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DATE: March 16, 2017

TO: SJVUAPCD Governing Board

FROM: Seyed Sadredin, Executive Director/APCO
Project Coordinator: Jaime Holt

RE: **ITEM NUMBER 6: RECEIVE A VISUAL DEMONSTRATION OF THE PROTOTYPE REAL-TIME ELECTRONIC AIR-QUALITY DISPLAY AND AUTHORIZE EXPENDITURE OF UP TO \$20,000 FOR A PILOT PROJECT TO RECRUIT UP TO 20 SCHOOLS THROUGHOUT THE VALLEY TO HELP WITH FINAL DESIGN AND DEPLOYMENT ISSUES**

RECOMMENDATION:

Receive a visual demonstration of the prototype Real-time Electronic Air-quality Display (READ) and authorize expenditure of up to \$20,000 for a pilot project to recruit up to 20 schools throughout the Valley to help with final design and deployment issues.

BACKGROUND:

In 2011, in response to requests from Valley schools for a more flexible and cost-effective alternative to the Air Quality Flag Program, the District developed the Real-time Air Advisory Network (RAAN). The RAAN program, which is also more health protective than the Air Quality Flag Program, was developed by the District in partnership with UCSF-Fresno, the American Lung Association of Central California, local asthma coalitions and Valley schools.

RAAN is designed to quickly inform schools when air pollution levels might impact student health if they were to engage in outdoor activity. With the Air Quality Flag Program, schools received the daily air quality forecast once a day via email and then raised the appropriately colored flag on the school's flag pole. The same flag was displayed for the entire day, regardless of improvements or worsening of the air quality during the day. However, RAAN links the public, school districts and individual schools directly to local air quality monitors via email, iPhone

and text notifications on an hourly basis as air quality changes. The RAAN's speed and accuracy provides much greater flexibility for schools as they seek to maximize the benefits of outdoor exercise while minimizing student exposure to elevated concentrations of ozone or PM2.5.

In 2014, the Governing Board voted to move forward with deemphasizing the flag program and to cease funding it with schools. Instead, focus has been placed on the RAAN program as the District-sponsored outreach tool for students. Additionally, the Board requested that staff investigate the feasibility of schools installing and utilizing some type of visual indicator, such as an electronic billboard, perhaps with financial support from the District, to communicate the RAAN levels as they change throughout the day.

The District has developed a prototype display device in-house and now is ready to engage schools to establish final design features and options. As the next step in establishing the final specifications and identifying and resolving deployment issues, the District intends to recruit up to 20 schools throughout the Valley to work with the District. The purpose of today's item is to provide a visual demonstration of the prototype unit, to seek your Board's authorization for the expenditure of up to \$20,000 for this effort and to seek additional guidance as your Board deems necessary.

DEVELOPMENT OF THE REAL-TIME ELECTRONIC AIR-QUALITY DISPLAY:

The prototype Real-time Electronic Air-quality Display (READ) is an electronic sign that uses powerful and versatile LED panels to display real time air quality data from the RAAN system. The messages can be displayed on one side, such as may be mounted on a wall or behind a window, or can be two-sided for viewing from either side for alternative mounting options such as on a pole. Each READ unit has a unique identification code that allows it to connect to the District's RAAN. The READ unit connects via a wired or wireless (Wi-Fi) network to the internet and then to RAAN. The unit displays updated real-time air quality data for the neighborhood in which it is located. A READ unit gathers updated data from the RAAN system every 30-60 seconds.

The READ unit consists of a micro-computer and LED driver assembly, with extended Wi-Fi & physical networking capability. It is designed to function in an autonomous mode without human intervention after physical installation. When the unit is powered up, it identifies and connects to any available computer network (physical network or Wi-Fi) that has access to the internet. Upon its access to the internet, it connects to the District's Real Time Air Advisory Network (RAAN) in order to fetch and display real-time air quality data for a particular site or a street address.

Specific display text and colors are programmed into the READ units to correspond with the RAAN air quality levels; however the units are capable of displaying other information, including text and graphics.

Prototype RAAN displays built by District staff cost approximately \$595 per unit. Staff intends to investigate outside manufacturing options, and expects that units built to professional specifications, but in larger quantities, could cost less than \$595. Units in installations that require weather-proof enclosures are expected to have a higher cost.

DEPLOYMENT OF THE REAL-TIME ELECTRONIC AIR-QUALITY DISPLAY:

The goal with the READ is to have schools throughout the Valley using it to communicate real-time air quality information to students, teachers, administrators, parents and the public. However, prior to widespread deployment, some questions need to be answered about the display's ability to function in real-world environments.

In further developing this display, the following questions will need to be answered:

- How does a display get installed, and can installation be handled by schools?
- What should be communicated to schools to make installation quick and easy?
- What are the electrical and technical requirements for schools to operate the display reliably?
- Where should this device be located for maximum exposure?
- What enhancements will need to be made to the display to allow it to be located outside and able to handle various weather conditions?
- What type of maintenance will the display need and who should be responsible for the maintenance?
- What kind of security features should the device have (both technical and physical)?
- What level of commercial grade technology should be used for this device which will provide durability and keep the costs low?
- Can further mass production of the display be contracted to a third party?
- What are cost savings that may be realized through mass production?
- What kind of cost-sharing arrangement would be needed to deploy the display widely through-out Valley schools?

With a READ prototype ready for launch at a few targeted schools throughout the Valley, staff is proposing a pilot program to gather information and answer the above questions.

PROPOSED PILOT PROGRAM:

Under this pilot program, the District will work with up to 20 schools throughout the Valley which are already using RAAN and are willing to utilize a READ unit at their site. Schools will be asked to provide feedback to the District to evaluate the display and communicate potential improvements. The District will coordinate all activities under this pilot project with a key focus on working with schools, parents, and sign manufacturers to answer the questions listed above and develop strategies for significant display expansion to schools throughout the Valley in the future.

Schools in all eight counties of the District will be selected to participate in the pilot program based on their current use and understanding of RAAN and their willingness to pilot the program. Under the pilot program, all reasonable costs associated with deploying the display at school sites will be covered by the District.

The pilot program will be conducted during the 2017-2018 school year and schools will be required to provide feedback to the District by June 2018.

FISCAL IMPACT:

If approved by your Board, the District will construct 20 READs and recruit 20 schools to participate in the pilot program over the 2017-18 school year. On behalf of the District, the Executive Director/APCO will enter into any necessary agreements with schools to allow READ units to be located at school sites and require feedback to the District on the deployment of the READ. The District's 2016-2017 Approved Budget includes \$50,000 for Electronic RAAN/Flag Display - System Development & Installation. Therefore, no budget amendments are necessary.