Highway Cost Allocation Study

2025-2027 Biennium

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SUMMARY OF MAJOR FINDINGS AND RECOMMENDATIONS

THE 2025 OREGON HIGHWAY COST ALLOCATION STUDY CONCLUDES THAT:

- For the 2025-27 biennium and under existing, current-law tax rates, full-fee-paying light vehicles will contribute 63.5 percent of state highway user revenues, and full-fee-paying heavy vehicles (those weighing more than 10,000 pounds), as a group, will contribute 36.5 percent.
- For the 2025-27 biennium and under existing, current-law tax rates, full-fee-paying light vehicles are responsible for 3.3 percent of state highway user costs, and full-fee-paying heavy vehicles (those weighing more than 10,000 pounds), as a group, are responsible for 26.7 percent.
- Equity ratios for full-fee-paying vehicles, the ratio of projected payments to responsibilities for vehicles in each class, are **0.8665** for light vehicles and **1.3657** for heavy vehicles. Under existing tax rates and fees, light vehicles are projected to underpay their responsibility by 13.4 percent. Heavy vehicles are projected to overpay by 36.6 percent during the next biennium.
- The Legislature recently enacted incremental rate increases for tax rates and fees between 2018 and 2024, which are now fully accounted for in this study. These rate increases have increased the share of revenues collected from heavy vehicles and impacted equity ratios between light and heavy vehicles.
- Should the Legislature choose to modify user fee rates for other reasons beyond the scope of this study, the HCAS model can be used to design those rates to ensure those rates produce revenues in proportion to expected costs imposed by light and heavy vehicles.
- For light-duty vehicles the tax on motor fuels would need to be increased from $0.40 per gallon to $0.49 per gallon and the registration fees would need to increase by 7 percent.
- To achieve equity for the medium duty vehicles (10,001 and 26,000 pounds) registration rates for these vehicles would need to be reduced to 85 percent of their current rates.
- To achieve equity within heavy vehicle classes, several rate schedules would need to be changed. Specific rates are recommended in Chapter 8.

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INTRODUCTION

For almost 80 years, Oregon has based the financing of its highways on the principle of cost responsibility. Cost responsibility is the principle that those who use the public roads should pay for them and, more specifically, that users should pay in proportion to the road costs for which they are responsible. Cost responsibility requires each category of highway users to contribute to highway revenues in proportion to the costs they impose on the highway system. The State of Oregon uses the cost allocation process to apportion costs of highway work to vehicles that impose those costs.

This tradition has served Oregon well by ensuring that the state's highway taxes and fees are levied in a fair and equitable manner. The State of Oregon commissions periodic studies to determine the "fair share" that each class of road users should pay for the maintenance, operation, and improvement of the state's highways, roads, and streets. Prior to the present study, 22 such studies had been completed; the first in 1937, the most recent in 2023.

Oregon voters ratified the principle of cost responsibility in the November 1999 special election by voting to add the following language to Article IX, Section 3a (3) of the Oregon Constitution:

"Revenues that are generated by taxes or excises imposed by the state shall be generated in a manner that ensures that the share of revenues paid for the use of light vehicles, including cars, and the share of revenues paid for the use of heavy vehicles, including trucks, is fair and proportionate to the costs incurred for the highway system because of each class of vehicle. The Legislative Assembly shall provide for a biennial review and, if necessary, adjustment, of revenue sources to ensure fairness and proportionality."

Purpose of Study

The purpose of this 2025 Oregon Highway Cost Allocation Study (HCAS) is to:

(1) determine the share that each class of road users should pay based on their respective share of costs for maintenance, operation, and improvement of Oregon's highways, roads, and streets; and

(2) if necessary, recommend adjustments to existing tax rates and fees to bring about a closer match between payments and responsibilities for each vehicle class.

ORGANIZATION OF THIS REPORT

This volume of the 2025 study provides an overview of the study issues, methodology, and results, as well as recommendations for future studies. There are several exhibits throughout this report to illustrate specific data. Please note that amounts shown are rounded and may not total exactly.

This chapter has provided an introductory discussion of the purpose, scope, and process of the 2025 study as well as a brief background discussion of the history of Oregon highway cost allocation studies by the federal government and other states, and the evolution of Oregon road user taxation.

- **Chapter 2** briefly summarizes the basic structure and parameters of the 2025 study, including the analysis periods, road (highway) systems, revenues attributed to vehicle classes, and expenditures allocated to those vehicle classes.
- **Chapter 3** presents the general methodology and approach used for the study. It includes a description of the special analyses conducted for the study and discussion of the major methodological and procedural changes from previous Oregon studies.
- **Chapter 4** summarizes the data and forecasts used in the study and compares them to the data and forecasts used in recent studies.
- **Chapter 5** presents the study expenditure allocation and revenue attribution procedures and results and compares the methods and results to those of previous Oregon studies.
- **Chapter 6** brings together the expenditure allocation and revenue attribution results from the previous chapter to develop ratios of projected payments to cost responsibilities for light vehicles and the detailed heavy vehicle weight classes. It also compares these ratios with those from the 2015-2023 Oregon studies.
- **Chapter 7** contains recommendations for changes in existing tax rates and fees to bring about a closer match between revenues contributed and cost responsibilities for each vehicle class.

The appendices to this study are presented in a separate document because of their size. The appendices include:

Appendix A. Glossary of terms

Appendix B. Summary of highway cost allocation studies in other states

Appendix C. The minutes of each SRT meeting

Appendix D. HCAS model user guide

Appendix E. HCAS model reference guide

Appendix F. 2025 input data and assumptions

BACKGROUND

Past Oregon Highway Cost Allocation Studies

Oregon, more than any other state, has a long history of conducting highway cost allocation or responsibility studies and basing its system of road user taxation on the results of these studies. The State of Oregon completed studies in 1937, 1947, 1963, 1974, 1980, 1984, 1986, 1990, 1992, 1994, and 1999-2023. As noted above, the Oregon Constitution requires that a study is conducted biennially and highway user tax rates adjusted, if necessary, to ensure fairness and proportionality between light and heavy vehicles.

Prior to 1999, Oregon used the term cost responsibility studies, whereas the federal government and most other states called their studies cost allocation studies. Oregon has now adopted the more conventional terminology, although the two terms are equivalent and used interchangeably in this report.[1]

In this study and all prior studies, highway users and other interested parties have been given the opportunity to offer their input in an open and objective process. During the 1986 study, for example, three large public meetings were held to provide information on the study and solicit the input of all user groups.

As part of the 1994 study process, a Policy Advisory Committee was formed to address several cost responsibility issues that arose during the 1993 legislative session. This committee consisted of 12 members, including a representative of AAA Oregon and five representatives of the trucking industry. The committee held six meetings devoted to understanding and recommending policies for the 1994 study as well as future Oregon studies.

In 1996, the Oregon Department of Transportation (ODOT) formed the Cost Responsibility Blue Ribbon Committee to evaluate the principles and methods of the Oregon cost responsibility studies and, if warranted, recommend improvements to the existing methodology. This 11-member committee was chaired by the then Chairman of the Oregon Transportation Commission and included representatives of the trucking industry, AAA Oregon, local governments, academia, and Oregon business interests. The committee held a total of seven meetings and reached agreement on several recommendations for future studies. Because the trucking industry, in some cases, did not agree with the full committee recommendations, it was given the opportunity and elected to file a Minority Report that was included in the committee report.

All studies prior to 1999 were conducted by ODOT staff. In February 1998, the ODOT and Oregon Department of Administrative Services (DAS) Directors reached agreement to transfer responsibility for the study from ODOT to DAS. The 1999, 2001, and 2005 through 2023 studies, as well as the current study, were conducted by consultants to the DAS Office of Economic Analysis. ODOT's role in these studies was to provide technical assistance and most of the data and other required information. In 2003, ODOT conducted the study using the model developed for the 2001 study.

The Oregon studies prior to 1999 relied on an internal technical advisory committee to provide the expertise and some of the many data elements required for the studies. As noted, highway users and other interested parties were also provided the opportunity to offer their input as the studies were being conducted. For the 1999 and subsequent studies, DAS formed a Study Review Team (SRT) to provide overall direction for the studies. The SRT's role has been to provide policy guidance and advisory input on all study methods and issues.

The SRT for the 2001 study consisted of ten members and the SRTs for the 2003 and 2005 studies had eight members. The SRT for the 2007 through 2021 consisted of ten members, and the present study consisted of nine

[1] "Oregon Cost Responsibility Studies Compared to Other States," Legislative Revenue Office Research Report #4-96, September 10, 1996.

members. The composition of the SRTs has changed from study to study, but all have included motorist, trucking industry, and Oregon business representatives; academics; and state officials. All SRTs have been chaired by the State Economist. ODOT did not have a representative on the 1999 SRT but was represented on subsequent SRTs.

Other Highway Cost Allocation Studies

Although Oregon has the longest history of conducting highway cost allocation studies, several other states have also conducted such studies, the majority of which have been completed over the past two decades. Since the first HCAS, 32 states have performed at least 88 cost allocation studies. Since the late 1970s, 30 states have conducted such studies.

The interest of other states in undertaking these studies has in many cases been sparked by the completion of similar studies by the federal government. Several states undertook studies following the release of the 1982 Federal HCAS. With the release of the 1997 Federal HCAS and the Federal Highway Administration's (FHWA) interest in helping states do their own studies, there was again a renewed interest among the states. Upon completion of the 1997 Federal study, FHWA formed a state representatives' Steering Committee to assist the states in adopting the research and methods employed in that study.

A 1996 Oregon Legislative Revenue Office report concluded that most of the differences in study results among states can be explained by differences in the types of expenditures that are allocated.[2] Oregon, for example, does not include state police expenditures in its studies because, since 1980, state police do not receive Highway Fund monies. California, on the other hand, includes large Highway Patrol expenditures in its studies. Since policing expenditures are typically viewed as a common responsibility of all highway users and are assigned to all vehicle classes based on each class's relative travel, they are primarily the responsibility of automobiles and other light vehicles. Therefore, it is not surprising that the California studies find a higher light vehicle responsibility and lower heavy vehicle responsibility share than the Oregon studies.

A review of state studies conducted in connection with the 1997 Federal study found that those studies attempting to clearly allocate costs between light and heavy vehicle classes have found heavy vehicles to be responsible for 30 to 40 percent of total highway expenditures. Until recently Oregon studies have produced results in this range. The results for 2025-2027 project heavy vehicles to be responsible for 27 percent of expenditures. Both the 1982 and 1997 Federal HCASs found trucks and other heavy vehicles to be responsible for 41 percent of federal highway expenditures.[3]

OREGON ROAD USER TAXATION

Oregon governs the State Highway Fund using the concept of cost responsibility. The State collects a fair share of revenue from each highway user class through three highway user taxes. The three taxes are: **vehicle registration fees**, **motor vehicle fuel taxes** (primarily the gasoline tax), and **motor carrier fees** (primarily the weight-mile tax).

Registration Fee

The registration fee is levied on a biennial basis for all road users, based on the type and weight of the vehicle being registered. The registration fee is considered payment for the fixed or non-use related costs of providing a highway system. These costs include minimal maintenance of facilities and equipment along with certain administrative functions necessary to keep the system accessible. Since these costs account for a small portion of total highway costs, registration fees in Oregon have traditionally been low (for both cars and trucks) in comparison to the corresponding fees in most other states.

Road user taxes were initially levied against motor vehicles to cover the cost of registration. A one-time fee of $3.00 was instituted in 1905. Because this proved to be a productive source of revenue, the state soon annualized the fee and began to increase the rates and use the proceeds to finance highways.

From 1990 to 2003, the two-year registration fee for automobiles and other vehicles weighing 8,000 pounds or less was $30, and in 2004, it was increased to $54. This shift to higher registration fees represents a change

[2] "Oregon Cost Responsibility Studies Compared to Other States," Legislative Revenue Office Research Report #4-96, September 10, 1996.
[3] It should be noted, however, that the results of the federal studies are not directly comparable to those of state studies for two reasons: highway maintenance is a state-funded activity and thus is not included in the federal studies, and the heavy vehicle responsibility share is generally lower for most maintenance activities than for construction, particularly major rehabilitation projects. Therefore, the responsibility for federal expenditures will typically be more weighted toward heavy vehicles than is the case for state expenditures.

in philosophy away from the "user pays" approach and toward the use of fixed fees to cover more of the variable costs of road construction and maintenance. In 2018, the legislature increased the biennial registration rates for automobiles from $86 to $112. Starting in 2020, additional registration fees were based on the fuel efficiency of registered vehicles, with increasing fees for high-efficiency vehicles.

Fuel Tax

The fuel tax applies to gasoline or diesel fuel purchased from an authorized seller who collects the taxes at the time of sale. In 1919, Oregon became the first state in the nation to enact a fuel tax on gasoline. It was regarded as a "true" road user tax because those who used the roads more paid more. The fuel tax came to be viewed as the most appropriate means of collecting the travel-related share of costs for which cars and other light vehicles are responsible.

The state fuel tax was extended to diesel and other fuels in 1943. Since that time, the tax on diesel and other fuels, referred to as a "use fuel" tax, has been at the same rate per gallon as the tax on gasoline. On January 1, 2022 the Oregon Legislature increased the fuel tax and use tax rates to $0.38. The rates increased by an additional $0.02 in 2024, bringing these taxes to their current rate of $0.40.

Motor Carrier Fees

The primary motor carrier fee is the weight-mile tax, which applies to all commercial motor vehicles with declared gross weights of more than 26,000 pounds. It is based on the declared weight of the vehicle and the distance it travels in Oregon. The weight-mile tax is a use-tax that takes the place of the fuel tax on heavy vehicles. Vehicles subject to the weight-mile tax are not subject to the state fuel tax.

The Oregon weight-mile tax system consists of a set of schedules and alternate flat fee rates. There are separate schedules for vehicles with declared weights of 26,001 to 80,000 pounds and those over 80,000 pounds. Additionally, log, sand and gravel, and wood chip haulers have the option to pay flat monthly fees in lieu of the mileage tax.

Since 1947, the State has adjusted the weight-mile rates 15 times based on the results of updated cost responsibility studies or the passage of transportation funding packages. Another adjustment occurred on January 1, 2024, when HB 2017 took full effect and increased weight-mile rates by an average of 53 percent across all weight classes as compared with pre-HB 2017 rates.

Other recent revisions to the weight-mile rates include:

- October 1, 2010, when weight-mile rates increased by an average of 24.5 percent because of the 2009 Jobs and Transportation Act (JTA).
- January 1, 2004, when the 2003 Legislature increased weight-mile rates by 9.9 percent when enacting the third phase of the Oregon Transportation Investment Act (OTIA III).
- On September 1, 2000, rates were reduced across the board by 12.3 percent to reflect the results of the 1999 study.
- On January 1, 1996, the rates were also reduced by 6.2 percent based on the results of the 1994 study.
- Rates were also increased on January 1, 1992, to maintain equivalency with the fuel tax increases enacted by the 1991 Legislature.

The 1999 Oregon Legislature repealed the weight-mile tax and replaced it with a 29 cent per gallon diesel fuel tax and higher heavy truck registration fees. This measure, House Bill 2082, was subsequently referred to the voters and defeated in the May 2000 primary election.

After the May 2000 vote, the trucking industry challenged the Oregon tax in the courts. The primary focus of the legal action was the feature that allows haulers of logs, sand and gravel, and wood chips to pay alternate flat fees in lieu of the mileage tax. The industry argued that these fees are, from a practical standpoint, available only to Oregon intrastate motor carriers, and this provision of the Oregon system therefore unfairly discriminates against non-Oregon based interstate firms. In February 2002, the Third District Circuit Court ruled in favor of the State in the lawsuit. The ruling was reversed in the Court of Appeals in 2003. The Oregon Supreme Court affirmed the original Circuit Court decision in December 2005.

For carriers hauling divisible-load commodities at gross weights between 80,001 and 105,500 pounds pay a weight-mile tax (statutory Table B) based on the vehicle's declared weight and number of axles. There are separate schedules for five, six, seven, eight, and nine or more axle vehicles, with each schedule graduated by declared weight. The rates are structured so

that, at any declared weight, carriers can qualify for a lower per-mile rate by utilizing additional axles.

Carriers hauling non-divisible loads at gross weights greater than 98,000 pounds under special, single-trip permits pay a per-mile road use assessment fee. Non-divisible (or "heavy haul") permits are issued for the transportation of very heavy loads that cannot be broken apart, such as construction equipment, bridge beams, and electrical transformers.

The road use assessment fees are expressed in terms of permit gross weight and number of axles and are based on a charge of 10.3 cents per equivalent single axle load (ESAL)[4] mile of travel as of January 1, 2022. As with the Table B rates, carriers are assessed a lower per-mile charge the greater the number of axles used at any given gross weight. The road use assessment fee takes the place of the weight-mile tax for the loaded, front-haul portion of non-divisible load trips. With rare exceptions, empty back haul miles continue to be subject to the weight-mile tax and taxed at the vehicle's regular declared weight.

Each biennium, ODOT conducts a study to test for the revenue neutrality of flat-fee rates and recommends adjustments to those rates as necessary to treat intrastate and interstate carriers equitably.

[4] An ESAL is equivalent to a single axle carrying 18,000 pounds.

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CHAPTER 2: SUMMARY OF THE BASIC STRUCTURE & PARAMETERS OF STUDY

The underlying approach and methods used in this highway cost allocation study are, with a few major exceptions, like those used in the last six Oregon studies. The analytical framework and basic parameters of the 2025 study are briefly summarized below.

STUDY APPROACH

This study uses the cost-occasioned approach, employing an incremental, design-based allocation methodology for bridges and the 2010 version of the National Pavement Cost Model (NAPCOM) for pavement costs. This is the same general approach that was used in previous Oregon studies and virtually all studies conducted by the federal government and other states.

GENERAL METHODOLOGY

This section describes key assumptions and data sources for the analysis.

Analysis Periods

- **Base Year:** Calendar year 2023, the most recent full year for which data were available when the study was undertaken.
- **Forecast Year:** Calendar year 2026, the middle 12 months of the 24-month study biennium.
- **Study Period:** The 2025-27 State Fiscal Biennium, or July 1, 2025 to June 30, 2027.

The expenditures allocated in this study are those projected for the 2025-27 biennium using ODOT's Cash Flow Forecast model. All traffic data used in the study were first developed from data for the 2023 base year (with the exception of FHWA data on publicly-owned vehicles, for which the most recent available data was from 2022), and then projected forward to the 2026 forecast year using weight-class-specific growth rates.

Road (Highway) Systems

This study uses the Federal Highway Administration's classification system for highway functional classes. Every public road in Oregon is assigned to one of 14 functional classes, which are defined as combinations of urban or rural and seven classifications based on the purpose of the road:

1. Interstate Freeways
2. Other Freeways and Expressways
3. Other Principal Arterials
4. Minor Arterials
5. Major Collectors
6. Minor Collectors
7. Local Streets and Roads

Each roadway segment is also assigned to one of four ownership categories: state, county, city, or federal. Note that U.S. Highways and Interstates are owned by the state; federal ownership consists mostly of Forest Service and Bureau of Land Management roads.

In addition to the 14 federal functional classes, we developed three other categories to facilitate the allocation of costs for projects on multiple functional classes. The additional categories are: all roads, all state-owned roads, and all locally-owned roads.

Vehicle Classes

Light vehicles include all vehicles up to 10,000 pounds gross weight, consistent with Oregon law and registration fee schedules. In studies prior to 2007, light vehicles were defined as vehicles up to 8,000 pounds.

Vehicles weighing more than 10,000 pounds are divided into 2,000-pound vehicle classes. All vehicles over 200,000 pounds are in the top weight class. Those over 80,000 pounds are further divided into subclasses based on the number of axles on the vehicle. The five subclasses are five, six, seven, eight, and nine or more axles.

Vehicles over 26,000 pounds are assigned to weight classes based on their declared weight, which may be different from their registered gross weight. For example, a given tractor may operate with different configurations (number and type of trailers) at various times and may have different declared weights for different configurations.

For modeling purposes, each weight class up to 80,000 pounds is assigned a distribution of numbers of axles, and each combination of weight class and number of axles is assigned a distribution of operating weights. For vehicles over 26,000 pounds, these distributions are obtained from Weigh-In-Motion data, which are collected and supplied by ODOT.

For reporting purposes, the expenditure allocation and revenue attribution results reported in Chapters 5 and 6 are presented in terms of the following seven summary-level vehicle weight groups:

- 1 to 10,000 pounds
- 10,001 to 26,000 pounds
- 26,001 to 78,000 pounds
- 78,001 to 80,000 pounds
- 80,001 to 104,000 pounds
- 104,001 to 105,500 pounds
- 105,501 pounds and up

The study team determined the various weight classes based on the characteristics of the vehicles in each group, logical divisions in the tax structure, and the number of vehicles and miles in each group. Operators of vehicles in the 10,001 to 26,000-pound group, for example, pay the state fuel tax and higher registration fees rather than the weight-mile tax. Additionally, most of these vehicles are two-axle, single-unit trucks or buses used in local commercial delivery operations or passenger transport. Thus, they have similar characteristics with respect to their cost responsibility and tax payments. It is, therefore, logical to combine them for reporting purposes.

Similarly, it makes sense to combine the individual weight classes above 105,500 pounds because these vehicles are (a) operated under special, single-trip, non-divisible load permits, (b) operated with multiple axles and legally allowed higher axle weights than regular commercial trucks, (c) subject to the road use assessment fee rather than the weight-mile tax for their loaded front haul miles, and (d) typically used for short-mileage hauls (e.g., transporting heavy equipment from one construction site to another) and so account for a very small proportion of total truck miles in the state.

The weight classes of 78,001-to-80,000 and 104,001-to-105,500 pounds are the largest two truck classes by miles of travel. These two classes alone account for a majority of the total commercial truck miles in Oregon. Because of the dominant role of these two classes in terms of miles of travel, cost responsibilities, and revenue contributions, it is logical they be kept as separate groups.

EXPENDITURES ALLOCATED

State Expenditures

All state expenditures of highway user fee revenues are allocated to vehicle weight classes, as are all state expenditures of federal highway funds (e.g., matching funds). Federal funds are included because they are interchangeable with state user fee revenues. Any differences in the way they are spent are arbitrary and subject to change.

State expenditures of bond revenues are included because the bonds are repaid from state user fees. Such expenditures are, however, reduced to the amount that will be repaid in the study period before these expenditures are allocated. The remaining expenditures will be included in future studies using the allocation to vehicle classes applied in this study, consistent with the approach taken in the 2005 through 2023 studies. Thus, expenditures of bond revenues that were allocated in the most recent prior study will be included in this and the next eight studies.

Local Government Expenditures

The study allocates all expenditures by local governments of state highway user fees and federal highway funds. Federal funds are included because, again, they are interchangeable with state user-fee revenues.

Some local-government own-source revenues are allocated because they are interchangeable with state highway user fees. The study excludes local-government own-source revenues reported as coming from locally issued bonds, property taxes (including local improvement districts), systems development charges, and traffic impact fees (also called system

development charges). These revenue sources must be spent on certain projects or certain types of projects and are not considered interchangeable with state highway user fees.

In studies prior to 2003, only the expenditures of state highway user fee revenues were allocated. This approach failed to account for the interchangeability of funds from other sources and required local governments to estimate how state funds were spent because their accounting systems do not track expenditures by funding source.

In the 2003 study, all expenditures by local governments were allocated. The 2005 study refined the approach taken in the 2003 study by excluding certain categories of own-source revenue that are not interchangeable. This approach has been used to allocate local government expenditures since the 2005 study.

Expenditure Categories

The four major expenditure categories used for the 2025 study are:

- **Modernization (new construction or reconstruction).** Examples include adding lanes and straightening curves. Modernization adds to the capacity of a roadway either directly or by improving throughput. A replacement bridge with more lanes than the bridge it replaces is considered modernization.
- **Preservation (rehabilitation).** Most preservation projects involve repaving existing roads. Preservation projects extend the useful life of a facility but does not add to its capacity. A replacement bridge that does not add capacity is considered preservation.
- **Maintenance and Operations.** Examples of maintenance include pothole patching, pavement striping, snow and ice removal, and bridge maintenance. Examples of operations include traffic signals, signage, and lighting.
- **Administration, Revenue Collection, Planning, and Other Costs.** Within each of these major categories, expenditures are further broken down into several individual work types. A separate allocation is performed for the expenditures in each individual work type. Chapter 3 contains a full listing of these work categories and the allocators used for each.

REVENUES ATTRIBUTED TO VEHICLES

The revenues attributed to vehicles are based on forecasted collections for the 2025-27 biennium by major state revenue source under the existing tax structure and current-law tax rates (i.e., current registration and title fees, fuel tax, weight-mile tax, flat fee, and road use assessment fee rates).

Because non-state funding sources are included as expenditures, the total expenditures allocated is larger than the amount of total revenues attributed. This difference in absolute size does not, however, affect the calculation of equity ratios, which are ratios of ratios (each vehicle class's share of attributed revenues divided by its share of allocated expenditures).

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CHAPTER 3: GENERAL METHODOLOGY & STUDY APPROACH

This chapter presents the general methodology and approach used in the 2025 Oregon Highway Cost Allocation Study.

COST-OCCASIONED APPROACH

All Oregon highway cost allocation studies, as well as the studies conducted by the federal government and most other states, use what is called the cost-occasioned approach. The basic premise of this approach is that each class of road user should pay for the system of roads in proportion to the costs associated with road use by that class. The equity of a road tax system may then be judged by how well shares of payments by different classes of road users match their shares of costs resulting from their use of the road system.

The principal alternative to the cost-occasioned approach is the benefits approach, in which an attempt is made to identify and measure the benefits received by both users and nonusers of the system. The benefits approach begins with the recognition that the purpose of a highway system is to provide benefits, both directly to highway users and indirectly to the rest of society. Basing user fees on the value of benefits received, rather than on the costs imposed, would promote both fairness (people pay in proportion to the value they receive) and efficiency (agencies would have less incentive to build facilities where the costs exceed the benefits).

The benefits approach has two major drawbacks: benefits are not directly measurable, and the benefits associated with traveling a mile on a given road can vary between identical-appearing vehicles or individuals and for the same vehicle or person at various times. Additionally, such an approach assumes that the benefits would not otherwise, and more economically, be realized through non-road-based modes of transportation.

A long-running debate about the proper balance of cost responsibility and tax burden between highway users and nonusers continues at both the state and federal levels, fueled over the years by numerous studies. Arguments that support charging nonusers for highways are based on the societal benefits attributable to the highway system, including increased mobility, safety, and economic development.

There are, however, some serious conceptual problems in quantifying benefits and deciding which accrue to users and which accrue to nonusers. In many cases, highway improvements benefit individuals or businesses simultaneously as both users and nonusers. Additionally, the more readily understood economic impacts of highway improvements often reflect a transfer of user benefits to nonusers—the clearest example being reduced shipping costs, which are passed to businesses and consumers in the form of lower product prices.

Because of these problems, and because of the inherent advantages of user fees in promoting an economically efficient allocation of scarce resources, the federal government and most states conducting cost allocation studies now rely on a cost-occasioned approach to determine responsibility for highways. The Oregon studies continue to use a cost-occasioned approach.

Incremental Method

Within the cost-occasioned approach, different methods may be used to allocate costs or expenditures to the various vehicle classes. Virtually every recent study, including Oregon's, has used some version of what is referred to as the incremental method. This method divides selected aspects of highway costs into increments, allocating the costs of successive increments to only those vehicles needing the higher cost increment. The design, considered adequate for light vehicles only, is viewed as a common responsibility of all highway users and is shared by all vehicle classes. Each group of successively larger and heavier vehicles also shares in the incremental costs they occasion.

In Oregon, the incremental method is used directly in the allocation of bridge costs. The first increment for a new bridge, for example, identifies the cost of building the bridge to support its own weight, withstand other non-load-related stresses (e.g., stream flow, high winds, and potential seismic forces), and carry light vehicle traffic only.[5] This cost is a common responsibility of all vehicles and is assigned to all classes based on each class's share of total vehicle miles traveled (VMT).

[5] The factors influencing the design requirements, and therefore costs, of bridges, are sometimes expressed by the terms dead load, live load, and total load. Bridges need to be designed to support their own weight and the other non-load-related forces such as stream flow, wind, and seismic forces (the dead load) plus the traffic loadings anticipated to be applied to the bridge (the live load). The total design load is the sum of the dead and live loads. Although the precise relationships differ by the type and location of the bridge under consideration, as a rule, the longer the span length, the greater the relative importance of the non-load-related factors in determining the total cost of the bridge.

The second increment identifies the additional cost of building the bridge to accommodate trucks and other heavy vehicles weighing up to 50,000 pounds. This cost is assigned to all vehicles with gross weights exceeding 10,000 pounds based on the relative VMT of each class over 10,000 pounds. Similarly, the additional cost of the third increment is assigned to all vehicles with gross weights over 50,000 pounds, the cost of the fourth increment to vehicles having gross weights over 80,000 pounds, and the cost of the fifth and final increment to vehicles having gross weights over 105,500 pounds.

National Pavement Cost Model (NAPCOM)

In the past, highway cost allocation studies typically used an incremental methodology to allocate pavement costs as well. Increased depth and strength of pavement surface and base is required to support increases in the number, and particularly weight, of the vehicles anticipated to use the pavement during its design life.

For the 1997 federal study, Roger Mingo adapted the National Pavement Cost Model (NAPCOM) for use in highway cost allocation. The model had two increments: non-load-related costs and load-related costs, with the load-related costs allocated using results from detailed engineering models of several different pavement degradation mechanisms that consider the effects of climate, traffic levels, mix of vehicle types, and the interactions between different mechanisms.

Roger Mingo adapted the pavement model to use Oregon's special weighing data[6] and to use 2,000-pound increments of declared vehicle weight for data input and results reporting. The allocation of costs in the second increment used the detailed results of the Oregon-specific pavement cost model, which provides allocation factors by weight class and number of axles for each combination of functional class and pavement type (flexible or rigid).

An updated version of NAPCOM was completed in 2010. This version of the model is different from the earlier versions in several ways, though the fundamental idea of incremental allocation of non-load-related and load-related costs is the same. Among the main differences in the newest version of NAPCOM are the new pavement distress models and equations for load-related costs, which have been updated to reflect the current accepted pavement damage models and theories. Load-related costs are allocated using results from newer detailed, empirical engineering models that have been calibrated to pavement distress data.

The 2010 NAPCOM model was used to develop the pavement factors for the 2011 through 2023, and 2025 Oregon Studies. Like the development of pavement factors for past studies, pavement factors were developed by 2,000-pound increments of declared vehicle weight. Weigh-in-motion (WIM) data were also used to construct distributions of configurations and declared weights by operating weight. The 2011 Oregon Highway Cost Allocation Study was the first study to use the updated version of NAPCOM to generate pavement factors for highway cost allocation.

THE CHOICE OF APPROPRIATE COST ALLOCATORS

Some quantifiable measure, or allocator, must be used to distribute each category of cost, or each increment within a category where the incremental approach is used, to the individual vehicle classes. For many costs, there are logical relationships that suggest which allocator is most appropriate.

Wear-related costs are a direct, empirically established consequence of use by vehicles, and are the easiest cost to allocate. The amount of wear a vehicle imposes per mile of travel relates closely to measurable attributes of the vehicle. Two approaches may be used for choosing allocators for wear-related costs:

- Results from a detailed model that predicts costs imposed by individual vehicles are used to develop allocation factors that produce the same attribution of costs as the model. That is how pavement costs are handled in this study.
- When a detailed model for attributing wear-related costs does not exist, this analysis uses allocation factors based on how wear is expected to vary in proportion to the wear imposed per unit of use by the vehicles in each category. For example, striping costs are allocated according to axle-miles of travel because it is expected that stripes wear in proportion to the number of axles that pass over them.

[6] Special weighings, which are no longer conducted, record the weight of every truck passing the scale, even if empty. Weights were reported for each axle grouping, along with the number of axles in the group. These data replaced the more generalized assumed distributions of operating weight and vehicle configurations used in the national model. The 2010 version of NAPCOM, and Oregon HCAS studies since 2011 use weigh-in-motion data, which record the weight on each axle and the distances between axles for every truck passing each of many sensors around the state.

For structures and, to a lesser extent, roadways, the cost of constructing a facility with a given capacity will vary with the maximum weight and size of vehicle expected to use it. Part of the difference in construction costs, however, may be offset by increased useful life of a sturdier facility. If one attributes capital costs based on differences in the size or strength of the structure required to accommodate several types of vehicles, then the incremental approach may be used.

The incremental approach, by itself, does not account for the capacity demand that drove the decision to build the facility. For bridges and structures, projects that added capacity were identified so that the base increment of the structure cost could be allocated using the peak-period passenger-car-equivalent VMT allocator (peak PCE-VMT). The incremental approach may be modified to consider the expected effects of structure design on useful life, as was done in the allocation of bridge costs in recent Oregon studies.

All other approaches to capital-cost allocation are theoretically arbitrary and thus inherently second best. However, other approaches may be selected because of their convenience, despite the lack of a compelling underlying logic. One such second-best approach to allocating capacity-enhancing capital costs was used in the most recent Oregon studies. The non-wear-related portion of capital costs were allocated in proportion to passenger-car-equivalent vehicle-miles traveled during the peak hour (peak PCE-VMT), which varies in proportion to each vehicle's contribution to congestion on existing facilities but does not consider the full relationship between volume and capacity-related costs on existing facilities. The approach also assumes that the value of time is equal across all vehicle types, trip types, and vehicle occupancies.

If the benefits resulting from a given expenditure vary with vehicle use, the cost may be allocated in proportion to the level of benefit. For example, if the occupants of every vehicle passing a safety improvement benefit from reduced risk of death or injury, the cost could be attributed based on occupant-miles traveled or, if occupancy is assumed to be the same across all vehicles, vehicle-miles traveled. Other costs may not vary at all with vehicle use but must still be allocated to vehicles. If one allocates costs that do not vary with use, any allocator that seems "fair" may be chosen. In these cases, there is no single right allocator to use.

In general, an allocator that varies more closely with costs imposed should be selected over one that varies less closely. The degree of correlation may be measurable given enough data, but the necessary data usually do not exist, so one must calculate the expected relationship based on engineering and economic theory. A strong statistical correlation does not necessarily indicate a good allocator, as there is no reason to believe that an accidental correlation will persist. An allocator must also vary with measurable (and measured) attributes of vehicles, such as miles traveled, weight, length, number of axles, or some combination of those.

Allocators Used In This Study

As noted above, there are several cost allocators available for use in a cost allocation study. Allocators may be applied on either a per-vehicle or per-vehicle-mile-traveled basis. Because it is vehicle use, rather than the existence of vehicles, that imposes costs on the highway system, many costs in the current Oregon study are allocated using some type of weighted vehicle-miles traveled (VMT). Exhibit 3-1 shows the allocators applied to each expenditure category for this study.

EXHIBIT 3-1: ALLOCATORS APPLIED TO EACH WORK TYPE

Work Type Description	Work Type	Allocator 1	Share 1	Allocator 2	Share 2
Preliminary and Construction Engineering (and etc.)	1	CongestedPCE	0.5595	Other_Construction	0.4405
Right of Way (and Utilities)	2	CongestedPCE	0.7375	Other_Construction	0.2625
Grading and Drainage	3	CongestedPCE	1.0000	None	0.0000
New Pavements-Rigid	4	CongestedPCE	0.0410	Rigid	0.9590
New Pavements-Flexible	5	CongestedPCE	0.0548	Flex	0.9452
New Shoulders-Rigid	6	CongestedPCE	1.0000	None	0.0000
New Shoulders-Flexible	7	CongestedPCE	1.0000	None	0.0000
Pavement and Shoulder Reconstruction-Rigid	8	CongestedPCE	0.0410	Rigid	0.9590
Pavement and Shoulder Reconstruction-Flexible	9	CongestedPCE	0.0548	Flex	0.9452
Pavement and Shoulder Rehab-Rigid	10	All_VMT	0.0410	Rigid	0.9590
Pavement and Shoulder Rehab-Flexible	11	All_VMT	0.0548	Flex	0.9452
Culverts	12	All_VMT	0.8752	Flex	0.1248
New Structures	13	None	1.0000	None	0.0000
Replacement Structures	14	None	1.0000	None	0.0000
Structures Rehabilitation	15	None	1.0000	None	0.0000
Climbing Lanes	16	UphillPCE	1.0000	None	0.0000
Truck Weight/Inspection Facilities	17	Over_26_VMT	1.0000	None	0.0000
Truck Escape Ramps	18	Over_26_VMT	1.0000	None	0.0000
Interchanges	19	None	1.0000	None	0.0000
Roadside Improvements	20	All_VMT	1.0000	None	0.0000
Safety Improvements	21	CongestedPCE	1.0000	None	0.0000
Traffic Service Improvements	22	CongestedPCE	1.0000	None	0.0000
Other Construction (modernization)	23	Other_Construction	1.0000	None	0.0000
Other Construction (preservation)	24	Other_Construction	1.0000	None	0.0000
Surface and Shoulder Maintenance-Rigid	25	All_VMT	0.0410	Rigid	0.9590
Surface and Shoulder Maintenance-Flexible	26	All_VMT	0.0548	Flex	0.9452
Surface and Shoulder Maintenance-Other	27	All_AMT	1.0000	None	0.0000
Drainage Facilities Maintenance	28	All_VMT	1.0000	None	0.0000
Structures Maintenance	29	All_VMT	1.0000	None	0.0000
Roadside Items Maintenance	30	All_VMT	1.0000	None	0.0000
Safety Items Maintenance	31	All_VMT	1.0000	None	0.0000
Traffic Service Items Maintenance	32	CongestedPCE	1.0000	None	0.0000
Pavement Striping and Marking (maintenance)	33	All_AMT	1.0000	None	0.0000
Sanding and Snow and Ice Removal (maintenance)	34	All_VMT	1.0000	None	0.0000
Extraordinary Maintenance	35	All_VMT	1.0000	None	0.0000
Truck Scale Maintenance-Flexible	36	Over_26_VMT	1.0000	None	0.0000
Truck Scale Maintenance-Rigid	37	Over_26_VMT	1.0000	None	0.0000
Truck Scale Maintenance-Buildings and Grounds	38	Over_26_VMT	1.0000	None	0.0000
Studded Tire Damage	39	Basic_VMT	1.0000	None	0.0000
Miscellaneous Maintenance	40	All_VMT	1.0000	None	0.0000
Bike/Pedestrian Projects	41	All_VMT	1.0000	None	0.0000
Railroad Safety Projects	42	All_VMT	1.0000	None	0.0000
Transit and Rail Support Projects	43	CongestedPCE	1.0000	None	0.0000

EXHIBIT 3-1: ALLOCATORS APPLIED TO EACH WORK TYPE (CONTINUED)

Work Type Description	Work Type	Allocator 1	Share 1	Allocator 2	Share 2
Fish and Wildlife Enabling Projects	44	All_VMT	1.0000	None	0.0000
Highway Planning	45	All_VMT	1.0000	None	0.0000
Transportation Demand & Transportation System Management	46	CongestedPCE	1.0000	None	0.0000
Multimodal	47	CongestedPCE	1.0000	None	0.0000
Reserve Money, Fund Exchange, Immediate Opportunity Fund	48	All_VMT	1.0000	None	0.0000
Seismic Retrofits on Structures	49	All_VMT	1.0000	None	0.0000
Other Common Costs	50	All_VMT	1.0000	None	0.0000
Other-Over 26,000 Only	55	Over_26_VMT	1.0000	None	0.0000
Other-Basic Only	56	Basic_VMT	1.0000	None	0.0000
Other-Over 8,000 Only	57	Over_10_VMT	1.0000	None	0.0000
Other-Under 26,000 Only	58	Under_26_VMT	1.0000	None	0.0000
Other Administration	59	All_VMT	1.0000	None	0.0000
Bridge-All Vehicles Share (no added capacity)	60	All_VMT	1.0000	None	0.0000
Bridge-Over 8,000 Vehicles Share	61	Over_10_VMT	1.0000	None	0.0000
Bridge-Over 50,000 Vehicles Share	62	Over_50_VMT	1.0000	None	0.0000
Bridge-Over 80,000 Vehicles Share	63	Over_80_VMT	1.0000	None	0.0000
Bridge-Over 106,000 Vehicle Share	64	Over_106_VMT	1.0000	None	0.0000
Bridge-All Vehicles Share (added capacity)	65	CongestedPCE	1.0000	None	0.0000
Other Bridge	66	Other_Bridge	1.0000	None	0.0000
Interchange Modernization	67	None	1.0000	None	0.0000
Bridge Replacement with Capacity	68	None	1.0000	None	0.0000

Unweighted VMT is the most general measure of system use and is considered a fair way to assign many types of common costs, that is, costs considered to be the joint responsibility of all highway users. VMT represent a reasonable and accepted measure to assign costs among the members of a subgroup (e.g., the individual vehicle classes within a cost increment), especially when members of the subgroup have similar characteristics or when an investment is made to provide a safer highway facility. Unweighted VMT are used for many traffic-oriented services, such as the provision of lighting, signs, and traffic signals since these services are related to traffic volumes.

Weighted VMT, with an appropriate vector of zeros and ones, will produce an allocator that restricts the allocation to a corresponding subset of weight classes. Such allocators are used to implement the incremental approach for bridge costs and for other costs allocated on VMT for a subset of all vehicles. One example is the allocation of Motor Carrier Transportation Division administrative costs only to vehicles over 26,000 pounds.

Other VMT weighting factors may also be used to allocate certain costs more appropriately. VMT can be weighted to account for the effective roadway space occupied by several types of vehicles relative to a standard passenger car. This is accomplished by using passenger-car equivalence (PCE) factors to weight VMT, producing PCE-VMT. Because trucks are larger and heavier than cars and require greater acceleration and braking distances, they occupy more effective roadway space and therefore have higher PCE factors.

A variety of PCE factors were developed for the 1997 federal study, including factors for different functional classes and traffic congestion, as well as uphill factors for steep grades. The uphill factors are used in this study to allocate the costs of climbing lanes.

Congested (or peak-period) PCE-VMT is peak-period VMT weighted by the PCE factors for congested traffic conditions. It is used in this study for the common cost portion of projects undertaken to add capacity to the highway system.

VMT can also be weighted to reflect the amount of pavement wear imposed by vehicles of various weights and axle configurations. The factors used for this weighting are produced from the results of the pavement model described above.

Costs not accounted for as a part of specific construction projects but that are expected to vary with the overall level of construction are allocated with special factors developed during the allocation process. These factors allocate costs in proportion to the construction costs that were allocated from specific projects. Separate "other construction" factors are calculated and applied for work performed by the state and by local governments.

Prospective View

The costs or expenditures allocated in a cost allocation study can be those for a past period, those anticipated for a future period, or a combination of past and future costs. Some studies conducted by the federal government and other states have allocated both historical and planned expenditures.

The Oregon studies have traditionally used a prospective approach in which the expenditures allocated are those planned for a future period, specifically, the next fiscal biennium. Similarly, the traffic data used in these studies are those projected for a future year. This is done to allow for changes in expenditure levels and traffic volumes, and so that the study results will be applicable for the period for which legislation is enacted to implement the study recommendations.

There are some disadvantages associated with allocating only projected future expenditures. Specifically, it requires relying on forecasts, which are subject to greater error than historical data.

The 1996 Cost Responsibility Blue Ribbon Committee recommended that the Oregon studies continue allocating only projected future expenditures. The current Oregon study again follows that recommendation, except for incorporating study-period expenditures on the repayment of bonds issued in the prior study periods, allocated in the same proportions as in the prior studies.

Exclusion of External (Social) Costs

The Oregon studies, as well as studies conducted by most other states have chosen to allocate direct governmental expenditures and exclude external costs associated with highway use. For example, these external costs include costs of congestion, greenhouse gases, and public health amongst others. The proponents of a cost-based approach argue that to be consistent, a HCAS should include all costs that result from use of the highway system. They further argue that economically efficient pricing of highways requires the inclusion of all costs and that failure to do so encourages an over-utilization of highways. Including external costs adds to the breadth and completeness of the analysis and helps determine appropriate user charges necessary to reflect these costs.

However, there are several disadvantages associated with including external costs. Although these costs represent actual costs to society, they are decidedly more difficult to quantify and incorporate in the analysis than are direct highway costs. Inclusion of external costs therefore increases the data requirements and complexity of the studies and could reduce their overall accuracy.

The 1996 Blue Ribbon Committee recommended that the Oregon studies continue to exclude social costs until the state implements explicit user charges to capture these costs. Both the 1982 and 1997 federal HCASs included some social costs in supplementary analyses. The 1999 Oregon study recommended that future studies include "a separate assessment of the impacts of proposed changes in highway user taxes on the total costs of highway use including all major external costs." The 2001 and 2003 studies made this same recommendation.

In 2009, the State Legislature directed the Oregon Department of Administrative Services to prepare a second highway cost allocation study based on the concept of the efficient pricing of highways, in addition to the traditional study. ORS 366.506 Section 30 in House Bill 2001 specifically required that an efficient fee study "consider the actual costs users impose on the highway system, including but not limited to highway replacement costs, traffic congestion costs and the cost of greenhouse gas emissions." Additionally, the efficient fee study report needed to "include recommendations for legislation to implement the efficient fee method of cost allocation." The results of the 2011 Oregon Efficient Fee Highway Cost Allocation Study were presented in a separate report.

EXPENDITURE ALLOCATION

The Oregon studies allocate expenditures of road-related user fees, rather than costs. Over the long run, expenditures must cover the full direct costs being imposed on the system or the system will deteriorate. Over any shorter period, however, expenditures will exceed or fall short of the costs imposed. Additionally, local governments spend money from sources other than user fees on local roads and bridges. Oregon's highway cost allocation process includes the expenditure of the portion of local governments' own-source revenues that are fungible with state user fees but excludes the expenditure of own-source funds that are dedicated to specific projects or purposes. In this study, 18.5 percent of local government expenditures (5.3 percent of all expenditures) were excluded.

Some past Oregon studies, including a special analysis in the 2001 study, attempted to estimate and allocate a full-cost budget in addition to a base-level (actual expenditure) budget. The intent was to approximate costs by estimating the level of expenditures required to preserve service levels and pavement conditions at existing levels. In these studies, heavy vehicles were found to be responsible for a greater share of the preservation level budget than of the base-level budget. This was because most unmet needs at that time involved pavement rehabilitation and maintenance, items for which heavy vehicles have the predominant responsibility.

There are convincing arguments for moving toward a full cost-based approach in highway cost allocation studies. Recognizing the benefit of moving toward a financing system based on efficient fees, a full 2011 Efficient Fee Highway Cost Allocation Study was performed in addition to the traditional study. "True" costs are still more difficult to quantify and incorporate in the analysis than are direct highway expenditures. Some of these problems are theoretical in nature or are limited by our knowledge of such costs, and data limitations also plague the calculation of many of these costs. As a practical matter, therefore, highway cost allocation studies, including this study, continue to focus on the allocation of expenditures rather than costs.

Treatment of Debt-Financed Expenditures and Debt Service

Oregon has traditionally relied much less on debt financing of its highway program than have other states. This has changed since the enactment of the Oregon Transportation Investment Act (OTIA) by the 2001 Legislature. The first OTIA authorized the issuance of $400 million in new debt for projects to be completed across Oregon. It provided $200 million for projects that add lane capacity or improve interchanges and $200 million for bridge and pavement rehabilitation projects. Automobile and truck title fees were increased to finance the repayment of construction bonds for OTIA projects.

Favorable bond-rate conditions allowed the 2002 Special Legislative Session to authorize an additional $100 million in debt without needing to further increase revenues. The original OTIA projects became known as OTIA I and the additional projects as OTIA II.

The 2003 Legislature authorized an additional $2.46 billion in new debt and increased title, registration, and other DMV fees to produce the additional revenue necessary to repay the bonds. The OTIA III money was to be spent as follows:

- $1.3 billion to repair or replace 365 state bridges
- $300 million to repair or replace 141 locally owned bridges
- $361 million for local-government maintenance and preservation
- $500 million for modernization

The issue of how to treat OTIA project expenditures and the associated debt service was discussed at some length by the Study Review Teams for both the 2003 and 2005 studies. Debt finance introduces a disconnect between study-period revenues and expenditures because the period in which the revenues are received differs from the period in which the funds are expended. Care needs to be taken to avoid double counting, which would occur if both the debt-financed project expenditures and full debt service expenditures (including interest and repayment of principal) were included.

While not all the funds expended on OTIA projects come from bonds, the bonded amounts are easily identifiable, as are the associated debt service expenses. The dollar amount allocated in the model is the study-period debt service expenditure, given the bond rate and amortization period, in this case 20 years. The expenditures associated with each bond-financed project are scaled down by a bond factor to one study-period worth of debt service expenditure before allocation. This method retains the project detail necessary to assign expenditure shares by vehicle class. The dollar amounts allocated to each vehicle class for bonded projects are recorded and carried forward to each of the next nine studies.

This approach has two disadvantages: the choice of which projects get bond financing can affect the results of the study, as well as the next nine studies, and the allocation of those expenditures in future studies remains based on traffic conditions expected for the first two years of the 20-year repayment period. The Study Review Team considered several alternative approaches and decided that the advantages of simplicity and limited data requirements for the chosen approach outweighed its disadvantages. They also noted that the failure to update the allocation in future studies was consistent with the treatment of cash-financed projects, which are completely ignored in all future studies.

Treatment of Alternative-Fee-Paying Vehicles

Under Oregon's existing highway taxation structure, some types of vehicles are exempt from certain fees or qualify to pay according to alternative-fee schedules. These types of vehicles are collectively referred to in this report as "alternative-fee-paying" vehicles. The two main types of such vehicles are publicly owned vehicles and farm trucks. Publicly owned vehicles pay a nominal registration fee and are not subject to the weight-mile tax. Most types of publicly owned vehicles are now subject to the state fuel tax, but many diesel-powered publicly owned vehicles are not. Operators of farm trucks pay lower annual registration fees than operators of regular commercial trucks, and most pay fuel taxes, rather than weight-mile taxes when operated on public roads.

The reduced rates paid by certain types of vehicles mean they are paying less per mile than comparable vehicles subject to full fees. The difference between what alternative-fee-paying vehicles is projected to pay and what they would pay if they were subject to full fees is the alternative-fee difference. The approach used in past Oregon studies was to calculate this difference for each weight class and sum these amounts. The total alternative-fee difference (subsidy amount) was then reassigned to all other, full-fee-paying vehicles on a per-VMT basis, that is, this amount was treated as a common cost to be shared proportionately by all full-fee-paying vehicles.

The rationale for this approach was that the granting of these reduced fees represents a public policy decision, and most vehicles paying reduced fees are providing some public service that should be paid for by all taxpayers in relation to their use of the system. Because the heavy vehicle share of the total alternative-fee difference is greater than their share of total statewide travel, reassigning this amount based on relative vehicle miles had the effect of increasing the light vehicle responsibility share and reducing the heavy vehicle share.

Beginning with the 2013 study, the Study Review Team recommended that the alternative-fee difference be reported, but that the results be calculated for full-fee paying vehicles only, without any adjustment related to alternative-fee paying vehicles.

Treatment of Tax Avoidance and Evasion

When vehicles subject to Oregon's fuel tax purchase fuel in another state and then drive in Oregon, they avoid the Oregon fuel tax. The reverse is also true, so if the number of miles driven in Oregon on out-of-state fuel equaled the number of miles driven outside Oregon on in-state fuel, the net avoidance would be zero. The net avoidance is specifically accounted for in the highway cost allocation study by assuming that 3.5 percent of VMT by fuel-tax paying vehicles do not result in fuel-tax collections for Oregon.

The International Fuel Tax Agreement sorts out the payments of state fuel taxes and the use of fuel in other states for interstate truckers. If truckers pay fuel tax in California, for example, and then use that fuel in Oregon while paying the weight-mile tax, IFTA provides a mechanism for California to reimburse them. If truckers then buy fuel in Oregon, paying no fuel tax, and drive in Washington, IFTA provides a mechanism for them to pay what they owe to Washington.

The avoidance of the weight-mile tax by vehicles that are not legally required to pay it is treated as described above, under alternative-fee paying vehicles, rather than as avoidance.

Virtually any tax is subject to some evasion. While it is generally agreed that evasion of the state gasoline tax and vehicle registration fees is quite low, there is more debate concerning evasion of the weight-mile and use fuel (primarily diesel) taxes. For this study, we assume that evasion of the weight-mile tax is equal to 9.4 percent of what would be collected if all that is due were paid.[7] This study also assumes that an additional 1.0 percent of the use-fuel tax on diesel (beyond the 3.5 percent gas tax avoidance) is successfully evaded.

[7] The weight-mile tax evasion percentage is based on a 2021 report commissioned by ODOT, which measured the rate of weight-mile tax evasion in Oregon.

TYPES OF DATA

Five major types of data are required to conduct a highway cost allocation study:

- **Traffic data.** The miles of travel by vehicle weight and type on each of the road systems used in the study.
- **Expenditure data.** Projected expenditures on construction projects by work type category, road system, and funding source, and projected expenditures in other categories by funding source.
- **Revenue data.** Projected revenues by revenue source or tax instrument.
- **Allocation factors.** Factors used to allocate costs to individual vehicle classes, including passenger-car equivalence (PCE) factors, pavement factors, and bridge increment shares.
- **Conversion factors and distributions.** Examples include distributions used to convert VMT by declared weight class to VMT by operating weight class or to VMT by registered weight class.

The allocation factors used in this study are described in Chapter 3 and the development and use of conversion factors is described in Appendix E: Model Reference Guide.

The remainder of this chapter presents the traffic, expenditure, and revenue data used in the 2025 study and compares them with the data used in the previous Oregon studies.

Traffic Data and Forecasts

VMT by road system, by vehicle weight class and number of axles, and by vehicle tax class are important throughout the cost allocation and revenue attribution processes. VMT estimates and projections are used in both the allocation of expenditures and the attribution of revenues to detailed vehicle classes. Additionally, as explained in Chapter 3, VMT weighted by factors such as PCEs or pavement factors is used to assign several of the individual expenditure categories allocated in the study.

For this study, the required traffic data were first collected for the 2023 base year, the latest year for which complete historical data were available. These data were then projected forward to calendar year 2026, the middle 12 months of the 2025-27 fiscal biennium, which is the study period.

The base year traffic data were obtained from several sources. These include ODOT Motor Carrier Transportation Division (MCTD) weight-mile tax information, Highway Performance Monitoring System (HPMS) submittals, MCTD and Driver & Motor Vehicle Services vehicle registrations data, and the Weigh-In-Motion data. For each road system used in the study, travel estimates are developed for light vehicles and each 2,000-pound heavy vehicle weight class.

Information from state economic forecasts and from ODOT's revenue forecasting model is used to forecast projected study year traffic from the base year data. Data from Weigh-In-Motion are used to convert truck miles of travel by declared weight class to miles of travel by operating weight class and to obtain detailed information on vehicle configurations and axle counts for each weight class. HPMS and FHWA Highway Statistics data are used to spread VMT to functional classifications.

EXHIBIT 4-1: CURRENT AND FORECASTED VMT BY WEIGHT GROUP (MILLIONS OF MILES)

Declared Weight in Pounds			2023 VMT (estimate)	2026 VMT (forecast)	Avg. Annual Growth Rate
1	to	10,000	33,605	32,594	-1.0%
10,001	to	26,000	1,031	948	-2.7%
26,001	to	78,000	531	612	4.9%
78,001	to	80,000	1,358	1,420	1.5%
80,001	to	104,000	221	216	-0.7%
104,001	to	105,500	304	312	0.9%
105,501	and	up	4	4	1.9%
		Total	**37,053**	**36,107**	**-0.9%**
Total by Weight Range					
1	to	10,000	33,605	32,594	-1.0%
10,001	and	up	3,448	3,513	0.6%
1	to	26,000	34,636	33,542	-1.1%
26,001	and	up	2,417	2,565	2.0%
% of Total by Weight Range					
1	to	10,000	91%	90%	
10,001	and	up	9%	10%	
1	to	26,001	93%	93%	
26,001	and	up	7%	7%	

Exhibit 4-1 shows that total vehicle travel in Oregon is projected to decrease from 37.1 billion miles in 2023 to 36.1 billion miles in 2026. This decrease represents an average annual decline of about 0.9 percent. Other periods of recent decline in total vehicle travel include the economic downturn in 2010-2011 and the Covid pandemic of 2019-2020. Light-vehicle travel is projected to decline from 33.6 billion miles in 2023 to 32.6 billion miles in 2026, which represents an average annual decline of 1.0 percent. Total heavy-vehicle travel (10,001 pounds or greater) is forecasted to increase from 3.4 billion miles in 2023 to 3.5 billion miles in 2026, for an average annual increase of 0.6 percent. These projections are based on the projections from ODOT's revenue forecast model.

While these traffic projections are based on accepted practices and the best available data, VMT has, in recent years, become more difficult to forecast accurately. The current decline in VMT is primarily related to the COVID-19 pandemic, which led to a change in economic activity. During the pandemic truck volumes increased while passenger vehicle use declined. Post-pandemic, these changes have begun to revert themselves. The final distribution of VMT during the next biennium will depend on how commuting patterns, preferences for travel modes, and reliance on delivery trucks for e-commerce continue to evolve over time. Given the rapid changes in behavior during and after 2020, expectations about future preferences may not be clearly represented in the underlying data.

Exhibit 4-1 also shows that the change in projected VMT for heavy vehicle travel varies by weight group. While the 26,001-to-78,000-pound weight class group is expected to grow by an average of 4.9 percent each year, the 10,001-to-26,001-pound group is expected to contract by 2.7 percent each year.

Exhibit 4-2 shows the distribution of projected 2026 travel between light and heavy vehicles for different combinations of road system and ownership. Although light vehicles are projected to account for 90.3 percent and heavy vehicles 9.7 percent of total statewide VMT, the mix of traffic varies significantly among the different road systems. Within that distribution of total VMT, heavy vehicles are expected to account for 12.4 percent of the overall travel on state roads and 5.5 percent of the travel on local roads.

Exhibit 4-3 illustrates the separate distributions of projected VMT by road system for light vehicles, heavy vehicles, and all vehicles. As shown, 61.3 percent of total travel in the state is expected to be on state highways and 38.6 percent on local roads and streets. The distribution of VMT, however, differs significantly for light versus heavy vehicles across road systems.

Rural interstate highways, for example, are projected to handle 11.3 percent of total VMT in 2026 but 27.3 percent of heavy vehicle VMT. At the other extreme, 20.8 percent of light vehicle travel, but only 8.9 percent of heavy

EXHIBIT 4-2: PROJECTED 2026 VMT BY ROAD SYSTEM (MILLIONS OF MILES)

		VMT by VC		Percent of Total VMT	
Road System	**Total VMT**	**Light**	**Heavy**	**Light**	**Heavy**
State Roads	22,124	19,375	2,749	87.6%	12.4%
Urban Interstate	5,523	4,902	622	88.7%	11.3%
Rural Interstate	4,077	3,117	960	76.5%	23.5%
Urban Other	6,298	5,921	377	94.0%	6.0%
Rural Other	6,226	5,436	790	87.3%	12.7%
Local Roads	13,934	13,174	760	94.5%	5.5%
County Roads	6,833	6,387	446	93.5%	6.5%
City Streets	7,101	6,787	314	95.6%	4.4%
State & Local Roads	36,058	32,549	3,509	90.3%	9.7%
Federal Roads	49	45	4	92.2%	7.8%
Total All Roads	**36,107**	**32,594**	**3,513**	**90.3%**	**9.7%**

Note: Light includes all vehicles 10,000 pounds & under. Heavy includes all vehicles over 10,000 pounds.

EXHIBIT 4-3: DISTRIBUTION OF PROJECTED 2026 VMT BY ROAD SYSTEM

		Percent of Total VMT	
Road System	**Percent of Total VMT**	**Light**	**Heavy**
State Roads	61.3%	59.4%	78.2%
Urban Interstate	15.3%	15.0%	17.7%
Rural Interstate	11.3%	9.6%	27.3%
Urban Other	17.4%	18.2%	10.7%
Rural Other	17.2%	16.7%	22.5%
Local Roads	38.6%	40.4%	21.6%
County Roads	18.9%	19.6%	12.7%
City Streets	19.7%	20.8%	8.9%
State & Local Roads	99.9%	99.9%	99.9%
Federal Roads	0.1%	0.1%	0.1%
Total All Roads	**100.0%**	**100.0%**	**100.0%**

EXHIBIT 4-4: COMPARISON OF FORECAST VMT USED IN PRIOR OR HCASs (BILLIONS OF MILES)

Road System	2015 Study 2016 VMT	% of Total	2017 Study 2018 VMT	% of Total	2019 Study 2020 VMT	% of Total	2021 Study 2022 VMT	% of Total	2023 Study 2024 VMT	% of Total	2025 Study 2026 VMT	% of Total
State Roads	21.3	59.4%	21.6	60.5%	22.4	60.1%	22.1	67.8%	21.6	60.5%	22.1	61.3%
Urban Interstate	4.9	13.6%	5.4	15.0%	5.8	15.6%	5.8	17.8%	5.4	15.0%	5.5	15.3%
Rural Interstate	4.5	12.7%	4.1	11.3%	4.0	10.8%	4.1	12.6%	4.1	11.3%	4.1	11.3%
Urban Other	5.0	14.0%	6.0	16.8%	6.6	17.6%	6.1	18.8%	6.0	16.8%	6.3	17.4%
Rural Other	6.9	19.2%	6.2	17.4%	6.1	16.2%	6.1	18.6%	6.2	17.4%	6.2	17.2%
Local Roads	14.6	40.6%	14.1	39.5%	14.9	39.9%	10.5	32.2%	14.1	39.5%	13.9	38.6%
County Roads	7.3	20.2%	7.1	19.9%	8.5	22.7%	4.5	13.7%	7.1	19.9%	6.8	18.9%
City Streets	7.3	20.4%	7.0	19.6%	6.4	17.2%	6.0	18.5%	7.0	19.6%	7.1	19.7%
Total All Roads	**35.9**	**100.0%**	**35.7**	**100.0%**	**37.3**	**100.0%**	**32.6**	**100.0%**	**35.7**	**100.0%**	**36.0**	**100.0%**

Note: VMT on Federally-owned roads not included in Totals.

vehicle travel, is forecast to be on city streets. State highways are expected to handle about 59.4 percent of total travel by light vehicles and 78.2 percent of travel by heavy vehicles.

Exhibit 4-4 compares the VMT projections by road system used in the 2015 through 2023 studies. The systems projected to account for the largest shares of total statewide travel are Local City Streets and Local County Roads.

Expenditure Data

Until the 2001 study, Oregon highway cost allocation studies allocated only expenditures of Oregon highway user fees by state and local-government agencies. Because federal funds are in many cases interchangeable with state funds, and because the proportion of federal funds used for any project is arbitrary and subject to change between the time of the study and the time the money is spent, excluding federal funds can introduce arbitrary bias and inaccuracy into the study results.

The 2001 study included the expenditure of federal funds by the state and reported their allocation both separately and in combination with state funds.

The 2003 study, for the first time ever, included all expenditures on roads and streets in the state. In addition to state-funded expenditures, expenditures (both state and local) funded from federal highway revenues and locally generated revenues were also included. This change increased the level and breadth of expenditures allocated in the 2003 study as compared to previous studies.

Since 2005, Oregon highway cost allocation studies have included expenditures of state, federal, and local revenues but exclude certain categories of local revenues determined to not be interchangeable with state user fees. Those sources are locally issued bonds, property taxes (including local improvement districts), systems development charges, and traffic impact fees.

The expenditure data for this study were obtained from several sources. Data from ODOT's monthly Budget and Cash Flow Forecast were used to develop projected construction expenditures by project for 2025-27 biennium. Projected expenditures on maintenance and other programs were obtained from ODOT Financial Services and based on ODOT's Agency Request Budget.

Identifying those expenditures projected to be federally funded was straightforward and based on detailed information from the ODOT Cash Flow Forecast model and Project Control System. Local expenditures were projected from data obtained from the 2023 Local Roads and Streets Survey combined with information from ODOT's Agency Request Budget.

EXHIBIT 4-5: AVERAGE ANNUAL EXPENDITURES BY CATEGORY AND FUNDING SOURCE (THOUSANDS OF DOLLARS)

Major Expenditure Category	All Funding Sources	Funds by Source			Percent of All Funding Sources			All Funding Sources	Percent of Source		
		State	Federal	Local	State	Federal	Local		State	Federal	Local
Modernization	314,555	145,740	140,049	28,766	46.3%	44.5%	9.1%	14.8%	11.2%	20.4%	21.3%
Preservation	213,399	100,098	99,657	13,645	46.9%	46.7%	6.4%	10.0%	7.7%	14.6%	10.1%
Maintenance	389,261	318,019	26,054	45,188	81.7%	6.7%	11.6%	18.3%	24.4%	3.8%	33.4%
Bridge	205,934	137,625	64,818	3,490	66.8%	31.5%	1.7%	9.7%	10.5%	9.5%	2.6%
Other	1,002,239	603,836	354,332	44,071	60.2%	35.4%	4.4%	47.2%	46.3%	51.7%	32.6%
Total	**2,125,387**	**1,305,318**	**684,911**	**135,159**	**61.4%**	**32.2%**	**6.4%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Exhibit 4-5 presents the average annual expenditures projected for the 2025-27 biennium by major category (modernization, preservation, maintenance, bridge, and other) and funding source (state, federal, and local—bond is not included because all values were zero). As shown, projected expenditures total $2.1 billion. This compares to $2.1 billion annual expenditures allocated in the 2023 study.

Of the $2.1 billion total annual expenditures, $1.3 billion (61.4 percent) are projected to be state funded, $684.9 million (32.2 percent) federally funded, and $135.2 million (6.4 percent) locally funded.

The local funds column of Exhibit 4-5 includes only local expenditures from the own-source revenues that were included in this study. Local expenditures from state and federal revenues are included in the state funds and federal funds columns, respectively.

Bridge and interchange expenditures are shown separately from other modernization, preservation, and maintenance expenditures.

The "other" category in the exhibit encompasses expenditures for many activities. In addition to general administrative and tax collection costs for the state, counties, and cities, it includes expenditures for:

- Preliminary engineering
- Right of way acquisition and property management
- Safety-related projects, safety inspections, and rehabilitation and maintenance of existing safety improvements
- Pedestrian/bike projects
- Railroad safety projects
- Fish- and wildlife-enabling projects (e.g., salmon culverts)
- Transportation demand management and transportation system management projects (e.g., Traffic Operations Centers)
- Multi-modal projects
- Transportation project development and delivery
- Transportation planning, research, and analysis

The exhibit shows significant differences in the funding of different expenditure categories. Modernization, preservation, and bridge expenditures have large federal funds components. About 44.5 percent of modernization, 46.7 percent of preservation, and 31.5 percent of bridge expenditures will be federally funded. Maintenance expenditures, on the other hand, are largely state-funded, and to a lesser extent, locally funded, with a small federal-funds component.

Revenue Data and Forecasts

The revenues projected for this study include receipts from taxes and fees collected by the state from highway users, that is, revenues flowing into Oregon's dedicated State Highway Fund. Revenues from federal taxes and user fees are not estimated. Similarly, revenues generated by local governments from their own funding sources (e.g., property taxes, street assessments, system development charges, local fuel taxes) are not included.

Because the expenditures of federal and local revenues are included among the expenditures to be allocated, and because a portion of the expenditure of bond revenue in the prior biennium is included, average annual allocated expenditures exceed average annual attributed revenues in this study by $720 million.

The revenue data required for the study are obtained directly from ODOT's revenue forecasting model. The revenue forecast used for this study was the April 2024 forecast. This is a change from the 2023 study, which used the October forecast, and from previous studies that relied on the December forecast. The forecasts include the 40 percent of State Highway Fund revenues transferred to local governments for use on local roads and streets, and all state funds used for highways, including matching requirements for federal-aid highway projects.

EXHIBIT 4-6: REVENUE FORECASTS BY TAX AND FEE TYPE (THOUSANDS OF DOLLARS) AVERAGE ANNUAL AMOUNTS FOR 2025-2027 BIENNIUM

Tax or Fee Type	Forecast Revenue	Percent of Total
Fuel Tax	684,154	41.8%
Registration Fees	357,836	21.9%
Title Fees	104,223	6.4%
Other Motor Carrier Revenue	2,351	0.1%
Road Use Assessment Fees	5,124	0.3%
Weight-Mile Tax	482,691	29.5%
Total	**1,636,379**	**100.0%**

Average annual state revenues for the 2025-27 biennium are expected to total $1.6 billion. As shown in Exhibit 4-6, fuel taxes and the weight-mile tax are the two largest sources of state user-fee revenue. Revenue from the state fuel tax is projected to average $684 million per year (41.8 percent of total revenues) and weight-mile tax revenue is forecast to average $483 million (29.5 percent of total revenues). These two sources account for 71.3 percent of highway user revenues, illustrating that Oregon's system of highway finance is based heavily on taxes and fees related to use of the system.

Revenue from registration and title fees is anticipated to average $358 million annually (21.9 percent of total revenues), consistent with recent prior studies. Other revenue sources bring in smaller amounts of revenue.

Exhibit 4-7 compares the forecasts of average annual total revenues used in the 1999 through 2025 studies. The increase between the 2021 and 2023 studies reflects the increases in the fuel tax, weight-mile tax, and registration fees enacted as by the Oregon Legislature in 2017.

EXHIBIT 4-7: COMPARISON OF FORECAST REVENUE (MILLIONS OF DOLLARS) USED IN PRIOR OR HCASs

Year of Study	Average Annual Forecast Revenue
1999	691
2001	690
2003	713
2005	826
2007	879
2009	870
2011	1,126
2013	1,096
2015	1,123
2017	1,186
2019	1,482
2021	1,491
2023	1,618
2025	1,636

Caution should be used in comparing these forecasts, however, because they were made at various times for different biennia, and they used different assumptions regarding the treatment of ODOT beginning and ending balances. Additionally, title fees were not identified as a revenue source in studies prior to 2003 because they did not produce net revenue.

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CHAPTER 5: EXPENDITURE ALLOCATION & REVENUE ATTRIBUTION RESULTS

This chapter presents the expenditure allocation and revenue attribution results of the 2025 study and compares them to the results of previous Oregon studies. The following chapter reports equity ratios for each vehicle group and weight class based on the expenditure allocation and revenue attribution results.

EXPENDITURE ALLOCATION RESULTS

The 2003 study was the first to base expenditure allocation results on all highway expenditures, including those financed by federal, state, and local revenues. This approach was considered necessary to address the impacts of the federal advance construction program on expenditures. This change in approach meant the expenditure allocation results for the 2003 study were not directly comparable to those of the earlier Oregon studies.

For the 2005 and later studies, the approach used in the 2003 study was modified to exclude the expenditure of certain local-government, own-source revenues that were not considered to be interchangeable with State Highway Fund monies. The excluded categories were property taxes (including local improvement districts), local bond revenues, systems development charges, and traffic impact fees. The 2025 study uses the same methodology as the 2005 through 2021 studies. As a result, the expenditure allocations in this study are comparable to the 2005 and later studies, but not directly comparable to those in the 2003 or earlier studies.

Exhibit 5-1 presents the expenditure allocation results by major expenditure category and vehicle weight group. Light (up to 10,000 pound) and heavy (over 10,000 pound) vehicles are projected to be responsible for 70.8 percent and 29.2 percent (respectively) of average annual total expenditures for the 2025-27 biennium.

As shown in the exhibit, the responsibility shares vary significantly among the major expenditure categories. Heavy vehicles, as a group, are projected to be responsible for much of the preservation expenditure (74.3 percent).

EXHIBIT 5-1: AVERAGE ANNUAL COST RESPONSIBILITY BY EXPENDITURE CATEGORY AND WEIGHT CLASS (THOUSANDS OF DOLLARS)

Declared Weight in Pounds			Expenditure Categories						Total
			Modernization	Preservation	Maintenance	Bridge	Other	Prior Bonds	
1	to	10,000	264,388	54,747	242,408	133,628	850,329	122,510	1,668,010
10,001	to	26,000	6,710	11,604	17,758	13,898	19,643	12,277	81,889
26,001	to	78,000	12,030	31,705	41,966	8,495	29,912	10,030	134,138
78,001	to	80,000	23,707	93,777	70,190	24,255	74,458	40,402	326,789
80,001	to	104,000	4,134	13,864	12,589	6,213	11,459	21,268	69,527
104,001	to	105,500	2,232	252	2,236	8,607	14,586	21,851	49,765
105,501	and	up	1,355	7,451	2,113	10,838	1,851	2,445	26,053
		Total	**314,555**	**213,399**	**389,261**	**205,934**	**1,002,239**	**230,784**	**2,356,171**
Total by Weight Range									
1	to	10,000	264,388	54,747	242,408	133,628	850,329	122,510	1,668,010
10,001	and	up	50,167	158,652	146,852	72,306	151,910	108,273	688,161
1	to	26,001	271,098	66,351	260,166	147,525	869,972	134,787	1,749,899
26,001	and	up	43,457	147,048	129,095	58,408	132,267	95,996	606,272
% of Total by Weight Range									
1	to	10,000	84.1%	25.7%	62.3%	64.9%	84.8%	53.1%	70.8%
10,001	and	up	15.9%	74.3%	37.7%	35.1%	15.2%	46.9%	29.2%
1	to	26,001	86.2%	31.1%	66.8%	71.6%	86.8%	58.4%	74.3%
26,001	and	up	13.8%	68.9%	33.2%	28.4%	13.2%	41.6%	25.7%

That group is responsible for smaller shares of modernization, general maintenance, bridge, and other expenditures (15.9 percent, 37.7 percent, 35.1 percent, and 15.2 percent, respectively); this illustrates the point made previously that the mix of expenditures allocated can have a significant impact on the overall results.

Both the state and local governments spend funds from state user fees and from the federal government. Exhibit 5-2 shows the funds received from each revenue source and by whom they are expended. The difference between the funds received and the expenditures allocated is due to the allocation of bond expenditures. The upper part of the table shows the full expenditure of bond revenues, and the lower part shows the portions of current and prior expenditures of bond revenues that are allocated to vehicles in this study. In the exhibits that follow, where allocated expenditures are broken down into state, federal, local, and bond, the categories correspond to rows in the lower part of Exhibit 5-2.

EXHIBIT 5-2: SOURCES AND EXPENDITURES OF FUNDS (THOUSANDS OF ANNUAL DOLLARS)

Expenditures of Funds	Source of Funds				All Sources
	State Revenues	Bond Revenues	Federal Revenues	Local Revenues	
State Government	1,037,888	0	636,730	0	1,674,617
Local Governments	267,430	0	48,181	135,159	450,770
Expenditure of Bond Revenue	0	0	0	0	0
Total Expenditures	**1,305,318**	**0**	**684,911**	**135,159**	**2,125,387**
Allocated State Expenditures	1,037,888	0	636,730	0	1,674,617
Allocated Local Expenditures	267,430	0	48,181	135,159	450,770
Allocated Current Bond	0	0	0	0	0
Allocated Prior Bond	0	230,784	0	0	230,784
Total Allocated Expenditures	**1,305,318**	**230,784**	**684,911**	**135,159**	**2,356,171**

EXHIBIT 5-3: EXPENDITURE ALLOCATION RESULTS FOR WEIGHT GROUPS BY FUNDING SOURCE (THOUSANDS OF DOLLARS)

Funding Source	Avg. Annual Total Expenditures Allocated	Allocation to Vehicles			
		Under 10,001 Pounds	Over 10,000 Pounds	Under 26,001 Pounds	Over 26,000 Pounds
State (Highway Fund)	1,037,888	777,617	260,271	808,855	229,033
		74.9%	25.1%	77.9%	22.1%
Federal	636,730	485,401	151,329	502,245	134,484
		76.2%	23.8%	78.9%	21.1%
Local	450,770	282,482	168,288	304,012	146,758
		62.7%	37.3%	67.4%	32.6%
Bond	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%
Current	2,125,387	1,545,500	579,887	1,615,112	510,275
		72.7%	27.3%	76.0%	24.0%
Prior Bond	230,784	122,510	108,273	134,787	95,996
		53.1%	46.9%	58.4%	41.6%
Total	**2,356,171**	**1,668,010**	**688,161**	**1,749,899**	**606,272**
		70.8%	**29.2%**	**74.3%**	**25.7%**

The responsibility amounts for state, federal, local, and bond expenditures are broken out separately in Exhibit 5-3. In this exhibit, the expenditure of state and federal monies by local governments are counted under the state and federal categories. The local category contains only the expenditure by local governments of their own revenues.

Light vehicles are projected to be responsible for 74.9 percent of state, 76.2 percent of federal, and 62.7 percent of local bond expenditures. Heavy vehicles are projected to be responsible for 25.1 percent of state, 23.8 percent of federal, and 37.3 percent of local expenditures. Overall, state-funded expenditures are expected to average $1.0 billion annually over the 2025-27 biennium. Comparable annual amounts for federal and local expenditures are $637 million and $451 million, respectively.

The allocation results for state, federal, local, and bond expenditures are further broken out by major category in Exhibit 5-4 through Exhibit 5-7.

EXHIBIT 5-4: AVERAGE ANNUAL COST RESPONSIBILITY, STATE HIGHWAY FUND DETAIL (THOUSANDS OF DOLLARS)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Total
1	to	10,000	73,677	18,085	179,982	86,414	419,459	777,617
10,001	to	26,000	1,965	3,523	7,035	8,327	10,388	31,238
26,001	to	78,000	2,148	8,860	7,536	4,967	19,431	42,941
78,001	to	80,000	7,841	34,539	26,766	15,419	49,212	133,777
80,001	to	104,000	1,242	4,760	3,754	3,808	7,400	20,965
104,001	to	105,500	1,010	81	2,029	5,234	10,283	18,636
105,501	and	up	942	3,164	1,575	6,551	483	12,714
		Total	**88,824**	**73,012**	**228,677**	**130,719**	**516,656**	**1,037,888**
Total by Weight Range								
1	to	10,000	73,677	18,085	179,982	86,414	419,459	777,617
10,001	and	up	15,147	54,927	48,695	44,305	97,197	260,271
1	to	26,000	75,641	21,608	187,018	94,741	429,847	808,855
26,001	and	up	13,182	51,404	41,659	35,979	86,809	229,033
% of Total by Weight Range								
1	to	10,000	83%	25%	79%	66%	81%	75%
10,001	and	up	17%	75%	21%	34%	19%	25%
1	to	26,000	85%	30%	82%	72%	83%	78%
26,001	and	up	15%	70%	18%	28%	17%	22%

EXHIBIT 5-5: AVERAGE ANNUAL COST RESPONSIBILITY, FEDERAL DETAIL (THOUSANDS OF DOLLARS)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Total
1	to	10,000	119,021	22,768	8,461	39,676	295,474	485,401
10,001	to	26,000	1,270	4,730	310	4,355	6,180	16,845
26,001	to	78,000	1,569	11,608	221	2,598	6,965	22,961
78,001	to	80,000	5,887	45,184	724	8,065	21,720	81,581
80,001	to	104,000	847	6,229	103	2,244	3,329	12,752
104,001	to	105,500	901	160	107	3,083	3,628	7,880
105,501	and	up	300	4,115	19	3,552	1,325	9,310
		Total	**129,795**	**94,793**	**9,946**	**63,574**	**338,622**	**636,730**
Total by Weight Range								
1	to	10,000	119,021	22,768	8,461	39,676	295,474	485,401
10,001	and	up	10,774	72,025	1,485	23,897	43,148	151,329
1	to	26,000	120,291	27,498	8,771	44,032	301,654	502,245
26,001	and	up	9,504	67,295	1,175	19,542	36,968	134,484
% of Total by Weight Range								
1	to	10,000	92%	24%	85%	62%	87%	76%
10,001	and	up	8%	76%	15%	38%	13%	24%
1	to	26,000	93%	29%	88%	69%	89%	79%
26,001	and	up	7%	71%	12%	31%	11%	21%

EXHIBIT 5-6: AVERAGE ANNUAL COST RESPONSIBILITY, LOCAL GOVERNMENT DETAIL (THOUSANDS OF DOLLARS)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Total
1	to	10,000	71,690	13,895	53,965	7,538	135,395	282,482
10,001	to	26,000	3,475	3,351	10,412	1,216	3,076	21,529
26,001	to	78,000	8,314	11,237	34,209	930	3,516	58,207
78,001	to	80,000	9,979	14,055	42,699	771	3,526	71,029
80,001	to	104,000	2,045	2,874	8,732	161	730	14,542
104,001	to	105,500	320	12	101	290	675	1,397
105,501	and	up	113	172	520	735	43	1,583
		Total	**95,936**	**45,595**	**150,638**	**11,641**	**146,960**	**450,770**
Total by Weight Range								
1	to	10,000	71,690	13,895	53,965	7,538	135,395	282,482
10,001	and	up	24,246	31,700	96,673	4,103	11,565	168,288
1	to	26,000	75,165	17,245	64,377	8,753	138,471	304,012
26,001	and	up	20,771	28,350	86,261	2,887	8,490	146,758
% of Total by Weight Range								
1	to	10,000	75%	30%	36%	65%	92%	63%
10,001	and	up	25%	70%	64%	35%	8%	37%
1	to	26,000	78%	38%	43%	75%	94%	67%
26,001	and	up	22%	62%	57%	25%	6%	33%

EXHIBIT 5-7: AVERAGE ANNUAL COST RESPONSIBILITY, BOND DETAIL (THOUSANDS OF DOLLARS)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Current	Prior	Total
1	to	10,000	0	0	0	0	0	0	122,510	122,510
10,001	to	26,000	0	0	0	0	0	0	12,277	12,277
26,001	to	78,000	0	0	0	0	0	0	10,030	10,030
78,001	to	80,000	0	0	0	0	0	0	40,402	40,402
80,001	to	104,000	0	0	0	0	0	0	21,268	21,268
104,001	to	105,500	0	0	0	0	0	0	21,851	21,851
105,501	and	up	0	0	0	0	0	0	2,445	2,445
		Total	**0**	**0**	**0**	**0**	**0**	**0**	**230,784**	**230,784**
Total by Weight Range										
1	to	10,000	0	0	0	0	0	0	122,510	122,510
10,001	and	up	0	0	0	0	0	0	108,273	108,273
1	to	26,000	0	0	0	0	0	0	134,787	134,787
26,001	and	up	0	0	0	0	0	0	95,996	95,996
% of Total by Weight Range										
1	to	10,000	0%	0%	0%	0%	0%	0%	53%	53%
10,001	and	up	0%	0%	0%	0%	0%	0%	47%	47%
1	to	26,000	0%	0%	0%	0%	0%	0%	58%	58%
26,001	and	up	0%	0%	0%	0%	0%	0%	42%	42%

Because of restrictions on the types of expenditures for which federal-aid highway funds can be used, federal funds tend to be concentrated on construction (i.e., modernization, preservation, and bridge) projects and other types of work for which heavy vehicles have the predominant responsibility.

Additionally, federal funds are focused on projects on interstate and other higher order highways where the heavy vehicle share of travel is highest. Hence, the inclusion of federally funded expenditures in a state HCAS will typically have the effect of reducing the light vehicle responsibility share and increasing the heavy vehicle share.

Conversely, state funds are more concentrated on maintenance, operations, administration, and other activities for which light vehicles have the largest responsibility share.

The inclusion of local expenditures in a state HCAS will, by itself, typically increase the relative responsibility of light vehicles and reduce that of heavy vehicles. This is because local streets see a higher proportion of traffic from light vehicles and many types of expenditures are allocated on a relative travel basis.

This factor, however, is partially offset by the fact that local governments spend more of their road and street funds on activities having a comparatively high heavy vehicle responsibility component, including rehabilitation, repair, and maintenance of pavements and bridges. In addition, locally owned roads often are less able to withstand the weight of heavy vehicles than are freeways and state highways.

Because pavements and bridges represent two of the largest and most important expenditure areas in a highway cost allocation study, the responsibility results for these expenditures are broken out separately in Exhibit 5-8 and Exhibit 5-9.

EXHIBIT 5-8. COMPARISON OF PAVEMENT RESPONSIBILITY RESULTS FROM PRIOR OR HCASs (THOUSANDS OF ANNUAL DOLLARS)

Expenditure Work Type	2015 Study			2017 Study			2019 Study			2021 Study			2023 Study			2025 Study		
	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility
New Pavements	48,984	7,530	41,454	37,084	3,938	33,146	31,199	5,097	26,103	27,691	3,587	24,104	36,605	7,075	29,530	30,449	8,965	21,484
	3.4%	15.4%	84.6%	2.5%	10.6%	89.4%	1.7%	16.3%	83.7%	1.4%	13.0%	87.0%	1.7%	19.3%	80.7%	1.4%	29.4%	70.6%
Pavement and Shoulder Reconstruction	28,823	4,233	24,590	4,106	384	3,722	1,988	245	1,743	306	28	278	6,022	841	5,181	3,800	658	3,142
	2.0%	14.7%	85.3%	0.3%	9.4%	90.6%	0.1%	12.3%	87.7%	0.0%	9.3%	90.7%	0.3%	14.0%	86.0%	0.2%	17.3%	82.7%
Pavement and Shoulder Rehabilitation	64,885	11,114	53,771	141,338	14,780	126,558	208,765	26,918	181,847	204,237	19,715	184,522	164,801	26,218	138,584	193,746	38,438	155,308
	4.5%	17.1%	82.9%	9.4%	10.5%	89.5%	11.5%	12.9%	87.1%	10.6%	9.7%	90.3%	7.7%	15.9%	84.1%	9.1%	19.8%	80.2%
Pavement Maintenance	221,898	54,784	167,114	227,903	29,773	198,131	211,770	36,577	175,193	183,275	22,330	160,945	166,965	35,403	131,562	168,905	46,171	122,734
	15.4%	24.7%	75.3%	15.2%	13.1%	86.9%	11.6%	17.3%	82.7%	9.5%	12.2%	87.8%	7.8%	21.2%	78.8%	7.9%	27.3%	72.7%
Other Pavement Expenditures	5,013	4,957	56	5,416	4,434	983	5,883	4,225	1,658	2,325	2,325	0	2,325	2,325	0	10,313	7,462	2,851
	0.3%	98.9%	1.1%	0.4%	81.9%	18.1%	0.3%	71.8%	28.2%	0.1%	100.0%	0.0%	0.1%	100.0%	0.0%	0.5%	72.4%	27.6%
Total Pavement Expenditures	**369,604**	**82,618**	**286,986**	**415,848**	**53,308**	**362,539**	**459,605**	**73,062**	**386,544**	**417,834**	**47,986**	**369,848**	**376,719**	**71,862**	**304,857**	**407,213**	**101,695**	**305,519**
	25.7%	**22.4%**	**77.6%**	**27.8%**	**12.8%**	**87.2%**	**25.3%**	**15.9%**	**84.1%**	**21.6%**	**11.5%**	**88.5%**	**17.7%**	**19.1%**	**80.9%**	**19.2%**	**25.0%**	**75.0%**

EXHIBIT 5-9: COMPARISON OF BRIDGE AND INTERCHANGE RESPONSIBILITY RESULTS FROM PRIOR OR HCASs (THOUSANDS OF DOLLARS)

Expenditure Work Type	2015 Study			2017 Study			2019 Study			2021 Study			2023 Study			2025 Study		
	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility	Expenditures Allocated	Light Vehicle Responsibility	Heavy Vehicle Responsibility
Bridge and Interchange	86,528	54,743	31,785	42,474	26,727	15,747	97,647	59,707	37,940	92,270	62,126	30,145	236,175	148,038	88,136	185,613	115,832	69,781
	6.0%	63.3%	36.7%	2.8%	62.9%	37.1%	5.4%	61.1%	38.9%	4.8%	67.3%	32.7%	11.1%	62.7%	37.3%	8.7%	62.4%	37.6%
Bridge Maintenance	20,064	17,883	2,181	1,098	984	114	3,533	3,149	384	9,428	8,368	1,060	15,165	13,366	1,799	20,321	17,796	2,525
	1.4%	89.1%	10.9%	0.1%	89.6%	10.4%	0.2%	89.1%	10.9%	0.5%	88.8%	11.2%	0.7%	88.1%	11.9%	1.0%	87.6%	12.4%
Total Bridge & Interchange Expenditures	**106,592**	**72,626**	**33,966**	**43,572**	**27,711**	**15,861**	**101,180**	**62,856**	**38,324**	**101,698**	**70,494**	**31,204**	**251,339**	**161,404**	**89,935**	**205,934**	**133,628**	**72,306**
	7.4%	**68.1%**	**31.9%**	**2.9%**	**63.6%**	**36.4%**	**5.6%**	**62.1%**	**37.9%**	**5.3%**	**69.3%**	**30.7%**	**11.8%**	**64.2%**	**35.8%**	**9.7%**	**64.9%**	**35.1%**

Exhibit 5-8 shows that pavement expenditures allocated in the 2025 study total $407.2 million, 8.1 percent higher than in the 2023 study, and 2.5 percent less than the pavement expenditures allocated in the 2021 study. The share of pavement cost responsibility for heavy trucks decreased during the 2023 and 2025 studies due to updated information about the distribution of the volume of vehicles by weight class using various parts of the state highway network.

Given the substantial changes to the distress equations in the 2010 NAPCOM model (which is used to generate pavement factors for pavement expenditure allocation), the pavement expenditure allocation based on the 2011 pavement factors was compared to the pavement expenditure allocation when using the 2009 study pavement factors with the 2011 model. First, the pavement factors developed for the 2011 study for light vehicles are slightly lower than those from the 2009 study.

Pavement factors are also lower for certain heavy vehicle weight classes but are offset by increases in the pavement factors for other heavy vehicle classes. Sensitivity analyses performed using new pavement factors demonstrated that pavement expenditure allocations are sensitive to the light vehicle pavement factors. In the 2019 study, additional weigh-in-motion data was provided to the study team, which revealed information about the distribution of light vehicles in Oregon. This additional information shifted pavement expenditure allocations toward light vehicles. This same shift has occurred again in 2023 and 2025 as a result of even more detailed and accurate data from weigh-in-motion reporting.

Exhibit 5-9 compares the bridge and interchange expenditure amounts and responsibility results in the 2015 through 2025 studies. Bridge-related expenditures decreased by about 18.1 percent in the 2025 study relative to the 2023 study and were lower as a share of total expenditures in the current study (9.7 percent) than in the 2023 study (11.8 percent). In part this decrease is due to a large project expenditure in 2023 for the Abernethy Bridge in the I-205 corridor, which was not present in the 2025 study. The expenditure amounts reported in Exhibit 5-9 do not include this study's share of prior biennia's bond expenditures.

The heavy vehicle responsibility share for total bridge plus interchange expenditures in the current study is 35.1 percent, compared to 35.8 percent in the 2023 study, 30.7 percent in the 2021 study, 37.9 percent in the 2019 study, 36.4 percent in the 2017 study, 31.9 percent in the 2015 study, and 24.7 percent in the 2013 study. The change since 2011 reflects the results of a new bridge cost allocation study completed for the 2013 study.

EXHIBIT 5-10: AVERAGE ANNUAL COST RESPONSIBILITY BY WEIGHT GROUP WITH PRIOR ALLOCATED EXPENDITURES (THOUSANDS OF DOLLARS)

Declared Weight in Pounds			Total Without Prior Allocated Expenditures	Prior Allocated Expenditures	Total With Prior Allocated Expenditures
1	to	10,000	1,545,500	122,510	1,668,010
10,001	to	26,000	69,612	12,277	81,889
26,001	to	78,000	124,108	10,030	134,138
78,001	to	80,000	286,387	40,402	326,789
80,001	to	104,000	48,259	21,268	69,527
104,001	to	105,500	27,913	21,851	49,765
105,501	and	up	23,608	2,445	26,053
		Total	**2,125,387**	**230,784**	**2,356,171**

Exhibit 5-10 shows the amounts of allocated expenditures of bond revenues, including the amount that carried forward from the prior studies. These represent amounts that were spent in prior biennia and that will be repaid during the 2025-27 biennium. The 2025 study will include the same allocated expenditures from the 2013 through 2023 studies, as well as allocated bond expenditures from the current study.

EXHIBIT 5-11: COST RESPONSIBILITY DISTRIBUTIONS BY WEIGHT GROUP-COMPARISON BETWEEN CURRENT AND PRIOR OR HCAS

Declared Weight in Pounds			2023 Study	2025 Study	Change in Percentage
1	to	10,000	70.9%	70.8%	-0.1%
10,001	to	26,000	4.1%	3.5%	-0.6%
26,001	to	78,000	3.5%	5.7%	2.2%
78,001	to	80,000	12.4%	13.9%	1.5%
80,001	to	104,000	3.4%	3.0%	-0.5%
104,001	to	105,500	4.8%	2.1%	-2.6%
105,501	and	up	0.8%	1.1%	0.3%
		Total	**100.0%**	**100.0%**	
% for Vehicles Over 10,000 lbs			**29.1%**	**29.2%**	**0.1%**

For illustrative purposes, Exhibit 5-11 compares the expenditure allocation results (with prior allocated costs) for the current study with those of the previous study. As shown, the shares remained nearly identical for light vehicles and heavy vehicles between the 2023 and 2025 studies: the all-vehicle responsibility shares in the 2023 study are 70.9 percent for light vehicles and 29.1 percent for heavy vehicles; the 2025 study shares are 70.8 percent for light vehicles and 29.2 percent for heavy vehicles. Larger changes occurred in sub-categories within heavy vehicles, however.

REVENUE ATTRIBUTION RESULTS

The attribution of revenues to the various vehicle types and weight classes is a principal element of a highway cost allocation study. Once accomplished, the shares of projected payments are compared to the shares of cost responsibility for each class to determine whether each class is paying more or less than its fair share under the existing tax structure and rates. Where significant imbalances are detected, recommendations for changes in tax rates are made to bring payments back into balance with cost responsibilities.

As noted in Chapter 4, most of the required revenue data for the study, including control totals for forecasted revenues by tax instrument (e.g., fuel taxes, registration fees, weight-mile tax), are obtained from ODOT's revenue forecasting model. Every effort is made to ensure that the data used in the HCAS are consistent with the revenue forecast upon which the Agency Request Budget is based.

Some information required for the HCAS, however, is not available from the revenue forecasting model and so must be estimated from other sources. The revenue model, for example, does not project fuel tax payments by detailed, 2,000-pound weight class. Therefore, estimated fuel efficiencies by vehicle type and weight group must be used together with control totals from the revenue model to attribute projected fuel tax payments to the detailed vehicle classes.

The revenue attribution results are summarized in Exhibit 5-12. For the next biennium, under existing tax rates and forecasted spending by ODOT, we anticipate that light vehicles will contribute 62.8 percent of State Highway Fund revenues and heavy vehicles will contribute 37.2 percent. These shares are for all vehicles and differ from the shares for full-fee paying vehicles that are used in the calculation of equity ratios.

Exhibit 5-12 also illustrates how the relative payments of different vehicle weight groups vary by tax instrument. Light vehicles are projected to contribute 98.5 percent of fuel tax revenues and 76.8 percent of registration and title fee revenues. Heavy vehicles, on the other hand, contribute 100 percent of weight-mile tax, flat fee, and road use assessment fee

EXHIBIT 5-12: AVERAGE ANNUAL USER-FEE REVENUE BY TAX INSTRUMENT AND WEIGHT CLASS (THOUSANDS OF DOLLARS)

Declared Weight in Pounds			Fuel Tax	Registration and Title Fees	Weight-Mile Tax	Other Motor Carrier	Flat Fee	RUAF	Total
1	to	10,000	673,578	354,835	0	0	0	0	1,028,413
10,001	to	26,000	1,959	54,564	0	0	0	0	56,523
26,001	to	78,000	8,370	11,402	36,589	330	25	0	56,716
78,001	to	80,000	140	37,140	320,430	1,500	1,909	0	361,118
80,001	to	104,000	34	3,548	42,774	194	6,576	54	53,179
104,001	to	105,500	72	372	72,829	323	1,559	39	75,194
105,501	and	up	0	198	0	5	0	5,032	5,235
		Total	**684,154**	**462,059**	**472,622**	**2,351**	**10,069**	**5,124**	**1,636,379**
Total by Weight Range									
1	to	10,000	673,578	354,835	0	0	0	0	1,028,413
10,001	and	up	10,576	107,224	472,622	2,351	10,069	5,124	607,965
1	to	26,000	675,537	409,399	0	0	0	0	1,084,936
26,001	and	up	8,617	52,660	472,622	2,351	10,069	5,124	551,443
% of Total by Weight Range									
1	to	10,000	98.5%	76.8%	0.0%	0.0%	0.0%	0.0%	62.8%
10,001	and	up	1.5%	23.2%	100.0%	100.0%	100.0%	100.0%	37.2%
1	to	26,001	98.7%	88.6%	0.0%	0.0%	0.0%	0.0%	66.3%
26,001	and	up	1.3%	11.4%	100.0%	100.0%	100.0%	100.0%	33.7%

EXHIBIT 5-13: REVENUE ATTRIBUTION DISTRIBUTIONS BY WEIGHT GROUP-COMPARISON BETWEEN CURRENT AND PRIOR OR HCAS

Declared Weight in Pounds			2023 Study	2025 Study	Change in Percentage
1	to	10,000	63.4%	62.8%	-0.6%
10,001	to	26,000	4.1%	3.5%	-0.6%
26,001	to	78,000	2.5%	3.5%	1.0%
78,001	to	80,000	21.5%	22.1%	0.5%
80,001	to	104,000	3.4%	3.2%	-0.1%
104,001	to	105,500	4.8%	4.6%	-0.2%
105,501	and	up	0.2%	0.3%	0.1%
		Total	**100.0%**	**100.0%**	
% for Vehicles Over 10,000 lbs.			**36.6%**	**37.2%**	**0.6%**

revenues. Heavy vehicles also contribute 100 percent of the other motor carrier revenue identified in the exhibit. This category includes revenues from truck overweight/overlength permit fees, overdue payment penalties and interest, etc.

Exhibit 5-13 compares the revenue attribution results of the current study with those of the 2023 study. The projected share of revenues contributed by light vehicles has decreased from 63.4 percent in the 2023 study to 62.8 percent in the current study. Conversely, for all vehicles (both fee-paying and non-fee paying) the overall heavy vehicle share of projected payments has increased from 36.6 percent in the previous study to 37.2 percent in the current study.

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CHAPTER 6: COMPARISON OF EXPENDITURES ALLOCATED TO REVENUES PAID

This chapter brings together the expenditure allocation and revenue attribution results reported in Chapter 5 to compare projected responsibilities and tax payments for each vehicle class and for broader groups of vehicles (e.g., all heavy vehicles combined).

This comparison is facilitated by the calculation of equity ratios, or the ratio of the share of revenues contributed by the vehicles in a class to the share of cost responsibility for vehicles in that class. An equity ratio greater than one indicates that the vehicles in that class are projected to pay more than their cost-responsible share of user fees. Conversely, an equity ratio less than one indicates that the vehicles in that class are projected to pay less than their cost-responsible share.

The comparison of revenue shares to cost responsibility shares in the Oregon studies is traditionally done for full-fee-paying vehicles only. This study takes the same approach, which requires some further adjustments to the numbers presented in Chapter 5. The model separately estimates the revenue contributions from full-fee-paying and alternative-fee-paying vehicles for each tax instrument. For alternative-fee-paying vehicles, the model also estimates the fees they would pay if they were full-fee-paying vehicles. The expenditures allocated to each vehicle class are apportioned among full-fee-paying and alternative-fee-paying vehicles based on the relative miles of travel of each in that class.[8]

PRESENTATION OF EQUITY RATIOS

EXHIBIT 6-1: COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Declared Weight in Pounds			Annual VMT			Percent of Annual VMT		
			All	Full-Fee	Alternative Fee	All	Full-Fee	Alternative Fee
1	to	10,000	32,594,219,914	32,377,369,141	216,850,773	90.3%	91.6%	28.3%
10,001	to	26,000	948,237,966	691,601,502	256,636,464	2.6%	2.0%	33.5%
26,001	to	78,000	611,929,451	324,106,954	287,822,497	1.7%	0.9%	37.6%
78,001	to	80,000	1,420,497,531	1,418,171,714	2,325,816	3.9%	4.0%	0.3%
80,001	to	104,000	215,813,241	215,319,277	493,964	0.6%	0.6%	0.1%
104,001	to	105,500	312,045,712	311,106,571	939,141	0.9%	0.9%	0.1%
105,501	and	up	4,409,255	4,409,255	0	0.0%	0.0%	0.0%
		Total	**36,107,153,070**	**35,342,084,414**	**765,068,656**	**100.0%**	**100.0%**	**100.0%**
10,001	and	up	3,512,933,156	2,964,715,274	548,217,882	9.7%	8.4%	71.7%
26,001	to	80,000	2,032,426,982	1,742,278,668	290,148,314	5.6%	4.9%	37.9%
80,001	to	105,500	527,858,953	526,425,848	1,433,105	1.5%	1.5%	0.2%
26,001	to	105,500	2,560,285,935	2,268,704,516	291,581,419	7.1%	6.4%	38.1%
26,001	and	up	2,564,695,190	2,273,113,772	291,581,419	7.1%	6.4%	38.1%

[8] If, for example, 80 percent of the VMT in a weight class are by full-fee-paying vehicles and 20 percent are by alternative-fee-paying vehicles, then 80 percent of the total responsibility of that class is assigned to full-fee-paying vehicles and 20 percent to alternative-fee-paying vehicles. This division is based on the reasonable assumption that two vehicles that are identical, except one is subject to full fees and the other alternative fees, have exactly the same per-mile cost responsibility.

EXHIBIT 6-1 (CONTINUED): COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Declared Weight in Pounds			Annual Cost Responsibility				Percent of Annual Cost Responsibility			
			State	Federal	Local	Full-Fee	State	Federal	Local	Full-Fee
1	to	10,000	900,127,372	485,400,634	282,482,471	1,656,913,130	71.0%	76.2%	62.7%	73.3%
10,001	to	26,000	43,514,851	16,844,792	21,529,364	57,115,623	3.4%	2.6%	4.8%	2.5%
26,001	to	78,000	52,970,778	22,960,657	58,206,599	76,459,967	4.2%	3.6%	12.9%	3.4%
78,001	to	80,000	174,178,513	81,581,028	71,029,473	326,253,953	13.7%	12.8%	15.8%	14.4%
80,001	to	104,000	42,233,239	12,752,314	14,541,593	69,362,583	3.3%	2.0%	3.2%	3.1%
104,001	to	105,500	40,487,425	7,879,686	1,397,413	49,614,909	3.2%	1.2%	0.3%	2.2%
105,501	and	up	15,159,289	9,310,444	1,583,111	26,050,892	1.2%	1.5%	0.4%	1.2%
		Total	**1,268,671,466**	**636,729,554**	**450,770,023**	**2,261,771,057**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
10,001	and	up	368,544,094	151,328,920	168,287,552	604,857,927	29.0%	23.8%	37.3%	26.7%
26,001	to	80,000	227,149,291	104,541,684	129,236,071	402,713,920	17.9%	16.4%	28.7%	17.8%
80,001	to	105,500	82,720,664	20,632,000	15,939,006	118,977,492	6.5%	3.2%	3.5%	5.3%
26,001	to	105,500	309,869,955	125,173,684	145,175,077	521,691,412	24.4%	19.7%	32.2%	23.1%
26,001	and	up	325,029,244	134,484,129	146,758,188	547,742,304	25.6%	21.1%	32.6%	24.2%

EXHIBIT 6-1 (CONTINUED): COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Declared Weight in Pounds			Annual User Fees			Annual User Fees		
			All	Full-Fee	Alternative Fee Difference	All	Full-Fee	Alternative Fee Difference
1	to	10,000	1,028,413,429	1,022,197,375	630,219	62.8%	63.5%	2.1%
10,001	to	26,000	56,522,602	45,888,290	5,290,925	3.5%	2.8%	17.3%
26,001	to	78,000	56,716,265	47,608,728	23,832,335	3.5%	3.0%	77.8%
78,001	to	80,000	361,118,136	361,059,697	533,703	22.1%	22.4%	1.7%
80,001	to	104,000	53,179,383	53,169,039	120,619	3.2%	3.3%	0.4%
104,001	to	105,500	75,193,882	75,187,685	220,690	4.6%	4.7%	0.7%
105,501	and	up	5,235,160	5,235,157	0	0.3%	0.3%	0.0%
		Total	**1,636,378,856**	**1,610,345,970**	**30,628,491**	**100.0%**	**100.0%**	**100.0%**
10,001	and	up	607,965,427	588,148,595	29,998,272	37.2%	36.5%	97.9%
26,001	to	80,000	417,834,401	408,668,425	24,366,038	25.5%	25.4%	79.6%
80,001	to	105,500	128,373,265	128,356,723	341,309	7.8%	8.0%	1.1%
26,001	to	105,500	546,207,665	537,025,148	24,707,347	33.4%	33.3%	80.7%
26,001	and	up	551,442,825	542,260,305	24,707,347	33.7%	33.7%	80.7%

EXHIBIT 6-1 (CONTINUED): COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Declared Weight in Pounds			Scaled Equity Ratio		Share of Cost	
			All	Full-Fee	All	Full-Fee
1	to	10,000	0.8878	0.8665	70.8%	73.3%
10,001	to	26,000	0.9938	1.1284	3.5%	2.5%
26,001	to	78,000	0.6088	0.8745	5.7%	3.4%
78,001	to	80,000	1.5911	1.5544	13.9%	14.4%
80,001	to	104,000	1.1013	1.0766	3.0%	3.1%
104,001	to	105,500	2.1756	2.1285	2.1%	2.2%
105,501	and	up	0.2893	0.2823	1.1%	1.2%
		Total	**1.0000**	**1.0000**	**100.0%**	**100.0%**
10,001	and	up	1.2721	1.3657	29.2%	26.7%
26,001	to	80,000	1.3053	1.4253	19.6%	17.8%
80,001	to	105,500	1.5495	1.5152	5.1%	5.3%
26,001	to	105,500	1.3555	1.4458	24.6%	23.1%
26,001	and	up	1.3097	1.3905	25.7%	24.2%

Exhibit 6-1 includes calculated equity ratios for the summary-level weight groups shown in earlier exhibits. As shown in the first table within Exhibit 6-1, projected 2026 vehicle miles traveled (VMT) for full-fee-paying vehicles are 35.3 billion, 91.6 percent of these miles being traveled by light vehicles and 8.4 percent by heavy vehicles. This compares to projected 2026 miles of travel by all vehicles of 36.1 billion, 90.3 percent by light vehicles and 9.7 percent by heavy vehicles.

Exhibit 6-2 at the end of this chapter, shows the equity ratios for each 2,000-pound weight class. **These equity ratios are for full-fee-paying vehicles only and exclude vehicles that pay on an alternative-fee basis.**

As explained in Chapter 3, alternative-fee-paying vehicles are disproportionately concentrated in the heavy vehicle classes, so excluding them will reduce the heavy vehicle share of VMT. The heavy vehicle-share of VMT, in other words, will always be lower if only full-fee-paying vehicles are considered than if all vehicles are considered.

The projected total cost responsibility of full-fee-paying vehicles is $2.26 billion per year, with responsibility shares of 73.3 percent for light vehicles and 26.7 percent for heavy vehicles. This compares to the projected total responsibility for all vehicles of $2.36 billion. The difference between these two amounts is the projected responsibility of alternative-fee-paying vehicles.

Forecasted average annual user fees paid by full-fee-paying vehicles total $1.61 billion, 63.5 percent from light vehicles and 36.5 percent from heavy vehicles. The difference between this total and the $1.64 billion for all vehicles represents projected revenues from alternative-fee-paying vehicles.

The total of the Alternative-Fee Difference column represents the average annual difference between what alternative-fee-paying vehicles are projected to pay and what they would pay if subject to full fees. This total is $30.6 million annually for the next biennium under existing tax rates.[9] Beginning with the 2013 study, equity ratios are calculated using allocated costs and attributed revenues for full-fee paying vehicles only.

Because the current study includes expenditures of funds from federal and local revenue sources, the allocated expenditures for full-fee-paying vehicles are more than the attributed state revenues for these vehicles. This does not present a problem in calculating the equity ratios.[10]

This study finds full-fee equity ratios of 0.8665 for light vehicles and 1.3657 for heavy vehicles as a group. This means that, for the 2025-27 biennium, under the existing tax structure and rates, light vehicles are expected to underpay their fair share by 13.4 percent and heavy vehicles are expected to overpay by 36.6 percent under the existing tax rates and relative to the projected distribution of project spending.

Exhibit 6-1 also shows the overall equity ratios for vehicles under and over 26,000 pounds, as well as for the summary-level weight groups shown in earlier exhibits. Full-fee vehicles with declared weights between 10,001 pounds and 26,000 pounds are projected to overpay their responsibility by 12.8 percent. Full-fee vehicles with weights between 26,001-and-78,000-pounds, as a group, underpay their fair share by 12.5 percent and those between 78,001-and-80,000-pounds overpay by 55.4 percent.

[9] These amounts represent the underpayment by alternative-fee-paying vehicles relative to what they would pay on a full-fee basis—the difference, for example, between revenues from publicly owned vehicles under the existing tax structure versus revenues from these vehicles if they were all subject to the state fuel tax or weight- mile tax and full registration fees.

[10] The calculation of equity ratios in the model is accomplished by comparing ratios of revenues attributed to ratios of expenditures allocated. For each vehicle class, the ratio of the revenues attributed to this class to the total revenues attributed to all classes is first calculated. This ratio is then divided by the ratio of the expenditures allocated to this class to the total expenditures allocated to all classes. Thus, the calculation of the equity ratios does not require scaling of either the attributed revenues or allocated expenditures when the two are not equal.

Vehicles in the 78,001-to-80,000-pound class alone account for 47.8 percent of the VMT by full-fee-paying heavy vehicles and 62.4 percent of the VMT by full-fee-paying vehicles over 26,000-pounds. These vehicles also account for 53.9 percent of the cost responsibility and 61.4 percent of the user fees paid by full-fee-paying heavy vehicles. The reason for the difference in the equity ratio between this group and the groups above and below it is that most truckers who can operate at 80,000 pounds and do not know in advance how much their loads will weigh declare at 80,000 pounds. As a result, the average operating weights of vehicles declared at 80,000 pounds are a lower fraction of their declared weight than for other declared weight classes, and the wear-related costs they impose per mile are correspondingly lower.

As a group, vehicles between 80,001-and-105,500-pounds (Schedule B vehicles) pay 51.5 percent more than their fair share. Those in the 104,001 to 105,500 range pay 112.9 percent more than their fair share.

Vehicles over 105,500 pounds all pay the road use assessment fee, as do some vehicles between 98,001 and 105,500 pounds. Those over 105,500 pounds underpay their fair share by 81.8 percent. This is consistent with underpayment levels found in previous studies. The model was changed for the 2005 study to attribute portions of vehicle registration fees to these vehicles. Since no vehicle can register above 105,500 pounds, no registration fees were attributed to these vehicles in pre-2005 studies.

COMPARISON WITH PREVIOUS OREGON STUDIES

Overall, the heavy and light equity ratios found by this study align with those ratios determined in previous Oregon studies (see Exhibit 6-2). The 2001 study found adjusted equity ratios of 1.003 for light vehicles and 0.995 for heavy vehicles as a group. This indicated a situation of near-perfect equity for the 2001-03 biennium analysis period, that is, a 0.3 percent projected overpayment by full-fee-paying light vehicles and a 0.5 percent projected underpayment by heavy vehicles. Consequently, no adjustment in tax rates was deemed necessary by the legislature to satisfy the constitutional requirement of "fairness and proportionality" between light and heavy vehicles.

The 2003 study found adjusted equity ratios of 0.9921 for light vehicles and 1.0158 for heavy vehicles. The 2003 Legislature did not change rates as a direct result of the 2003 study but did increase registration and other fees to meet the debt-service requirements of the OTIA III bond program. Those fee increases were designed to preserve light/heavy equity given the nature of the projects they would fund, and the results of subsequent studies indicate that they succeeded.

The 2011-2021 studies found adjusted equity ratios ranging between 0.9539 to 1.0076 for light vehicles and 0.9865 to 1.1054 for heavy vehicles. Over these biennia the gap between the heavy and light equity ratios ranged from 0.7 percent to 15.9 percent.

EXHIBIT 6-2: COMPARISON OF EQUITY RATIOS FROM PREVIOUS OREGON HCASs

Declared Weight in Pounds			Study Year					
			2015	2017	2019	2021	2023	2025
1	to	10,000	0.9974	1.0076	0.9846	0.9284	0.8783	0.8665
10,001	to	26,000	1.0498	1.0993	1.0819	1.0654	1.0762	1.1284
26,001	to	78,000	0.9031	0.7705	0.8338	0.7207	1.0022	0.8745
78,001	to	80,000	1.3423	1.2065	1.3288	1.5258	1.7217	1.5544
80,001	to	104,000	0.6929	0.7513	0.7901	0.9772	0.9828	1.0766
104,001	to	105,500	0.7325	0.7219	0.7282	0.9480	1.0296	2.1285
105,501	and	up	0.2406	0.3133	0.1538	0.2914	0.2630	0.2823
		Total	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**
10,001	and	up	1.0047	0.9865	1.0314	1.1635	1.3242	1.3657
26,001	to	80,000	1.2680	1.1310	1.2306	1.3445	1.6115	1.4253
80,001	to	105,500	0.7109	0.7348	0.7549	0.9600	1.0098	1.5152
26,001	to	105,500	1.0194	0.9847	1.0602	1.2033	1.3980	1.4458
26,001	and	up	0.9986	0.9712	1.0247	1.1763	1.3582	1.3905

The 2023 study found adjusted equity ratios of 0.8783 for light vehicles and 1.3242 for heavy vehicles. The gap between the heavy and light equity ratios in 2023 is partially attributable to proposed rate and fee changes made by the legislature in HB 2017. The gap in the 2023 study is larger than in the biennia preceding it and is the result of a combination of factors including the mix of highway investments, updated pavement factors and changes in tax rates. We discuss these factors in more detail below.

The 2025 study found adjusted equity ratios of 0.8665 for light vehicles and 1.3657 for heavy vehicles. This result reveals a continued widening of the gap between the heavy and light equity ratios.

EXHIBIT 6-3: DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
1	0	32,594,219,914	32,377,369,141	1,668,010,477	1,656,913,130	1,028,413,429	1,022,197,375	0.8665
10,001	0	263,230,136	180,903,388	15,802,781	10,860,370	11,226,129	8,724,873	1.1284
12,001	0	4,368,246	632,992	1,494,772	216,604	63,182	17,319	0.1123
14,001	0	192,891,187	154,623,333	13,722,051	10,999,721	11,468,874	9,791,152	1.2502
16,001	0	219,001,425	182,445,517	15,175,013	12,641,986	14,812,339	12,914,899	1.4348
18,001	0	35,914,837	10,493,862	3,926,916	1,147,395	1,026,540	424,752	0.5199
20,001	0	8,566,978	4,527,973	1,223,972	646,916	474,358	324,846	0.7053
22,001	0	164,376,654	127,142,792	18,859,395	14,587,449	13,727,580	11,360,404	1.0938
24,001	0	59,888,502	30,831,645	11,684,107	6,015,182	3,723,599	2,330,045	0.5441
26,001	0	19,319,671	5,911,833	3,741,912	1,145,028	933,472	528,867	0.6487
28,001	0	68,181,901	19,552,587	10,917,277	3,130,758	3,761,543	1,990,126	0.8928
30,001	0	67,646,539	7,926,809	12,977,095	1,520,654	1,074,906	725,191	0.6698
32,001	0	82,501,759	29,486,472	15,804,363	5,648,545	5,573,368	3,219,691	0.8006
34,001	0	10,752,923	5,525,772	2,142,112	1,100,801	756,310	590,472	0.7534
36,001	0	4,416,550	3,536,204	1,121,666	898,085	408,810	388,845	0.6081
38,001	0	47,606,608	8,516,323	9,136,365	1,634,400	1,155,222	944,556	0.8117
40,001	0	2,722,101	2,433,516	544,947	487,174	265,572	258,941	0.7465
42,001	0	27,684,393	3,581,474	4,676,053	604,932	1,858,291	514,884	1.1955
44,001	0	26,131,487	23,371,950	6,667,830	5,963,694	3,834,303	3,626,835	0.8542
46,001	0	13,102,880	10,661,573	3,178,925	2,586,633	1,516,220	1,409,612	0.7654
48,001	0	18,136,845	16,337,898	5,434,046	4,895,057	2,319,291	2,238,753	0.6424
50,001	0	37,377,760	14,959,725	12,626,895	5,053,670	3,830,538	2,406,521	0.6688
52,001	0	38,083,276	36,035,242	7,634,686	7,224,109	5,465,478	5,362,093	1.0425
54,001	0	35,762,382	30,532,473	9,584,780	8,183,097	5,052,959	4,856,119	0.8335
56,001	0	18,053,415	18,025,053	4,736,057	4,728,616	2,948,320	2,946,620	0.8752
58,001	0	23,775,622	23,695,538	6,121,129	6,100,511	3,562,235	3,559,761	0.8196
60,001	0	9,631,943	9,596,361	3,570,203	3,557,014	1,627,346	1,625,321	0.6418
62,001	0	16,875,280	10,999,641	3,938,113	2,566,940	2,449,278	2,107,494	1.1531
64,001	0	13,163,288	13,141,981	3,145,838	3,140,746	2,249,638	2,249,183	1.0058
66,001	0	3,295,752	3,295,752	839,477	839,477	599,866	599,866	1.0036
68,001	0	10,115,603	10,115,603	2,191,365	2,191,365	1,915,523	1,915,523	1.2277

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
70,001	0	4,948,741	4,936,024	894,795	892,496	952,433	952,175	1.4984
72,001	0	2,276,799	2,276,799	397,698	397,698	456,517	456,517	1.6123
74,001	0	7,999,182	7,365,909	1,648,826	1,518,293	1,628,111	1,617,349	1.4962
76,001	0	2,366,754	2,288,442	465,579	450,174	520,713	517,413	1.6143
78,001	0	1,420,497,531	1,418,171,714	326,789,013	326,253,953	361,118,136	361,059,697	1.5544
80,001	5	6,385,497	6,290,959	1,288,985	1,269,901	1,424,649	1,425,531	1.5767
80,001	6	502,546	493,660	323,240	317,525	106,892	106,868	0.4727
80,001	7	309,933	303,607	103,625	101,510	64,629	64,539	0.8930
80,001	8	7,232	7,101	15,538	15,256	2,025	2,012	0.1853
80,001	9	1,788	1,751	1,354	1,325	335	334	0.3544
82,001	5	4,345,559	4,329,134	2,255,763	2,247,236	1,100,081	1,099,869	0.6874
82,001	6	860,684	857,561	182,143	181,482	194,260	194,222	1.5031
82,001	7	87,360	87,018	18,870	18,797	19,150	19,143	1.4304
82,001	8	23,702	23,609	9,208	9,172	4,939	4,937	0.7560
82,001	9	198	198	761	758	39	39	0.0725
84,001	5	6,027,746	5,972,799	3,170,464	3,141,563	1,643,665	1,642,327	0.7342
84,001	6	2,862,907	2,838,504	838,165	831,021	710,764	710,062	1.2001
84,001	7	467,114	462,612	130,777	129,517	110,155	110,002	1.1929
84,001	8	89,035	88,177	20,737	20,537	19,957	19,927	1.3628
84,001	9	41,389	40,990	5,278	5,227	8,835	8,821	2.3703
86,001	5	2,046,110	2,044,232	489,155	488,706	537,478	537,477	1.5447
86,001	6	11,356,659	11,348,930	4,248,956	4,246,064	2,652,050	2,652,018	0.8772
86,001	7	905,109	904,100	176,134	175,938	211,622	211,598	1.6892
86,001	8	229,383	229,109	76,004	75,913	51,505	51,498	0.9528
86,001	9	8,130	8,121	7,142	7,133	1,730	1,730	0.3406
88,001	5	4,063,356	4,055,918	1,880,082	1,876,640	1,175,728	1,175,555	0.8798
88,001	6	33,375,226	33,335,920	5,915,926	5,908,958	7,705,230	7,705,138	1.8315
88,001	7	837,620	836,085	185,597	185,257	203,631	203,575	1.5434
88,001	8	163,385	163,161	40,164	40,109	33,450	33,448	1.1713
88,001	9	50,782	50,678	6,491	6,478	11,310	11,305	2.4512
90,001	5	1,795,212	1,786,154	215,572	214,484	538,678	538,542	3.5266
90,001	6	8,410,000	8,377,137	1,943,081	1,935,488	2,037,714	2,037,718	1.4787
90,001	7	578,742	575,909	260,321	259,047	138,581	138,516	0.7510
90,001	8	21,453	21,341	7,728	7,688	4,959	4,956	0.9054
90,001	9	4,415	4,392	1,221	1,215	970	969	1.1208
92,001	5	673,534	670,370	88,935	88,518	208,930	208,884	3.3144
92,001	6	940,767	937,405	300,634	299,560	238,218	238,195	1.1168
92,001	7	835,171	831,954	183,711	183,003	189,042	189,013	1.4506
92,001	8	38,824	38,634	8,098	8,059	8,982	8,977	1.5645
92,001	9	1,088	1,083	540	537	238	238	0.6234

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
94,001	5	689,701	687,705	223,033	222,388	223,667	223,648	1.4125
94,001	6	5,291,766	5,278,559	836,952	834,863	1,425,845	1,425,706	2.3985
94,001	7	15,051,133	15,006,286	3,179,575	3,170,101	3,699,315	3,698,416	1.6386
94,001	8	791,924	789,488	155,682	155,203	186,947	186,888	1.6913
94,001	9	14,354	14,310	6,923	6,902	3,205	3,203	0.6519
96,001	5	2,276,268	2,274,015	1,583,525	1,581,957	768,443	768,409	0.6822
96,001	6	5,679,672	5,675,960	2,923,660	2,921,749	1,531,721	1,531,688	0.7363
96,001	7	26,070,083	26,042,478	22,455,558	22,431,781	6,617,368	6,616,522	0.4143
96,001	8	1,857,864	1,855,818	2,369,283	2,366,673	444,523	444,459	0.2638
96,001	9	136,396	136,246	250,153	249,878	20,487	20,493	0.1152
98,001	5	0	1,756	2,168	0	26	0	
98,001	6	1,723,969	1,722,242	243,725	243,480	476,653	476,650	2.7496
98,001	7	8,824,304	8,815,015	1,744,872	1,743,035	2,150,398	2,150,287	1.7327
98,001	8	1,127,565	1,126,300	184,280	184,073	259,161	259,143	1.9773
98,001	9	45,440	45,386	5,339	5,332	10,040	10,039	2.6442
100,001	5	0	1,780	633	0	752	0	
100,001	6	3,126	3,126	5,043	5,043	2,263	2,263	0.6304
100,001	7	4,414,887	4,398,768	1,230,582	1,226,089	1,147,165	1,146,755	1.3136
100,001	8	7,542,739	7,511,222	1,169,801	1,164,913	1,846,112	1,845,262	2.2248
100,001	9	39,477	39,312	4,683	4,663	9,064	9,059	2.7285
102,001	5	0	16,388	972	0	3,144	0	
102,001	6	0	0	1,805	0	0	0	
102,001	7	4,013,636	4,011,784	1,111,902	1,111,389	989,170	989,150	1.2500
102,001	8	41,606,411	41,582,307	5,409,879	5,406,745	9,944,526	9,944,049	2.5832
102,001	9	264,869	264,715	26,717	26,702	58,967	58,964	3.1015
104,001	5	13,524	13,524	31,695	31,695	3,105	3,105	0.1376
104,001	6	45,298	45,298	33,080	33,080	11,694	11,694	0.4965
104,001	7	101,096,653	100,797,166	16,029,166	15,981,682	25,469,147	25,467,636	2.2382
104,001	8	208,194,908	207,563,505	33,131,231	33,030,753	49,161,664	49,156,921	2.0902
104,001	9	2,695,328	2,687,077	539,351	537,700	548,272	548,329	1.4323
106,001	5	0	0	0	0	3	0	
106,001	6	30,924	30,924	158,847	158,847	21,525	21,525	0.1903
106,001	7	27,615	27,615	126,821	126,821	11,214	11,214	0.1242
106,001	8	5,037	5,037	22,897	22,897	1,391	1,391	0.0853
106,001	9	9,891	9,891	34,880	34,880	2,335	2,335	0.0940
108,001	5	0	0	0	0	0	0	
108,001	6	46,287	46,287	242,514	242,514	34,070	34,070	0.1973
108,001	7	91,281	91,281	411,237	411,237	40,717	40,717	0.1391
108,001	8	20,501	20,501	83,987	83,987	5,865	5,865	0.0981
108,001	9	15,399	15,399	72,887	72,887	3,635	3,635	0.0700

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
110,001	5	0	0	0	0	0	0	
110,001	6	23,094	23,094	132,088	132,088	19,539	19,539	0.2078
110,001	7	31,761	31,761	146,170	146,170	14,803	14,803	0.1422
110,001	8	6,529	6,529	28,752	28,752	1,998	1,998	0.0976
110,001	9	2,462	2,462	10,935	10,935	631	631	0.0810
112,001	5	0	0	0	0	0	0	
112,001	6	27,482	27,482	159,543	159,543	24,076	24,076	0.2120
112,001	7	41,856	41,856	189,190	189,190	20,345	20,345	0.1510
112,001	8	3,006	3,006	14,290	14,290	1,010	1,010	0.0993
112,001	9	6,298	6,298	23,573	23,573	1,739	1,739	0.1036
114,001	5	0	0	0	0	0	0	
114,001	6	37,216	37,216	221,199	221,199	33,720	33,720	0.2141
114,001	7	146,079	146,079	635,076	635,076	73,925	73,925	0.1635
114,001	8	15,878	15,878	68,627	68,627	6,289	6,289	0.1287
114,001	9	8,676	8,676	34,914	34,914	2,395	2,395	0.0964
116,001	5	0	0	0	0	0	0	
116,001	6	23,353	23,353	138,926	138,926	23,027	23,027	0.2328
116,001	7	49,689	49,689	234,826	234,826	27,133	27,133	0.1623
116,001	8	5,789	5,789	27,057	27,057	2,351	2,351	0.1220
116,001	9	2,153	2,153	10,113	10,113	616	616	0.0856
118,001	5	0	0	0	0	0	0	
118,001	6	62,472	62,472	364,744	364,744	66,600	66,600	0.2565
118,001	7	142,431	142,431	686,774	686,774	84,898	84,898	0.1736
118,001	8	16,687	16,687	81,834	81,834	7,444	7,444	0.1278
118,001	9	8,094	8,094	38,270	38,270	2,477	2,477	0.0909
120,001	5	0	0	0	0	0	0	
120,001	6	20,446	20,446	134,517	134,517	22,819	22,819	0.2383
120,001	7	35,268	35,268	174,341	174,341	22,433	22,433	0.1807
120,001	8	8,801	8,801	40,173	40,173	4,102	4,102	0.1434
120,001	9	6,137	6,137	24,418	24,418	2,063	2,063	0.1186
122,001	5	0	0	0	0	0	0	
122,001	6	10,425	10,425	69,087	69,087	12,365	12,365	0.2514
122,001	7	36,875	36,875	190,150	190,150	24,930	24,930	0.1841
122,001	8	6,701	6,701	31,547	31,547	3,391	3,391	0.1510
122,001	9	970	970	6,100	6,100	384	384	0.0885
124,001	5	0	0	0	0	0	0	
124,001	6	6,368	6,368	49,815	49,815	8,317	8,317	0.2345
124,001	7	137,693	137,693	672,882	672,882	98,597	98,597	0.2058
124,001	8	19,294	19,294	91,015	91,015	10,150	10,150	0.1566
124,001	9	1,305	1,305	9,590	9,590	530	530	0.0776

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
126,001	5	0	0	0	0	0	0	
126,001	6	8,611	8,611	60,535	60,535	11,764	11,764	0.2729
126,001	7	47,555	47,555	268,670	268,670	35,955	35,955	0.1880
126,001	8	14,657	14,657	71,311	71,311	8,004	8,004	0.1576
126,001	9	333	333	4,328	4,328	142	142	0.0461
128,001	5	0	0	0	0	0	0	
128,001	6	1,466	1,466	11,614	11,614	2,193	2,193	0.2652
128,001	7	127,323	127,323	733,050	733,050	105,177	105,177	0.2015
128,001	8	16,965	16,965	89,050	89,050	10,112	10,112	0.1595
128,001	9	5,013	5,013	25,543	25,543	2,236	2,236	0.1229
130,001	5	0	0	0	0	0	0	
130,001	6	0	0	360	0	0	0	
130,001	7	57,244	57,244	334,550	334,550	51,294	51,294	0.2153
130,001	8	13,493	13,493	68,796	68,796	8,582	8,582	0.1752
130,001	9	2,230	2,230	11,314	11,314	1,039	1,039	0.1290
132,001	5	0	0	0	0	0	0	
132,001	6	0	0	210	0	0	0	
132,001	7	70,725	70,725	440,596	440,596	66,911	66,911	0.2133
132,001	8	13,406	13,406	69,715	69,715	8,795	8,795	0.1772
132,001	9	4,119	4,119	18,386	18,386	1,920	1,920	0.1467
134,001	5	0	0	0	0	0	0	
134,001	6	0	0	93	0	0	0	
134,001	7	170,400	170,400	1,054,733	1,054,733	168,025	168,025	0.2237
134,001	8	77,031	77,031	370,039	370,039	53,618	53,618	0.2035
134,001	9	7,942	7,942	39,105	39,105	4,019	4,019	0.1443
136,001	5	0	0	0	0	0	0	
136,001	6	0	0	1	0	0	0	
136,001	7	44,187	44,187	297,088	297,088	47,990	47,990	0.2269
136,001	8	29,757	29,757	156,772	156,772	21,903	21,903	0.1962
136,001	9	2,940	2,940	15,709	15,709	1,546	1,546	0.1383
138,001	5	0	0	0	0	0	0	
138,001	6	0	0	98	0	0	0	
138,001	7	140,924	140,924	937,553	937,553	160,099	160,099	0.2398
138,001	8	59,568	59,568	317,242	317,242	46,228	46,228	0.2047
138,001	9	10,110	10,110	49,767	49,767	5,521	5,521	0.1558
140,001	5	0	0	0	0	0	0	
140,001	6	0	0	0	0	0	0	
140,001	7	20,962	20,962	151,344	151,344	25,282	25,282	0.2346
140,001	8	35,343	35,343	195,646	195,646	29,902	29,902	0.2147
140,001	9	3,038	3,038	16,029	16,029	1,720	1,720	0.1507

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
142,001	5	0	0	0	0	0	0	
142,001	6	0	0	0	0	0	0	
142,001	7	24,085	24,085	214,713	214,713	31,457	31,457	0.2058
142,001	8	25,568	25,568	153,352	153,352	23,166	23,166	0.2122
142,001	9	4,195	4,195	21,095	21,095	2,584	2,584	0.1721
144,001	5	0	0	0	0	0	0	
144,001	6	0	0	0	0	0	0	
144,001	7	46,801	46,801	357,268	357,268	63,933	63,933	0.2513
144,001	8	60,030	60,030	344,528	344,528	56,792	56,792	0.2315
144,001	9	17,770	17,770	84,289	84,289	11,303	11,303	0.1883
146,001	5	0	0	0	0	0	0	
146,001	6	0	0	0	0	0	0	
146,001	7	91,123	91,123	772,884	772,884	135,414	135,414	0.2461
146,001	8	39,493	39,493	246,702	246,702	38,152	38,152	0.2172
146,001	9	4,616	4,616	25,086	25,086	3,028	3,028	0.1695
148,001	5	0	0	0	0	0	0	
148,001	6	0	0	0	0	0	0	
148,001	7	25,146	25,146	83,081	83,081	39,129	39,129	0.6615
148,001	8	72,258	72,258	451,282	451,282	77,032	77,032	0.2397
148,001	9	16,166	16,166	85,899	85,899	10,929	10,929	0.1787
150,001	5	0	0	0	0	0	0	
150,001	6	0	0	0	0	0	0	
150,001	7	15,261	15,261	46,743	46,743	24,968	24,968	0.7502
150,001	8	28,504	28,504	179,555	179,555	31,242	31,242	0.2444
150,001	9	33,594	33,594	154,287	154,287	24,055	24,055	0.2190
152,001	5	0	0	0	0	0	0	
152,001	6	0	0	0	0	0	0	
152,001	7	0	0	58	0	0	0	
152,001	8	70,874	70,874	458,838	458,838	81,935	81,935	0.2508
152,001	9	6,713	6,713	35,219	35,219	4,941	4,941	0.1971
154,001	5	0	0	0	0	0	0	
154,001	6	0	0	0	0	0	0	
154,001	7	0	0	324	0	0	0	
154,001	8	58,279	58,279	380,151	380,151	69,123	69,123	0.2554
154,001	9	35,905	35,905	184,770	184,770	27,865	27,865	0.2118
156,001	5	0	0	0	0	0	0	

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
156,001	5	0	0	0	0	0	0	
156,001	6	0	0	0	0	0	0	
156,001	7	0	0	85	0	0	0	
156,001	8	68,322	68,322	470,554	470,554	87,867	87,867	0.2623
156,001	9	7,592	7,592	42,349	42,349	6,651	6,651	0.2206
158,001	5	0	0	0	0	0	0	
158,001	6	0	0	0	0	0	0	
158,001	7	0	0	65	0	0	0	
158,001	8	50,919	50,919	379,560	379,560	67,522	67,522	0.2499
158,001	9	40,153	40,153	216,837	216,837	36,382	36,382	0.2357
160,001	5	0	0	0	0	0	0	
160,001	6	0	0	0	0	0	0	
160,001	7	0	0	12	0	0	0	
160,001	8	13,198	13,198	104,304	104,304	18,161	18,161	0.2445
160,001	9	15,181	15,181	78,104	78,104	14,362	14,362	0.2583
162,001	5	0	0	0	0	0	0	
162,001	6	0	0	0	0	0	0	
162,001	7	0	0	0	0	0	0	
162,001	8	6,873	6,873	57,609	57,609	10,282	10,282	0.2507
162,001	9	8,601	8,601	51,278	51,278	8,481	8,481	0.2323
164,001	5	0	0	0	0	0	0	
164,001	6	0	0	0	0	0	0	
164,001	7	0	0	194	0	0	0	
164,001	8	6,534	6,534	58,614	58,614	10,168	10,168	0.2436
164,001	9	32,440	32,440	186,450	186,450	34,584	34,584	0.2605
166,001	5	0	0	0	0	0	0	
166,001	6	0	0	0	0	0	0	
166,001	7	0	0	0	0	0	0	
166,001	8	10,556	10,556	89,148	89,148	17,060	17,060	0.2688
166,001	9	16,191	16,191	90,394	90,394	18,070	18,070	0.2808
168,001	5	0	0	0	0	0	0	
168,001	6	0	0	0	0	0	0	
168,001	7	0	0	76	0	0	0	
168,001	8	10,217	10,217	36,146	36,146	17,430	17,430	0.6773
168,001	9	49,230	49,230	275,724	275,724	57,898	57,898	0.2949
170,001	5	0	0	0	0	0	0	
170,001	6	0	0	0	0	0	0	
170,001	7	0	0	0	0	0	0	

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
170,001	8	1,714	1,714	16,210	16,210	3,027	3,027	0.2623
170,001	9	11,005	11,005	67,915	67,915	13,273	13,273	0.2745
172,001	5	0	0	0	0	0	0	
172,001	6	0	0	0	0	0	0	
172,001	7	0	0	15	0	0	0	
172,001	8	0	0	134	0	0	0	
172,001	9	23,374	23,374	138,134	138,134	30,528	30,528	0.3104
174,001	5	0	0	0	0	0	0	
174,001	6	0	0	0	0	0	0	
174,001	7	0	0	0	0	0	0	
174,001	8	0	0	33	0	0	0	
174,001	9	50,439	50,439	307,618	307,618	67,894	67,894	0.3100
176,001	5	0	0	0	0	0	0	
176,001	6	0	0	0	0	0	0	
176,001	7	0	0	1	0	0	0	
176,001	8	0	0	11	0	0	0	
176,001	9	15,976	15,976	95,666	95,666	22,304	22,304	0.3275
178,001	5	0	0	0	0	0	0	
178,001	6	0	0	0	0	0	0	
178,001	7	0	0	0	0	0	0	
178,001	8	0	0	76	0	0	0	
178,001	9	63,566	63,566	389,608	389,608	95,098	95,098	0.3428
180,001	5	0	0	0	0	0	0	
180,001	6	0	0	0	0	0	0	
180,001	7	0	0	0	0	0	0	
180,001	8	0	0	0	0	0	0	
180,001	9	17,550	17,550	105,105	105,105	27,309	27,309	0.3649
182,001	5	0	0	0	0	0	0	
182,001	6	0	0	0	0	0	0	
182,001	7	0	0	0	0	0	0	
182,001	8	0	0	0	0	0	0	
182,001	9	54,461	54,461	316,456	316,456	88,013	88,013	0.3906
184,001	5	0	0	0	0	0	0	
184,001	6	0	0	0	0	0	0	
184,001	7	0	0	0	0	0	0	
184,001	8	0	0	92	0	0	0	
184,001	9	57,251	57,251	367,877	367,877	97,675	97,675	0.3729
186,001	5	0	0	0	0	0	0	
186,001	6	0	0	0	0	0	0	

EXHIBIT 6-3 (CONTINUED): DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees		Full-Fee Scaled Equity Ratio
		All	Full-Fee	All	Full-Fee	All	Full-Fee	
186,001	7	0	0	0	0	0	0	
186,001	8	0	0	0	0	0	0	
186,001	9	38,296	38,296	233,686	233,686	66,868	66,868	0.4019
188,001	5	0	0	0	0	0	0	
188,001	6	0	0	0	0	0	0	
188,001	7	0	0	0	0	0	0	
188,001	8	0	0	8	0	0	0	
188,001	9	45,743	45,743	312,963	312,963	83,529	83,529	0.3749
190,001	5	0	0	0	0	0	0	
190,001	6	0	0	0	0	0	0	
190,001	7	0	0	0	0	0	0	
190,001	8	0	0	0	0	0	0	
190,001	9	39,566	39,566	252,458	252,458	75,811	75,811	0.4218
192,001	5	0	0	0	0	0	0	
192,001	6	0	0	0	0	0	0	
192,001	7	0	0	0	0	0	0	
192,001	8	0	0	0	0	0	0	
192,001	9	20,588	20,588	142,420	142,420	41,095	41,095	0.4053
194,001	5	0	0	0	0	0	0	
194,001	6	0	0	0	0	0	0	
194,001	7	0	0	0	0	0	0	
194,001	8	0	0	6	0	0	0	
194,001	9	50,747	50,747	341,420	341,420	104,339	104,339	0.4292
196,001	5	0	0	0	0	0	0	
196,001	6	0	0	0	0	0	0	
196,001	7	0	0	0	0	0	0	
196,001	8	0	0	0	0	0	0	
196,001	9	33,997	33,997	226,317	226,317	73,300	73,300	0.4549
198,001	5	0	0	0	0	0	0	
198,001	6	0	0	0	0	0	0	
198,001	7	0	0	0	0	0	0	
198,001	8	0	0	0	0	0	0	
198,001	9	156,774	156,774	1,060,979	1,060,979	345,853	345,853	0.4578
200,001	5	0	0	0	0	0	0	
200,001	6	0	0	0	0	0	0	
200,001	7	0	0	0	0	0	0	
200,001	8	0	0	0	0	0	0	
200,001	9	532,256	532,256	3,556,151	3,556,151	1,211,449	1,211,449	0.4785

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As stated in the introduction to this report, the purpose of this 2025 Oregon Highway Cost Allocation Study (HCAS) is to:

1. determine the share that each class of road users should pay based on the respective share of costs for maintenance, operation, and improvement of Oregon's highways, roads, and streets attributable to their use; and

2. if necessary, recommend adjustments to existing tax rates and fees to bring about a closer match between payments and responsibilities for each vehicle class.

A principal finding of this study is that equity ratios for full-fee-paying vehicles, the ratio of projected payments to responsibilities for vehicles in each class, are **0.8665** for light vehicles and **1.3657** for heavy vehicles. Under existing tax rates and fees, light vehicles are projected to underpay their responsibility by 13.3 percent whereas heavy vehicles are projected to overpay by 36.6 percent during the next biennium.

This finding is a continuation of recent trends that depart from a historical pattern of equity. An examination of equity ratios from previous HCAS reports over the last decade, as seen in Exhibit 7-1 below, demonstrates that equity between light-duty and heavy vehicles has been relatively stable until 2021.

EXHIBIT 7-1: EQUITY RATIOS FROM PREVIOUS HCAS REPORTS

	Equity Ratio, Full-Fee	
	Basic	Heavy
2011	1.00	1.01
2013	0.99	1.01
2015	1.00	1.00
2017	1.01	0.99
2019	0.98	1.03
2021	0.93	1.16
2023	0.88	1.32
2025	0.87	1.37

This substantial shift in equity beginning in the 2021 study and continuing through the 2025 study necessitates some additional exploration of factors contributing to this change. As is always the case, the current HCAS relies upon new forecasts of both vehicle miles traveled and transportation revenues for the upcoming biennium. The revenue forecasts serve to provide control totals for the revenue that is attributed to each vehicle class, and the vehicle-miles-traveled forecasts are used in the apportionment of costs to classes of vehicles. Miles driven, in combination with weigh-in-motion data, contributes to a process for deriving pavement damage costs. And each new HCAS study involves a projection of transportation-related expenditures at the programmatic level and on individual transportation projects. Finally, any changes in tax rates are also incorporated into the revenue apportionment process. Any and all of these factors can play a role in changing the equity ratios that are produced by the HCAS modeling.

CHANGES IN EXPENDITURES OVER TIME

The principal factor contributing to the changes in equity ratios is the mix of project and non-project expenditures associated with each biennium. An examination of expenditure patterns going back to the 2017-2019 biennium reveals some expenditure trends that have shifted cost responsibility toward basic vehicles and away from heavy vehicles. Expenditures in the following categories (as shares of total expenditures during the biennium) are notable:

- Administration has decreased from 24 percent in 2017, to 18 percent in 2025
- Pavement-specific maintenance (not part of general maintenance and operations) has decreased from 13 percent in 2017, to 7 percent in 2025
- Preservation has decreased from 5 percent in 2017, to 1 percent in 2025
- Bike and Pedestrian has increased: from 3 percent in 2017, to 10 percent in 2025
- Bridge and Interchange has increased from 2 percent in 2017, to 8 percent in 2025
- Preliminary Engineering has increased from 3 percent in 2017, to 7 percent in 2025

The net result is the share of total costs that are attributable to light-duty vehicles has increased starting in 2019, as seen in Exhibit 7-2 below.

EXHIBIT 7-2: SHARE OF COST RESPONSABILITY 2017-2025

Share of Cost Responsibility					
Declared Weight	2017	2019	2021	2023	2025
1 to 10,000	66.4%	67.2%	69.6%	72.6%	73.3%
10,001 to 26,000	4.0%	3.9%	3.5%	3.6%	2.5%
26,001 and up	29.6%	29.0%	26.9%	23.7%	24.2%
Total	100%	100%	100%	100%	100%

OTHER CHANGES

The share of total user fees attributable to light-duty vehicles has declined during this same time, but in a less dramatic fashion. The share of total user fees that are attributable to basic and heavy vehicles since 2017 is shown in Exhibit 7-3 below.

EXHIBIT 7-3: SHARE OF USER FEES 2017-2025

Share of User Fees					
Declared Weight	2017	2019	2021	2023	2025
1 to 10,000	64.8%	66.1%	64.6%	63.5%	63.5%
10,001 to 26,000	4.4%	4.2%	3.7%	3.9%	2.8%
26,001 and up	30.8%	29.7%	31.7%	32.6%	33.7%
Total	100%	100%	100%	100%	100%

And finally, the allocation of pavement costs is an important step in determining equity ratios since heavy vehicles are responsible for a significant portion of pavement damages. Beginning in 2023 the HCAS study has made use of a new source of information (new state data vendor) for weigh-in-motion records. The share of light-duty vehicles on some functional classes has increased in the new data set which has resulted in a slight shift in the allocation of pavement costs to light-duty vehicles. This finding is likely an improvement in data rather than a change in the actual share of vehicles on various parts of the state road network.

HIGHWAY COST ALLOCATION LOOKBACK STUDY

In September 2024, the Oregon State University conducted a *Highway Cost Allocation Study Review: A Three Biennia Lookback Study*. The study replicated HCAS results from the three biennia and then substituted actual expenditure and revenue data for the projected data to determine differences between actual and projected equity ratios. The study recommendations were as follows:

After completing the evaluation of the HCAS models for the 2017-2019, 2019-2021, and 2021-2023 biennia, the OSU research team recommends the following to OEA:

1. *perform further research on the limitations of the HCAS model,*
2. *streamline the coding of project WorkTypes, and*
3. *improve the documentation on project WorkType and Bridge Type Coding process.*

During the preparation of the 2025-2027 HCAS these recommendations have been implemented. The coding and documentation of WorkTypes has been a specific focus of the Study Review Team and has involved ODOT project delivery and engineering staff expertise. The limitations of the HCAS model, as encountered by the OSU staff have also been evaluated. The specific problems encountered by the OSU team appear to be related to the use of unanticipated input data, including the presence of negative values for project costs. In addition, while actual data was made available for project expenditures and user fee revenue, no updates to the forecast for vehicle miles traveled were used in the Lookback Study which introduces some inconsistency in the core data elements in the modeling. These limitations can all be easily addressed in future Lookback analysis with some additional data preparation guidance.

In spite of these limitations there are other important findings from the Lookback Study. Specifically, the Lookback Study:

- Replicated previous HCAS results and findings.
- Highlighted areas for additional documentation regarding project expenditure classification.
- Resulted in an improved process for classifying projects by type of work performed.

- Documented differences in actual expenditure and revenue compared with projections.
- Found that changes in equity ratios for actual as compared with projections are largely explained by differences in expenditures, and to a lesser degree by differences in revenues.
- Verified the challenges presented by the pandemic with respect to forecasting vehicle usage, expenditures, and revenues.

An important question is what happened "on the ground" to explain the differences in actual as compared with projected equity ratios. The notable factors explaining those differences for the most recent biennium, the period during which the actual data inputs are most comprehensive and consistent, appear to be as follows:

- Actual revenues in 2021-23 were 0.5 percent lower than projected.
- Actual expenditures in 2021-23 were 15.3 percent lower than projected.
- Equity ratio for basic vehicles: actual = 0.91, projected = 0.93.
- Equity ratio for heavy vehicles: actual = 1.22, projected = 1.16.
- Actual expenditure types substantially lower than projected included:
    - Modernization (37 percent decrease)
    - Preservation (85 percent decrease)
    - Pavement and Shoulder Rehabilitation (55 percent decrease)
    - Bike and Pedestrian (57 percent decrease)
- Actual expedinture types substantially higher than projected included:
    - Preliminary Engineering (29 percent increase)

Future applications of the Lookback methodology can be streamlined and made more consistent with the underlying HCAS modeling. Lookback findings from the most recent biennium where actual data is available can be incorporated into the general HCAS reporting. Over time, it is possible that trends in actual versus projected expenditures, revenues, and highway system utilization may emerge. Those trends may suggest specific improvements to forecasting methods, project delivery and HCAS modeling. And those trends may also suggest further action for the Legislature to consider with regard to tax rate setting.

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CHAPTER 8: RECOMMENDATIONS FOR CHANGES IN TAX RATES

GENERAL RECOMMENDATIONS

Based on findings from the HCAS analysis the Study Review Team has developed the following general recommendations for legislative consideration and for guidance in conducting future HCAS studies:

- Tax rates should be adjusted such that basic and heavy vehicles have equity ratios that fall within an acceptable range.
- Acceptable equity ratios can be achieved through an increase in the taxes on light-duty vehicles (motor fuels and registration fees) and a decrease in taxes on heavy vehicles (weight mile tax and other heavy vehicles fees).
- Absent the development of a new funding package, tax rate adjustments should result in no net gain or loss of user fee revenues.
- Any new funding package should include new revenue that is cost responsible.
- Future HCAS studies should incorporate results from evaluating actual versus projected revenues and costs for the most recent biennium for which comprehensive data is available.
- Forthcoming HCAS white papers relating to Section 75 analysis and medium heavy vehicle data may result in changes to HCAS methods and may suggest other legislative actions.

BALANCING LIGHT AND HEAVY VEHICLE TAX RATES

The findings of the 2025 HCAS study indicate that during the upcoming biennium heavy vehicles will pay a higher share of user fees than the share of costs that are allocated to those heavy vehicles. There is expected to be a corresponding underpaying of user fees for basic, or light-duty, vehicles. The HCAS model permits the testing of alternative tax rates that can bring equity ratios closer to balance.

To address the inequity between basic and heavy vehicles while keeping total user fee revenues approximately constant (i.e. revenue neutral), the tax rate on motor fuels would need to be increased as would the light-duty registration fees. The medium duty registration fees would need to be reduced and the rates for the weight mile tax would need to be decreased.

For light-duty vehicles the tax on motor fuels would need to be increased from $0.40 per gallon to $0.49 per gallon and the registration fees would need to increase by 7 percent.

Within the various classes of heavy vehicles, there are inequities that the legislature could choose to address through changes to the rate structure. In this chapter, we offer alternative rate schedules that, if implemented, would bring about greater equity within heavy vehicle classes without materially changing the total amount of revenue collected from heavy vehicles.

The inequities within heavy vehicle classes may be generalized (for details see Exhibit 6-3) as follows:

- Vehicles between 10,001 and 26,000 pounds are paying more than their fair share.
- Vehicles weighing between 26,001 and 78,000 pounds are paying less than their fair share.
- Vehicles with a declared weight of 78,001 to 80,000 pounds (which account for 59.0 percent of vehicle miles by full-fee-paying vehicles over 26,000 pounds) are paying more than their fair share.
- Vehicles weighing more than 80,000 pounds are paying less than their fair share.

To achieve equity for the medium duty vehicles (10,001 and 26,000 pounds) registration rates for these vehicles would need to be reduced to 85 percent of their current rates.

To achieve equity within heavy vehicle classes, several rate schedules would need to be changed. These include the Table A and Table B weight-mile tax rates; the optional flat fee rates for haulers of logs, sand and gravel, and wood chips; and the road use assessment fee applicable to vehicles operated under single-trip, non-divisible load permits at gross weights over 98,000 pounds.

WEIGHT MILE TAX RATE TABLE A AND TABLE B RATES

Commercial vehicles operated at declared weights of 26,001 to 105,500 pounds are subject to the weight-mile tax for their Oregon miles of travel. Operators of vehicles with declared weights of 26,001-80,000 pounds pay the statutory Table A rates. Vehicles operated under special annual permits at declared weights of 80,001-105,500 pounds are subject to the statutory Table B rates. The rates for 2024 range from 7.64 cents per mile for vehicles declared at 26,001-28,000 pounds to 25.12 cents per mile for vehicles declared at 78,001-80,000 pounds.

EXHIBIT 8-1: WEIGHT-MILE TAX TABLE A

Work Type Description	Current WMT Rate	Alternative Rate	Difference	Percent Difference
26001 to 28000	0.0764	0.0900	0.0136	17.80%
28001 to 30000	0.0809	0.0917	0.0108	13.35%
30001 to 32000	0.0846	0.0935	0.0089	10.52%
32001 to 34000	0.0884	0.0953	0.0069	7.81%
34001 to 36000	0.0918	0.0971	0.0053	5.77%
36001 to 38000	0.0966	0.0990	0.0024	2.48%
38001 to 40000	0.1002	0.1009	0.0007	0.70%
40001 to 42000	0.1038	0.1028	-0.0010	-0.96%
42001 to 44000	0.1077	0.1048	-0.0029	-2.69%
44001 to 46000	0.1113	0.1068	-0.0045	-4.04%
46001 to 48000	0.1149	0.1088	-0.0061	-5.31%
48001 to 50000	0.1187	0.1109	-0.0078	-6.57%
50001 to 52000	0.1231	0.1130	-0.0101	-8.20%
52001 to 54000	0.1277	0.1152	-0.0125	-9.79%
54001 to 56000	0.1325	0.1174	-0.0151	-11.40%
56001 to 58000	0.1380	0.1197	-0.0183	-13.26%
58001 to 60000	0.1443	0.1220	-0.0223	-15.45%
60001 to 62000	0.1517	0.1243	-0.0274	-18.06%
62001 to 64000	0.1601	0.1267	-0.0334	-20.86%
64001 to 66000	0.1693	0.1291	-0.0402	-23.74%
66001 to 68000	0.1813	0.1316	-0.0497	-27.41%
68001 to 70000	0.1941	0.1341	-0.0600	-30.91%
70001 to 72000	0.2069	0.1367	-0.0702	-33.93%
72001 to 74000	0.2187	0.1393	-0.0794	-36.31%
74001 to 76000	0.2300	0.1420	-0.0880	-38.26%
76001 to 78000	0.2411	0.1447	-0.0964	-39.98%
78001 to 80000	0.2512	0.1475	-0.1037	-41.28%

To achieve better equity within heavy vehicle classes, Table A rates could be changed to range from 9.00 cents per mile to 14.75 cents per mile, as shown in Exhibit 8-1. These modified rates would result in a 26-percent reduction in revenue collected from vehicles paying Table A rates. If Table A rates are to be adjusted as recommended here, Table B rates must also be adjusted as described below.

Table B rates are specified for combinations of 2,000-pound increment and number of axles. The rates are structured so that, at any given declared weight, carriers can qualify for a lower rate by utilizing additional axles. At a declared weight of 96,000 pounds, for example, the per-mile rate for a five-axle vehicle is 35.33 cents and the rate for a six-axle vehicle is 29.17 cents. Thus, by adding an axle, a carrier can reduce tax liability by more than five cents per mile. Current Table B rates range from 19.87 cents per mile for a nine-axle vehicle declared at 82,000 pounds to 35.33 cents per mile for a five-axle vehicle declared at 96,000 pounds. Vehicles declared at over 98,000 pounds must have six or more axles, and vehicles declared at over 100,000 pounds must have seven or more axles.

To achieve better equity within the heavy vehicle classes, Table B rates could be adjusted as shown in Exhibit 8-2.

EXHIBIT 8-2: WEIGHT-MILE TAX TABLE B

Weight Class	Axles	Current Rate	Alternative	Difference	Percent Difference
80001 to 82000	5	0.2594	0.2519	-0.0075	-2.90%
80001 to 82001	6	0.2373	0.2304	-0.0069	-2.90%
80001 to 82002	7	0.2218	0.2154	-0.0064	-2.90%
80001 to 82003	8	0.2107	0.2046	-0.0061	-2.90%
80001 to 82004	9	0.1987	0.1929	-0.0058	-2.90%
82001 to 84000	5	0.2678	0.2542	-0.0136	-5.08%
82001 to 84000	6	0.2411	0.2336	-0.0075	-3.11%
82001 to 84000	7	0.2254	0.2185	-0.0069	-3.06%
82001 to 84000	8	0.2134	0.2069	-0.0065	-3.05%
82001 to 84000	9	0.2014	0.1950	-0.0064	-3.18%
84001 to 86000	5	0.2758	0.2565	-0.0193	-7.00%
84001 to 86000	6	0.2466	0.2368	-0.0098	-3.97%
84001 to 86000	7	0.2291	0.2216	-0.0075	-3.27%
84001 to 86000	8	0.2161	0.2092	-0.0069	-3.19%
84001 to 86000	9	0.2042	0.1970	-0.0072	-3.53%
86001 to 88000	5	0.2852	0.2588	-0.0264	-9.26%
86001 to 88000	6	0.2520	0.2401	-0.0119	-4.72%
86001 to 88000	7	0.2327	0.2248	-0.0079	-3.39%
86001 to 88000	8	0.2199	0.2115	-0.0084	-3.82%
86001 to 88000	9	0.2069	0.1991	-0.0078	-3.77%
88001 to 90000	5	0.2962	0.2611	-0.0351	-11.85%
88001 to 90000	6	0.2584	0.2434	-0.0150	-5.80%
88001 to 90000	7	0.2365	0.2280	-0.0085	-3.59%
88001 to 90000	8	0.2235	0.2139	-0.0096	-4.30%
88001 to 90000	9	0.2107	0.2012	-0.0095	-4.51%
90001 to 92000	5	0.3090	0.2635	-0.0455	-14.72%
90001 to 92000	6	0.2659	0.2467	-0.0192	-7.22%
90001 to 92000	7	0.2399	0.2313	-0.0086	-3.58%
90001 to 92000	8	0.2271	0.2163	-0.0108	-4.76%
90001 to 92000	9	0.2144	0.2033	-0.0111	-5.18%

FIGURE 8-2 (CONTINUED): WEIGHT-MILE TAX TABLE B

Weight Class	Axles	Current Rate	Alternative	Difference	Percent Difference
92,001 to 94,000	5	0.3230	0.2659	-0.0571	-17.68%
92,001 to 94,000	6	0.2731	0.2501	-0.0230	-8.42%
92,001 to 94,000	7	0.2438	0.2346	-0.0092	-3.77%
92,001 to 94,000	8	0.2308	0.2187	-0.0121	-5.24%
92,001 to 94,000	9	0.2172	0.2054	-0.0118	-5.43%
94,001 to 96,000	5	0.3377	0.2683	-0.0694	-20.55%
94,001 to 96,000	6	0.2815	0.2535	-0.0280	-9.95%
94,001 to 96,000	7	0.2483	0.2380	-0.0103	-4.15%
94,001 to 96,000	8	0.2346	0.2211	-0.0135	-5.75%
94,001 to 96,000	9	0.2207	0.2075	-0.0132	-5.98%
96,001 to 98,000	5	0.3533	0.2707	-0.0826	-23.38%
96,001 to 98,000	6	0.2917	0.2570	-0.0347	-11.91%
96,001 to 98,000	7	0.2539	0.2414	-0.0125	-4.92%
96,001 to 98,000	8	0.2384	0.2236	-0.0148	-6.21%
96,001 to 98,000	9	0.2207	0.2097	-0.0109	-4.93%
98,001 to 100,000	5	0.3205	0.2469	-0.0736	-22.98%
98,001 to 100,000	6	0.2594	0.2449	-0.0145	-5.58%
98,001 to 100,000	7	0.2428	0.2261	-0.0167	-6.89%
98,001 to 100,000	8	0.2281	0.2119	-0.0162	-7.10%
98,001 to 100,000	9	0.2221	0.2111	-0.0110	-4.96%
100,001 to 102,000	7	0.2649	0.2484	-0.0165	-6.23%
100,001 to 102,000	8	0.2483	0.2326	-0.0157	-6.34%
100,001 to 102,000	9	0.2319	0.2141	-0.0178	-7.64%
102,001 to 104,000	7	0.2705	0.2520	-0.0185	-6.84%
102,001 to 104,000	8	0.2539	0.2312	-0.0227	-8.94%
102,001 to 104,000	9	0.2365	0.2163	-0.0202	-8.54%
104,001 to 106,000	7	0.2777	0.2555	-0.0222	-7.98%
104,001 to 106,000	8	0.2594	0.2338	-0.0256	-9.88%
104,001 to 106,000	9	0.2411	0.2185	-0.0226	-9.37%

OPTIONAL FLAT FEE RATES

Under existing law, carriers hauling qualifying commodities logs, sand and gravel, and wood chips—have the option of paying monthly flat fees in lieu of the weight-mile tax. There are separate flat fee rates applicable to each of the three different commodity groups. Each rate is set so that carriers paying it should, on average, pay the same amount as they would on a mileage basis. For this reason, flat fee vehicles are treated as full fee vehicles in this study. Before the 2015 study, flat fee vehicles were classified as alternative fee vehicles.

When paying the weight-mile tax, log haulers can use a lower declared weight when their trailer is empty and stowed above the tractor unit. It was assumed that 55 percent of log-truck miles are with an empty, decked trailer. Weight-mile taxes apply only to miles on public roads in Oregon, but log trucks may incur some of their miles on private logging roads.

The existing statutory flat fee rate for carriers transporting logs is $11.60 per 100 pounds of declared combined weight. These fees are typically paid in

monthly installments. The monthly flat fee applicable to a log truck declared at 80,000 pounds, for example, is $773.34 ($11.60 x 800 = $7,280/12 months = $773.34). This amount must be paid each month the vehicle remains on a flat fee basis, regardless of the number of miles traveled during the month. The flat fee rates are required to be reviewed biennially and appropriate adjustments presented to each regular legislative session. This review is accomplished through the biennial flat fee studies, the latest of which was completed in August 2024 and entitled "Testing for Revenue Neutrality of Flat Fee Firms in Oregon (2023)."

That study compared flat fee revenues in 2023 to what those vehicles would have paid in weight-mile tax in 2023. The 2023 flat fee study found that flat fee log haulers overpaid by 11.13 percent, while sand and gravel haulers underpaid by 33.44 percent compared with what they would have paid on a mileage basis.

ROAD USE ASSESSMENT FEE RATES

Since 1990, carriers operating vehicles under single-trip, non-divisible load permits at gross weights above 98,000 pounds pay the road use assessment fee. The road use assessment fee takes the place of the weight-mile tax for the loaded portion of non-divisible load hauls. With rare exceptions, the empty backhaul portion of these trips is subject to the weight-mile tax and taxed at the vehicle's regular declared weight. The fees carriers pay are contained in a table of per-mile rates expressed in terms of permit gross weight and number of axles. Because of its size, that table is not reproduced in this report. Per-mile rates for loads over 200,000 pounds are calculated from the actual weight on each axle. As with the Table B rates, carriers are charged a lower per-mile fee for the use of additional axles at any given gross weight. This reflects the fact that spreading any given total load over additional axles reduces the amount of pavement damage imposed by that load.

For the 2025 HCAS, the equity ratios presented in Chapter 6 suggest that vehicles in weight classes above 105,500 significantly underpaid relative to their cost responsibility.

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