Vehicle Inspection Program

An Effective and Efficient Emissions Control Strategy

Oregon DEQ
700 NE Multnomah
Portland, OR 97232
Phone: 503-229-5696

www.oregon.gov/DEQ

DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

State of Oregon
Department of Environmental Quality

This report prepared by:

Oregon Department of Environmental Quality
700 NE Multnomah Street
Portland, OR 97232
1-800-452-4011
www.oregon.gov/deq

Contact:
Matthew Davis, Senior Legislative Analyst
503-229-5687
Davis.matthew@deq.state.or.us

Ali Mirzakhalili, Air Quality Division Administrator
503-229-5041
Mirzakhalili.ali@deq.state.or.us

Executive Summary

The Vehicle Inspection Program (VIP), which began in the Portland area in 1975 and in the Medford area in 1986, is Oregon's cornerstone strategy for reducing emissions from the number one source or air pollution: cars and trucks. While today's vehicles are *manufactured* to burn less fuel and burn that fuel cleaner, those improvements rely on the regular maintenance of engines and onboard emissions control systems. As vehicles age, maintenance becomes more and more important. Ensuring that regular maintenance is the primary purpose of VIP.

The program, which is entirely fee-funded, operates seven Clean Air Stations; one in Medford and six in the Portland-metro area. In addition to visiting a Clean Air Station, motorists and fleet-operators can use innovative test methods such as Mobile/Fleet testing or DEQ Too™, a new public-private partnership that allows motorists to test their vehicle at convenient locations such as gas stations or service repair shops.

The program benefits Oregon in several important ways:

- Reducing pollution from vehicles helps keep Oregonians healthy, especially children and people with respiratory problems. High concentrations of pollution from vehicles are associated with health problems including asthma attacks, an increased risk of heart attacks and premature death.
- Reducing vehicle emissions is a core part of Oregon's State Implementation Plan (SIP). The SIP is Oregon's federally approved strategy for meeting Clean Air Act requirements and federal air quality standards. If Oregon had no VIP, it would need to impose more stringent standards on other sources of pollution, including industrial sources.
- Reducing vehicle emissions ensures that Oregon remains in compliance with the federal air quality standard for ozone, one of six pollutants called "criteria" pollutants. Preventing violations of federal air quality standards is essential to maintaining the health and economic vitality of communities.

Recent analyses of the program found that VIP remains both an effective and efficient approach to reducing emissions from motor vehicles. Specific findings include:

- Approximately 1 in 5 cars (22%) are being serviced in the three months between receiving their registration renewal notice and visiting a Clean Air Station. This indicates that the program is effective at capturing and resolving maintenance problems that might otherwise not get addressed or addressed in a timely way.
- In the Portland-area, VIP is accountable for a 10-20% reduction in on-road emissions of criteria and hazardous air pollutants.
- Over 80,000 customer surveys indicate a positive experience with VIP visits 97% of the time.
- The Oregon VIP program is the only program in the country that is currently offering both self-service lanes and remote testing via the DEQ Too™ program as convenience alternatives to traditional station visits.
- A comprehensive analysis of vehicle emissions testing programs across the country shows that Oregon's fee remains among the lowest in the nation, particularly given the

unique features of Oregon's program (entirely fee-funded, free re-testing, innovative test options and on-site DMV renewal registration).
- The broad array of services available within the Oregon model positions the VIP to continue adapting to future technological change.

Introduction

When Oregon began implementing requirements of the federal Clean Air Act, in the 1970s and 1980s, air quality in the Portland and Medford areas of the state did not meet federal standards for ozone and carbon monoxide. In response to the poor air quality, the Department of Environmental Quality (DEQ) was required to develop plans to reduce these pollutants. Once the areas were attaining standards, DEQ had to submit plans to US Environmental Protection Agency (EPA) that described how Oregon's pollution control strategies would assure that the Portland and Medford areas would stay in compliance with air quality standards.

Oregon operates a biennial testing program in the Portland and Medford areas. Vehicles registered within the two testing boundaries must pass an emissions test in order to be (re)registered with the Oregon Department of Transportation, Driver and Motor Vehicle Services (DMV). Vehicles 1995 and older receive a tailpipe emissions test, while cars 1996 and newer are tested through their On-Board Diagnostics (OBD) system.

This report describes the VIP operation and service delivery model, inventories efforts to improve efficiency and customer experience, and summarizes the results of two recent analyses: (1) a comprehensive analysis of the air quality benefits attributable to VIP, and (2) a related cost effectiveness analysis performed in preparation for a proposed fee increase.

Vehicle Inspection Program Operations and Service Delivery

VIP operates seven Cleaner Air Stations, one in Medford and six in the Portland-metro area. The programs test nearly one third (1.3 million vehicles) of all registered vehicles in the state of Oregon. Vehicles 4 years old or newer are exempt from testing in both areas. In the Portland-metro area, vehicles 1975 and newer are required to test. In Medford, vehicles 20 years old or less are required to test. A more expansive test window was required in the Portland-metro area to achieve the necessary emission reductions.

In addition to the Clean Air Stations, the program maintains an administrative office in the Portland-metro area that houses maintenance staff, information technology staff, business operations staff, administrative support staff as well as the program manager. These staff not only ensure the entire program has what it needs to operate on a day-to-day basis, they also ensure improvements are implemented and maintain working relationships with DEQ's headquarters and the DMV.

Program funding is entirely other funds from fees collected for the issuance of certificates of compliance. The total projected revenue for the 17-19 biennium is $22.7 million. This is down slightly from the actual revenue of $23.2 million in 15-17 and $23.4 million in 13-15. Program expenses for the 17-19 biennium are estimated at $26.1 million, which is up slightly from the actual expenses of $25.3 million in the 15-17 biennium and $23.8 million in the 13-15 biennium.

The program has 102 FTE for the 17-19 biennium. Seven positons were eliminated due to revenue shortfalls this biennium. Prior to the elimination of those seven positions, FTE for the program had remained consistent around 110 FTE for many biennia, with a large decrease in FTE in the 07-09 biennium due to a change in the testing method for vehicles.

Figure 1 shows the Full Time Equivalent (FTE) staffing trends for VIP

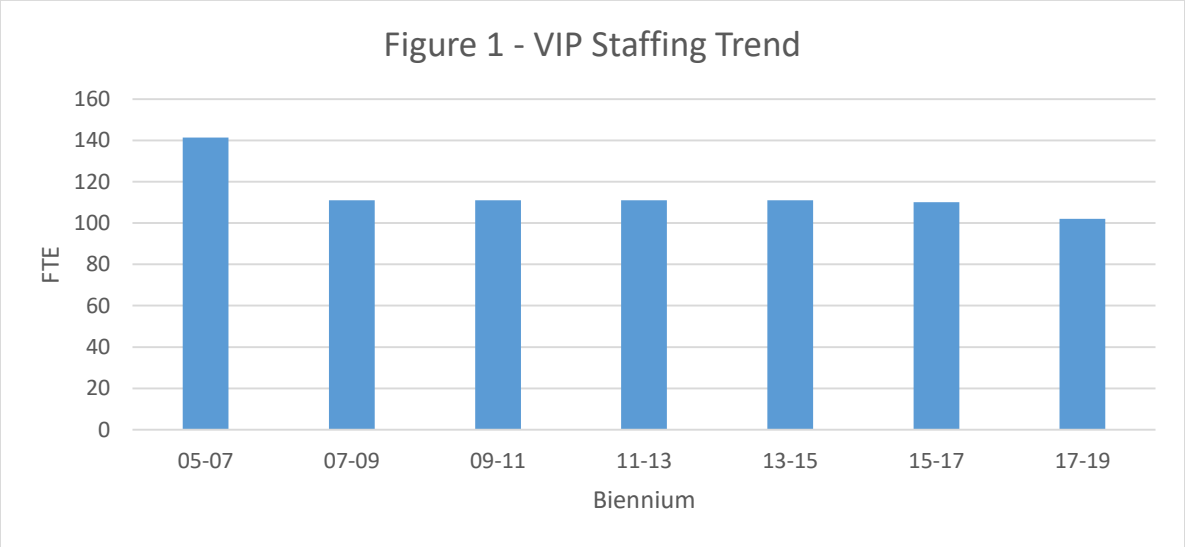
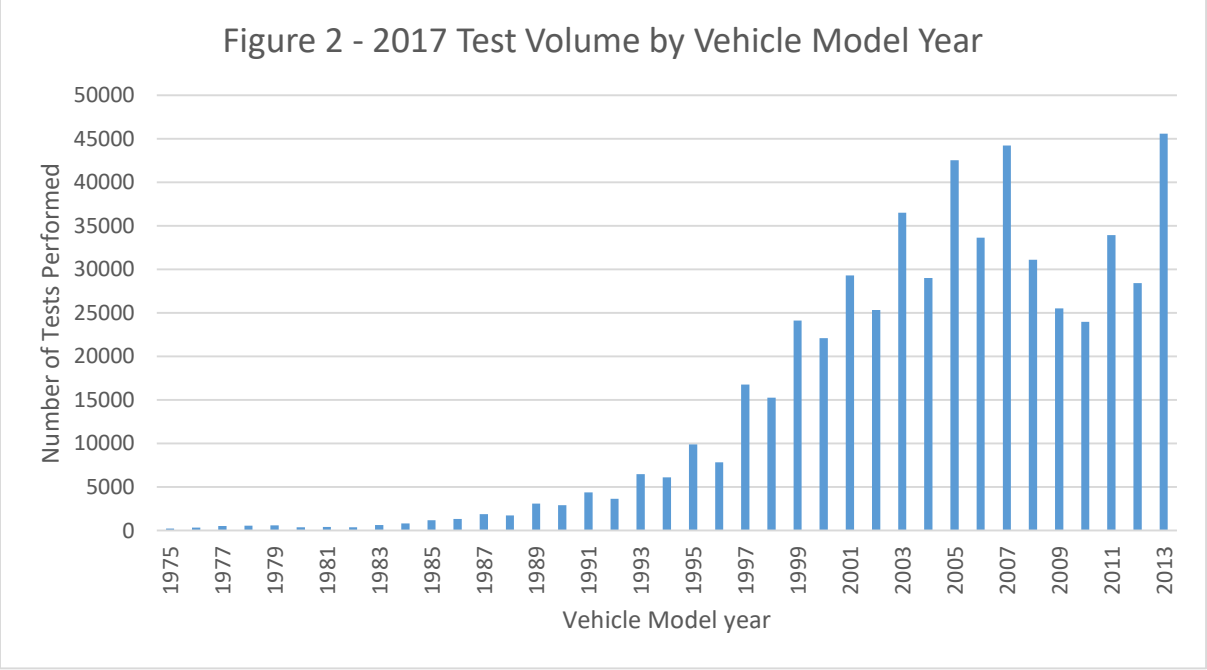


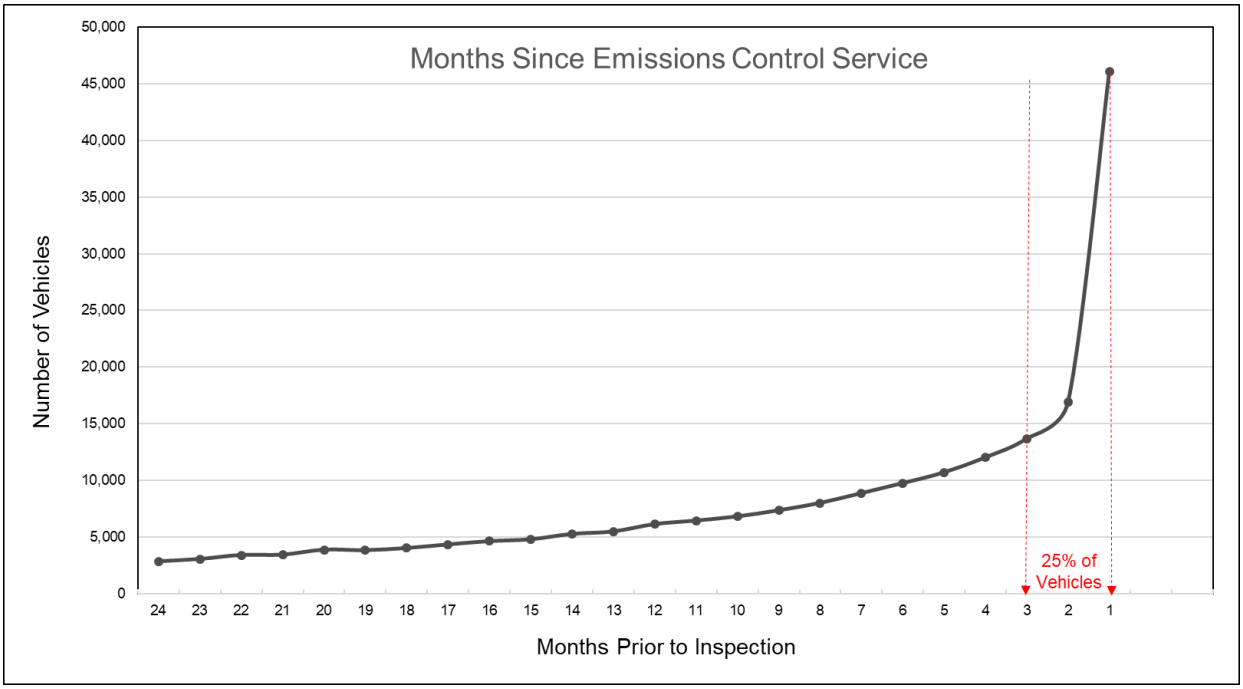
Figure 2 shows the total test volume in Calendar Year 2017 by vehicle model year.



DEQ inspections find that overall, at the time of inspection approximately 6% of vehicles do not have a properly functioning emission control systems and that the more miles a vehicle has driven, the more likely it is to have problems with its emission control equipment.

The primary purpose, and benefit, of the program is not in identifying vehicles that fail the test. Rather the program is focused on ensuring regular maintenance of vehicles *before* they are tested. To measure this outcome, DEQ reviews data on when a vehicle's OBD codes were most recently cleared. The clearing of OBDs is an indication the vehicle was serviced.

Figure 3 shows that 1 in 4 (25%) of vehicles have codes cleared (i.e. serviced) in the three months between receiving their registration renewal notice and visiting a clean air station.



The program charges a fee ($21 in Portland and $10 in Medford) for the issuance of certificates of compliance. The program does not charge a fee for the test. In other words, motorists are only charged when their vehicle passes the test. The fee disparity between Portland and Medford is attributable to a period in the late 1990s and early 2000s when the program employed an enhanced test in the Portland area. That test method required additional staff resources. Since that time both areas have transitioned to OBD testing. The agency is currently proposing to bring the fees into alignment over the next six years.

In addition to testing at DEQ Clean Air Stations, VIP offers customers convenient alternatives, such as:

- Dealership testing. Instead of an auto dealership shuttling their vehicles one-by-one to a Clean Air Stations, VIP can visit a dealer and test multiple vehicles. This service is available upon appointment.
- DEQ Too™. Motorists can now have their test performed at private businesses who have partnered with DEQ.

These approaches, and others, are discussed in more detail in "Efforts to Increase Efficiency."

The program measures wait times at the stations as well as customer satisfaction. Motorists can expect to complete the testing process in about 15 minutes and since 2006 have also been able to renew their DMV registration at a DEQ clean air station upon passage of the test.

VIP surveys customers regularly and over 80,000 comment cards show that 97 percent of motorists have a positive experience at testing stations. Online passive surveys of clean air stations (such as google reviews) also reflect an overwhelmingly positive experience for motorists.

Air Quality Benefits

DEQ recently completed a comprehensive analysis of the air pollution prevented by operating VIP in the Portland and Medford airsheds. This analysis, an Emission Inventory Demonstration for Air Toxics and Ozone Precursors, demonstrated that the program continues to be an effective strategy at reducing vehicle emissions and associated pollutants.

A critical finding of the analysis is that on-road emissions of pollutants would increase 7 to 20% if the vehicle inspection program were not operating in Portland, and 5 to 8% if the program were not operating in Medford. The increases in Medford are proportionately less given the fleet we test in Medford is younger, with fewer miles on the emission control systems. As noted previously, reducing emissions, particularly precursors to ozone formation, is critical to *preventing* violations of federal clean air standards and a subsequent nonattainment designation.

Figure 4 shows the pollution prevention attributable to VIP in the Portland-metro area in tons per year (tpy) of emissions from on-road sources.

		2015 (tpy)	2015 No VIP (tpy)	Emissions Increase (a)
Air Toxic	1,3-Butadiene	30.14	35.71	18%
	Benzene	213.3	255.3	20%
	Ethylbenzene	128.0	148.5	16%
	Acetaldehyde	90.3	103.9	15%
	Napthalene	15.18	17.31	14%
	15-PAH	5.454	6.162	13%
	Formaldehyde	106.51	119.35	12%
	Acrolein	7.286	8.043	10%
Criteria	NOX	13,760	14,698	7%
	CO	74,894	85,748	14%
	VOC	7,783	9,260	19%

(a) % increase = ((2015 tpy no VIP) - (2015 tpy)) / (2015 tpy)

Figure 5 shows the pollution prevention attributable to VIP in the Medford area in tons per year (tpy) of emissions from on-road sources.

		2015 (tpy)	2015 No VIP (tpy)	Emissions Increase (a)
Air Toxic	1,3-Butadiene	8.04	8.73	8%
	Benzene	62.8	67.7	8%
	Ethylbenzene	43.1	45.7	6%
	Acetaldehyde	22.3	24.0	8%
	Napthalene	3.77	4.04	7%
	15-PAH	1.463	1.551	6%
	Formaldehyde	25.03	26.64	6%
	Acrolein	1.458	1.550	6%
Criteria	NOX	2,597	2,767	7%
	CO	21,703	22,920	6%
	VOC	2,515	2,647	5%

(a) % increase = ((2015 tpy no VIP) - (2015 tpy)) / (2015 tpy)

In addition to preventing violations of federal air quality standards, reducing emissions from passenger vehicles also results in fewer emissions of toxic air contaminants. These pollutants, which all form as a result of incomplete combustion, are associated with a variety of health impacts, including:

- Cardiovascular disease (1, 3-Butadiene)
- Increased risk of cancer (1, 3-Butadiene, 15-PAH, Acetaldehyde and Benzene)
- Upper respiratory system irritation (Acrolein and Formaldehyde)
- Adverse developmental and reproductive effects (Benzene)
- Anemia (Benzene and Naphthalene)

Efforts to Improve Efficiency and Customer Experience

VIP has a long history of implementing measures to improve the efficiency and customer experience of the program. These improvements include:

- **Modernizing test methods:** Changes to generally accepted test methods have contributed to vehicle testing industry-wide efficiency gains. Most significantly, the 1990 amendments to the Clean Air Act established the requirement that passenger vehicles be equipped with an OBD system. A vehicle's OBD is designed to trigger a dashboard "check engine" or Malfunction Indicator Light (MIL). This light alerts the driver to a malfunctioning pollution control device. OBD-based testing systems assess whether a vehicle's emission control systems are working as designed. If a vehicle fails an OBD test, repairs to the equipment causing the failure will enable the vehicle to return to compliance, and pass a subsequent test.

Oregon was a national leader in beginning to deploy the OBD testing approach in January 2000. This test is currently available for all vehicles that are 1996 model year and newer, with older model vehicles receiving the prior "basic" or "tailpipe" test. The industry transition to the use of OBD tests is a primary reason that Oregon has been able to maintain its fee structure since 1996. Although testing demands and certain expenses increased during this period, much of the increase was offset through OBD-based efficiencies. For example, staff-deployed OBD tests are generally performed by a single testing agent, or inspector. Prior enhanced tests required the work of two to three inspectors. Therefore, the use of OBD tests has reduced the costs of a typical vehicle inspection, and contributed significantly to overall program cost effectiveness since 2000. The use of OBD tests has, at the same time, improved emission reductions within the VIP program. OBD tests, unlike tailpipe tests, directly address the root cause of a pollution problem[1], with sustained emissions reduction benefits.

- **Self-service lanes:** The nationwide transition to OBD testing also set the stage for Oregon's more recent use of self-service lanes. With many vehicle-testing hazards associated with the prior tailpipe tests now removed, and with other technologies available, Oregon was among the first in the nation to develop self-service lanes. VIP began using its first self-serve lane in 2011. Ten self-service lanes[2] are currently available at five of the program's Portland area stations. At these stations, customers directly participate in the testing process by confirming vehicle information and entering vehicle owner insurance and odometer information at a computer terminal located at each station. Customers who are familiar with the OBD testing port location in their vehicle may also connect their OBD testing equipment. The inspector assigned to the lane provides needed assistance to the customer, confirms the pass or fail results, and completes the transaction. With the benefit of assistance from the customer, one inspector can oversee two self-service stations, giving rise to efficiency gains.

  The use of self-service lanes within VIP's service array is in its relative infancy, but shows significant promise. VIP staff and customers are becoming more accustomed to the use of this shared service approach to vehicle testing. Over time, and with the benefit of additional technologies, VIP anticipates that a more fully customer-driven test will be possible. Among the current challenges that VIP is addressing are those related to payment processing technologies and requirements. VIP continues to explore technology and process options and to integrate operational improvements into this and other processes. In the meantime, Oregon VIP stands ahead of many other providers in the industry by realizing efficiency gains through its use of self-service testing.

- **DEQ Too™:** In July 2016 Oregon launched the use of its remote-telematics device program—DEQ Too™—at certain private business locations. The DEQ Too™ program enables testing information to be sent to VIP from customer vehicles located at remote locations, outside of a VIP test station. Test information is currently sent to VIP through devices referred to as "S-type" or "shared telematics" devices. S-type devices are used for brief periods to collect emission data, and are attached to vehicles at a private business.

[1] The root cause of a pollution problem is a failing system or component which leads to the symptom of elevated emissions.
[2] DEQ is in the process of adding another self-serve lane at the Clackamas Clean Air Station.

For example, customers may use an S-type device to relay OBD information while receiving an oil change at an approved service provider. The remote test is completed when VIP receives the test information telematically, confirms whether the vehicle passed or failed the test, and the customer completes an on-line transaction to purchase their certificate of compliance and registration tags[3].

Since VIP's initiation of this program in 2016, the program has seen a continued increase in its utilization. VIP has authorized the use of DEQ Too™ technologies at more than 166 business locations, performing over 27,658 tests in 2018. Authorized providers include businesses such as auto repair shops and oil change service centers. All DEQ Too™ hosts and other providers must abide by the terms of an Agreement with VIP. The Agreement includes program obligations addressing approved devices, testing protocol, communications with customers, performance of repairs and a variety of measures to ensure the relay of accurate test information.

As with VIP's use of self-service lanes, this newer program has produced early testing successes and continues to be evaluated. Currently, tests performed under the DEQ Too™ program represent only 4.5% of total annual tests performed by VIP. Although this market space appears to hold significant near-term opportunity for growth, the program continues to evaluate additional opportunities for individuals to remotely test their vehicles.

- **Mobile/Fleet Testing:** VIP continually strives to meet the unique test needs of all vehicle owners, including businesses and automobile retailers who possess large vehicle fleets. As with privately owned personal vehicles, corporate fleets are required to undergo testing following the current four-year initial exemption period, and consistent with the DMV's two-year renewal cycle. Retailers of used automobiles must similarly undergo testing. Given the large number of vehicles held by these entities, VIP offers mobile testing services at the business owner's location. Tests are performed by VIP personnel using a program cargo van outfitted with the needed OBD test equipment. VIP performs approximately 7,500 annual tests using this approach. VIP is also reaching out to fleets and dealers to promote the use of DEQ Too™ as a means of reducing the business burden of complying with the emission test requirement. CarMax, for example, performed almost 4,000 tests in 2018 using DEQ Too™.

- **Clean Air Partners (CAP) Program:** Unlike some state vehicle inspection programs, VIP does not exempt failing vehicles when a minimum amount is spent on repairs. These "repair exemptions," while relatively common in other states, produce lower levels of compliance by leaving more failing and polluting vehicles on the road. VIP recognizes, however, that the absence of such an exemption could negatively impact low-income vehicle owners. For reasons including this, since 2003, VIP has offered subsidized and usually free repair services to low income customers through the CAPs program. VIP collects voluntary donations at its testing locations, and through United Way and a participating repair facility, the funds cover repair costs for qualified, low-income

[3] Registration tags are currently sold separately through DMV's online portal, but motorists are directed there through the DEQ Too™ online service.

applicants. The program currently serves more than 100 annual applicants, with funds sufficient to meet the repair needs of qualified applicants.

- **DMV Service Delivery Partnership:** Finally, while efficiency and effectiveness in vehicle emission testing remains VIP's operational focus, the program also plays a critical role in the state's vehicle registration process. In most states, a visit to a state vehicle inspection station must be followed by a visit, in person or on-line, to a state DMV office. In Oregon, however, a partnership between VIP and the DMV enables the registration renewal process to be completed, in most cases, at any of the VIP stations. VIP customers leave the test stations with documentation of their passing emission test, and with license plate registration tags in hand. No fewer than 365,757, or 63% of motorists who received testing services, also renewed their registrations at DEQ VIP in 2018.

Cost-Effectiveness Analysis and Findings

VIP monitors opportunities to modify its service delivery through ongoing communications with industry leaders, and assessments of performance of other programs. In connection with the recent update of the program's fee structure, and pursuant to ORS 468A.370 and 468A.400, VIP performed a comprehensive assessment of the program, relative to other U.S. vehicle testing programs.

A core element of this analysis was a review of data collected by the National OBD Clearinghouse established by the National Center for Automotive Science and Technology at Weber State University and funded through a U.S. Environmental Protection Agency (EPA) grant. More specifically, DEQ VIP evaluated all state programs by considering program characteristics and performance information such as program type, annual tests performed, test fees and testing frequency.

In an effort to secure more detailed information, in 2018 DEQ VIP also conducted a survey of like programs through the national IM Solutions Forum. A 12 question survey was distributed to program leaders with 20 programs supplying additional requested data and information. The survey results supplemented the data that had been assembled, adding important program specifics including whether re-tests are free, and if programs are supported by any non-fee revenues. This information, along with other data assembled, produced the dataset reflected in Appendix 1.[4]

With key data assembled, VIP analyzed the cost effectiveness of its current state operating model by comparing that model to the 38 other programs included in Appendix 1. More specifically, VIP first assessed the pros and cons, and operating successes of the centralized design relative to other program designs. Next, VIP compared its program to the other centralized programs, to ensure that the analysis included a like kind comparison, and a focus on the most relevant programs. The evaluation of all programs was performed through the lens of cost effectiveness,

[4] DEQ VIP completed its data compilation of information in 2019, with some data previously relayed by programs prior to that date.

with adjusted biennial fee per test being the central unit of measurement. Given the somewhat varying designs and unique aspects of all programs, the analysis proceeded beyond a comparison of fees assessed, considering the other indicators of program success and overall cost effectiveness.

DEQ VIP's analysis included 38 programs, including all state programs. In some cases, multiple programs within one state are represented in Appendix 1 because some state programs are operated by separate smaller regulatory jurisdictions such as counties or cities, largely independent local air pollution authorities, charging different fees. Within the universe of programs, DEQ VIP considered the three primary models used in delivering vehicle testing services: the Centralized--Public Model, the Centralized--Private Model, and the Decentralized or Fully Private Model. The key features of each are as follows:

- **Centralized-Public Model:** The primary characteristic of a centralized testing program is its few, larger sized stations that are dedicated to addressing emissions through vehicle testing. The stations do not perform repairs on vehicles, with those services provided by privately operated businesses. The facilities housing the stations are usually leased and operated by a single agency or contractor. The fee charged for testing services is a set fee, consistent throughout the program. The primary advantages of this model include standard fees, consistent test procedures, efficiencies associated with large test volume capacity, and the ability to offer DMV tags, or other registration services, to the testing activity.

  Within the centralized model, services may be delivered publically or privately. The primary distinguishing characteristic is whether the front line testing services, or inspections, are provided by public or private employees. Program administrative services, such as those staff dedicated to technology and compliance management, and other core services common to multiple stations, are typically retained by the public entity.

- **Centralized-Private Model**: As noted above, the Centralized—Private Model differs primarily by the outsourcing of station specific testing services to the private sector. In selecting between the public or private delivery of these services, centralized programs generally balance wage and other cost considerations against compliance considerations. Most centralized programs, including Oregon, operate within the public model to avoid the additional costs and risks associated with the needed monitoring and oversight.

- **Decentralized/Fully Private Model:** Decentralized, or more fully private, testing programs have multiple small locations that are typically repair garages. The testing and repair garages are owned and operated by disparate entities, charging independently selected and varying prices for services. An advantage of a decentralized program is the ability to transfer equipment, supply and operating costs to the private sector. A decentralized environment relies on the competitive nature of garages located throughout the state.

  As the decentralized programs operate through facilities that perform both testing and repairs, however, the unavoidable conflict between test and repair is a significant drawback. These programs typically direct relatively more public staffing resources to the management and oversight of the activities performed at the garages. This work is often needed to ensure that test results remain accurate, and that repair services are appropriate and necessary to address the specific malfunction issues associated with a failing test.

As reflected by the data in Appendix-1, the majority of states currently operate under a Decentralized model. Only 11 of the 38 programs evaluated in Oregon VIP's recent analysis use a Centralized program model. See Appendices 2 and 3 for lists of decentralized and centralized programs, respectively. Many states currently using the decentralized model transitioned to that model following the transition to OBD-based testing following the implementation of the 1990 amendments to the Clean Air Act. Since approximately 2005, most differences between states that have elected the centralized or decentralized model have remained largely static.

The recent evaluation of fees charged by centralized vehicle testing programs versus the decentralized vehicle testing programs indicates that the centralized programs charge customers lower fees. In comparing fees across the different programs, VIP used a weighted average approach to representing inspection fees when different fee rates are used by a program. Oregon's fee of $20.04 used in this analysis, for example, represents an average fee assessed when considering the number of inspections performed at $10 in Medford[5], $21 in the Portland areas, and $26 for mobile testing. This weighted average biennial fee of $20.04 is roughly one-third of the $59.34 weighted average fee assessed by the service providers in decentralized programs. As reflected in bar chart in Appendix 4, whether the fees charged within the different programs are compared by weighted average or straight average, the pattern of centralized program fees representing one-third of decentralized program fees remains consistent.

The $20.04[6] weighted average Oregon fee overstates the fee to a limited extent. The true fee impact to an Oregon VIP program customer is actually somewhat less than this amount. If the fee is also adjusted to account for the free re-tests performed at Oregon stations, the average fee is reduced to $16.44[7]. This is relevant as half of the states surveyed charge customers for re-tests if customers exceed a re-test threshold. See Appendix 3.

Oregon's rate is also effectively lower than the value used in the analysis when considering that no other financial support is provided. Although details in this areas are difficult to secure, it is known that other state programs often receive some elements of general fund support. As Oregon's VIP is fee-driven, and does not receive general fund support[8], its effective rate charged is, again, lower, than those charged by other centralized programs. See Appendix 5

Therefore, under the first prong of the analysis, the centralized model used by Oregon is more cost effective than the decentralized model. The recent analysis indicates that the decentralized model is producing higher fees in the aggregate, without any identifiable benefits in the form of improved services or enhanced environmental protection.

---

[5] The current $10 fee in Medford is anticipated to be increased over time, supporting more alignment with fees assessed at the Portland stations. The lower fee is a legacy of the more expensive BAR-31 test which was not implemented in Medford. Portland and Medford are both using OBD as the enhanced test method today.

[6] The weighted average $20.04 fee is based on the $26 mobile fleet testing fee, the $21 Portland fee, and the $10 Medford fee.

[7] This is a result of dividing the total certificate fee revenue by the total number of tests conducted in 2018. Oregon only charges for a certificate and does not charge for a test.

[8] Although Oregon participates in limited cost-sharing through its partnership with the Oregon DMV, any limited net revenues made available through the partnership have an insignificant impact on this analysis.

Under the second prong of the analysis, in further comparing the fee charged by Oregon to those charged by other centralized programs, the Oregon fee remains among the lowest of the fees set within this centralized, lower fee tier. See Appendices 3 and 5. This is also the case when considering some of the modestly reduced fees within the Centralized-Private subgroup. See Appendix-3. While several programs initially appear to have lower fees under this type of Centralized program, most of these programs receive non-fee financial support. If these amounts were known and accounted for, these fees would be higher. Also, any difference from privatization does not appear significant when considering the effect of unlimited retests for Oregon consumers. Finally, the Centralized private programs are to be negatively distinguished from the other centralized programs when considering the nature of services provided. None of the Centralized-private programs in the analysis offer remote testing services.[9] Also, each of these programs included a repair waiver, with the associated negative impact to emission reductions.

The range of service offerings available to Oregon customers is of direct benefit to those customers, and separates it from other service providers. The Oregon VIP program is the only program in the country that is currently offering both self-service lanes and remote testing via the DEQ Too™ program. This supports program effectiveness both in the additional elements of choice available to Oregon customers, and in the ability to continually adjust to changing operating realities.

The importance of Oregon's dynamic programmatic design, including traditional lane testing, double-lane testing, self-service testing, mobile fleet testing, and now even remote testing through independent service providers, cannot be overstated. The broader array of services available within the Oregon model most ideally positions the program for inevitable future technological change, and for continued evolution as a program. If a particular mode of testing is later found to be more cost effective relative to other testing approaches, additional resources may be directed to that approach.

Finally, DEQ VIP also recognizes that the recipient of services is best positioned to evaluate the success of the program. For this reason, DEQ VIP offers every customer, no matter when a test is performed, the opportunity to report on their experience via a 10-question comment card. DEQ VIP receives over 10,000 customer responses annually from this approach. The results reveal that greater than 97% of customers rank DEQ VIP as "good" to "excellent". The program uses this information to not only gauge its overall effectiveness, but to also identify ongoing opportunities for improvement. Comment cards and results are routinely shared with station managers and staff, and any items of concern or opportunities for improvement are promptly addressed by the program. This reliance on customer feedback, as with the dynamic design of the program, helps to ensure the program's long term cost effectiveness.

[9] This sub-group does not offer either remote testing either for emissions or OBD.

Appendix-1

Program	Program Type	Annual Tests	Fee-Adj[1] (Biennial)	Fee Revenue	Freq[2]	Total Vehicles	Free Retests	Non-Fee[3] Revenue	Remote Sensing	Remote OBD	Repair Waiver
Arizona, Phoenix	Centralized	600,000	$ 20.35	$12,210,000	B	1,200,000		No	No	No	Yes
Arizona, Tucson	Centralized	800,000	$ 12.25	$9,800,000	B	1,600,000		No	No	No	Yes
California	Decentralized	13,081,788	$ 59.33	$776,142,452	B	26,163,575		Yes	No	Pilot	Yes
Colorado	Centralized	1,200,000	$ 25.00	$30,000,000	B	2,400,000	Limited	Yes	Yes	No	Yes
Connecticut	Decentralized	1,032,784	$ 30.00	$30,983,520	B	2,065,568			Yes	No	Yes
Delaware	Centralized	460,000	$ -	$0	B	920,000	Yes		No	No	Yes
District of Columbia	Centralized	120,000	$ 35.00	$4,200,000	B	240,000			No	No	Yes
Georgia	Decentralized	3,100,000	$ 50.00	$155,000,000	A	3,100,000		No	Yes	No	Yes
Idaho	Decentralized	125,000	$ 20.00	$2,500,000	B	250,000	Limited		No	No	Yes
Illinois	Centralized	2,100,000	$ -	$0	B	4,200,000	Yes		No	No	Yes
Indiana	Centralized	195,000	$ 23.83	$4,646,850	B	390,000			No	No	Yes
Louisiana	Decentralized	425,000	$ 36.00	$15,300,000	A	425,000		No	No	No	No
Maine	Decentralized	137,500	$ 37.00	$5,087,500	A	137,500		Yes	No	No	No
Maryland	Centralized	1,750,000	$ 14.00	$24,500,000	B	3,500,000	Limited		No	No	Yes
Massachusetts	Decentralized	4,800,000	$ 70.00	$336,000,000	A	4,800,000	Limited		No	No	Yes
Missouri	Decentralized	812,531	$ 26.50	$21,532,072	B	1,625,062	Limited	No	No	No	Yes
Nevada	Decentralized	1,856,507	$ 96.00	$178,224,672	A	1,856,507		No	No	No	Yes
New Hampshire	Decentralized	1,053,884	$ 70.00	$73,771,880	A	1,053,884			No	No	No
New Jersey	Decentralized	3,250,000	$ 70.00	$227,500,000	B	6,500,000	Varies	Yes	No	No	No
New Mexico	Decentralized	250,000	$ 20.00	$5,000,000	B	500,000			No	No	Yes
New York	Decentralized	11,000,000	$ 74.00	$814,000,000	A	11,000,000		No	No	No	Yes
North Carolina	Decentralized	5,000,000	$ 60.00	$300,000,000	A	5,000,000	Yes		No	No	Yes
Ohio	Decentralized	840,000	$ -	$0	B	1,680,000	Yes	Yes	Yes	No	Yes
Ontario, Canada	Decentralized	2,000,000	$ 33.90	$67,800,000	B	4,000,000			Pilot	Pilot	Yes
Oregon	Centralized	600,000	$ 20.04[4]	$12,024,000	B	1,200,000	Yes	No	No	Yes[5]	No
Pennsylvania	Decentralized	3,500,000	$ 70.00	$245,000,000	A	3,500,000			No	No	Yes
Rhode Island	Decentralized	347,000	$ 55.00	$19,085,000	B	694,000	Limited	No	Yes	No	Yes
Tennessee	Centralized	1,400,000	$ 18.00	$25,200,000	A	1,400,000	Limited		No	No	Yes
Texas	Decentralized	9,854,000	$ 37.00	$364,598,000	A	9,854,000	Limited	No	Yes	No	Yes
Utah, Davis	Decentralized	276,745	$ 82.50	$22,831,463	A	276,745		Yes	No	No	Yes
Utah, Weber	Decentralized	152,000	$ 60.00	$9,120,000	A	152,000	Limited		No	No	Yes
Utah, Utah Co.	Decentralized	290,111	$ 74.00	$21,468,214	A	290,111			No	No	Yes
Utah, Salt Lake	Decentralized	1,000,000	$ 73.20	$73,200,000	A	1,000,000			No	No	Yes
Utah, Cache County	Decentralized	50,600	$ 15.00	$759,000	B	101,200		Yes	No	No	Yes
Vermont	Decentralized	573,000	$ 100.00	$57,300,000	A	573,000	Varies	No	No	No	TBD
Virginia	Decentralized	895,322	$ 30.00	$26,859,660	B	1,790,644	Limited	No	Yes	No	Yes
Washington[6]	Centralized	747,727	$ 15.00	$11,215,905	B	1,495,454		Yes	No	No	Yes
Wisconsin	Decentralized	650,000	$ -	$0	B	1,300,000			No	No	Yes
Total Tests		**72,276,499[7]**	**$ 55.11[8]**	**$3,982,860,187**		**108,234,250**					

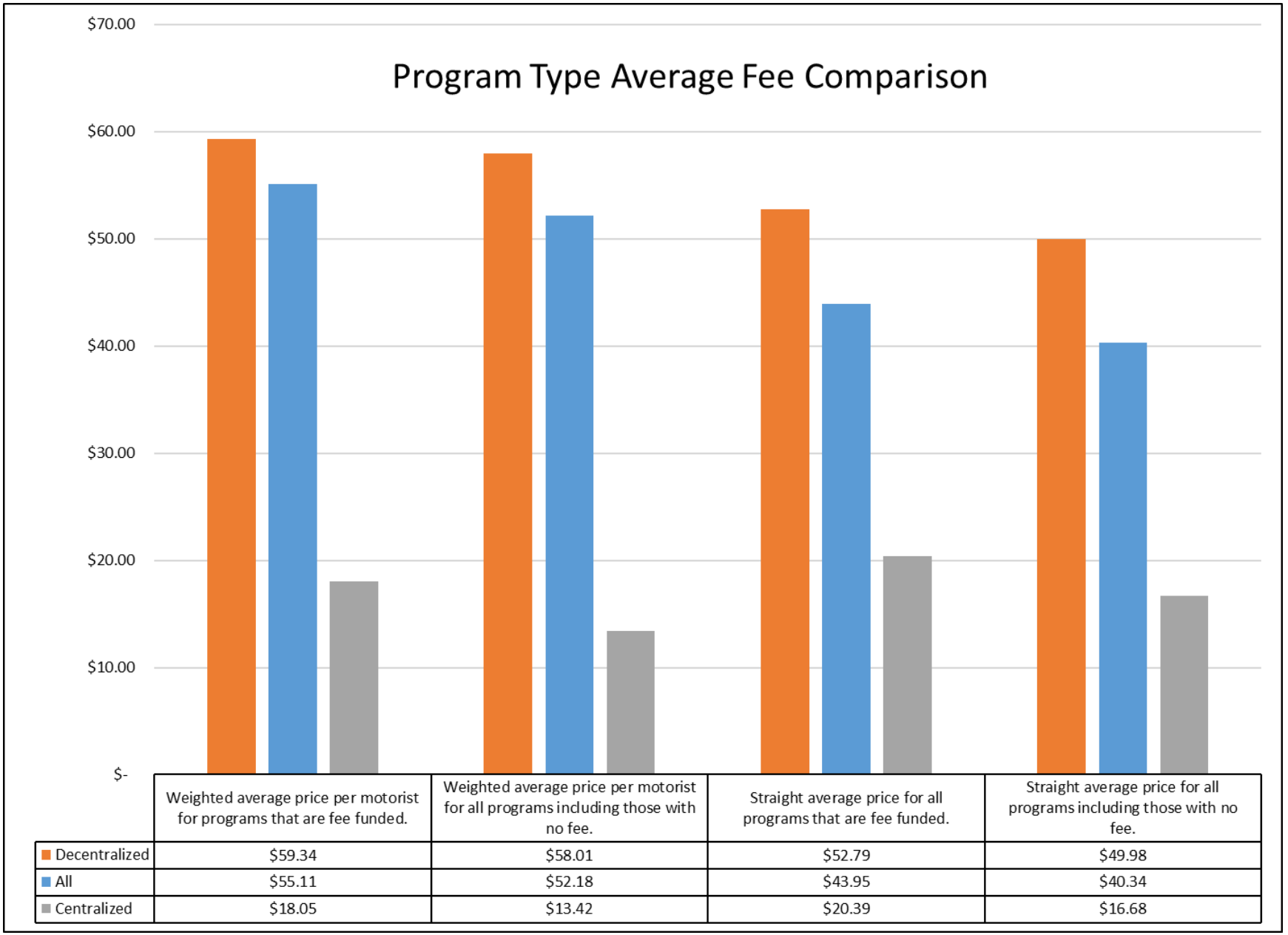
Appendix-2
Decentralized Programs

Program	Program Type	Annual Tests	Fee-Adj (Biennial)	Fee Revenue	Freq	Total Vehicles	Free Retests	Non-Fee Revenue	Remote Sensing	Remote OBD	Repair Waiver
California	Decentralized	13,081,788	$ 59.33	$776,142,452	B	26,163,575		Yes	No	Pilot	Yes
Connecticut	Decentralized	1,032,784	$ 30.00	$30,983,520	B	2,065,568			Yes	No	Yes
Georgia	Decentralized	3,100,000	$ 50.00	$155,000,000	A	3,100,000		No	Yes	No	Yes
Idaho	Decentralized	125,000	$ 20.00	$2,500,000	B	250,000	Limited		No	No	Yes
Louisiana	Decentralized	425,000	$ 36.00	$15,300,000	A	425,000		No	No	No	No
Maine	Decentralized	137,500	$ 37.00	$5,087,500	A	137,500		Yes	No	No	No
Massachusetts	Decentralized	4,800,000	$ 70.00	$336,000,000	A	4,800,000	Limited		No	No	Yes
Missouri	Decentralized	812,531	$ 26.50	$21,532,072	B	1,625,062	Limited	No	No	No	Yes
Nevada	Decentralized	1,856,507	$ 96.00	$178,224,672	A	1,856,507		No	No	No	Yes
New Hampshire	Decentralized	1,053,884	$ 70.00	$73,771,880	A	1,053,884			No	No	No
New Jersey	Decentralized	3,250,000	$ 70.00	$227,500,000	B	6,500,000	Varies	Yes	No	No	No
New Mexico	Decentralized	250,000	$ 20.00	$5,000,000	B	500,000			No	No	Yes
New York	Decentralized	11,000,000	$ 74.00	$814,000,000	A	11,000,000		No	No	No	Yes
North Carolina	Decentralized	5,000,000	$ 60.00	$300,000,000	A	5,000,000	Yes		No	No	Yes
Ohio	Decentralized	840,000	$ -	$0	B	1,680,000	Yes	Yes	Yes	No	Yes
Ontario, Canada	Decentralized	2,000,000	$ 33.90	$67,800,000	B	4,000,000			Pilot	Pilot	Yes
Pennsylvania	Decentralized	3,500,000	$ 70.00	$245,000,000	A	3,500,000			No	No	Yes
Rhode Island	Decentralized	347,000	$ 55.00	$19,085,000	B	694,000	Limited	No	Yes	No	Yes
Texas	Decentralized	9,854,000	$ 37.00	$364,598,000	A	9,854,000	Limited	No	Yes	No	Yes
Utah, Davis	Decentralized	276,745	$ 82.50	$22,831,463	A	276,745		Yes	No	No	Yes
Utah, Weber	Decentralized	152,000	$ 60.00	$9,120,000	A	152,000	Limited		No	No	Yes
Utah, Utah Co.	Decentralized	290,111	$ 74.00	$21,468,214	A	290,111			No	No	Yes
Utah, Salt Lake	Decentralized	1,000,000	$ 73.20	$73,200,000	A	1,000,000			No	No	Yes
Utah, Cache County	Decentralized	50,600	$ 15.00	$759,000	B	101,200		Yes	No	No	Yes
Vermont	Decentralized	573,000	$ 100.00	$57,300,000	A	573,000	Varies	No	No	No	TBD
Virginia	Decentralized	895,322	$ 30.00	$26,859,660	B	1,790,644	Limited	No	Yes	No	Yes
Wisconsin	Decentralized	650,000	$ -	$0	B	1,300,000			No	No	Yes
Total Tests		**64,863,772**	**$ 59.34**	**$3,849,063,432**		**89,688,796**					

Appendix-3
Centralized Programs

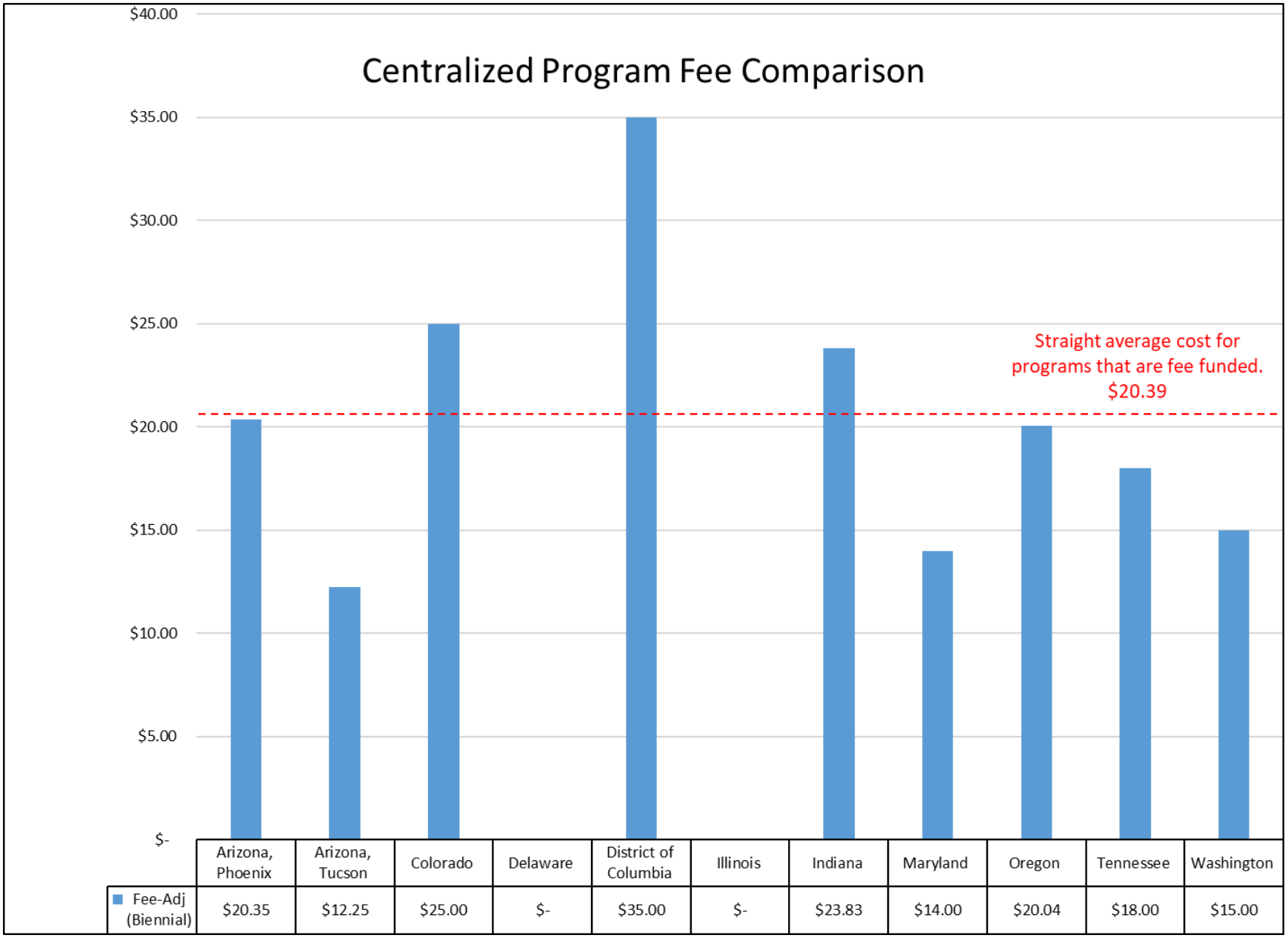
Program	Program Type	Operated	Annual Tests	Fee-Adj (Biennial)	Fee Revenue	Freq	Total Vehicles	Free Retests	Non-Fee Revenue	Remote Sensing	Remote OBD	Repair Waiver
Arizona, Phoenix	Centralized	Privately	600,000	$ 20.35	$12,210,000	B	1,200,000	Limited	No	No	No	Yes
Arizona, Tucson	Centralized	Privately	800,000	$ 12.25	$9,800,000	B	1,600,000	Limited	No	No	No	Yes
Colorado	Centralized	Publicly	1,200,000	$ 25.00	$30,000,000	B	2,400,000	Limited	Yes	Yes	No	Yes
Delaware	Centralized	Publicly	460,000	$ -	$0	B	920,000	Yes	Yes	No	No	Yes
District of Columbia	Centralized	Publicly	120,000	$ 35.00	$4,200,000	B	240,000		No	No	No	Yes
Illinois	Centralized	Privately	2,100,000	$ -	$0	B	4,200,000	Yes	Yes	No	No	Yes
Indiana	Centralized		195,000	$ 23.83	$4,646,850	B	390,000			No	No	Yes
Maryland	Centralized	Privately	1,750,000	$ 14.00	$24,500,000	B	3,500,000	Limited	No	No	No	Yes
Oregon	Centralized	Publicly	600,000	$ 20.04	$12,024,000	B	1,200,000	Yes	No	No	Yes	No
Tennessee	Centralized	Privately	1,400,000	$ 18.00	$25,200,000	A	1,400,000	Limited	Yes	No	No	Yes
Washington	Centralized	Privately	747,727	$ 15.00	$11,215,905	B	1,495,454		Yes	No	No	Yes
Total Tests			**7,412,727**	**$ 18.05**	**$133,796,755**		**18,545,454**					

Appendix-4



	Weighted average price per motorist for programs that are fee funded.	Weighted average price per motorist for all programs including those with no fee.	Straight average price for all programs that are fee funded.	Straight average price for all programs including those with no fee.
Decentralized	$59.34	$58.01	$52.79	$49.98
All	$55.11	$52.18	$43.95	$40.34
Centralized	$18.05	$13.42	$20.39	$16.68

Appendix-5



	Arizona, Phoenix	Arizona, Tucson	Colorado	Delaware	District of Columbia	Illinois	Indiana	Maryland	Oregon	Tennessee	Washington
Fee-Adj (Biennial)	$20.35	$12.25	$25.00	$-	$35.00	$-	$23.83	$14.00	$20.04	$18.00	$15.00

Notes:

---

[1] Fee adjusted to biennial form to match Oregon.
[2] Frequency of testing. Annual testing is represented with an ‘A’ while Biennial testing is represented with a ‘B.’
[3] Indicates if jurisdiction receives funding beyond the test fee. These fees would include such sources as: a CAA renewal fee, the state motor fuel tax, the state general fund, an Air Pollution Control Fee, state Transportation and Petroleum Environmental Cleanup Fund Act (PECFA). If additional funding is unknown, this column is left blank.
[4] This is the weighted average cost between Portland, Medford, and the Mobile Service.
[5] Oregon is the only program that currently offers Remote OBD to motorists. (DEQ Too™)
[6] Program expires in 2020 unless EPA rejects Washington’s latest SIP submittal.
[7] Total annual tests for programs that have a fee.
[8] This represents the weighted average motorist cost for all programs that have a fee.