

## **5.0 BUDGET ESTIMATES**

Cost estimates have been prepared for each element of the base and optional programs based on a consensus of the CCOS Technical Committee. Cost estimates are summarized in Table 5-1 for major components of the proposed measurement plan. These cost estimates are supported by detailed itemized costs, which vary in detail and accuracy. Some cost are based on contracts already in place, some on unit costs for measurements that are being made in current ARB extramural contracts or cost quotations from vendors and contractors. These detailed itemized costs were provided to the CCOS Technical Committee for the purposes of considering alternative measurements and tradeoffs and are not presented here. The total contract costs for CCOS is \$6,100,000 for the base program and \$1,00,000 for optional elements for a total combined contract costs of \$7,100,000.

In addition to the above contract costs, the ARB and the local APCD's are committing in-kind resources for planning and execution of CCOS. Estimates of in-kind costs are estimated by multiplying the projected level of effort (in hours) by a nominal hourly rate. In-kind costs include additional efforts that are specifically required during CCOS and does not include data collection and analysis associated with normal daily operations (e.g., PAMS and other aerometric monitoring programs). The in-kind costs total \$1,369,000, which does not include substantial leveraging of resources that will be available from CRPAQS.

**Table 5-1**  
**Summary of Cost Estimates for the CCOS Field Measurement Program**

Elements	Base Study			Optional			Total		
	In-Kind Cost (\$)	Contracts Cost (\$)	Total Cost (\$)	In-Kind Cost (\$)	Contracts Cost (\$)	Total Cost (\$)	In-Kind Cost (\$)	Contracts Cost (\$)	Project Cost (\$)
<b>Preliminary Studies</b>	\$72,000	\$80,000	\$152,000	\$0	\$0	\$0	\$72,000	\$80,000	\$152,000
<b>Supplemental Surface Measurements</b>									
Type 1 Supplemental sites (7+1 optional)									
Site acquisition and setup	\$ -	\$ 60,000	\$ 60,000	\$ -	\$ 10,000	\$ 10,000	\$ -	\$ 70,000	\$ 70,000
Equipment purchase	\$ -	\$ 130,000	\$ 130,000	\$ -	\$ 20,000	\$ 20,000	\$ -	\$ 150,000	\$ 150,000
Operations	\$ -	\$ 200,000	\$ 200,000	\$ -	\$ 30,000	\$ 30,000	\$ -	\$ 230,000	\$ 230,000
Canisters VOC sample collection and analysis	\$ -	\$ 350,000	\$ 350,000	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ 400,000	\$ 400,000
Carbonyl sample collection and analysis	\$ -	\$ 100,000	\$ 100,000	\$ -	\$ 10,000	\$ 10,000	\$ -	\$ 110,000	\$ 110,000
Additional VOC analysis (2 more day)					\$ 60,000	\$ 60,000	\$ -	\$ 60,000	\$ 60,000
<b>Subtotal Type 1 Sites</b>	\$ -	\$ 840,000	\$ 840,000	\$ -	\$ 180,000	\$ 180,000	\$ -	\$ 1,020,000	\$ 1,020,000
Type 2 Supplemental Sites (5 + 2 optional)									
Site acquisition and setup	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ 20,000	\$ 20,000	\$ -	\$ 70,000	\$ 70,000
Equipment purchase	\$ -	\$ 270,000	\$ 270,000	\$ -	\$ 90,000	\$ 90,000	\$ -	\$ 360,000	\$ 360,000
Operations	\$ -	\$ 220,000	\$ 220,000	\$ -	\$ 70,000	\$ 70,000	\$ -	\$ 290,000	\$ 290,000
Canisters VOC sample collection and analysis	\$ 310,000	\$ 250,000	\$ 560,000	\$ -	\$ 80,000	\$ 80,000	\$ 310,000	\$ 330,000	\$ 640,000
Carbonyl sample collection and analysis	\$ 90,000	\$ 70,000	\$ 160,000	\$ -	\$ 20,000	\$ 20,000	\$ 90,000	\$ 90,000	\$ 180,000
Additional VOC analysis (2 more day)					\$ 50,000	\$ 50,000	\$ -	\$ 50,000	\$ 50,000
<b>Subtotal Type 2 Sites</b>	\$ 400,000	\$ 860,000	\$ 1,260,000	\$ -	\$ 330,000	\$ 330,000	\$ 400,000	\$ 1,190,000	\$ 1,590,000
Research Sites (3)									
Site acquisition and setup	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 50,000
Equipment purchase	\$ -	\$ 480,000	\$ 480,000	\$ -	\$ -	\$ -	\$ -	\$ 480,000	\$ 480,000
Operations	\$ -	\$ 170,000	\$ 170,000	\$ -	\$ -	\$ -	\$ -	\$ 170,000	\$ 170,000
Canisters VOC sample collection and analysis	\$ -	\$ 30,000	\$ 30,000	\$ -	\$ -	\$ -	\$ -	\$ 30,000	\$ 30,000
Carbonyl sample collection and analysis	\$ -	\$ 10,000	\$ 10,000	\$ -	\$ -	\$ -	\$ -	\$ 10,000	\$ 10,000
NO2, HNO3 by TDLAS (includes operation)	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 50,000
H2O2, HCHO by TDLAS (includes operation)	\$ -	\$ 20,000	\$ 20,000	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 20,000
Auto GC/Ion Trap MS (use fee option)	\$ -	\$ 470,000	\$ 470,000	\$ -	\$ -	\$ -	\$ -	\$ 470,000	\$ 470,000
option)	\$ -	\$ 120,000	\$ 120,000	\$ -	\$ -	\$ -	\$ -	\$ 120,000	\$ 120,000
<b>Subtotal Research Sites</b>	\$ -	\$ 1,280,000	\$ 1,280,000	\$ -	\$ -	\$ -	\$ -	\$ 1,280,000	\$ 1,280,000
<b>Subtotal with GC/MS purchase option</b>	\$ -	\$ 1,400,000	\$ 1,400,000	\$ -	\$ -	\$ -	\$ -	\$ 1,400,000	\$ 1,400,000
<b>Total Surface AQ &amp; Met</b>	\$ 400,000	\$ 2,980,000	\$ 3,380,000	\$ 510,000	\$ 510,000	\$ 510,000	\$ 400,000	\$ 3,490,000	\$ 3,890,000
<b>Total Surf AQ &amp; Met (w/ GC/MS purchase)</b>	\$ 400,000	\$ 3,100,000	\$ 3,500,000				\$ 400,000	\$ 3,100,000	\$ 3,500,000

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**Table 5-1 (continued)**  
**Summary of Cost Estimates for the CCOS Field Measurement Program**

Elements	Base Study			Optional			Total		
	In-Kind Cost (\$)	Contracts Cost (\$)	Total Cost (\$)	In-Kind Cost (\$)	Contracts Cost (\$)	Total Cost (\$)	In-Kind Cost (\$)	Contracts Cost (\$)	Project Cost (\$)
<b>Upper-Air Meteorology and Air Quality</b>									
Continuous RWP/Rass and SODARs	\$ -	\$ 730,000	\$ 730,000	\$ -	\$ 180,000	\$ 180,000	\$ -	\$ 910,000	\$ 910,000
IOP Radiosondes/Ozonesondes	\$ 20,000	\$ 190,000	\$ 210,000	\$ -	\$ -	\$ -	\$ 20,000	\$ 190,000	\$ 210,000
Ground-base Lidar (150 hours during 1 month)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Instrumented Aircrafts	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
AQ aircraft with ozone lidar	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
AQ aircraft (UCD #1 and UCD #2) <sup>1</sup>	\$ -	\$ 350,000	\$ 350,000	\$ -	\$ -	\$ -	\$ -	\$ 350,000	\$ 350,000
AQ aircraft #3 overwater <sup>1</sup>	\$ -	\$ 275,000	\$ 275,000	\$ -	\$ -	\$ -	\$ -	\$ 275,000	\$ 275,000
AQ aircraft #4	\$ -	\$ 225,000	\$ 225,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Aloft VOC	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Aircraft Canisters <sup>1</sup>	\$ -	\$ 278,000	\$ 278,000	\$ -	\$ 30,000	\$ 30,000	\$ -	\$ 308,000	\$ 308,000
Aircraft Carbonyl <sup>1</sup>	\$ -	\$ 78,000	\$ 78,000	\$ -	\$ 10,000	\$ 10,000	\$ -	\$ 88,000	\$ 88,000
<b>Total Upper-Air Meteorology and Air Quality</b>	\$ 20,000	\$ 2,126,000	\$ 2,146,000	\$ -	\$ 220,000	\$ 220,000	\$ 20,000	\$ 2,346,000	\$ 2,366,000
<b>Field Operations and Management</b>	\$ 203,000	\$ 273,000	\$ 476,000	\$ -	\$ -	\$ -	\$ 203,000	\$ 273,000	\$ 476,000
<b>Quality Assurance</b>									
QA Plan	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 50,000
QA Coordination (1 person x 500 hrs)	\$ 40,000	\$ -	\$ 40,000	\$ -	\$ -	\$ -	\$ 40,000	\$ -	\$ 40,000
Ozone and NOx (2 persons x 10 sites x 32 hrs)	\$ 80,000	\$ -	\$ 80,000	\$ -	\$ -	\$ -	\$ 80,000	\$ -	\$ 80,000
VOC Audits (1 person x 160 hrs)	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 50,000
Surface and upper-air meteorology audits	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 50,000
Nitrogen Species	\$ -	\$ 30,000	\$ 30,000	\$ -	\$ -	\$ -	\$ -	\$ 30,000	\$ 30,000
VOC data validation	\$ -	\$ 40,000	\$ 40,000	\$ -	\$ -	\$ -	\$ -	\$ 40,000	\$ 40,000
Aloft air quality data validation	\$ -	\$ 40,000	\$ 40,000	\$ -	\$ -	\$ -	\$ -	\$ 40,000	\$ 40,000
Surface meteorology data validation	\$ 12,000	\$ -	\$ 12,000	\$ -	\$ -	\$ -	\$ 12,000	\$ -	\$ 12,000
Upper-Air Meteorology validation	\$ -	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 50,000
<b>Total Quality Assurance</b>	\$ 132,000	\$ 310,000	\$ 442,000	\$ -	\$ -	\$ -	\$ 132,000	\$ 310,000	\$ 442,000

**Table 5-1 (continued)**  
**Summary of Cost Estimates for the CCOS Field Measurement Program**

Elements	Base Study			Optional			Total		
	In-Kind Cost (\$)	Contracts Cost (\$)	Total Cost (\$)	In-Kind Cost (\$)	Contracts Cost (\$)	Total Cost (\$)	In-Kind Cost (\$)	Contracts Cost (\$)	Project Cost (\$)
<b>Data Management</b>	\$ 72,000	\$ 100,000	\$ 172,000	\$ -	\$ -	\$ -	\$ 72,000	\$ 100,000	\$ 172,000
<b>Emission Inventory Development</b>	\$ 470,000	\$465,000	\$ 935,000	\$ 185,000	\$ 185,000	\$ 370,000	\$ 470,000	\$ 650,000	\$ 1,120,000
<b>Contingency</b>		\$46,000	\$ 46,000	\$ 85,000		\$ 85,000	\$ -	\$ 131,000	\$ 46,000
<b>TOTAL (with GC/MS purchase option)</b>	<b>\$1,369,000</b>	<b>\$6,500,000</b>	<b>\$7,869,000</b>	<b>\$0</b>	<b>\$1,000,000</b>	<b>\$915,000</b>	<b>\$1,369,000</b>	<b>\$7,500,000</b>	<b>\$8,784,000</b>
<b>Credit for Resale of Equipment <sup>2</sup></b>		<b>(\$400,000)</b>	<b>(\$400,000)</b>					<b>(\$400,000)</b>	<b>(\$400,000)</b>
<b>NET TOTAL</b>	<b>\$1,369,000</b>	<b>\$6,100,000</b>	<b>\$7,469,000</b>	<b>\$0</b>	<b>\$1,000,000</b>	<b>\$915,000</b>	<b>\$1,369,000</b>	<b>\$7,100,000</b>	<b>\$8,384,000</b>

<sup>1</sup> 10% applied toward measurement of elevated plumes.

<sup>2</sup> 40% of the equipment purchases totaling \$1,000,000.