, of the benefits achieved through a rebranding effort.

If your Board were to wish to rebrand the District's Risk-Based Strategy, the following options are available:

1. Change name of the Risk-Based Strategy from its current form to ***"Health-Based Implementation Strategy."*** While the current terminology is already in wide-spread use, swift and declarative action to promote the new terminology should ensure a quick transition.

2. Create an identifiable outreach campaign with the following design elements:
    a. Short basic description (an "elevator pitch") of the strategy that is used uniformly throughout District communications
    b. An informative slide shown at District meetings and workshops
    c. A logo or design element used in District publications
    d. Outreach brochure and/or short informational video
    e. Targeted press releases and/or editorials that explain the strategy and highlight the new terminology

3. Elevate the discussion regarding the strategy with EPA and CARB to develop increased support and to promote use of the strategy to the extent feasible in the development of future air quality strategies at the state and federal levels.

4. Leverage upcoming scientific conferences and forums, including the upcoming June 2013 conference at UC Davis regarding risk-based strategies, to announce and promote the rebranded strategy.

5. Continue to use the Environmental Justice Advisory Group, Citizen's Advisory Committee, and Governing Board meetings as venues for communicating the importance and purpose of the strategy.

6. Continue to educate interested stakeholder groups regarding the need for the rebranding to ensure that the strategy's purpose is clearly communicated, and to minimize use of the old terminology. This effort should also include reaching out to stakeholder groups that have not previously shown interest to expand the level of interest and support for the strategy.

FISCAL IMPACT:

There is no fiscal impact to the District as a result of this action. Any costs associated with implementing rebranding of the District's Risk-Based Strategy are expected to be minor and included within the current District budget.