California Air Resources Board

Appendix D

Cost Survey and Aggregated Responses

Proposed Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation

Date of Release: September 20, 2022

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I. Introduction

In October 2021, California Air Resources Board (CARB) staff developed a survey to help CARB better understand how off-road diesel vehicles are purchased and other costs that stakeholders may incur as a result of the proposed amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation (Proposed Amendments). The survey was developed at the request of stakeholders during the workgroup on October 15, 2021, which was focused around the cost analysis related to the Proposed Amendments. The survey was distributed directly to all registrants from the October 15, 2021 workgroup, via email, and a notice of availability was distributed to the GovDelivery topic list for the "Off-Road Equipment (In-Use) Control Measure" on October 20, 2021.

II. Directives

The survey consisted of two parts:

1. In the Questionnaire Worksheet, staff requested information to help CARB better understand how off-road vehicles are purchased and other costs that stakeholders may incur as a result of the Proposed Amendments. It included questions regarding vehicle purchasing behavior, vehicle purchasing mechanisms, fuel use, sales of old vehicles, and other questions to better understand how the proposed concept would impact fleets.
2. The Purchasing Data Worksheet requested detailed cost information on recent vehicle acquisitions. CARB staff was particularly interested in both new and used cost data for all equipment types greater than 600 horsepower (hp), aerial lifts, paving equipment, sweeper/scrubbers, drill rigs, rubber-tired dozers, trenchers, workover rigs and railcar movers. The goal was to receive the most relevant cost data for Tier 4 vehicles, both new and used, from fleets firsthand.

Stakeholders submitted their responses to ordamendments@arb.ca.gov by November 12, 2021. Fleets were also encouraged to email additional information on a separate document if needed.

III. Survey – Questionnaire

A. Background

The first part of the questionnaire consisted of a few basic questions that helped CARB staff identify the fleet.

Table 1. Background Questions

Background Questions
What is your company name and contact information?
What is your DOORS ID? (optional)

Background Questions
What is your fleet size?
What counties do you primarily operate in? Please provide a list if more than one.
What is your industry NAICS code or what industry do you associate with? (Industry NAICS code preferred)

B. Purchasing Behavior

The questionnaire solicited feedback from stakeholders on their purchasing behavior and how they would respond to the Proposed Amendments. For privacy reasons, the fleet names are not provided, but the fleet size, operational counties, and the North American Industry Classification System (NAICS) code are provided to identify and characterize the fleet responses. Table 2 provides the fleet responses to purchasing behavior questions.

Table 2. Purchasing Behavior Questions and Responses

Fleet Size – Operational County – NAICS code[1]	How often do you purchase brand new vehicles?	How often do you purchase used vehicles?	If used, what is the typical age of the vehicle you look for?
Large – All counties in California	100%	0%	*n/a
Large – All counties in California – 48211	90%	10%	<1000 hours
Large – Kern – 5093, 238910	100%	0%	5 years all Tier 4 final
Large – Sacramento – 921190	100%	0%	n/a
Large – Sacramento, Placer Counties – 327110, 327120	80%	20%	<5 Years

[1] This column provides responses to the Background Questions asked in Table 1.

Fleet Size – Operational County – NAICS code[1]	How often do you purchase brand new vehicles?	How often do you purchase used vehicles?	If used, what is the typical age of the vehicle you look for?
Large – San Bernardino, Los Angeles, Orange, Riverside – 221310	90%	10%	2 years w/ minimal hours
Large – San Joaquin, Contra Costa, Sutter Stanislaus, Sacramento, Yuba, Glenn, Butte, Los Angeles, Amador	90%	10%	<5 Years
Large – San Joaquin, Solano, Fresno – 327331	95%	5%	<5 Years
Large – Santa Clara, San Francisco, Alameda – 532310	100%	0%	n/a
Medium – Los Angeles	100%	0%	2 years
Small (>500 hp) – Solano	100%	0%	n/a
Small (>500 hp) – Sonoma, Napa, Marin, Mendocino – 238910	90%	10%	5 Years
Small (>500 hp) – Ventura	100%	0%	n/a
Small (>500 hp) – Ventura	100%	0%	0
Ultra-Small (<500 hp) – Alameda	60%	40%	5 Years
Ultra-Small (<500 hp) – Kern – 2111	30%	70%	5-10 Years
Ultra-Small (<500 hp) – Los Angeles – 562212	100%	0%	n/a

Fleet Size – Operational County – NAICS code[1]	How often do you purchase brand new vehicles?	How often do you purchase used vehicles?	If used, what is the typical age of the vehicle you look for?
Ultra-Small (<500 hp) – Monterey – 61	70%	30%	5 Years
Ultra-Small (<500 hp) – Monterey – Construction	90%	10%	2-3 years

*n/a means that the fleet/company/persons did not provide a response

CARB staff identified 5 potential compliance pathways that a fleet could follow to come into compliance with the Proposed Amendments and asked fleets which pathways they would most likely utilize. Based on the survey results, on average, large fleets purchase brand new vehicles approximately 94 percent of the time, and purchase used vehicles 6 percent of the time. On average, small/medium fleets purchase brand new vehicles approximately 84 percent of the time, and purchase used vehicles 16 percent of the time. Table 3 provides the responses received. The responses from stakeholders were then used to analyze direct costs for vehicle owners as part of the cost analysis of the Proposed Amendments.

Table 3. Compliance Pathways and Responses

Fleet Size – Operational County – NAICS code	Remove the old vehicles from your fleet and purchase a new or used Tier 4 final or cleaner vehicle.	Remove the old vehicles from your fleet and rent a Tier 4 final or cleaner vehicle.	Remove the old vehicles from your fleet without replacing it.	Place the old vehicles under the low-use provision and purchase a new or used Tier 4 final or cleaner vehicle.	Place the old vehicles under the low-use provision without replacing it.
Large – All counties in California	100%	0%	0%	0%	0%
Large – All counties in California – 48211	50%	30%	10%	0%	10%
Large – Kern – 5093, 238910	90%	0%	10%	90%	10%

Fleet Size – Operational County – NAICS code	Remove the old vehicles from your fleet and purchase a new or used Tier 4 final or cleaner vehicle.	Remove the old vehicles from your fleet and rent a Tier 4 final or cleaner vehicle.	Remove the old vehicles from your fleet without replacing it.	Place the old vehicles under the low-use provision and purchase a new or used Tier 4 final or cleaner vehicle.	Place the old vehicles under the low-use provision without replacing it.
Large – Sacramento – 921190	90%	0%	10%	0%	0%
Large – Sacramento, Placer Counties – 327110, 327120	70%	0%	0%	25%	5%
Large – San Bernardino, Los Angeles, Orange, Riverside – 221310	60%	0%	10%	10%	20%
Large – San Joaquin, Contra Costa, Sutter Stanislaus, Sacramento, Yuba, Glenn, Butte, Los Angeles, Amador	90%	5%	3%	0%	2%
Large – San Joaquin, Solano, Fresno – 327331	80%	0%	0%	10%	10%
Large – Santa Clara, San Francisco, Alameda – 532310	100%	0%	0%	0%	0%
Medium – Los Angeles	95%	5%	0%	0%	0%
Small (>500 hp) – Solano	90%	0%	0%	0%	10%
Small (>500 hp) – Sonoma, Napa, Marin, Mendocino – 238910	90%	10%	0%	0%	0%

Fleet Size – Operational County – NAICS code	Remove the old vehicles from your fleet and purchase a new or used Tier 4 final or cleaner vehicle.	Remove the old vehicles from your fleet and rent a Tier 4 final or cleaner vehicle.	Remove the old vehicles from your fleet without replacing it.	Place the old vehicles under the low-use provision and purchase a new or used Tier 4 final or cleaner vehicle.	Place the old vehicles under the low-use provision without replacing it.
Small (>500 hp) – Ventura	100%	0%	0%	0%	0%
Small (>500 hp) – Ventura	90%	0%	0%	0%	10%
Ultra-Small (<500 hp) – Alameda	40%	10%	30%	10%	10%
Ultra-Small (<500 hp) – Kern – 2111	0%	0%	50%	0%	50%
Ultra-Small (<500 hp) – Los Angeles – 562212	20%	10%	0%	30%	40%
Ultra-Small (<500 hp) – Monterey – 61	70%	0%	20%	10%	0%
Ultra-Small (<500 hp) – Monterey – Construction	60%	0%	30%	0%	10%

C. Purchasing Mechanisms

The questionnaire solicited feedback from stakeholders on purchasing mechanisms. There were varied results on common interest rates and the number of years a vehicle is financed. Based on the survey responses, on average, over 80 percent of fleets acquire off-road vehicle with cash, about 15 percent use a loan, and less than 5 percent lease the vehicle. Table 4 below, provides the anonymized fleet responses.

Table 4. Purchasing Mechanisms Questions and Responses

Fleet Size – Operational County – NAICS code	How often do you acquire off-road vehicles for lease?	How often do you acquire off-road vehicles with cash?	What are common interest rates for off-road diesel vehicles?	In general, over how many years are your vehicles financed?	Who do you usually access financing from?	Are there different financing mechanisms for new versus used vehicles?
Large – All counties in California	0%	100%	n/a	n/a	n/a	n/a
Large – All counties in California – 48211	10%	90%	n/a	n/a	n/a	n/a
Large – Kern – 5093, 238910	0%	90%	0.90%	7	Dealer	No
Large – Sacramento – 921190	0%	100%	n/a	n/a	n/a	n/a
Large – Sacramento, Placer Counties – 327110, 327120	0%	100%	n/a	n/a	n/a	n/a
Large – San Bernardino, Los Angeles, Orange, Riverside – 221310	10%	90%	Unknown	Unknown	Dealerships/ Vendors	Unknown
Large – San Joaquin, Contra Costa, Sutter Stanislaus, Sacramento, Yuba, Glenn, Butte, Los Angeles, Amador	10%	90%	n/a	n/a	n/a	n/a

Fleet Size – Operational County – NAICS code	How often do you acquire off-road vehicles for lease?	How often do you acquire off-road vehicles with cash?	What are common interest rates for off-road diesel vehicles?	In general, over how many years are your vehicles financed?	Who do you usually access financing from?	Are there different financing mechanisms for new versus used vehicles?
Large – San Joaquin, Solano, Fresno – 327331	5%	95%	*n/a	n/a	n/a	n/a
Large – Santa Clara, San Francisco, Alameda – 532310	0%	70%	2.99%	3	Manufacturer lending partners	N/A
Medium – Los Angeles	0%	100%	60%	6	City General Fund	n/a
Small (>500 hp) – Solano	0%	100%	n/a	n/a	n/a	n/a
Small (>500 hp) – Sonoma, Napa, Marin, Mendocino – 238910	10%	20%	4.5	5	Dealerships	Yes
Small (>500 hp) – Ventura	0%	100%	n/a	n/a	n/a	n/a
Small (>500 hp) – Ventura	0%	100%		0	n/a	n/a
Ultra-Small (<500 hp) – Alameda	10%	80%	n/a	n/a	n/a	n/a
Ultra-Small (<500 hp) – Kern – 2111	0%	50%	n/a	n/a	Dealership	n/a

Fleet Size – Operational County – NAICS code	How often do you acquire off-road vehicles for lease?	How often do you acquire off-road vehicles with cash?	What are common interest rates for off-road diesel vehicles?	In general, over how many years are your vehicles financed?	Who do you usually access financing from?	Are there different financing mechanisms for new versus used vehicles?
Ultra-Small (<500 hp) – Los Angeles – 562212	0%	100%	n/a	n/a	n/a	n/a
Ultra-Small (<500 hp) – Monterey – 61	10%	70%	3.9	5	Banks	No
Ultra-Small (<500 hp) – Monterey – Construction	0%	10%	6	5	Manufacturer	None

*n/a means that the fleet/company/persons did not provide a response

D. Fuel Use

The questionnaire listed 3 questions regarding the use of diesel fuel. Based on the survey, over 80 percent of fleets procured diesel fuel through a contract, and less than 20 percent utilized fueling stations. Of the responses received, the price of diesel fuel varied from $1.00 per gallon to $4.69 per gallon. Table 5 below provides the anonymized fleet responses.

Table 5. Fuel Use Questions and Responses

Fleet Size – Operational County – NAICS code	How do you typically procure diesel fuel?	Do you currently use renewable diesel in any of your off-road vehicles?	If you do use renewable diesel, what is the typical price you pay per gallon?
Large – All counties in California	Contract	Yes	$3.87 in August 2021
Large – All counties in California – 48211	Contract	No	n/a

Fleet Size – Operational County – NAICS code	How do you typically procure diesel fuel?	Do you currently use renewable diesel in any of your off-road vehicles?	If you do use renewable diesel, what is the typical price you pay per gallon?
Large – Kern – 5093, 238910	Contract	No	n/a
Large – Sacramento – 921190	Contract	Yes	$4.55
Large – Sacramento, Placer Counties – 327110, 327120	Contract	No	n/a
Large – San Bernardino, Los Angeles, Orange, Riverside – 221310	Contract	Yes	$3.32
Large – San Joaquin, Contra Costa, Sutter Stanislaus, Sacramento, Yuba, Glenn, Butte, Los Angeles, Amador	Other	Yes	$3.37 Off-Road, $4.30 On-Road
Large – San Joaquin, Solano, Fresno – 327331	Contract	No	n/a
Large – Santa Clara, San Francisco, Alameda – 532310	Contract	No	n/a
Medium – Los Angeles	Contract	Yes	$1.00
Small (>500 hp) – Solano	Contract	No	n/a

Fleet Size – Operational County – NAICS code	How do you typically procure diesel fuel?	Do you currently use renewable diesel in any of your off-road vehicles?	If you do use renewable diesel, what is the typical price you pay per gallon?
Small (>500 hp) – Sonoma, Napa, Marin, Mendocino – 238910	Fueling Station	*n/a	n/a
Small (>500 hp) – Ventura	Fueling Station	Yes	$3.32
Small (>500 hp) – Ventura	Fueling Station	No	n/a
Ultra-Small (<500 hp) – Alameda	Contract	No	n/a
Ultra-Small (<500 hp) – Kern – 2111	Other	No	n/a
Ultra-Small (<500 hp) – Los Angeles – 562212	Contract	n/a	n/a
Ultra-Small (<500 hp) – Monterey – 61	Contract	Yes	$4.69
Ultra-Small (<500 hp) – Monterey – Construction	Contract	No	n/a

*n/a means that the fleet/company/persons did not provide a response

E. Selling Old Equipment

The questionnaire requested information on how the vehicles were sold and what method was most often used. Based on the survey, on average, about 75 percent of the vehicle were sold and less than 25 percent were scrapped. Of the vehicles that were sold, on average, about 50 percent were sold via auction. Fleets responded that 40 percent were sold in-state and over 25 percent were sold out-of-state. Table 6 below, provides the anonymized fleet responses.

Table 6. Selling Old Equipment Questions and Responses

Fleet Size – Operational County – NAICS code	When retiring old vehicles, how often do you sell the vehicle?	When retiring old vehicles, how often do you scrap the vehicle?	If you sell a vehicle, what percentage are sold via auction?	If you sell a vehicle, what percentage are sold in-state?	If you sell a vehicle, what percentage are sold out-of-state?	What is the monetary value of scrapping an old off-road vehicle?
Large – All counties in California	100%	0%	100%	0%	0%	n/a
Large – All counties in California – 48211	80%	20%	100%	0%	0%	Minimal
Large – Kern – 5093, 238910	100%	0%	0%	0%	100%	Market Value of Scrapping
Large – Sacramento – 921190	100%	0%	100%	0%	0%	$0
Large – Sacramento, Placer Counties – 327110, 327120	0%	100%	0%	0%	0%	$300 - $500.
Large – San Bernardino, Los Angeles, Orange, Riverside – 221310	100%	0%	100%	100%	0%	Unknown
Large – San Joaquin, Contra Costa, Sutter Stanislaus, Sacramento, Yuba, Glenn, Butte, Los Angeles, Amador	90%	10%	10%	20%	70%	Net $0
Large – San Joaquin, Solano, Fresno – 327331	20%	80%	0%	0%	100%	$300 - $500.

Fleet Size – Operational County – NAICS code	When retiring old vehicles, how often do you sell the vehicle?	When retiring old vehicles, how often do you scrap the vehicle?	If you sell a vehicle, what percentage are sold via auction?	If you sell a vehicle, what percentage are sold in-state?	If you sell a vehicle, what percentage are sold out-of-state?	What is the monetary value of scrapping an old off-road vehicle?
Large – Santa Clara, San Francisco, Alameda – 532310	100%	0%	60%	40%	0%	N/A.
Medium – Los Angeles	100%	0%	100%	40%	60%	$1,000
Small (>500 hp) – Solano	80%	20%	100%	50%	50%	n/a
Small (>500 hp) – Sonoma, Napa, Marin, Mendocino – 238910	100%	0%	0%	100%	0%	*n/a
Small (>500 hp) – Ventura	100%	0%	100%	100%	0%	n/a
Small (>500 hp) – Ventura	50%	50%	n/a	n/a	n/a	n/a
Ultra-Small (<500 hp) – Alameda	90%	10%	90%	0%	0%	n/a
Ultra-Small (<500 hp) – Kern – 2111	50%	50%	0%	100%	0%	n/a
Ultra-Small (<500 hp) – Los Angeles – 562212	90%	0%	100%	90%	10%	Unknown
Ultra-Small (<500 hp) – Monterey – 61	10%	70%	0%	90%	10%	$150

Fleet Size – Operational County – NAICS code	When retiring old vehicles, how often do you sell the vehicle?	When retiring old vehicles, how often do you scrap the vehicle?	If you sell a vehicle, what percentage are sold via auction?	If you sell a vehicle, what percentage are sold in-state?	If you sell a vehicle, what percentage are sold out-of-state?	What is the monetary value of scrapping an old off-road vehicle?
Ultra-Small (<500 hp) – Monterey – Construction	80%	10%	10%	20%	80%	Price of hauling

*n/a means that the fleet/company/persons did not provide a response

F. Other Questions

The questionnaire included a few open-ended questions for fleets, which garnered various responses. Table 7 below, provides the anonymized fleet responses.

Table 7. Other Questions and Responses

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
Large – All counties in California	**Yes, having the vehicle brought into the shop, getting a camera, taking a picture, uploading it, organizing it, and reporting it	No	The additional hours to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site is estimated to be 11,680 hours for	Yes, we will need to remove old Tier 2 engine vehicles from the fleet; purchase cost of new vehicles equipment; and receive, service, and equip them for service; and collect and report data into DOORS.

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
	annually. This will require labor hours to drop off the vehicle for a photograph and then pick back up.		construction contract administration. The estimated cost for 11,680 hours is $2.3 million.	
Large – All counties in California – 48211	Yes. Equipment travels throughout the state, requiring photographic evidence would be burdensome and time-consuming and would require significant labor.	Yes	n/a	In addition to the initial large capital cost of purchasing new equipment, Tier 4 final equipment has higher maintenance costs. There are more parts and at a higher price point. Additionally, repairs often have to be done by a dealer because they have a greater expertise of the technology to make repairs. We often have to pay significant travel costs if equipment needs repair in rural area.
Large – Kern – 5093, 238910	Yes, because we are requiring someone to record the hours.	No	N/A	Yes

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
Large – Sacramento – 921190	**Yes, all labor comes at a cost by the hour. Not all units are parked in one location. Each unit will have to be located, traveled to, and accessed. The photograph must be taken, copied, and stored for future access and maintained for an unspecified term.	Yes, all labor comes at a cost by the hour. This type of reporting has to be formatted, unit lists must be updated and verified, and quantities dispensed by unit have to be calculated.	Depending on the number of Public Works contracts each fiscal year, this requirement has the potential to require full time positions, including associated benefit costs, positions for clerical staff, purchasing agents, project managers and data processing staff to collect, scan, maintain, verify, store, and enforce administrative law regulations that should be enforced by the developing administrative body. This will drive up the costs to taxpayer and increase the potential of public works projects not being approved by local governing bodies.	CARB should be considering the additional capital costs of equipment when every public and private fleet are attempting to comply, and shortages of product supply exists (consider the current market for cars and trucks today). There will be additional costs for those who finance purchases in higher interest rates from increased debt to income ratios caused by removing equipment assets from service prior to the end of their estimated useful life cycle. The cost of renewable diesel is not going to remain static as the State attempts to regulate ICEs out of existence. It will increase as the supply decreases. The vague guideline at this point makes it a worst-case scenario when attempting to estimate the cost of all of the additional record documentation, recordkeeping, storage and

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
				reporting at this point, but the assumption seems to be that labor costs remain the same regardless of how many new tasks are created by administrative bodies.
Large – Sacramento, Placer Counties – 327110, 327120	No, we do this already.	Yes, best source is the diesel supplier. Due to availability issues, it will inevitably be mixed with type 2. No, we don't want to get a second tank.	n/a	Not sure what the regs will look like yet.
Large – San Bernardino, Los Angeles, Orange, Riverside – 221310	Yes, someone will have to physically go out to verify.	No, all diesel fuel consumed is from the contracted supply at our fueling depots.	1000 or more, depending on the number of CIP's any given year.	If the amendments require the replacement or retrofit of a custom specialty piece of equipment, there could be additional cost to design and replace the unit.
Large – San Joaquin, Contra Costa, Sutter Stanislaus, Sacramento, Yuba, Glenn,	Yes, annual reporting takes place in the winter, we have locations all over the state that may be closed or in-accessible. We	Yes, any additional record keeping/consolidation would add time. Most business can't find enough people to keep up with all the	**I can't imagine the amount of time required. Equipment including rentals are moved statewide. This rule would require a full-time person working all night to	**Yes, The health of the contractors, equipment manager, environmental compliance people. For 15 years we have been working to meet the 2023 fleet average target, spending billions of dollars. And now

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
Butte, Los Angeles, Amador	use the most recent service meter readings from our fuel/lube people when we can't verify. Besides, if someone wants to cheat the system, why do you think that they wouldn't cheat in the picture or disconnect the meter? Making all of the lawful operators do extra work won't stop the un-lawful.	other regulation reporting as it is.	track, print, and distribute certificates to the Foreman each day. And what if the lowbed driver picks up the wrong machine, it happens all the time. Someone needs to explain how this will stop the non-compliant fleet from operating. We have registered our fleet in DOORS and each machine has a specific EIN and engine family. Isn't that a certificate enough? If the EIN does not match what is reported, that is a violation. Why would you need a certificate? Again, you are forcing the lawful to add additional time and cost to an already expensive regulation, but not to the un-lawful.	for all our efforts, before we even get to the finish line, we are facing another challenge. The most effective path would be to allow the fleets to meet our 2023 target and beginning in 2025 as technology catches up, look at reducing the fleet average each year with the added incentive for electrification where possible. As a large fleet, I can't meet 2023 targets with any tier 0, but I can definitely make my fleet cleaner going forward if given the flexibility to retain a few tier 1 and tier 2 machines that don't get a lot of hours but will not meet the low use requirements. Fleet averaging will make it much easier to reduce emissions with more machines that typically work more hours. Instead of tying up millions in one machine that works one thousand hours, we can upgrade 10 - 15 smaller machines that work 20,000

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
				combined if given the flexibility.
Large – San Joaquin, Solano, Fresno – 327331	No, we do this already.	Yes, best source is the diesel supplier. Due to availability issues, it will inevitably be mixed with type 2. No, we don't want to get a second tank.	*n/a	Not sure what the regs will look like yet.
Large – Santa Clara, San Francisco, Alameda – 532310	No. We do NOT claim low-use exemptions for any of our equipment.	Yes. Our current fuel deliveries are typically mixed (gas & diesel) and we would have to maintain a spreadsheet which breaks out the renewable diesel only.	n/a	**The higher cost of renewable diesel which is not readily available and potentially in short supply. Secondly, most of the off-road equipment specifies that the engines can't be used with biodiesel, so we don’t know if renewable diesel can be used. If it can, we don't know if there will be additional maintenance costs related to using this fuel. If it can't, we'd have to re-fleet and this would not be cost-effective.
Medium – Los Angeles	The City captures the miles in a	The City Fuel Operation Division	100 hours	Manufacturer pricing going higher

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
	data base monthly and yearly	maintain records on the unit level		
Small (>500 hp) – Solano	No	Yes	n/a	No
Small (>500 hp) – Sonoma, Napa, Marin, Mendocino – 238910	No	Yes. Would require more sophisticated manner to track	100	Paying field employees to log vehicles coming and going on the job, plus office staff to maintain and validate the information.
Small (>500 hp) – Ventura	No	No	n/a	None
Small (>500 hp) – Ventura	No	No	8 hours	n/a
Ultra-Small (<500 hp) – Alameda	No	No	This will add 10-20 hours per contract.	No

Fleet Size – Operational County – NAICS code	Would obtaining photographic evidence of hour meters for low-use vehicles require any increase in labor hours compared to your current low-use reporting process?	Would maintaining records to show renewable diesel usage create an additional cost beyond current recordkeeping requirements?	Specifically for prime contractors and public works awarding bodies, how many additional hours do you expect to spend annually to comply with the proposed concept requiring vehicle level certificates for all equipment used at any job site?	Are there any additional costs that could be incurred as a result of the potential amendments to the Off-Road Diesel Regulation that CARB should be considering?
Ultra-Small (<500 hp) – Kern – 2111	No more time to get the information, but more time to download & submit information.	Yes, especially if it requires detailed usage more than what is now required; also costs for additional storage facilities.	n/a	Yes: If replacement engines or equipment is not available or exceeds the cost that a small business can afford, it could force them out of business. This is a very real concern. Oil drilling/ service rigs are one such example.
Ultra-Small (<500 hp) – Los Angeles – 562212	Would require a slight increase in labor hours	GSD would have to decide if renewable diesel can replace all at the plant. If so, they would manage the replacement and recordkeeping.	Most PW projects are managed by the Bureau of Engineering. Unknown impact on LASAN staff.	Unknown
Ultra-Small (<500 hp) – Monterey – 61	Yes, it takes time away from other duties to log in vehicle hours	No	8 Hours	No
Ultra-Small (<500 hp) – Monterey – Construction	Yes, equipment is scattered all over area	Yes, separate files would need to be maintained	240	You mean besides the hours and hours we are going to spend fighting with sub-contractors to provide info

*n/a means that the fleet/company/persons did not provide a response

**Responses have been summarized to preserve the identity of the fleet and/or condense the length.

IV. Survey – Purchasing Data

Staff received 19 responses from 9 large, 1 medium, and 9 small fleets, and received cost information for 440 off-road vehicles**.** Below is the list of fields that fleets were asked to complete for the purchasing data portion of the survey. Table 8 provides data from the following fields: equipment type, engine model year, engine horsepower, tier, and purchase cost. The vehicles in Table 8 were purchased in cash and were primarily new vehicles at the time of purchase. The vehicles in Table 9 were either loaned or leased and new at the time of purchase. The fields in this table include interest rate, length in years, and monthly payment, in addition to the fields in Table 8. Table 10 provides a summary of the cost data broken into horsepower groups.

- Equipment Type
- Age at time of purchase
- Transaction Year
- Engine Model Year (MY)
- Engine Horsepower (hp)
- Tier
- Equipment Make
- Equipment Model
- Engine Make
- Engine Model
- Financing Mechanism
- Purchase cost
- Interest Rate, if loan or lease
- Length in Years of loan or lease, if applicable
- Monthly Payment of loan or lease, if applicable

Table 8. Responses for New Vehicles Purchased in Cash

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Boom	2017	74	T4F	$158,403.82
Boom	2017	74	T4F	$158,403.82
Boom	2017	74	T4F	$121,192.88

[2] For the Tier column, T4F means Tier 4 final, T3 means Tier 3, T4I means Tier 4 Interim, and T0 means Tier 0 or uncontrolled.

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Boom	2017	74	T4F	$121,192.88
Crane 35ton or more	*n/a	260	T4F	$653,600.00
Crane 35ton or more	2015	275	T4F	$451,830.00
Crane 35ton or more	2015	310	T4F	$701,531.70
Crane less than 35ton	2016	74	T4F	$172,623.30
Crawler Tractors	2011	83	T3	$64,617.00
Crawler Tractors	2019	204	T4F	$356,701.00
Crawler Tractors	2018	741	T4F	$912,670.00
Excavators	2015	24.4	T4F	$50,642.50
Excavators	2019	24.4	T4F	$53,056.96
Excavators	2019	24.4	T4F	$53,056.96
Excavators	2019	57	T4F	$75,382.56
Excavators	2020	57	T4F	$83,760.93
Excavators	2016	61	T4F	$72,118.11
Excavators	2016	61	T4F	$78,298.91
Excavators	2016	61	T4F	$67,219.34
Excavators	n/a	65	T4F	$131,695.00
Excavators	2017	97	T4F	$195,816.68
Excavators	2018	166	T4F	$225,000.00

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Excavators	2019	173	T4F	$371,557.45
Excavators	2019	485	T4F	$755,198.73
Excavators	2019	560	T4F	$450,755.96
Excavators EX-3	2010	42	T4I	$65,888.00
Excavators EX-8	2019	41.8	T4F	$70,498.00
Forklifts	2008	42	T4I	$41,207.88
Forklifts	2011	45.7	T4I	$31,513.95
Forklifts	2010	49.58	T4I	$36,461.70
Forklifts	2011	56	T4I	$37,808.08
Forklifts	2008	57	T4I	$27,640.38
Forklifts	2008	57.6	T4I	$26,439.77
Forklifts	2008	57.6	T4I	$29,609.84
Forklifts	2008	57.62	T4I	$27,640.38
Forklifts	2008	57.62	T4I	$28,657.19
Forklifts	2008	57.62	T4I	$27,640.38
Forklifts	2008	57.62	T4I	$29,609.84
Forklifts	2008	58.5	T4I	$28,657.19
Forklifts	2009	58.6	T4I	$21,825.04
Forklifts	2012 Flex	61	T4I	$45,000.00

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Forklifts	2014	62	T4F	$45,000.00
Forklifts	2014	62	T4F	$45,000.00
Forklifts	2015	106	T4F	$83,495.73
Forklifts	2014	74 to 99	T4F	$100,000.00
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$222,629.54
Graders	2012	195	T4I	$222,833.19
Graders	2012	195	T4I	$222,833.19
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$223,443.05
Graders	2012	195	T4I	$220,464.84

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Graders	2012	195	T4I	$223,443.05
Graders	2012	195	T4I	$221,755.69
Graders	2012	195	T4I	$221,294.52
Graders	2012	195	T4I	$220,506.86
Graders	2012	195	T4I	$222,833.19
Graders	2012	195	T4I	$220,506.86
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$222,833.19
Graders	2012	195	T4I	$221,467.99
Graders	2012	195	T4I	$220,506.86
Graders	2012	195	T4I	$220,506.86
Graders	2012	195	T4I	$220,506.86
Graders	2012	195	T4I	$220,506.86
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$221,467.99
Graders	2012	195	T4I	$220,464.84
Graders	2012	195	T4I	$201,688.33
Graders	2012	195	T4I	$201,082.77
Graders	2012	195	T4I	$201,082.77

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Graders	2012	195	T4I	$202,941.46
Graders	2012	195	T4I	$201,688.33
Graders	2012	195	T4I	$201,688.33
Graders	2012	195	T4I	$201,688.33
Graders	2012	195	T4I	$201,082.77
Graders	2012	195	T4I	$201,688.33
Graders	2012	195	T4I	$201,688.33
Graders	2012	195	T4I	$201,082.77
Graders	2012	195	T4I	$200,295.12
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$291,513.27
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2018	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2017	253	T4F	$300,930.50
Graders	2021	253	T4F	$420,661.48
Graders	2019	253	T4F	$395,194.96
Graders	2015	299	T4F	$307,938.93
Graders	2015	299	T4F	$307,938.93
Graders	2015	299	T4F	$307,938.93

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Graders	2015	299	T4F	$307,938.93
Graders	2018	303	T4F	$568,264.04
Graders	2015	350	T4F	$356,371.62
Graders	2015	350	T4F	$356,371.62
Graders	2017	560	T4F	$414,675.03
Mower	2012	40	T4I	$101,889.10
Mower	2012	40	T4I	$101,889.10
Mower	2012	40	T4I	$101,889.10
Mower	2012	40	T4I	$101,889.10
Mower	2018	56	T4F	$59,943.00
Off Highway Trucks	2019	504	T4F	$674,008.58
Off Highway Trucks	2020	504	T4F	$671,494.47
Off Highway Trucks	2021	814	T4F	$1,011,081.71
Off-Highway Tractors	2013	99	T4I	$139,874.95
Other Construction Equipment	2019	248	T4F	$524,145.04
Other General Industrial Equipment	2011	400	T4I	$1,365,254.50
Other Material Handling Equipment	2018	87	T4F	$101,610.59

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Other Truck	2020	504	T4F	$671,494.47
Other Truck	2013	575	T4I	$650,728.75
Other Truck	2013	575	T4I	$650,728.75
Other Truck	2013	575	T4I	$649,328.75
Pavers	2015	173	T4F	$365,152.52
Paving Equipment	2019	173	T4F	$492,497.48
Paving Equipment	2015	334	T4F	$488,648.20
Paving Equipment	2015	334	T4F	$488,648.20
Paving Equipment	2015	334	T4F	$488,648.20
Rollers	2017	25	T4F	$35,238.82
Rollers	2017	25	T4F	$35,238.81
Rollers	2018	25	T4F	$34,595.15
Rollers	2019	25	T4F	$34,231.31
Rollers	2008	33	T4I	$31,393.00
Rollers	2019	35	T4F	$39,992.22
Rollers	2018	131.4	T4F	$136,800.59
Rough Terrain Forklifts	2014	56	T4F	$80,000.00
Rough Terrain Forklifts	2018	73.7	T4F	$73,109.30
Rough Terrain Forklifts	2018	73.7	T4F	$73,109.30

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Rough Terrain Forklifts	2012	99.2	T4I	$68,249.00
Rubber Tired Loaders	2015	73	T4F	$103,099.78
Rubber Tired Loaders	2019	157	T4F	$204,445.85
Rubber Tired Loaders	2021	157	T4F	$210,277.36
Rubber Tired Loaders	2012	170	T4I	$160,838.33
Rubber Tired Loaders	2012	170	T4I	$160,838.33
Rubber Tired Loaders	2013	170	T4I	$159,244.38
Rubber Tired Loaders	2021	188	T4F	$265,755.00
Rubber Tired Loaders	2015	230	T4F	$339,206.81
Rubber Tired Loaders	2015	230	T4F	$339,206.81
Rubber Tired Loaders	2015	230	T4F	$334,451.25
Rubber Tired Loaders	2015	230	T4F	$351,521.92
Rubber Tired Loaders	2019	270	T4F	$280,000.00
Rubber Tired Loaders	2015	307	T4F	$393,287.50
Rubber Tired Loaders	2021	579	T4F	$910,330.19
Rubber Tired Loaders	2019	896	T4F	$2,013,565.00
Scrapers	2020	408	T4F	$810,408.57
Skid Steer Loaders	2019	37.5	T4F	$35,626.84
Skid Steer Loaders	2019	37.5	T4F	$35,626.84

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Skid Steer Loaders	2002	46	T1	$24,767.00
Skid Steer Loaders	2018	48.8	T4F	$33,647.76
Skid Steer Loaders	2015	49	T4F	$36,140.03
Skid Steer Loaders	2015	49	T4F	$36,140.03
Skid Steer Loaders	2015	49	T4F	$36,140.02
Skid Steer Loaders	2015	49	T4F	$36,140.02
Skid Steer Loaders	2019	61	T4F	$54,952.95
Skid Steer Loaders	2016	61	T4F	$35,487.32
Skid Steer Loaders	2016	61	T4F	$35,487.32
Skid Steer Loaders	2018	61	T4F	$32,503.56
Skid Steer Loaders	2018	61	T4F	$32,503.56
Skid Steer Loaders	2018	61	T4F	$32,503.57
Skid Steer Loaders	2018	61	T4F	$33,715.22
Skid Steer Loaders	2018	61	T4F	$33,715.22
Skid Steer Loaders	2013	63	T4F	$41,228.30
Skid Steer Loaders	2015	66	T4F	$52,045.66
Skid Steer Loaders	2015	66	T4F	$52,045.66
Skid Steer Loaders	2016	66	T4F	$44,575.94
Skid Steer Loaders	2017	66	T4F	$47,283.45

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Skid Steer Loaders	2017	66	T4F	$47,283.45
Skid Steer Loaders	2019	74	T4F	$61,394.85
Skid Steer Loaders	2015	74	T4F	$61,509.00
Skid Steer Loaders	2015	74	T4F	$61,509.00
Skid Steer Loaders	2014	74	T4F	$43,686.02
Skid Steer Loaders	2014	74	T4F	$43,686.01
Skid Steer Loaders	2017	74	T4F	$42,126.28
Skid Steer Loaders	2017	74	T4F	$42,126.28
Skid Steer Loaders	2019	74	T4F	$49,223.51
Skid Steer Loaders	2020	74	T4F	$49,223.51
Skid Steer Loaders	2019	100	T4F	$69,712.50
Skid Steer Loaders (TL-3)	2012	98	T4I	$45,412.50
Sweepers/Scrubbers	2012	74	T4I	$56,160.09
Sweepers/Scrubbers	2016	74	T4F	$54,485.83
Telescopic Handler	2018	74	T4F	$62,341.86
Telescopic Handler	2018	74	T4F	$62,341.86
Telescopic Handler	2016	74	T4F	$54,460.31
Telescopic Handler	2016	74	T4F	$54,460.31

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2009	28	T4I	$20,506.00
Tractors/Loaders/ Backhoes	2017	31.2	T4F	$22,907.75
Tractors/Loaders/ Backhoes	1969	46	T0	$10,500.00
Tractors/Loaders/ Backhoes	2017	46	T4F	$47,092.37
Tractors/Loaders/ Backhoes	2019	52	T4F	$176,645.89
Tractors/Loaders/ Backhoes	2017	55	T4F	$71,321.88
Tractors/Loaders/ Backhoes	2008	57.62	T4I	$28,358.13
Tractors/Loaders/ Backhoes	2013	60	T4F	$36,969.00
Tractors/Loaders/ Backhoes	2012	60	T4I	$29,125.00
Tractors/Loaders/ Backhoes	2015	62	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2014	63	T4F	$108,275.40
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.00
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2015	64	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2009	65	T4I	$31,397.00
Tractors/Loaders/ Backhoes	2015	73	T4F	$83,113.75

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2015	73	T4F	$83,113.75
Tractors/Loaders/ Backhoes	n/a	73.2	T4F	$104,151.00
Tractors/Loaders/ Backhoes	2009	74	T4I	$103,018.25
Tractors/Loaders/ Backhoes	2009	74	T4I	$115,366.82
Tractors/Loaders/ Backhoes	2009	74	T4I	$67,173.17
Tractors/Loaders/ Backhoes	2009	74	T4I	$97,879.82
Tractors/Loaders/ Backhoes	2009	74	T4I	$97,879.82
Tractors/Loaders/ Backhoes	2009	74	T4I	$97,206.66
Tractors/Loaders/ Backhoes	2009	74	T4I	$100,937.87
Tractors/Loaders/ Backhoes	2009	74	T4I	$101,162.98
Tractors/Loaders/ Backhoes	2015	75	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2011	75	T3	$56,966.00
Tractors/Loaders/ Backhoes	2012	78	T4I	$64,243.00

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2014	88	T4I	$81,049.63
Tractors/Loaders/ Backhoes	2019	88	T4F	$88,874.35
Tractors/Loaders/ Backhoes	2015	93	T4F	$60,378.08
Tractors/Loaders/ Backhoes	2016	93	T4F	$98,362.50
Tractors/Loaders/ Backhoes	2015	93	T4F	$94,922.00
Tractors/Loaders/ Backhoes	2020	93	T4F	$96,599.49
Tractors/Loaders/ Backhoes	2020	93	T4F	$89,127.03
Tractors/Loaders/ Backhoes	2016	94	T4F	$112,104.27
Tractors/Loaders/ Backhoes	2017	99.1	T4F	$80,342.71
Tractors/Loaders/ Backhoes	2019	110	T4F	$128,628.72
Tractors/Loaders/ Backhoes	2018	113	T4F	$136,660.88
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,700.65
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,175.14

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,175.14
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,376.95
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,175.14
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,175.14
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,614.93
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,614.93
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,614.93
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,614.93
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,614.93
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,183.10
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,624.70
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,101.36
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,101.36
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,183.10

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,152.72
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,923.79
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,923.79
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,270.99
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,923.79
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,923.79
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,218.81
Tractors/Loaders/ Backhoes	2013	128	T4I	$127,218.91
Tractors/Loaders/ Backhoes	2013	128	T4I	$126,376.95
Tractors/Loaders/ Backhoes	2015	130	T4F	$164,851.05
Tractors/Loaders/ Backhoes	2017	130	T4F	$212,563.25
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71
Tractors/Loaders/ Backhoes	2017	130	T4F	$212,563.25
Tractors/Loaders/ Backhoes	2017	130	T4F	$147,120.70
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71
Tractors/Loaders/ Backhoes	2017	130	T4F	$212,563.25
Tractors/Loaders/ Backhoes	2017	130	T4F	$174,120.71
Tractors/Loaders/ Backhoes	2012	135	T4I	$179,032.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,164.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,598.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$179,032.00

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,598.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$179,032.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,598.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,815.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,598.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,598.00
Tractors/Loaders/ Backhoes	2012	135	T4I	$178,598.00
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2017	140	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2018	141	T4F	$152,905.80
Tractors/Loaders/ Backhoes	2012	170	T4I	$158,187.35
Tractors/Loaders/ Backhoes	2012	170	T4I	$159,244.38
Tractors/Loaders/ Backhoes	2012	170	T4I	$159,803.66
Tractors/Loaders/ Backhoes	2012	170	T4I	$159,691.80
Tractors/Loaders/ Backhoes	2012	170	T4I	$159,691.80
Tractors/Loaders/ Backhoes	2012	170	T4I	$160,838.33
Tractors/Loaders/ Backhoes	2012	170	T4I	$159,803.66
Tractors/Loaders/ Backhoes	2012	170	T4I	$160,838.33
Tractors/Loaders/ Backhoes	2012	170	T4I	$158,187.35
Tractors/Loaders/ Backhoes	2012	170	T4I	$160,838.33
Tractors/Loaders/ Backhoes	2012	170	T4I	$160,838.33

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2012	170	T4I	$157,717.56
Tractors/Loaders/ Backhoes	2012	170	T4I	$159,691.80
Tractors/Loaders/ Backhoes	2012	170	T4I	$157,717.56
Tractors/Loaders/ Backhoes	2013	173	T4I	$126,923.79
Tractors/Loaders/ Backhoes	2018	186	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2018	186	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2018	186	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2018	186	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2018	186	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2017	200	T4F	$201,880.06
Tractors/Loaders/ Backhoes	2017	200	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2017	200	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2017	200	T4F	$201,880.26
Tractors/Loaders/ Backhoes	2021	216	T4F	$156,499.00

Equipment Type	Engine Model Year (MY)	Engine Horsepower (hp)	Tier[2]	Purchase cost
Tractors/Loaders/ Backhoes	2018	232	T4F	$263,565.44
Tractors/Loaders/ Backhoes	2018	232	T4F	$263,565.44
Tractors/Loaders/ Backhoes	2017	259	T4F	$263,565.44
Tractors/Loaders/ Backhoes	2017	259	T4F	$263,565.44
Tractors/Loaders/ Backhoes	2017	259	T4F	$263,565.44
Tractors/Loaders/ Backhoes	2017	259	T4F	$263,565.44
Tractors/Loaders/ Backhoes	2017	259	T4F	$263,565.44
Vacuum Truck	2012	138	T4I	$331,871.77

*n/a means that the fleet/company/persons did not provide a response

Table 9. Responses to Purchasing Data of Vehicles Loaned or Leased

Equipment Type	Engine Model Year	Engine hp	Tier[3]	Purchase cost	Interest Rate	Length in Years	Monthly Payment
Aerial Lifts	2014	48	T4F	$108,677.14	0.00%	2	$4,528.22
Aerial Lifts	2018	48	T4F	$105,350.99	0.00%	2	$4,389.63
Aerial Lifts	2018	49	T4F	$74,416.78	0.00%	2	$3,100.70
Aerial Lifts	2017	49	T4F	$96,279.98	0.00%	2	$4,011.67

[3] For the Tier column, T4F means Tier 4 final.

Equipment Type	Engine Model Year	Engine hp	Tier[3]	Purchase cost	Interest Rate	Length in Years	Monthly Payment
Aerial Lifts	2014	74	T4F	$139,360.41	0.00%	2	$5,806.69
Excavators	2017	39	T4F	$76,000.00	0.00%	5	$1,180.00
Excavators	2021	52.3	T4F	$96,000.00	0.00%	5	$1,866.00
Excavators	2015	65	T4F	$138,000.00	0.00%	5	$2,388.00
Excavators	2020	367	T4F	$418,445.00	4.29%	5	$5,817.43
Excavators EX-5	2012	97	T4I	$139,995.00	*n/a	4	$2,917.48
Excavators EX-6	2016	65.7	T4F	$119,668.00	425.00%	5	$1,772.67
Excavators EX-7	2018	41.8	T4F	$75,183.00	0.00%	0	$0.00
Other Construction Equipment	2020	225	T4F	$285,000.00	500.00%	5	$3,774.00
Other Construction Equipment LS-6	2016	93	T4F	$99,973.00	190.00%	4	$1,770.27
Paving Equipment	2020	142	T4F	$149,839.00	3.92%	5	$2,131.56
Rollers	2020	142.1	T4F	$154,939.00	3.92%	5	$2,370.94
Rubber Tired Loaders	2019	182	T4F	$227,172.00	3.92%	5	$3,379.97
Skid Steer Loaders	2014	49	T4F	$38,581.26	0.00%	4	$803.78
Skid Steer Loaders	2014	49	T4F	$38,581.25	0.00%	4	$803.78
Skid Steer Loaders	2019	67.1	T4F	$34,474.00	3.92%	5	$567.28
Skid Steer Loaders	2019	67.1	T4F	$36,566.00	3.92%	5	$655.65
Skid Steer Loaders	2014	70	T4F	$63,000.00	0.00%	5	$923.00

Equipment Type	Engine Model Year	Engine hp	Tier[3]	Purchase cost	Interest Rate	Length in Years	Monthly Payment
Skid Steer Loaders	2021	73.2	T4F	$88,000.00	0.00%	5	$1,300.00
Skid Steer Loaders	2019	73.2	T4F	$88,000.00	0.00%	5	$1,300.00
Skid Steer Loaders	2016	73.2	T4F	$76,000.00	0.00%	5	$1,120.00
Skid Steer Loaders	2016	73.2	T4F	$76,000.00	0.00%	5	$1,090.00
Skid Steer Loaders	2015	73.2	T4F	$69,000.00	0.00%	5	$1,020.00
Telescopic Handler	2015	74	T4F	$90,352.98	3.49%	4	$2,145.13
Telescopic Handler	2017	74	T4F	$92,324.99	0.00%	2	$3,846.88
Telescopic Handler	2019	74	T4F	$106,787.50	0.00%	1	$8,898.96
Telescopic Handler	2019	74	T4F	$106,787.50	0.00%	1	$8,898.96
Telescopic Handler	2015	74	T4F	$56,663.10	3.49%	4	$1,345.28
Telescopic Handler	2015	74	T4F	$56,663.10	3.49%	4	$1,345.28
Telescopic Handler	2018	74	T4F	$59,904.54	0.00%	2	$2,496.03
Telescopic Handler	2018	74	T4F	$59,904.54	0.00%	2	$2,496.03
Telescopic Handler	2019	74	T4F	$64,770.17	0.00%	1.5	$3,598.35
Telescopic Handler	2019	74	T4F	$64,770.17	0.00%	1.5	$3,598.35
Telescopic Handler	2020	74	T4F	$64,422.11	0.00%	2	$2,684.26
Telescopic Handler	2020	74	T4F	$64,422.11	0.00%	2	$2,684.26
Telescopic Handler	2018	121	T4F	$128,504.21	0.00%	2	$5,354.35
Telescopic Handler	2016	121	T4F	$128,504.21	0.00%	2	$5,354.35

Equipment Type	Engine Model Year	Engine hp	Tier[3]	Purchase cost	Interest Rate	Length in Years	Monthly Payment
Telescopic Handler	2015	130	T4F	$136,546.34	0.00%	2	$5,689.43
Telescopic Handler	2015	130	T4F	$136,546.34	0.00%	2	$5,689.43
Tractors/ Loaders/ Backhoes	2017	102	T4F	$152,000.00	0.00%	5	$2,250.00
Tractors/ Loaders/ Backhoes	2020	420	T4F	$487,100.81	3.92%	5	$6,738.97
Tractors/ Loaders/ Backhoes	2014	74	T4F	$85,920.00	350.00%	4	$1,933.53

*n/a means that the fleet/company/persons did not provide a response

Table 10 provides a summary of the cost data, split into common horsepower groups relevant to the Proposed Amendments.

Table 10. New Vehicle Cost Data Averaged by Horsepower Group

Minimum hp	Maximum hp	Average Survey Cost Data
25	49	$61,172
50	74	$75,496
75	99	$105,618
100	174	$175,380
175	299	$288,315
300	599	$659,153
600	749	$912,670
750	9999	$1,529,102