BOARD MEETING DATE: May 6, 2022 AGENDA NO. 8

PROPOSAL: Transfer Funds Between Major Objects and Execute Purchase Orders for AQ-SPEC Program

SYNOPSIS: In July 2014, AQ-SPEC was established to perform systematic, detailed characterizations of currently available air monitoring sensors using both field and laboratory-based testing and to communicate the results to the public. AQ-SPEC funds are included as part of Science & Technology Advancement's FY 2021-22 adopted budget. Based on an assessment of the existing priorities and resources of this program, there is a need to reallocate funds. This action is to transfer up to $85,000 between Major Objects and to execute purchase orders for air monitoring equipment.

COMMITTEE: Technology, April 15, 2022; Recommended for Approval

RECOMMENDED ACTIONS:

1. Transfer up to $85,000 from the Services and Supplies Major Object to the Capital Outlays Major Object in Science & Technology Advancement's FY 2021-22 Budget (Org 43); and
2. Authorize the Procurement Manager, in accordance with South Coast AQMD's Procurement Policy and Procedure, to execute purchase orders for the following equipment as listed in Table 1:
   a. One 55i Non-Methane Hydrocarbon Analyzer from Thermo Fisher Scientific, Inc. (Thermo), in an amount not to exceed $27,000;
   b. One 1160 Zero Air Generator from Thermo, in an amount not to exceed $14,000;
   c. One 49iQ Ozone Monitor from Thermo, in an amount not to exceed $15,000; and
   d. One T700U Dynamic Dilution Calibrator from Teledyne Technologies, Inc. (Teledyne) in an amount not to exceed $29,000.

Wayne Nastri
Executive Officer

MMM:JCL:AP:VP:ld:kdl

Background
In 2014, South Coast AQMD established the AQ-SPEC to characterize the performance of commercially available air quality sensors using both field and laboratory-based testing and communicate such results to the public through an information website. Air quality sensors that produce reliable data, can significantly augment and supplement current ambient air monitoring capabilities that predominantly rely on more sophisticated and expensive fixed-site federal-reference monitoring devices and methods. In addition, they also have become effective tools in introducing students to and engaging them in air quality matters.

The type and number of sensors that have been tested through the AQ-SPEC program has grown substantially over the years. To date, staff has evaluated over 170 sensors measuring particle and gaseous pollutants (mainly fine particulate matter, ozone, nitrogen oxides, and other criteria pollutants) for their accuracy and overall quality. Interest is rapidly increasing in the use of air quality sensors for measurements of VOCs, with potential applications for ambient air monitoring, hotspot detection, personal exposure, and fenceline monitoring. AQ-SPEC methods include the performance testing of sensors in both laboratory and field environments to inform the public, community groups, citizen scientists, researchers and other potential users on the actual capabilities of these emerging sensor technologies.

The AQ-SPEC program performs the evaluation of air quality gas sensors through collocated measurements with reference instruments which must be calibrated periodically to ensure their readings are reliable and accurate. Currently, the AQ-SPEC program does not have dedicated resources for VOC equipment calibration activities. As the program requires the calibration of multiple analyzers at two field testing sites, two test laboratory chambers and a mobile platform, it is necessary to set up a dedicated calibration station to ensure uninterrupted operations.

Proposal
This action is to transfer up to $85,000 from the Services and Supplies Major Object to the Capital Outlays Major Object in Science & Technology Advancement's FY 2021-22 Budget (Org 43). This action is also to authorize the Procurement Manager, in accordance with South Coast AQMD's Procurement Policy and Procedure, to issue sole-source purchase orders to purchase a 55i Non-Methane Hydrocarbon Analyzer, 1160 Zero Air Generator, 49iQ Ozone Monitor from Thermo, and a T700U Dynamic Dilution Calibrator from Teledyne for an amount not to exceed $85,000.

<u>Proposed Purchases through Sole Source Purchase Orders</u>
This action is to purchase the following equipment as listed in Table 1.

Thermo Model 55i
A Non-Methane Hydrocarbon Analyzer is needed to provide high resolution measurements of total VOC for field testing of VOC sensors. Ambient VOC concentrations can change rapidly, with increased VOC levels often being short-lived. In addition, VOC sensors typically report data at 1-minute intervals, so their evaluation in the field under ambient conditions requires a reference VOC monitor with the same or better time resolution.

Thermo Model 1160
A Zero Air Generator would be purchased to provide a self-contained source of high purity zero air for dilution calibrators and would be used in conjunction with the Non-Methane Hydrocarbon Analyzer as mentioned above. It is ideal for use with highly sensitive gaseous analyzers in ambient background and trace level applications at high pressure to support flame combustion and actuator controls.

Thermo Model 49iQ
An ozone monitor is needed to serve as an ozone transfer standard when calibrating reference ozone monitors for laboratory and mobile testing of ozone sensors. The Model 49iQ is highly sensitive and accurate, is ideal for calibrating reference and regulatory-grade ozone monitors and has been used for this purpose at all South Coast AQMD network air monitoring stations for several years.

Teledyne Model T700U
A Calibration/Dilution System with Ozone Generator is needed for the calibration of different gas analyzers. Using highly accurate mass flow controllers combined with compressed sources of standard gases, calibration standards are provided for multipoint span and zero checks using up to four gas sources. The Model T700U is designed for the demanding requirements of very sensitive measurements and is essential for accurate testing of air monitoring sensors with wide sensitivity and accuracy ranges.

Sole Source Justification
Section VIII.B.2 of South Coast AQMD's Procurement Policy and Procedures identifies provisions under which sole source awards can be made. The request for sole source purchase of the Non-Methane Hydrocarbon Analyzer and the Zero-Air Generator from Thermo is made under provision VIII.B.2.c.(1): "The unique experience and capabilities of the proposed contractor or contractor team". The purchase of the Non-Methane Hydrocarbon Analyzer from Thermo is proposed under this section since this is the only instrument with a very low detection limit of ambient TVOC concentrations at a very high time resolution that allows for direct comparison with sensors. This instrument requires a constant zero-air supply at a very high pressure to support flame combustion and actuator controls, and staff have identified the Zero Air Generator from Thermo as the only instrument having this capability for this requirement.

The request for sole source purchase of the Calibration/Dilution System with Ozone Generator from Teledyne and of the Ozone Monitor from Thermo is made under provision VIII.B.2.d.(6), "Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interests of the South Coast AQMD." Such circumstances may include but are not limited to "Projects requiring compatibility with existing specialized equipment." The purchase of these two instruments is proposed under this section since identical items are already in use at multiple South Coast AQMD's air monitoring network stations to calibrate regulatory-grade ozone monitors and have been integrated well with a consistent history of reliability.

Benefits to South Coast AQMD

The proposed purchases are necessary to enhance the field and laboratory testing capabilities of the AQ-SPEC program, to guarantee the performance of the program's reference gas analyzers, ensure their uninterrupted operation, and to expand our current testing capabilities to include the laboratory evaluation of VOC sensors that are starting to become available for public purchase and use.

Resource Impacts

Sufficient funding is currently available to transfer funds and purchase the instruments needed to enhance the field and laboratory testing capabilities of the AQ-SPEC program.

Attachment

Table 1 - Proposed Sole Source Purchase Orders for AQ-SPEC Program for FY 2021-22

Table 1

Proposed Sole Source Purchase Orders for AQ-SPEC Program for FY 2021-22

Capital Outlay Major Object	Account Number	Qty	Estimated Cost
Non-Methane Hydrocarbon Analyzer (Thermo Fisher Scientific, Inc., Model 55i)	77000	1	$27,000
Zero Air Generator (Thermo Fisher Scientific, Inc., Model 1160)	77000	1	$14,000
Ozone Monitor (Thermo Fisher Scientific, Inc., Model 49iQ)	77000	1	$15,000
Calibration/Dilution System with Ozone (O3) Generator (Teledyne Technologies, Inc., Model T700U)	77000	1	$29,000
Total			**Not to Exceed $85,000**