Vehicle Inspection Program

Cost Effectiveness Analysis

Oregon DEQ
700 NE Multnomah St.
Suite 600
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.

DEQ

State of Oregon
Department of
Environmental
Quality

This report prepared by:

Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
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

Michael Skorupka, Vehicle Inspection Program Manager
971-673-1638
Skorupka.michael@deq.state.or.us

Table of Contents

Executive Summary 3
Introduction 4
Program Budget 8
Air Quality Benefits 10
Long Term Program Issues 11
Evaluation of Alternative Service Models 14
Conclusion 15
Appendix 1 – Test Volume by Type Graphs
Appendix 2 – Efforts to Increase Efficiency
Appendix 3 – Emissions Inventory Analysis
Appendix 4 – Evaluation of Alternative Service Models

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 of 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, 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. Failure to meet the federal air quality standards triggers mandatory sanctions including the loss of federal highway funds.

In advance of proposing a fee increase to the Environmental Quality Commission, DEQ has completed a compressive review of the program, its impact, its current staffing levels and budget, and an analysis of alternative program delivery options. The review found that VIP remains both a cost-effective and efficient approach to reducing emissions from motor vehicles. Specific findings include:

- Approximately 1 in 4 cars (25%) 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 resolved or addressed in a timely way.
- In the Portland-area, VIP is responsible 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 program has not adjusted fees in over 20 years. While a series of innovations has allowed the program to maintain and improve the staff-to-test ratio, a failure to restore 8 recently eliminated positions will seriously jeopardize the effectiveness and quality of the program.
- An analysis of alternative service delivery models, including decentralization (i.e. privatization) found that customers receiving testing services from privatized test programs pay on average triple the fees paid by their centralized (public) station counterparts. This is despite the fact that privatized programs do not experience the same labor constraints in the form of pay for inspectors, as do public entities.

- Oregon's fee, including the proposed increase, 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).

For these reasons, DEQ recommends that, in accordance with ORS 468A.370 and ORS 468A.400, the Environmental Quality Commission find that the Vehicle Inspection program, including the proposed 2020 fee increase, is the most cost effective program consistent with Clean Air Act requirements.

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 ensure that the Portland and Medford areas would stay in compliance with air quality standards.

Some of the same air quality challenges persist today. Concentrations of ground-level ozone are on the rise. Both the Portland-metro and Rogue Valley areas have experienced unhealthy levels of ozone for the past three summers. Emissions from cars are responsible for the majority of the pollution that causes ozone in Oregon.

To address the leading cause of pollution, Oregon operates a biennial vehicle emissions 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 Vehicle Inspection Program (VIP) operation and service delivery model, inventories past and current efforts to improve efficiency and customer experience, provides the budget justification and rationale for a proposed fee increase, and summarizes the results of four recent analyses:

1. A review of all test types and trending that has occurred since 2007, and projected forward;
2. An inventory of past and current efforts to improve the efficiency of Oregon VIP;
3. A comprehensive analysis of the air quality benefits attributable to VIP; and
4. An assessment of alternative service delivery models.

Collectively, this information forms the basis for a cost-effectiveness determination required to be made by the Environmental Quality Commission pursuant to ORS 468A.370 and ORS 468A.400.

Vehicle Inspection Program Operations and Service Delivery

VIP operates seven Clean Air Stations, one in Medford and six in the Portland-metro area. The program tests 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 is 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, DMV and other operations partners.

Recent program operational statistics for calendar year 2018 are included in Figure 1 below. As noted, the VIP performs more than 680,000 annual inspections at its seven testing stations, resulting in the issuance of over 570,000 certificates of compliance after vehicles secure passing test results. Additionally, because of the VIP's innovative partnership with the DMV, more than 365,000 annual customers also receive their registration stickers directly from staff at a VIP test station.

Figure 1 – 2018 VIP Station Operations and Staffing

VIP 2018 Station Operations & Staffing						
	Tests	**Certs**	**Basic**	**OBD**	**SS-OBD**	**Staff (2019)**
Sunset	143,877	125,692	13,859	74,284	55,396	14
Clackamas	128,958	110,735	17,221	91,897	19,600	14
Gresham	108,466	89,417	13,856	58,613	35,738	13
NE and Scappoose	111,334	95,008	13,950	56,201	40,655	12
Sherwood	95,597	84,896	9,261	65,812	20,396	11
Medford	59,207	50,915	2,290	56,845		6
T/C Admin.	441	441	14	427		20
DEQ Too	26,328	15,685				N/A*
Mobile	7,452	5,706		7,442		N/A**
Totals	681,660	578,495	70,451	411,521	171,785	90

(*) Staff for DEQ Too included in T/C Admin.

(**) Staff for Mobile included in Gresham Station

The VIP, as a large volume, customer-facing operation, continually adjusts to meet increasing vehicle-testing demands and evolving customer preferences. Figure 1 includes statistics, by station or other test type, for the following ways in which the program conducts its vehicle testing:

- *Basic Tests:* These tests, also referred to as "tailpipe" tests, are used for older vehicles, generally those manufactured before 1996, that do not have Onboard Diagnostic Systems.

- *OBD Tests*: OBD tests, used for newer vehicles, involves the review of data from vehicle computers and an assessment of the effective functioning of vehicle emissions control equipment.
- *Self-Service (SS) OBD Tests:* VIP stations provide for Self-Service tests, with customers primarily completing information screens and with inspection agents assisting in the testing process, as needed. The Self-Service option is limited to vehicles that are eligible for an OBD test.
- *Technical Center (T/C) Administratively Issued Tests:* These tests typically involve Oregon residents temporarily living out of state and submitting test results conducted through a companion program.
- *Mobile Tests:* These tests meet the needs of automobile retailers, which own multiple vehicles and are performed on-site, using the VIP mobile testing van.
- *DEQ Too:* An OBD test remotely administered from a host site. The test results are transmitted to DEQ for review and approval.

In relation to these test types, Appendix 1 depicts the trending of the VIP's primary test types over the last several biennia.

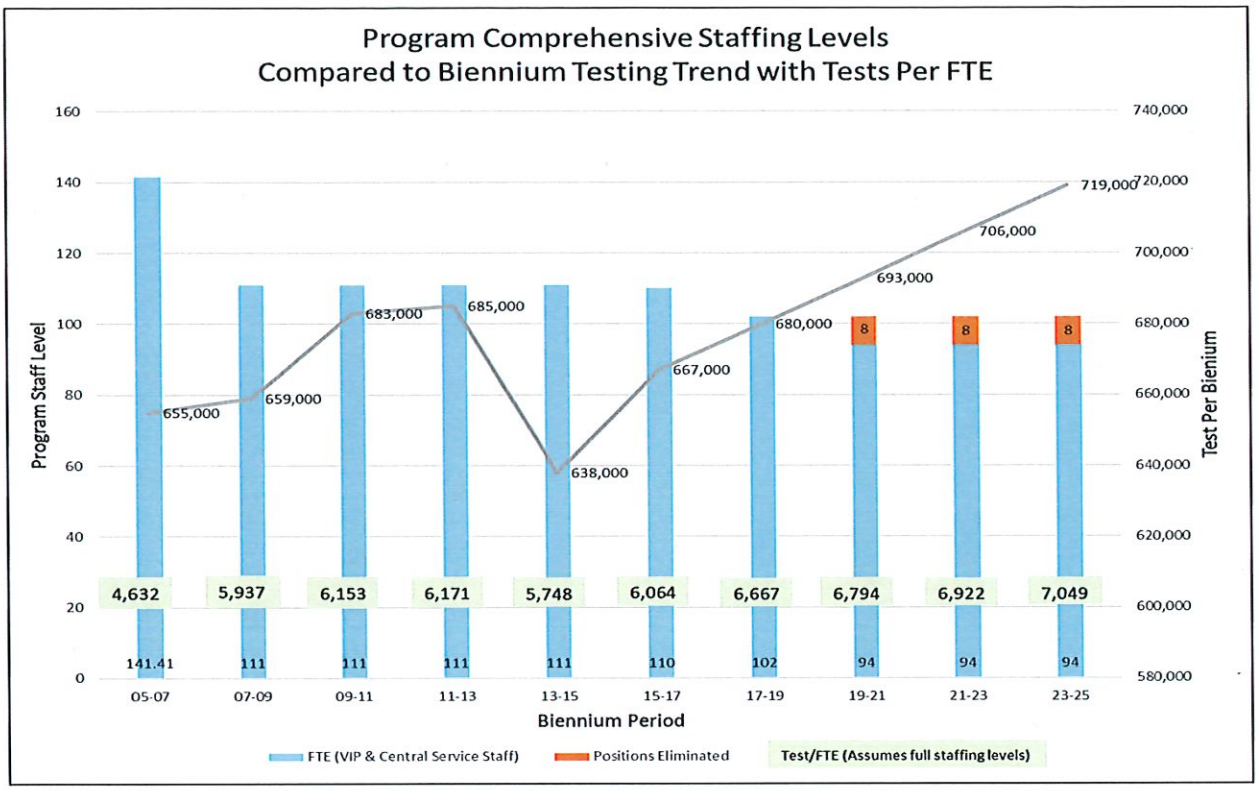
The program overall testing demands are increasing at a rate of approximately 2 percent per year. Several aspects of the program's design and operations, however, enable it to meet these increasing demands, within its existing station footprint and at 2017-2019 resourcing levels. First, as vehicles continue to modernize, the more efficient testing via the OBD systems continues to replace the somewhat more time-intensive tailpipe or basic vehicle tests. Program projections indicate that OBD tests will represent 91-96 percent of the program's test volume over the next three biennia, with basic tests diminishing to less than 4 percent of annual tests.

The VIP uses several additional approaches to assist in the management of its increasing, primarily OBD-based, test volume. These approaches enhance customer choice and present opportunities to most efficiently secure vehicle test certificates. Notably, the VIP is the only program in the U.S. offering remote testing through its partnership with private sector businesses, using a testing approach referred to as "DEQ Too". These tests are achieved through the VIP's network of nearly 200 service providers, and currently represents 4 percent of the program's test volume. Although it is difficult to accurately project the extent to which customers will select this testing option over the next several years, it is expected that DEQ Too tests could represent as much as 10 percent of VIP's test volume by 2025.

The VIP also continues to allow customers to participate more directly in the testing process via each of the stations' 10 self-service lanes. Customer preferences and operational limitations currently restrict the capacity of the self-service testing approach to approximately 25 percent of all test volume. Constraints on further expansion include the ability to use this technology for limited vehicles, and the limited extent to which customers choose to fully participate in the testing process. Collectively, the prevalence of OBD-based testing, the partnership with the private sector through DEQ Too, and the continued use of self-service lane technology, positions the VIP to address continued test volume increases within the current program design, structure and 2017-2019 staffing levels.

While the VIP's operations will remain flexible and its efficiency gains are expected to continue, a foundational level of staffing is required across its seven stations. Figure 2 depicts the total program FTE supporting all station operations over time, relative to the consistently increasing total test volume. The figure also includes the program test volume per FTE ratios for each biennium.

Figure 2 – Program Comprehensive Staffing Levels Compared to Biennium Testing Trend with Tests Per FTE



As reflected, while program staffing levels are expected to remain relatively static over the next three biennia, a modest but continued increase in testing demands is expected. More significantly, it is important to note that the program is currently operating at its highest-ever test volume to FTE ratio of 6794 tests per FTE per biennium. This ratio, a primary indicator of continually improving program efficiencies, is projected to continue to increase over the next three biennia, potentially reaching a ratio of over 7000 tests per FTE per biennium. Therefore, even with continued efficiency gains assumed, the restored staffing levels are required to meet the needs of the current and future test volume.

A failure to restore staffing to 2017-19 levels will hinder the ability of the program to operate stations at full capacity and will directly contribute to longer wait times, among other customer service issues. This reality is no different at the station level. VIP allocates its limited staff to the stations it operates as reflected in Figure 1. Already today, the program is in the position of making daily decisions regarding the deployment of staff resources. In response to unexpected leave, for example, employees are forced to drive to alternate work locations to ensure a minimum staffing level is achieved. Similarly, if one station receives an atypical uptick in customers seeking tests, inspectors need to be shifted from one base station to another. For this reason, the high test to staff ratios occur both in the aggregate, and at each of the VIP test stations. An elimination of 8 positions would represent up to a 15% decrease in inspector positions, reducing the program's FTE base beyond what is workable in the near or long term.

A failure to restore the 8 positions will also hinder the program's ability to fully implement DEQ Too, expand the availability of self-service lanes and explore additional innovations in testing. Resourcing for

these program elements is necessary to maintain current service levels and to keep pace with increasing test volumes.

The eight positions highlighted in the 2017-2019 biennia were recently eliminated from the VIPs budget. But, current VIP inspector vacancies, including these positions, remain filled through a combination of limited duration and temporary staff positions. Therefore, Figure 2 denotes current and future tests per FTE assuming that the 8 positions at issue are *not* eliminated. It remains particularly important to keep these positions in place going forward for the reasons described above. It follows then that these staff can remain in place only if fees increase.

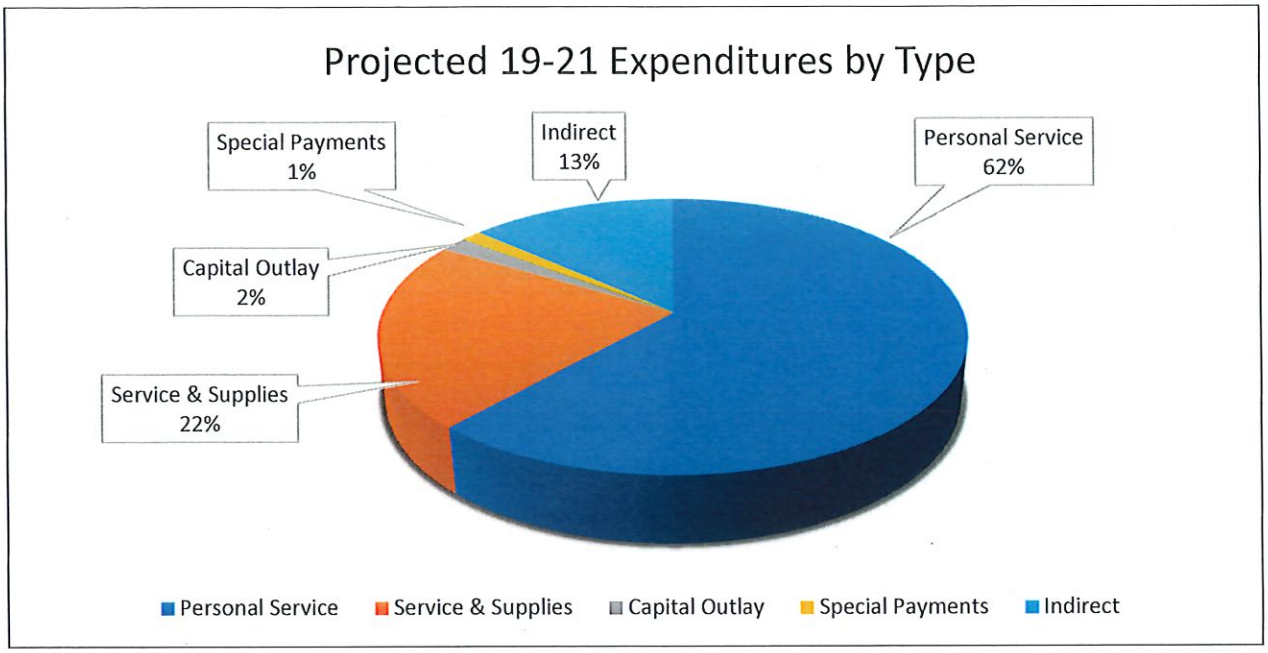
Program Budget

Program funding is entirely 'Other Funds,' i.e. the fees collected for the issuance of certificates of compliance. The program charges a fee (currently $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 and a certificate is issued. If the program charged on a per-test basis, the weighted average fee following the increase would be closer to $20. Fees were last updated in 1997.

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 (and consequently more expensive) test method in the Portland area. That test method required additional staff resources. Since that time both areas have transitioned to OBD testing.

Figure 3 illustrates the current program biennial expenses of $27,841,888. Biennial expenditures include $17,168,679 in Personal Service expenses, $6,100,448 in Services and Supplies, $3,725,603 in Indirect Expenses and a small amount of expense attributable to Special Payments and Capital Outlay. The primary cost drivers for the VIP are personnel expenses and, to a lesser extent, the costs associated with the maintenance of seven testing stations. On a biennia over biennia basis, Personal Service costs increase due to factors beyond the control of VIP. These factors include adjustments to the agency's indirect rate and inflation in the costs of public employee benefits.

Figure 3 – Projected 2019 – 2021 Expenditures by Type



The primary reason the program has sustained for over twenty years without a fee increase is due to a culture of innovation and continuous improvement. In addition to leading the nation in adoption of OBD testing, the program has developed a remote fleet testing program and a public-private partnership known as DEQ Too. Appendix 2 provides a comprehensive inventory of past and current efforts to increase efficiency and the quality of the customer experience.

DEQ proposes an increase in fees as follows:

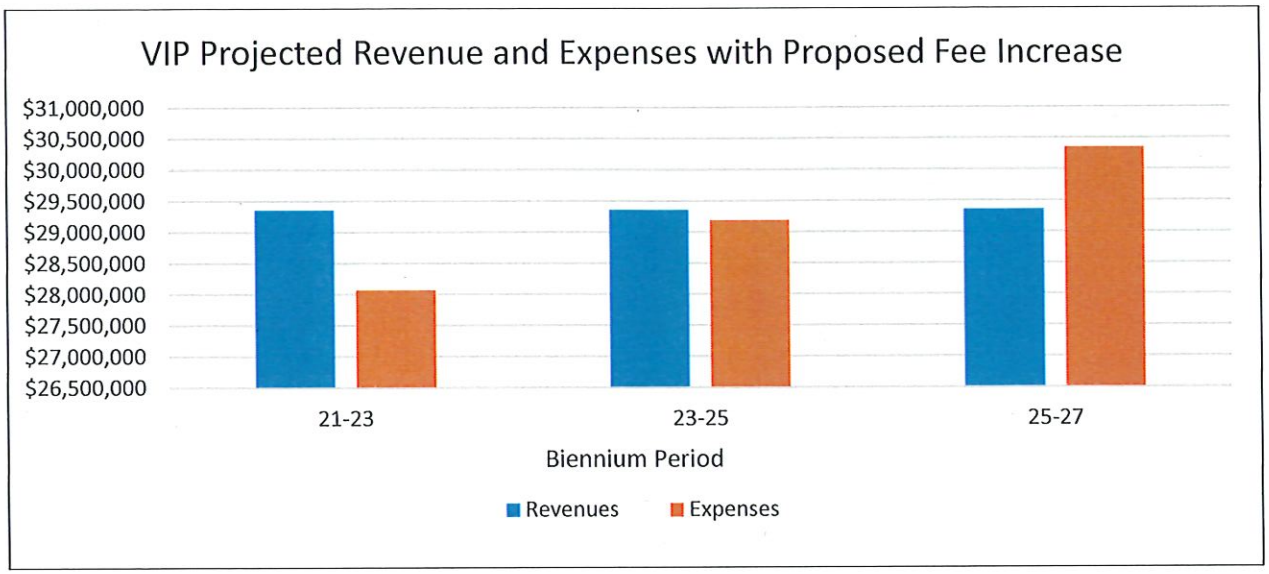
Portland-area	Effective no earlier than April 1 2020, the $21 fee would be adjusted upward to $25
Rogue Valley (Medford)	• Effective no earlier than April 1 2020, the $10 fee would be adjusted upward to $15 • Effective July 1 2021, the $15 fee would be adjusted upward to $20.

Additionally, the mobile fleet testing fee is proposed to increase from $26 to $30. Medford station fees are proposed to freeze at $20 in the near term to maintain an appropriate differential between Portland area and Medford area station fees. This differential aligns with the varying cost structures between the two areas of the state and an interest in phasing in the Medford fee increase at a steady and predictable pace.

The proposed fee increase is necessary to provide sufficient revenue to restore the 8 eliminated positions and balance the budget for the subsequent three biennia. As illustrated in Figure 4, over the next three biennia, the projected net revenues are positive in the first two biennia, turning negative in the 2025-2027 biennia, as projected expenses outpace the modest fee increase (See below). The projected net revenue surplus, while largely limited to the approximate $1.2M surplus in the 2021-2023 biennium and existing fund balance, is projected to carry the program through the projected deficit in the 2025-2027 biennium.

Therefore, the additional revenues derived from the projected fee increase should adequately support the program over the next three biennia.

Figure 4 – VIP Projected Revenue and Expenses with Proposed Fee Increase



It will be important in the future, however, for the program to make adjustments to fees commensurate with inflation, as is more typical for a fee-funded program of this type. Here, the VIP in partnership with stakeholders and the legislature, will explore approaches that provide for future fee adjustments.

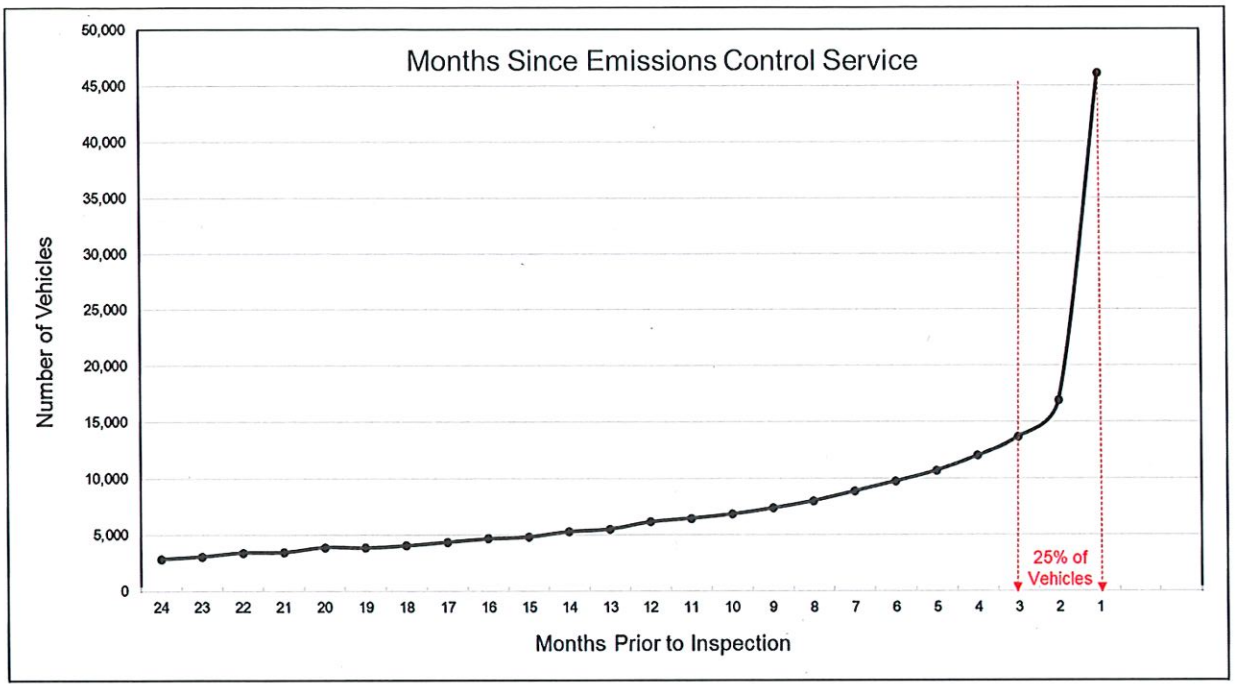
Air Quality Benefits

DEQ recently completed a comprehensive analysis of the air pollution prevented by operating VIP in the Portland and Medford airsheds. This analysis (Appendix 3) demonstrates that the program continues to be an effective strategy at reducing vehicle emissions and associated pollutants.

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

That being said, 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 OBD codes is an indication the vehicle was serviced. Figure 5 shows that 1 in 4 (25%) of vehicles have codes cleared (i.e. repaired) in the three months between receiving their registration renewal notice and visiting a clean air station.

Figure 5 – Months Since Emissions Control Service



An additional 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. Reducing emissions, particularly precursors to ozone formation, is critical to *preventing* violations of federal clean air standards and a subsequent nonattainment designation. This holds particularly true in recent years as we have routinely experienced exceedances of federal standards in both Portland and Medford.

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)

Long Term Program Issues

The proposed fee increase can sustain program operations over approximately the next three biennia. During that time, the VIP will continue to evaluate opportunities to evolve and, if needed, modify its service delivery lines. There are several issues the agency will pay close attention to in the coming years.

Bringing DEQ Too to Scale

In 2016 DEQ officially launched DEQ Too, a new approach to service delivery that allows customers to have their vehicle tested at a participating host site. Host sites include auto repair shops, gas stations, and

automobile dealerships, among other business types. The primary goal of the program is to enhance convenience by offering testing locations with business hours that extend beyond the Clean Air Stations. Host sites do not review or approve test results; they transmit vehicle test data remotely to DEQ. Motorists login to the DEQ webpage to review their test results and pay the certificate of compliance fee when appropriate. Host site participation is free of cost from the agency, however host sites are allowed, and often do charge a convenience fee to motorists for the business of administering the test. Those fees are paid to the host sites and are separate from the fee charged by the agency for the review of test results and issuance of certificate of compliance.

Although a state inspector does not administer tests conducted under DEQ Too, the resources needed to develop and now implement this nascent program are significant. They include:

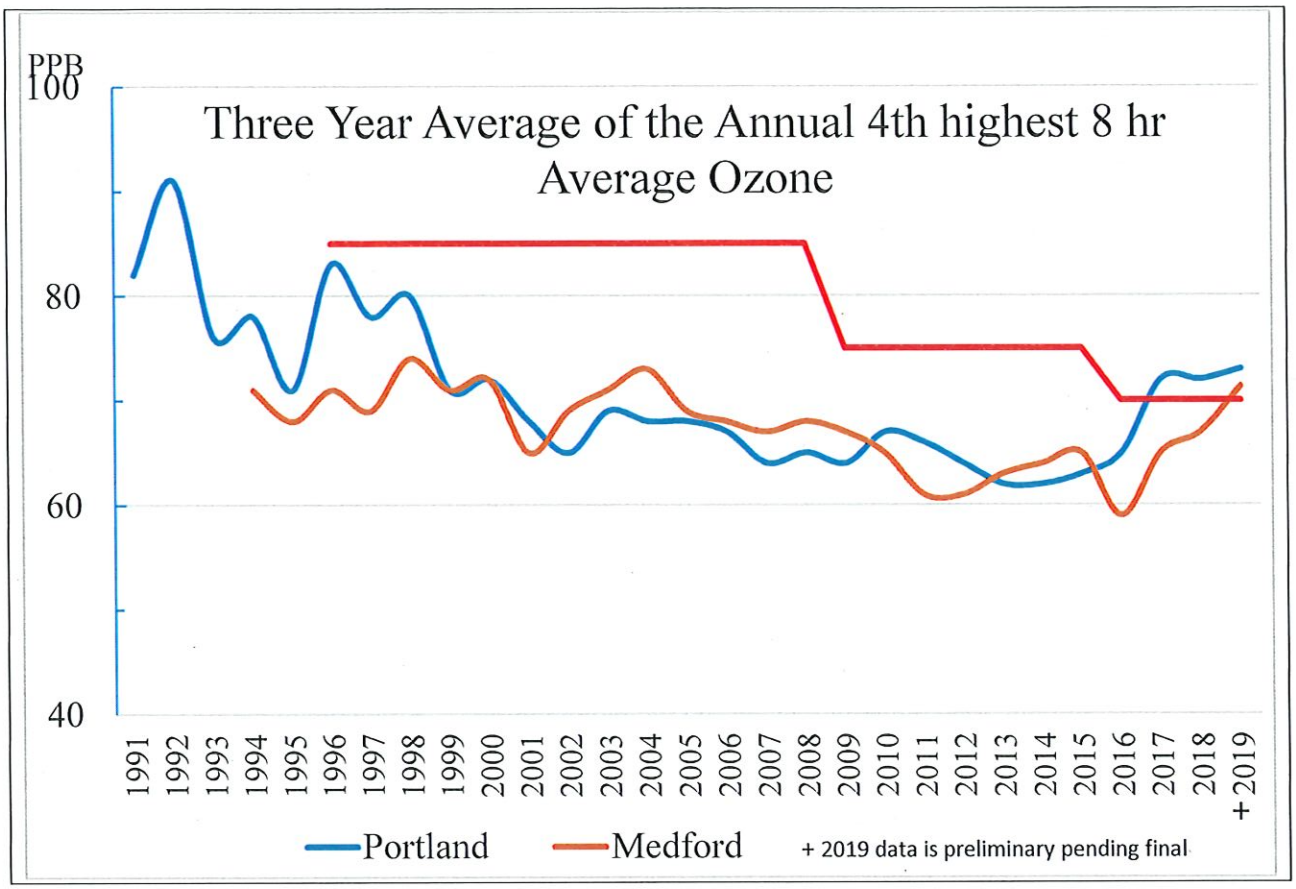
- Information Technology. IT solutions development, vendor selection and oversight, system testing and maintenance, data management, data security and server upgrades.
- Telematics Devices. Development of device specifications, development of telematics provider agreements, and device testing and certification.
- DEQ Too Host Sites. Host site recruitment, development and implementation of host terms and conditions agreements, providing host site technical assistance and ensuring host site oversight and auditing.
- Communications. Developing, implementing and updating DEQ Too communication strategies and tools (webpage, signage agreements, satisfaction surveying and marketing).
- Evaluation and reporting. Annual reporting to the Environmental Protection Agency as required by the federal Clean Air Act, continuous improvement efforts to expand DEQ Too and reconciliation of accounting and other records.

The VIP continues to invest in this unique partnership with the private sector as a critical strategy for enhancing the program cost effectiveness. Long term, VIP intends to evaluate the cost-structure of DEQ Too in hopes of developing a fee structure that aligns with the associated work. In the near term, the annual expenses associated with DEQ Too exceed the associated fee revenue. For this reason, the proposed fee increase maintains that DEQ Too customers pay a fee equal to those who test at a Clean Air Station, with the fee amount being tied to the relevant boundary area.

Air Quality Trends

Most importantly, the DEQ will continue to closely measure ozone concentrations within the Portland and Medford airsheds to ensure the program achieves the required emission reductions. The current federal standard for ozone levels in ambient air is 70 parts per billion. That standard will be evaluated by the US Environmental Protection Agency in 2020 and may be lowered. As reflected in Figure 6, below, the standard is routinely being exceeded in the Portland and Medford areas in recent years. Evidence suggests the level will also exceed the standard in 2019.

Figure 6 – Portland Metro and Medford Area Ozone Trends



These heightened ozone levels have even required the issuance of air quality advisories to protect the health of sensitive groups, including children, the elderly, pregnant women and people with medical conditions. On August 28, 2019, Portland residents were encouraged to take steps to help reduce these levels, including increasing the use of public transportation, avoiding engine idling and other actions involving the use of motor vehicles.

While these incidents do not represent violations of the federal Clean Air Act, each serves as an important reminder that Oregon must remain vigilant in reducing vehicle emissions to avoid a violation of the federal ozone standard in the future. Such a violation could have significant negative impacts on Oregonians if the state was found to be in non-attainment for ozone. A nonattainment designation has the potential to be highly consequential in the following ways:

- Public health impacts. Nonattainment indicates unhealthy levels of pollution, increasing the chances of negative health effects in the community.
- Economic impacts. A nonattainment designation means additional regulation for industry, which can limit the availability of economic development/expansion or new industry investments. The stigma of nonattainment can also dampen interest in economic development in a region.
- Regulatory burdens. A nonattainment designation requires decades of planning and reporting obligations with the Environmental Protection Agency.

- Potential Sanctions. Failure to prepare and submit plans that reduce emissions and bring non-attaining areas back into attainment can trigger mandatory sanctions including loss of federal highway funds.

Evaluation of Alternative Service Models

Appendix 4 details the process and results of a comprehensive analysis of operational models for delivering vehicle inspection services. Oregon currently operates a 'centralized' program, meaning it operates a small number of facilities dedicated exclusively to the testing of automobile emissions. However, the addition of DEQ Too means Oregon VIP is effectively a hybrid – the only of its kind in the country.

In order to provide the information necessary for the Environmental Quality Commission to make a cost-effectiveness finding the agency evaluated programs of all types. Key findings from this analysis include:

- The decentralized model (i.e. privatized programs) are charging higher fees in the aggregate. Customers receiving testing services from decentralized test stations pay, on average, triple the fees paid by their centralized station counterparts. This is despite the fact that privatized programs do not experience the same labor or wage constraints as public entities.
- Among centralized programs, Oregon's VIP's costs remain competitive relative to like-programs. This holds true even when accounting for the proposed fee increase. Additionally, the $24.59[1] weighted average Oregon post-increase fee overstates the fee relative to like-programs. When the fee is also adjusted to account for the free re-tests performed at Oregon stations, the average fee is reduced to $20.18[2]. The analysis also found that many centralized programs are supplemented with general funds or other funds. This is not the case in Oregon.
- Oregon's program is the only program in the nation that is offering both self-service testing and a public-private telematic OBD partnership.

In addition to cost, the analysis includes the consideration of efficiency and quality. While DEQ cannot objectively evaluate the quality of other programs, nor can the agency forecast the quality-impact of decentralizing Oregon's program, we find that the current program is delivering an outstanding and efficient experience for our customers.

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 thousands of 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 gauge its overall effectiveness, and to 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.

In addition to customer satisfaction, the agency monitors wait-time at the stations by scanning vehicles as they enter the station; measuring the time upon completion of the process. Motorists experience an

---

[1] The weighted average $24.59 fee is based on a $30 mobile fleet testing fee, a $25 Portland fee, and a $20 Medford fee.

[2] 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.

average wait time of approximately 10 minutes and have the benefit of receiving their license plate stickers upon passage – saving a separate trip to a DMV office.

Conclusion

The Vehicle Inspection Program remains a critically important strategy for reducing and preventing pollution from cars and trucks in Oregon. While demand for testing continues to increase, the program has managed to do more with less because of a culture of innovation and continuous improvement. Fees for the issuance of certificates of compliance have not been adjusted in over twenty years. A transition to OBD testing, development of self-service testing lanes and the development of a public-private partnership model allow the program to operate in an extremely efficient manner. While revenue shortfalls have resulted in position eliminations, these changes in the service delivery model have allowed wait times to remain low and customer satisfaction to remain stellar.

However, the program is at a tipping point. Test to staff ratios are now nearing 7,000 tests per biennium and forecasted to increase with the demand on testing. The program requires a minimum level of staffing to provide an efficient and safe testing environment. Without the restoration of 8 positions recently eliminated, the program cannot operate its seven stations at the capacity for which they were designed. This will lead to longer wait times, reducing the cost-effectiveness of the program.

In developing a fee increase proposal that would stabilize the programs finances and allow for the restoration of 8 positions, DEQ evaluated alternative models of service delivery. Through that work, the fees paid by VIP customers, including the proposed increase, were shown to be roughly one-third of the fees paid by customers of the fully privatized programs. Even among the less expensive centralized programs, the Oregon VIP's fees are among the lowest in the nation and its wide range of service offerings is unmatched.

For these reasons, DEQ recommends that in accordance with ORS 468A.370 and ORS 468A.400 the Environmental Quality Commission find that the Vehicle Inspection program, including the proposed 2020 fee increase, is the most cost effective program consistent with Clean Air Act requirements.

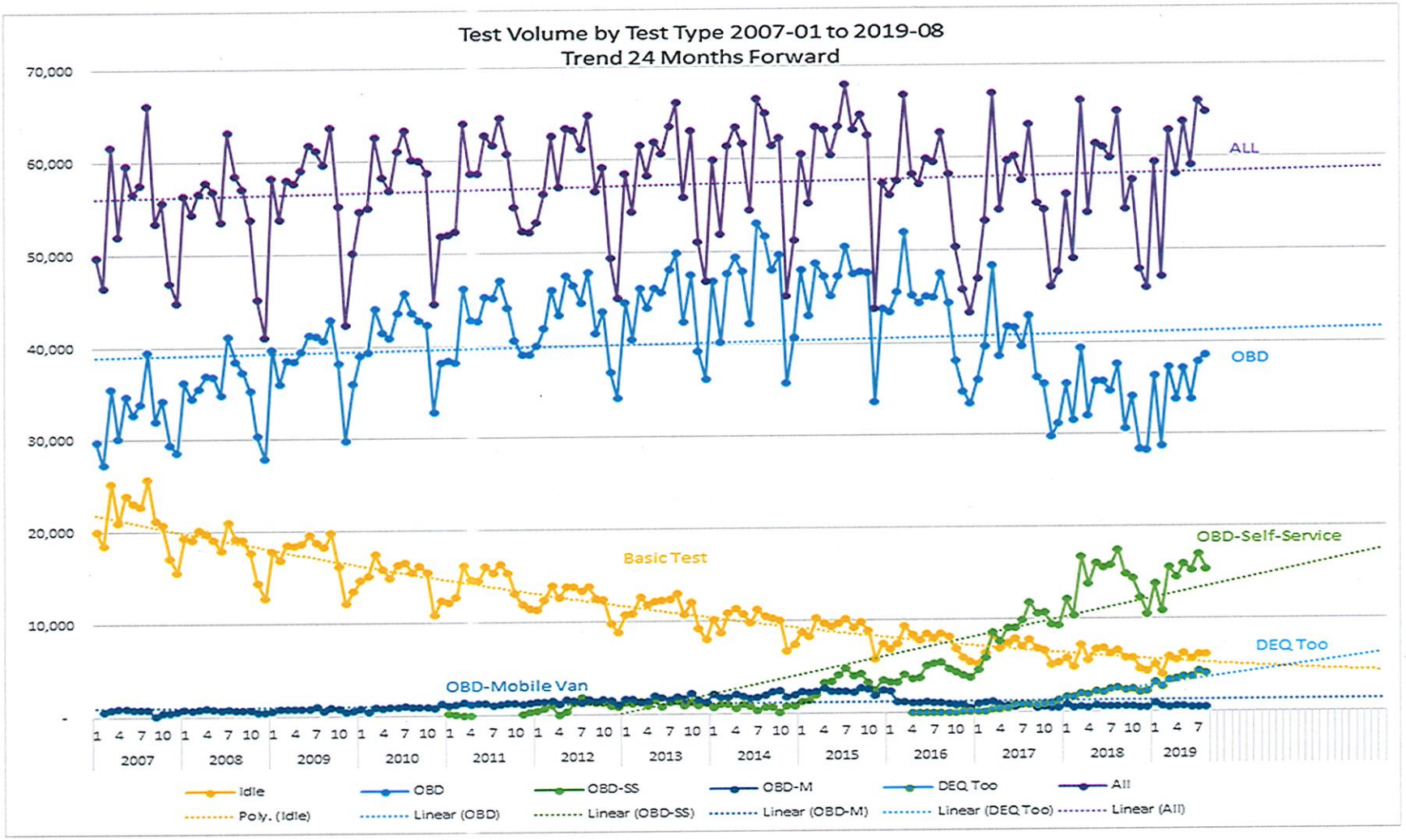
Appendix 1 – Test Volume by Type Graphs

Appendix 2 – Efforts to Increase Efficiency

Appendix 3 – Emissions Inventory Analysis

Appendix 4 – Evaluation of Alternative Service Models

Appendix 1 – Test Volume by Type Graphs



Appendix 2 - 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 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

[1] The root cause of a pollution problem is a failing system or component which leads to the symptom of elevated emissions.

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. 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[2].

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 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.

---

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

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 the United Way and a participating repair facility, the funds cover repair costs for qualified, low-income 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.

Appendix 4 - Evaluation of Program Models

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 Table 1.[1]

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 Table 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, 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 Table 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

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

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, with 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 Table 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 Tables 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 $24.59 used in this analysis, for example, represents an average fee assessed

when considering the number of inspections performed at $20 in Medford[2], $25 in the Portland areas, and $26 for mobile testing. This weighted average biennial fee of $24.59 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 Figure 1, 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 $24.59[3] 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 $20.18[4]. This is relevant as half of the states surveyed charge customers for re-tests if customers exceed a re-test threshold. See Table 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[5], its effective rate charged is, again, lower, than those charged by other centralized programs. See Figure 2.

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.

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 Table 3 and Figure 2. This is also the case when considering some of the modestly reduced fees within the Centralized-Private subgroup. See Table 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.[6] 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

---

[2] The current $10 fee in Medford is anticipated to be increased over time to $20, 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.

[3] The weighted average $24.59 fee is based on the $30 mobile fleet testing fee, the $25 Portland fee, and the eventual $20 Medford fee.

[4] 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.

[5] 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.

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

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 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 thousands of 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.

Table 1 – All Programs

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 – Phase 2	Centralized	600,000	$ 24.59[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	$ -	$0	B	1,300,000			No	No	Yes
Total Tests		**72,276,499[7]**	**$ 55.14[8]**	**$3,982,860,187**		**108,234,250**					

Table 2
Decentralized Programs

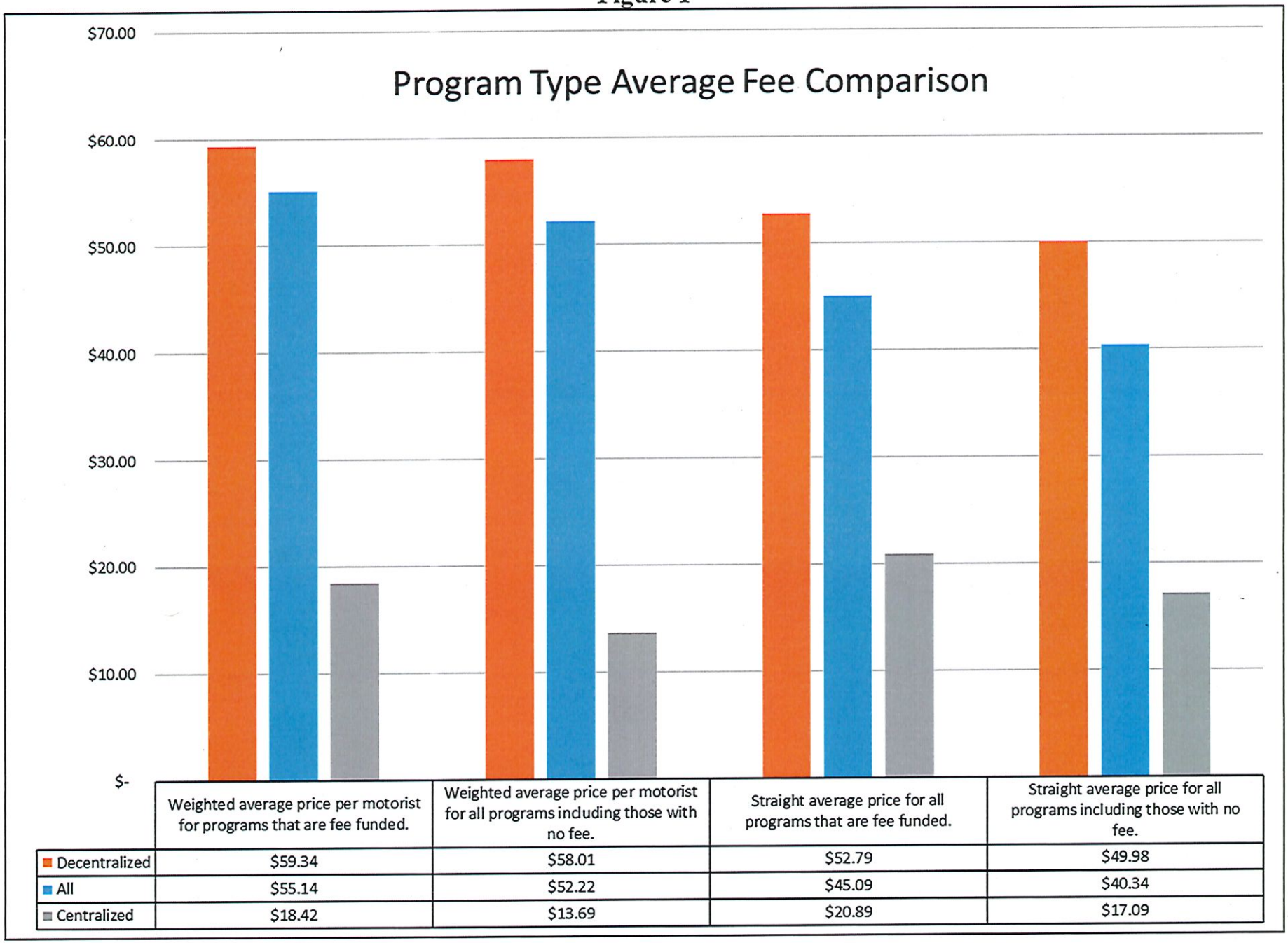
Program	Program Type	Annual Tests	Fee-Adj (Biennial)	Fee Revenue	Freq	Total Vehicles	Free Retests	Non-Fee Revenue	Remote Sensing	Remote OBD	Repair Waiver
California	Decentralized	13,081,788	$ 59.33	$776,142,452	B	26,163,575		Yes	No	Pilot	Yes
Connecticut	Decentralized	1,032,784	$ 30.00	$30,983,520	B	2,065,568			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**					

Table 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 - Current	Centralized	Publicly	600,000	$ 20.04	$12,024,000	B	1,200,000	Yes	No	No	Yes	No
Oregon - Phase 1	Centralized	Publicly	600,000	$24.13	$14,478,000	B	1,200,000	Yes	No	No	Yes	No
Oregon - Phase 2	Centralized	Publicly	600,000	$24.59	$14,754,000	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	$11,215,905	B	1,495,454		Yes	No	No	Yes
Total Tests			**7,412,727**	**$ 18.42**[7]	**$133,796,755**		**18,545,454**					

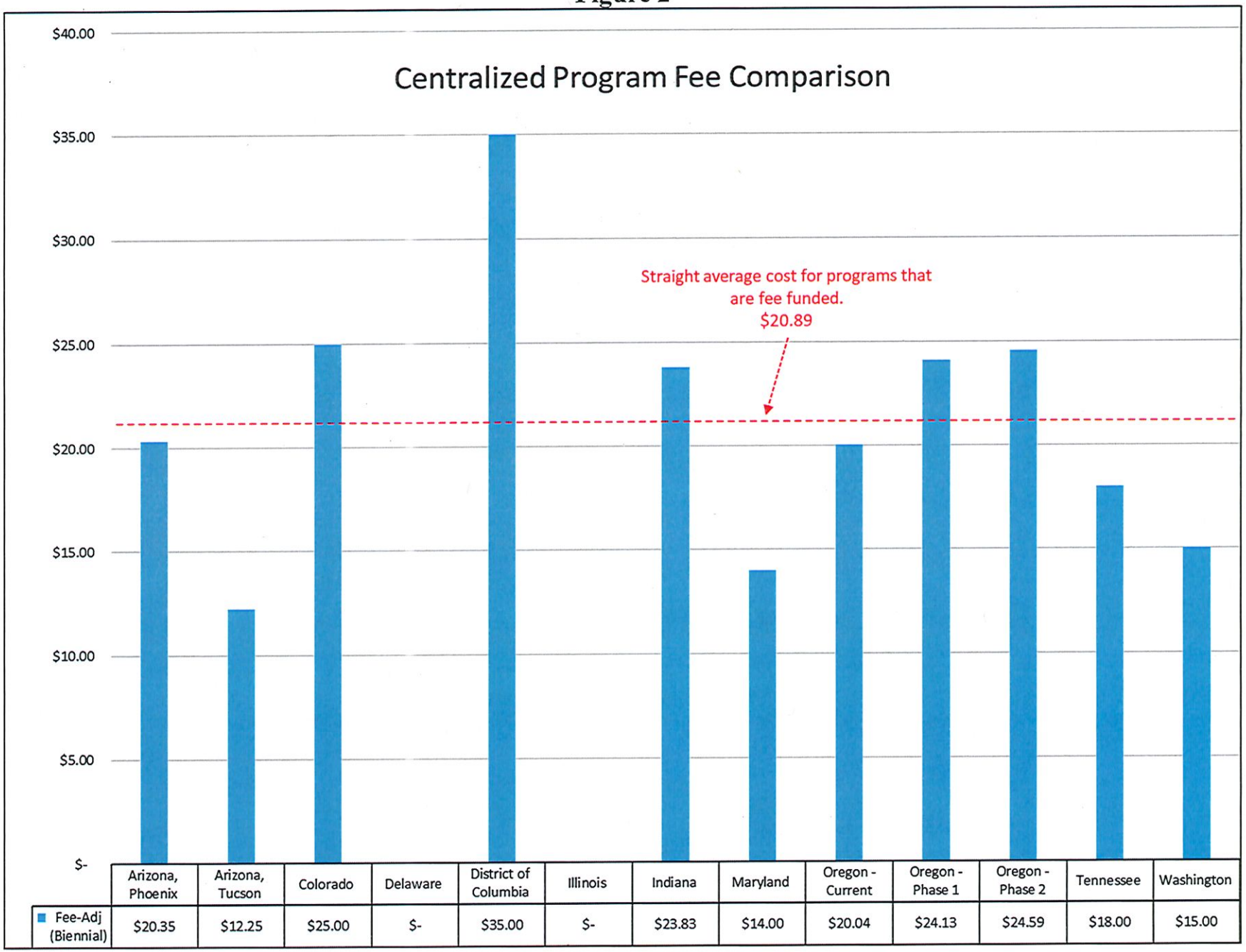
[7] This program average uses Oregon's Phase 2 fee structure and ignores the other Oregon fee structures.

Figure 1



	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	$55.14	$52.22	$45.09	$40.34
Centralized	$18.42	$13.69	$20.89	$17.09

Figure 2



	Arizona, Phoenix	Arizona, Tucson	Colorado	Delaware	District of Columbia	Illinois	Indiana	Maryland	Oregon - Current	Oregon - Phase 1	Oregon - Phase 2	Tennessee	Washington
Fee-Adj (Biennial)	$20.35	$12.25	$25.00	$-	$35.00	$-	$23.83	$14.00	$20.04	$24.13	$24.59	$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.