

EXHIBIT SUMMARY SHEET

Proposing Entity (include other participating entities): Nevada County Public Works

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Total Project Budget:

	AB 2766 Funds	Co-Funding	Total Project Costs
Capital Costs	\$ <u>179,808</u>	\$ <u>100,279</u>	\$ <u>280,087</u>
Operating Costs	\$ _____	\$ _____	\$ _____
TOTAL	\$ <u>179,808</u>	\$ <u>100,279</u>	\$ <u>280,087</u>

Type of Project: (check one)

- Quantifiable Project
- Reduced Emission Vehicles Project

Implementation Area for Project: Check if District-wide

Describe the Implementation Area for the Project (e.g. city, county, region): County

Estimated Emission Reductions:

A. Emission Reductions (lbs/yr)

Reactive Organic Gases 585.93 Nitrogen Oxides 7,298.95 PM₁₀ 521.53

B. Vehicle Miles Traveled (VMT) Reduced N/A

Single Occupancy Vehicle Trips Reduced N/A

C. Number of people reached per day through public education N/A

Note* Total emission reductions are comparing our current dual engine unit to a new single engine unit. Spreadsheet shows per engine reductions.

Cost-effectiveness: \$ 1.71 per pound (AB 2766 Funds Only)

Brief Project Description:

Replace 1990 dual engine Tier 0 emission Elgin street sweeper with a new single engine unit. Reducing emissions, fuel consumption and maintenance costs. This project will keep roadways safe and clean and waterways free from contaminated runoff.

REQUEST FOR PROPOSAL CONTENTS CHECKLIST

Applicant: Nevada County Public Works

Please complete and attach this checklist with your application.

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Request for Proposal Contents Checklist - page 2

Authorization Letter/Resolution - page Pending Board Approval

Project Description - page 3

Project Organization/Background - page 4

Emissions Benefits/Cost-Effectiveness - page 5&6

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All Pages Numbered

Proposal, One Original

(CHECK ONE ONLY)
Quantifiable Project

- OR -

Reduced Emission Vehicles Project

Project Description: Nevada County Public works proposes to replace our Tier 0, dual engine, 1990 Elgin street sweeper with a new model year Tier 4 final single engine unit. Replacing this unit will result in reduced fuel consumption and emissions, while keeping the roadways safe and clean and waterways free from contaminated runoff. Scope of work: Sweep and remove debris from roadways. Requests for street sweeping have increased, primarily by bicyclists. The cost effectiveness for this project is high as bicycle, pedestrian, and motorist safety increases when our roadways are swept. In addition, sweeping helps maintain water quality by removing debris that otherwise make its way to our waterways laden with contaminants from motor vehicles.

Project Organization/Background: The County of Nevada, Public works roads division is responsible for the maintenance and repair of over 400 miles of paved roads in the unincorporated areas of Nevada County. Street sweeping requests have increased. With a new street sweeper we will be able to more efficiently keep up with requests, while reducing emissions and using less fuel.

Nevada county public works has successfully completed grants in the past to include vehicle replacement grants.

NSAQMD Grant	Nevada County	
Grant Year:	2021	
Department Name:	Public Work, Fleet	
Grant Name:	New Street Sweeper	
		Funding Percentages
	Funding Percentages	100%
Item	Total for County	Nevada County
Grant Funding Amount	\$179,808	\$179,808
In-Kind Funding amount	\$100,279	\$100,279
Total Project Funding amount	\$280,087	\$280,087
		Trip Percentages
	Trip Percentages	100%
Effectiveness Period (LIFE)	15yr	
Weeks	52.00	
Days (includes holidays/may need to adjust)	234.00	
Average Miles per trip (one-way)	30.00	
Capital recovery factor (3%)	0.08	
Total Yearly Miles	14,040.00	
Calculated Daily Trip Run time @ 15mph (HRS)	4.000	
Yearly Calculated Run Time (HRS)	936.00	
Current Street Sweeper Dual Tier Zero Emissions	Front Engine 1990 Ford 6.6l 170bhp	Aux Engine 1990 John Deere 3.9l 85hp
Data collected from Table 1 US EPA & California emission standards for heavy-duty CI engines. https://dieselnet.com/standards/us/hd.php#pre04		
	Annual	Annual
Nitrogen Oxides (NOx) Pounds	4,932.246	2,466.123
Reactive Organic Gases (ROG) Pounds	393.036	196.518
Particular Matter (PM10) Pounds	350.063	175.032
Proposed new single engine street sweeper	Single engine 2022 Cummins 6.7l 200hp	
	Annually	
Nitrogen Oxides (NOx)	78.930	
Reactive Organic Gases (ROG)	2.631	
Particular Matter (PM10)	2.631	
Data based on reduction in emissions from engine model year differences on Table 1 US EPA & California emission standards for heavy-duty CI engines. https://dieselnet.com/standards/us/hd.php#pre04		
Annual Emission Reduction - NOX (lbs./year)	7319.4386	
Annual Emission Reduction - ROG (lbs./year)	586.9232	
Annual Emission Reduction - PM10 (lbs./year)	522.4637	
Total Emissions reduction (All) (Lbs./year)	8428.8256	
	Annual	
Cost-Effectiveness of Funding Dollars (dollars/lb.)	\$1.71	

Spreadsheet for Calculating the Cost Effectiveness of Old diesel engines versus new diesel engines

****Please only enter values into those cells that are shaded blue, all other cells are either formulas or constants**

Conversion Factor for converting grams to pounds: 454
 Amount of Grant Request: \$ 179,808
 Capital Recovery Factor: 0.08

Old Engine #1 170 Horsepower (hp)
 Old Engine #1 936 Annual Hours of Operation
 Old Engine #1 ROG 1.1204 g/bhp-hr
 Old Engine #1 NOx 14.06 g/bhp-hr
 Old Engine #1 PM 0.9979 g/bhp-hr
 ROG 392.68 lbs/year
 NOx 4927.81 lbs/year
 PM 349.75 lbs/year
 Old Engine Total 5670.24 lbs/year all pollutants

Old Engine #2 85 Horsepower (hp)
 Old Engine #2 936 Annual Hours of Operation
 Old Engine #2 ROG 1.1204 g/bhp-hr
 Old Engine #2 NOx 14.06 g/bhp-hr
 Old Engine #2 PM 0.9979 g/bhp-hr
 ROG 196.34 lbs/year
 NOx 2463.91 lbs/year
 PM 174.87 lbs/year
 Old Engine Total 2835.12 lbs/year all pollutants

New Engine #1 200 Horsepower (hp)
 New Engine #1 936 Annual Hours of Operation
 New Engine #1 ROG 0.0075 g/bhp-hr
 New Engine #1 NOx 0.225 g/bhp-hr
 New Engine #1 PM 0.0075 g/bhp-hr
 ROG 3.09 lbs/year
 NOx 92.78 lbs/year
 PM 3.09 lbs/year
 New Engine Total 98.96 lbs/year all pollutants

New Engine #2 Horsepower (hp)
 New Engine #2 Annual Hours of Operation
 New Engine #2 ROG g/bhp-hr
 New Engine #2 NOx g/bhp-hr
 New Engine #2 PM g/bhp-hr
 ROG 0.00 lbs/year
 NOx 0.00 lbs/year
 PM 0.00 lbs/year
 New Engine Total 0.00 lbs/year all pollutants

Emissions Reduced, ROG 389.59 lbs/year
 Emissions Reduced, NOx 4835.04 lbs/year
 Emissions Reduced, PM 346.66 lbs/year

Emissions Reduced, ROG 196.34 lbs/year
 Emissions Reduced, NOx 2463.91 lbs/year
 Emissions Reduced, PM 174.87 lbs/year

Difference between old and new: 5571.28 all pollutants

Difference between old and new: 2835.12 all pollutants

Cost Effectiveness for New Engine #1: \$ 2.58 per pound

Cost Effectiveness for New Engine #2: \$ 5.07 per pound

Capitol Recover Factors

1 year	1.03	project life
3 years	0.35	project life
5 years	0.22	project life
7 years	0.16	project life
10 years	0.12	project life
12 years	0.10	project life
15 years	0.08	project life
20 years	0.07	project life

Cost Effectiveness if grant amount

is for both engines: \$ 1.71 per pound

The total combined estimated pollutants reduced

Pounds Annually	Kilograms Daily
8406.41	10.47

Work Statement:

This project will be broken out into 6 phases. Project will start after January 1, 2022 immediately following approval of AB2766 RFP. Phases will go directly after another until completed.

Phase 1. Request current quote from Owen equipment for 2022 Crosswind street sweeper.

Phase 2. Submit funding request for total of AB2766 grant funding approved.

Phase 3. Submit request for use of funds from Roads ISF replacement fund for remainder of new purchase balance.

Phase 4. Submit request for County Purchase order to purchase New Elgin street sweeper.

Phase 5. Submit purchase order and complete purchase of new street sweeper.

Phase 6. Obtain and install stickers "Purchased with funds from the Northern Sierra Air Quality Management District DMV surcharge funds. Ensuring roads are clean and safe for usage by all". Install GPS telematics tracking and safety equipment and release to service.

Funding Request/Breakdown of Cost

Purchase of new street sweeper	\$ Amount
Funding source	
AB 2766 DMV surcharge funds (Requested)	\$179,808
Nevada County Roads ISF replacement fund (co-funding)	\$100,279
Operating cost covered by AB 2766	\$0
Administrative costs	\$0
	Total
	\$280,087

Schedule of Deliverables/Monitoring Program:

Check in with each of the following tasks bi-weekly to make sure we are on task to complete the project before the end of the year.

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