

BOARD MEETING DATE: October 6, 2017

AGENDA NO. 8

**PROPOSAL:** Recognize Revenue and Appropriate Funds for Improving Interpretation of PM2.5 Measurements from Satellites

**SYNOPSIS:** The National Aeronautics and Space Administration awarded its competitive “Research Opportunities in Earth and Space Science 2016: Citizen Science for Earth Systems Program” research grant to SCAQMD, Research Triangle Institute (RTI) and Goddard Space Flight Center (GSFC) to implement a spatially dense network of low-cost PM2.5 sensors to be operated by citizen-scientists. SCAQMD will collaborate with researchers from RTI and GSFC to deploy a network of 25 sensors, and resulting data will be used to improve the interpretation of PM2.5 measurements from satellites. This action is to recognize revenue and appropriate up to \$75,884 to support this project.

**COMMITTEE:** Administrative, September 8, 2017; Recommended for Approval

**RECOMMENDED ACTION:**

Recognize revenue up to \$75,884 from Research Triangle Institute, upon receipt, into the General Fund and appropriate up to \$28,340 from the General Fund Unassigned (Undesignated) Fund Balance in Science & Technology Advancement’s FY 2017-18 Budget (Org 43), as follows: Small Tools, Instruments, Equipment - \$25,800; Mileage - \$540; and Office Expense - \$2,000 (\$47,544 was already included in Salaries and Employee Benefits within Science & Technology Advancement’s FY 2017-18 Budget).

Wayne Nastri  
Executive Officer

## **Background**

In 2016, staff collaborated with the Research Triangle Institute (RTI) and National Aeronautics and Space Administration (NASA)'s Goddard Space Flight Center (GSFC) to apply for a competitive "Research Opportunities in Earth and Space Science (ROSES) 2016: Citizen Science for Earth Systems Program" research grant. The proposal was selected and SCAQMD was awarded \$75,884 for a prototype phase deployment of 25 low-cost PM sensors in the South Coast Air Basin (Basin). Upon successful completion of the prototype phase, this project may be selected for a three-year implementation phase. If selected to continue to the implementation phase, additional funding could be awarded to the SCAQMD.

## **Project Description**

The overarching objective of this project is to relate aerosol characteristics observed from satellites to PM concentrations measured at ground level. This objective will be achieved by undertaking the following two major tasks:

- 1) Collecting highly temporally and spatially resolved surface PM data by deploying a network of low-cost PM sensors to be operated by citizen-scientists; and
- 2) Utilizing the surface PM<sub>2.5</sub> dataset to interpret and validate the current surface PM estimates derived from satellite data.

For this purpose, SCAQMD staff will select a suitable low-cost PM sensor to create a dense sensor network using citizen-scientists to host and maintain the sensors. The deployment will be conducted in the Basin. SCAQMD will also develop a robust mechanism for data transfer and open data sharing between the citizen-scientists, air quality agencies and NASA. Utilizing the data from this sensor network, SCAQMD staff will then evaluate the spatial and temporal variability and the relationship between satellite-derived and surface aerosol loadings. This information will be used to develop region-specific statistical models to improve air quality monitoring using satellite data. SCAQMD will engage citizen-scientists by educating them on local air quality issues, training them in the operation of air quality PM sensors, and introducing them to the satellite data for air quality applications.

## **Projected Outcomes**

This project has the potential to revolutionize the way air quality agencies monitor PM at the local, regional, and National scale by providing a model for the successful development of future sensor, fixed monitors, and satellite system to better characterize the spatial distribution of PM and other air pollutants.

**Benefits to SCAQMD**

The results of this project will allow SCAQMD and other policymakers to better understand air quality issues at the community level and to incorporate satellite data into the decision-making process. This prototype sensor deployment will also allow SCAQMD to better interact with citizen-scientists and inform them of the appropriate use and operation of sensor devices for measuring PM.

**Resource Impacts**

Sufficient funding is available for this project within Science & Technology Advancement's FY 2017-18 Budget. NASA has authorized funding of \$75,884 for this prototype sensor deployment effort and those funds will be recognized and appropriated into the FY 2017-18 Budget, as applicable.