Highway Cost Allocation Study

2015 – 2017 Biennium

PREPARED BY:

ECONorthwest

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2015-2017 OREGON HIGHWAY COST ALLOCATION STUDY

STUDY TEAM

Carl Batten, ECONorthwest

Erin Haswell, ECONorthwest

Matthew Kitchen, ECONorthwest

Randall Pozdena, ECONorthwest

Tina Morgan, ECONorthwest

Roger Mingo, RD Mingo & Associates

Tom Potiowsky, NERC

Jeff Renfro, NERC

STUDY REVIEW TEAM

Mark McMullen (Chair), Oregon Office of Economic Analysis

Jerri Bohard, Oregon Department of Transportation

Mazen Malik, Oregon Legislative Revenue Office

Mike McArthur, Association of Oregon Counties

John Merriss, Independent Expert

Tim Morgan, AAA Oregon/Idaho

Don Negri, Willamette University

Doug Parrow, Independent Expert

Bob Russell, Oregon Trucking Associations

PROJECT MANAGER

Amy Williams, Oregon Office of Economic Analysis

The study team received valuable assistance from Lani Pennington, Michael Bufalino, Jennifer Campbell, April Carpenter, John Coplantz, Victor Dodier, Stefan Hamlin, Bert Hartman, Tessa Jantzi, Dave Kavanaugh, Marie Kennedy, Robert Maestre, Justin Moderie, Rick Munford, Dan Porter, and Dave Ringeisen at the Oregon Department of Transportation.

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SUMMARY OF MAJOR FINDINGS

The 2015 Oregon Highway Cost Allocation Study concludes that:

- Light vehicles (those weighing 10,000 pounds or less) paying full fees should pay 64.56 percent of state highway user revenues, and heavy vehicles (those weighing more than 10,000 pounds) paying full fees should contribute 35.44 percent during the 2015-17 biennium.
- For the 2015-17 biennium and under existing, current-law tax rates, it is projected that full-fee-paying light vehicles will contribute 64.40 percent of state highway user revenues and full-fee-paying heavy vehicles, as a group, will contribute 35.60 percent.
- The calculated equity ratios for full-fee-paying vehicles, defined as the ratio of projected payments to responsibilities for the vehicles in each class, are 0.9974 for light vehicles and 1.0047 for heavy vehicles as a group. This means that, under existing tax rates and fees, light vehicles are projected to underpay their responsibility by 0.26 percent. Heavy vehicles, as a group, are projected to overpay their responsibility by 0.47 percent during the next biennium.
- The equity ratios for the individual heavy vehicle weight classes show some classes are projected to overpay and some to underpay their responsibility during the 2015-17 biennium. Chapter 7 of this report offers alternative fee schedules that would minimize this cross-subsidization of some heavy vehicle weight classes by others.
- The reduced rates paid by certain types of vehicles, principally publicly owned and farm vehicles, mean these vehicles are paying lower per-mile charges than comparable vehicles subject to full fees.

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CHAPTER 1: INTRODUCTION AND BACKGROUND

INTRODUCTION

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. Cost allocation is the process of apportioning the cost of highway work to the vehicles that impose those costs and is therefore necessary for the implementation of the cost responsibility policy of the State of Oregon.

For more than 70 years, Oregon has based the financing of its highways on the principle of cost responsibility. This tradition has served Oregon well by ensuring that the state's highway taxes and fees are levied in a fair and equitable manner. Periodic studies have been conducted 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, 18 such studies had been completed; the first in 1937, the most recent in 2013.

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 2015 Oregon Highway Cost Allocation Study (HCAS) is to

> (1) determine the fair share that each class of road users should pay for the maintenance, operation, and improvement of Oregon's highways, roads, and streets; and
>
> (2) recommend adjustments, if necessary, to existing tax rates and fees to bring about a closer match between payments and responsibilities for each vehicle class.

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. Studies were completed in 1937, 1947, 1963, 1974, 1980, 1984, 1986, 1990, 1992, 1994, 1999, 2001, 2003, 2005, 2007, 2009, 2011, and 2013. As noted above, the Oregon Constitution now requires that a study be 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 essentially equivalent and used interchangeably in this report.[1]

In this 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.

[1]It should be noted that, to be precise, neither term is technically correct. Since all previous state studies, including Oregon's, have allocated expenditures rather than actual costs imposed, they are really expenditure allocation studies. The 2011 Efficient Fee Study, performed for Oregon during the 2009-2011 biennium, was to our knowledge the first state-level study to estimate and allocate the actual costs of highway use.

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 a number of 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, 2005, 2007, 2009, 2011, and 2013 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, 2009, 2011, 2013 and the present study consisted of ten 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, a number of 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 87 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

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

policing expenditures are typically viewed as a common responsibility of all highway users and are assigned to all vehicle classes on the basis of each class's relative travel, they are predominantly the responsibility of automobiles and other light vehicles. Therefore, it is not surprising that the California studies find a higher light 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 commonly found heavy vehicles to be responsible for 30 to 40 percent of total highway expenditures. The past several Oregon studies have produced results in this range. 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's constitutionally dedicated State Highway Fund derives most of its revenue from three major highway user taxes: vehicle registration fees, motor vehicle fuel taxes (primarily the gasoline tax), and motor carrier fees (primarily the weight-mile tax). The basis of each of these taxes is governed by the concept of cost responsibility. This three-tiered structure is used to collect a fair share of revenue from each highway user class.

Road user taxes were initially levied against motor vehicles to cover the cost of registration. A one-time fee of $3 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.

The registration fee was 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. 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. It is currently $86 biennially. This shift to relatively higher registration fees represents a change 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.

The second tier in the Oregon system is the fuel tax. 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, 2011, Oregon's fuel tax rate increased from $0.24 per gallon to $0.30 per gallon. The last time it was increased was in 1993.

The third tier in the Oregon highway finance system is the weight-mile tax. Oregon's first third-structure tax was put into effect in 1925 in the form of a ton-mile tax. It was used to cover the responsibility of the growing number of trucks and other heavy vehicles appearing on the public roadways at that time.

Oregon's first weight-mile tax was enacted in 1947 and implemented in 1948. The tax applies to all commercial motor vehicles with declared gross weights in excess of 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.

[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 largely 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.

Since 1990, 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.

Also since 1990, carriers hauling non-divisible loads at gross weights in excess of 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 currently based on a charge of 7.1 cents per equivalent single axle load (ESAL[4]) mile of travel. 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.

In the years since 1947, the weight-mile rates have been adjusted 15 times based on the results of updated cost responsibility studies or the passage of transportation funding packages. The most recent revision occurred on October 1, 2010, when weight-mile rates increased by an average of 24.5 percent as a result of the 2009 Jobs and Transportation Act (JTA). Prior to the 2009 JTA rate increase, the last increase occurred on January 1, 2004, when the 2003 Legislature increased weight-mile rates by approximately 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 approximately 12.3 percent to reflect the results of the 1999 Study. The rates were also reduced by 6.2 percent on January 1, 1996, based on the results of the 1994 Study. Before then, rates were 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 substantially 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.

ORGANIZATION OF THIS REPORT

This volume of the 2015 Study provides an overview of the study issues, methodology, and results, as well as recommendations for future studies. There are a number of 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 2015 Study as well as a brief background discussion of the history of Oregon highway cost allocation studies, 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 2015 Study, including the analysis periods, road (highway) systems, vehicle classes, revenues attributed, and expenditures allocated to the vehicle classes.
- **Chapter 3** presents the general methodology and approach used for the study. It includes

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

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 2001, 2003, 2005, 2007, 2009, 2011, and 2013 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:

  A. Glossary of terms

  B. Issue papers

  C. The minutes of each SRT meeting

  D. HCAS model user guide

  E. HCAS model reference guide

  F. 2015 input data and assumptions

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CHAPTER 2: BASIC STRUCTURE AND PARAMETERS OF STUDY

The underlying approach and methods used in this highway cost allocation study are, with a few significant exceptions, similar to those used in the last five Oregon studies. The analytical framework and basic parameters of the 2015 Study are briefly summarized below.

STUDY APPROACH AND GENERAL METHODOLOGY

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.

ANALYSIS PERIODS

Base Year: Calendar Year 2013, the most recent full year for which data were available when the study was undertaken (2014).

Forecast Year: Calendar Year 2016, the middle 12 months of the 24-month study biennium.

Study Period: The 2015-17 State Fiscal Biennium, or July 1, 2015 to June 30, 2017.

The expenditures allocated are those projected for the 2015-17 biennium using ODOT's Cash Flow Forecast model. All traffic data used in the study were first developed from data for the 2013 base year, and then projected forward to the 2016 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 12 functional classes:

1. Rural Interstate
2. Rural Other Principal Arterial
3. Rural Minor Arterial
4. Rural Major Collector
5. Rural Minor Collector
6. Rural Local
7. Urban Interstate
8. Urban Other Freeway
9. Urban Other Principal Arterial
10. Urban Minor Arterial
11. Urban Collector
12. Urban Local

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 12 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 previous studies before 2007, light vehicles were defined as all 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 different 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, data collected by ODOT and supplied by Portland State University.

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 various weight classes were selected on the basis of 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, a large majority of these vehicles are two-axle, single-unit trucks or buses used in local commercial delivery operations or passenger transport. Thus, they have relatively similar characteristics with respect to their cost responsibility and tax payments, and 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 by far 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, 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, 2007, 2009, 2011, and 2013 studies. Thus, expenditures of bond revenues in the last 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. These revenue sources generally 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 generally are not interchangeable. This approach was also used in the 2007, 2009, 2011, and 2013 studies.

Expenditure Categories

The four major expenditure categories are:

- **Modernization (new construction or reconstruction).** Examples include adding lanes and straightening curves. Modernization generally 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 generally do 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, Collection, Planning, and Other Costs (everything else).**

Within each of these major categories, expenditures are further broken down into a number of individual work types. Maintenance and Operations, for example, includes 16 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

The revenues attributed to vehicles are based on forecast collections for the 2015-17 biennium by major state revenue source under the existing tax structure and current-law tax rates (i.e., current registration and title fees, 30 cent per gallon fuel tax rate, current weight-mile tax, flat fee, and road use assessment fee rates).

Because non-state funding sources are included as expenditures, the total expenditures allocated amount is considerably larger than the total revenues attributed amount. 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 AND STUDY APPROACH

This chapter presents the general methodology and approach used in the 2015 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 greatly between identical-appearing vehicles or individuals and for the same vehicle or person at different 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.[1] This cost is a common responsibility of all vehicles and is assigned to all classes on the basis of each class's share of total vehicle miles traveled (VMT). 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 on the basis of 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 take into account the effects of climate, traffic levels, mix of vehicle types, and the interactions between different mechanisms. Mingo adapted the pavement model to use Oregon's special weighings data[2] 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).

A new 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, 2013, and 2015 Oregon Studies. Similar to 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 a distribution of operating to declared weights. The 2011 Oregon Highway Cost Allocation Study was the first study to use the new 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 a particular allocator as most appropriate.

Wear-related costs are the easiest to allocate. Wear-related costs are a direct, empirically established consequence of use by vehicles. The amount of wear a vehicle imposes per mile of travel generally 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 may be used to develop allocation factors that produce

[1]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 general 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.

[2]Special weighings record the weight of every truck passing the scale, even if empty. Weights are 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.

the same attribution of costs as the model. That is how pavement costs are handled in this study.

If a detailed model for attributing wear-related costs does not exist, one may choose allocation factors that one expects 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.

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 cost, 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 different types of vehicle, 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 take into account 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 four 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 take into account the relationship between volume and capacity 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 on the basis of 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 sufficient 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 a number of 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 generally 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.

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 generally related to traffic volumes.

Weighting 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 various 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 different factors for different functional classes and different levels of 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 the studies is that 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 in 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, with the exception of 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 the studies conducted by most other states, have chosen to allocate direct governmental expenditures and exclude external costs associated with highway use. 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 real 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.

EXHIBIT 3-1: ALLOCATORS APPLIED TO EACH WORK TYPE

Work Type	Work Type Description	Allocator 1	Share 1	Allocator 2	Share 2
1	Preliminary and Construction Engineering (and etc.)	CongestedPCE	55.95%	Other_Construction	Other_Construction
2	Right of Way (and Utilities)	CongestedPCE	73.75%	Other_Construction	Other_Construction
3	Grading and Drainage	CongestedPCE	100.00%	None	None
4	New Pavements-Rigid	CongestedPCE	3.99%	Rigid	Rigid
5	New Pavements-Flexible	CongestedPCE	5.43%	Flex	Flex
6	New Shoulders-Rigid	CongestedPCE	100.00%	None	None
7	New Shoulders-Flexible	CongestedPCE	100.00%	None	None
8	Pavement and Shoulder Reconstruction-Rigid	CongestedPCE	3.99%	Rigid	Rigid
9	Pavement and Shoulder Reconstruction-Flexible	CongestedPCE	5.43%	Flex	Flex
10	Pavement and Shoulder Rehab-Rigid	All_VMT	3.99%	Rigid	Rigid
11	Pavement and Shoulder Rehab-Flexible	All_VMT	5.43%	Flex	Flex
12	Pavement and Shoulder Rehab-Other	All_VMT	100.00%	None	None
13	New Structures	None	100.00%	None	None
14	Replacement Structures	None	100.00%	None	None
15	Structures Rehabilitation	None	100.00%	None	None
16	Climbing Lanes	UphillPCE	100.00%	None	None
17	Truck Weight/Inspection Facilities	Over_26_VMT	100.00%	None	None
18	Truck Escape Ramps	Over_26_VMT	100.00%	None	None
19	Interchanges	None	100.00%	None	None
20	Roadside Improvements	All_VMT	100.00%	None	None
21	Safety Improvements	CongestedPCE	100.00%	None	None
22	Traffic Service Improvements	CongestedPCE	100.00%	None	None
23	Other Construction (modernization)	Other_Construction	100.00%	None	None
24	Other Construction (preservation)	All_VMT	100.00%	None	None
25	Surface and Shoulder Maintenance-Rigid	All_VMT	3.99%	Rigid	Rigid
26	Surface and Shoulder Maintenance-Flexible	All_VMT	5.43%	Flex	Flex
27	Surface and Shoulder Maintenance-Other	All_AMT	100.00%	None	None
28	Drainage Facilities Maintenance	All_VMT	100.00%	None	None
29	Structures Maintenance	All_VMT	100.00%	None	None
30	Roadside Items Maintenance	All_VMT	100.00%	None	None
31	Safety Items Maintenance	All_VMT	100.00%	None	None
32	Traffic Service Items Maintenance	CongestedPCE	100.00%	None	None

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

Work Type	Work Type Description	Allocator 1	Share 1	Allocator 2	Share 2
33	Pavement Striping and Marking (maintenance)	All_AMT	100.00%	None	0.0%
34	Sanding and Snow and Ice Removal (maintenance)	All_VMT	100.00%	None	0.0%
35	Extraordinary Maintenance	All_VMT	100.00%	None	0.0%
36	Truck Scale Maintenance-Flexible	Over_26_VMT	100.00%	None	0.0%
37	Truck Scale Maintenance-Rigid	Over_26_VMT	100.00%	None	0.0%
38	Truck Scale Maintenance-Buildings and Grounds	Over_26_VMT	100.00%	None	0.0%
39	Studded Tire Damage	Basic_VMT	100.00%	None	0.0%
40	Miscellaneous Maintenance	All_VMT	100.00%	None	0.0%
41	Bike/Pedestrian Projects	All_VMT	100.00%	None	0.0%
42	Railroad Safety Projects	All_VMT	100.00%	None	0.0%
43	Transit and Rail Support Projects	CongestedPCE	100.00%	None	0.0%
44	Fish and Wildlife Enabling Projects	All_VMT	100.00%	None	0.0%
45	Highway Planning	All_VMT	100.00%	None	0.0%
46	Transportation Demand & Transportation System Management	CongestedPCE	100.00%	None	0.0%
47	Multimodal	CongestedPCE	100.00%	None	0.0%
48	Reserve Money, Fund Exchange, Immediate Opportunity Fund	All_VMT	100.00%	None	0.0%
49	Seismic Retrofits on Structures	All_VMT	100.00%	None	0.0%
50	Other Common Costs	All_VMT	100.00%	None	0.0%
55	Other--Over 26,000 Only	Over_26_VMT	100.00%	None	0.0%
56	Other--Basic Only	Basic_VMT	100.00%	None	0.0%
57	Other--Over 8,000 Only	Over_10_VMT	100.00%	None	0.0%
58	Other--Under 26,000 Only	Under_26_VMT	100.00%	None	0.0%
59	Other Administration	All_VMT	100.00%	None	0.0%
60	Bridge --All Vehicles Share (no added capacity)	All_VMT	100.00%	None	0.0%
61	Bridge --Over 8,000 Vehicles Share	Over_10_VMT	100.00%	None	0.0%
62	Bridge --Over 50,000 Vehicles Share	Over_50_VMT	100.00%	None	0.0%
63	Bridge --Over 80,000 Vehicles Share	Over_80_VMT	100.00%	None	0.0%
64	Bridge --Over 106,000 Vehicle Share	Over_106_VMT	100.00%	None	0.0%
65	Bridge --All Vehicles Share (added capacity)	CongestedPCE	100.00%	None	0.0%
66	Other Bridge	Other_Bridge	100.00%	None	0.0%
67	Interchange Modernization	None	100.00%	None	0.0%
68	Bridge Replacement with Capacity	None	100.00%	None	0.0%

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

Work Type	Work Type Description	Allocator 1	Share 1	Allocator 2	Share 2
101	Local Gov: Preliminary and Construction Engineering (and etc.)	CongestedPCE	55.92%	Other_Construction	44.08%
102	Local Gov: Right of Way (and Utilities)	CongestedPCE	55.92%	Other_Construction	44.08%
103	Local Gov: Grading and Drainage	CongestedPCE	100.00%	None	0.00%
104	Local Gov: New Pavements-Rigid	CongestedPCE	3.99%	Rigid	96.01%
105	Local Gov: New Pavements-Flexible	CongestedPCE	5.43%	Flex	94.57%
106	Local Gov: New Shoulders-Rigid	CongestedPCE	100.00%	None	0.00%
107	Local Gov: New Shoulders-Flexible	CongestedPCE	100.00%	None	0.00%
108	Local Gov: Pavement and Shoulder Reconstruction-Rigid	CongestedPCE	3.99%	Rigid	96.01%
109	Local Gov: Pavement and Shoulder Reconstruction-Flexible	CongestedPCE	5.43%	Flex	94.57%
110	Local Gov: Pavement and Shoulder Rehab-Rigid	All_VMT	3.99%	Rigid	96.01%
111	Local Gov: Pavement and Shoulder Rehab-Flexible	All_VMT	5.43%	Flex	94.57%
112	Local Gov: Pavement and Shoulder Rehab-Other	All_VMT	100.00%	None	0.00%
113	Local Gov: New Structures	None	100.00%	None	0.00%
114	Local Gov: Replacement Structures	None	100.00%	None	0.00%
115	Local Gov: Structures Rehabilitation	None	100.00%	None	0.00%
116	Climbing Lanes	UphillPCE	100.00%	None	0.00%
117	Truck Weight/Inspection Facilities	Over_26_VMT	100.00%	None	0.00%
118	Truck Escape Ramps	Over_26_VMT	100.00%	None	0.00%
119	Interchanges	None	100.00%	None	0.00%
120	Roadside Improvements	All_VMT	100.00%	None	0.00%
121	Local Gov: Safety Improvements	All_VMT	100.00%	None	0.00%
122	Local Gov: Traffic Service Improvements	CongestedPCE	100.00%	None	0.00%
123	Local Gov: Other Construction	Other_Construction	100.00%	None	0.00%
124	Local Gov: Other Rehabilitation	All_VMT	100.00%	None	0.00%
125	Local Gov: Surface and Shoulder-Rigid	All_VMT	3.99%	Rigid	96.01%
126	Local Gov: Surface and Shoulder-Flexible	All_VMT	5.43%	Flex	94.57%
127	Local Gov: Surface and Shoulder-Other	All_AMT	100.00%	None	0.0000
128	Local Gov: Drainage Facilities	All_VMT	100.00%	None	0.0000
129	Local Gov: Structures	All_VMT	100.00%	None	0.0000
130	Local Gov: Roadside Items	All_VMT	100.00%	None	0.0000
131	Local Gov: Safety Items	All_VMT	100.00%	None	0.0000
132	Local Gov: Traffic Service Items	CongestedPCE	100.00%	None	0.0000
133	Local Gov: Pavement Striping and Marking	All_AMT	100.00%	None	0.0000

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

Work Type	Work Type Description	Allocator 1	Share 1	Allocator 2	Share 2
134	Local Gov: Sanding and Snow/Ice Removal	All_VMT	100.00%	None	0.00%
135	Local Gov: Extraordinary Maintenance	All_VMT	100.00%	None	0.00%
136	Truck Scale-Flexible	Over_26_VMT	100.00%	None	0.00%
137	Truck Scale-Rigid	Over_26_VMT	100.00%	None	0.00%
138	Truck Scale-Buildings and Grounds	Over_26_VMT	100.00%	None	0.00%
139	Local Gov: Studded Tire Damage	Basic_VMT	100.00%	None	0.00%
140	Local Gov: Miscellaneous / Unspecified	All_VMT	100.00%	None	0.00%
141	Bike/Pedestrian Projects	All_VMT	100.00%	None	0.00%
142	Railroad Safety Projects	All_VMT	100.00%	None	0.00%
143	Transit and Rail Support Projects	CongestedPCE	100.00%	None	0.00%
144	Fish, Wildlife Enabling Projects	All_VMT	100.00%	None	0.00%
145	Planning	All_VMT	100.00%	None	0.00%
146	Transportation Demand & Transportation System Management	CongestedPCE	100.00%	None	0.00%
147	Multimodal	CongestedPCE	100.00%	None	0.00%
148	Reserve Money, Fund Exchange, Immediate Opportunity Fund	All_VMT	100.00%	None	0.00%
149	Seismic Retrofits	All_VMT	100.00%	None	0.00%
150	Local Gov: Other Admin	All_VMT	100.00%	None	0.00%
160	Bridge --All Vehicles Share	All_VMT	100.00%	None	0.00%
161	Bridge --Over 8,000 Vehicles Share	Over_10_VMT	100.00%	None	0.00%
162	Bridge --Over 50,000 Vehicles Share	Over_50_VMT	100.00%	None	0.00%
163	Bridge --Over 80,000 Vehicles Share	Over_80_VMT	100.00%	None	0.00%
164	Bridge --Over 106,000 Vehicle Share	Over_106_VMT	100.00%	None	0.00%
165	Bridge Modernization	None	100.00%	None	0.00%
166	Other Bridge	Other_Bridge	100.00%	None	0.00%
167	Interchange Modernization	None	100.00%	None	0.00%
168	Bridge Replacement with Capacity	None	100.00%	None	0.00%

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 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 particular projects or purposes. In this study, 17.6 percent of local government expenditures (6.5 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 the majority of unmet needs at that time involved pavement rehabilitation and maintenance, items for which heavy vehicles have the predominant responsibility.

There are strong 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 many 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 time 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 of 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's 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 a number of 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 are 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 is 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 arguably 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 on the basis of relative vehicle miles had the effect of increasing the light vehicle responsibility share and reducing the heavy vehicle share.

For the current study, the Study Review Team recommended that the alternative-fee difference be reported, but that the final 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. Net avoidance in Oregon is significant because of the large number of people who live in Washington and work in Oregon. These people tend to buy a smaller proportion of their fuel in Oregon than the proportion of their total miles that are driven in Oregon. This 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 the purpose of this study, it was assumed that evasion of the weight-mile tax is equal to 5.0 percent of what would be collected if all that is due were paid. This is the midpoint of the 3 to 7 percent evasion rate estimated by the Oregon Weight-Mile Tax Study conducted by consultants for the Legislative Revenue Office in 1996. This study also assumes that an additional 1.0 percent of the use-fuel tax on diesel (beyond the 3.5 percent avoidance) is successfully evaded.

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CHAPTER 4: STUDY DATA AND FORECASTS

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

- **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 2015 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 2013 base year, the latest year for which complete historical data were available. These data were then projected forward to calendar year 2016, the middle 12 months of the 2015-17 fiscal biennium, which is the study period.

The base year traffic data were obtained from a number of sources. These include ODOT Motor Carrier Transportation Division (MCTD) weight-mile tax information, ODOT traffic counts and traffic classification statistics, Highway Performance Monitoring System (HPMS) submittals, MCTD and Driver & Motor Vehicle Services vehicle registrations data, and the Weigh-In-Motion data previously discussed. 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 shows that total vehicle travel in Oregon is projected to increase from 33.8 billion miles in 2013 to 36.0 billion miles in 2016. This represents an average annual growth of about 2.1 percent, and a significant downward revision from earlier ODOT forecasts. Light vehicle travel is projected to increase from 31.1 billion miles in 2013 to 32.9 billion miles in 2016, which represents an average annual growth of 2.0 percent. Total heavy vehicle travel is forecast to increase from 2.73 billion miles in 2013 to 3.0 billion miles in 2016, an average annual growth of about 3.1 percent. These projections are based on, and consistent with, the projections from ODOT's revenue forecast model. The

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

Declared Weight in Pounds	2013 VMT (estimate)	2016 VMT (forecast)	Average Annual Growth Rate
1 to 10,000	31,059	32,927	2.0%
10,001 to 26,000	780	843	2.6%
26,001 to 78,000	385	410	2.1%
78,001 to 80,000	1,065	1,146	2.5%
80,001 to 104,000	256	323	8.0%
104,001 to 150,500	245	272	3.5%
150,501 and up	3	3	3.3%
Total for All Vehicles	33,793	35,925	2.1%
Total for Vehicles Under 10,001 pounds	31,059	32,927	2.0%
% for Vehicles Under 10,001 pounds	91.9%	91.7%	
Total for Vehicles Over 10,000 pounds	2,735	2,998	3.1%
% for Vehicles Over 10,000 pounds	8.1%	8.3%	
Total for Vehicles Under 26,001 pounds	31,839	33,771	2.0%
% for Vehicles Under 26,001 pounds	94.2%	94.0%	
Total for Vehicles Over 26,000 pounds	1,955	2,154	3.3%
% for Vehicles Over 26,000 pounds	5.8%	6.0%	

EXHIBIT 4-2: PROJECTED 2016 VMT BY ROAD SYSTEM (MILLIONS OF MILES)

	Light Vehicles		Heavy Vehicles		
Road System	Miles of Travel	Percent of Total	Miles of Travel	Percent of Total	Total VMT
Interstate Urban	4,421	90.7%	452	9.3%	4,873
Interstate Rural	3,639	80.1%	902	19.9%	4,541
Other State Urban	4,775	95.3%	238	4.7%	5,013
Other State Rural	6,148	89.5%	724	10.5%	6,871
Subtotal-State Roads	18,983	89.1%	2,315	10.9%	21,298
County Roads	6,848	94.3%	412	5.7%	7,260
City Streets	7,038	96.4%	266	3.6%	7,304
Subtotal-Local Roads	13,886	95.3%	678	4.7%	14,564
Subtotal-State and Local Roads	32,869	91.7%	2,993	8.3%	35,862
Federal Roads	59	93.4%	4	6.6%	63
Total-All Roads	32,927	91.7%	2,998	8.3%	35,925

traffic growth projections for the current study are higher than those for the 1999, 2001, 2003, 2005, 2007, 2009, and 2011 studies. The 1999 Study projected that total state VMT would grow at an average annual rate of 1.7 percent between 1997 and 2000. The 2001 Study projected 1.3 percent annual growth between 1999 and 2002. The 2003 Study projected 1.1 percent annual growth between 2001 and 2004. The 2005 Study growth projection of 1.6 percent reflected recovery from the economic downturn in Oregon and the nation that limited growth in the early part of the decade. The 2007 Study projected a 1.9 percent annual growth rate between 2005 and 2008, reflecting the upward trend in the economy during that period. The 2009 Study projected a growth rate of 1.1 percent from 2007 to 2010, reflecting the recession of 2008 through 2009, with a particularly high negative growth rate for heavy vehicles over the study period. The 2011 Study projected a growth rate of 1.9 percent from 2009 to 2012, reflecting some of the expected recovery from the recent recession. The 2013 study projected a growth rate of 2.5 percent from 2011 to 2014, reflecting continued recovery from the recession. The current study projects 2.1 percent growth from 2013 to 2016, starting from a revised base, reflecting that previously-expected recovery didn't happen as soon as expected. 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. Possible explanations include changes in the distribution of ages in the population, differences in preferences for travel modes between age cohorts, changes in commuting patterns, and telecommuting.

Forecasted heavy vehicle travel is expected to grow faster than forecasted light vehicle travel between 2013 and 2016. The share of travel accounted for by light vehicles is not expected to change by a large amount between 2013 and 2016 (forecasts are 91.9 percent in 2013 and

EXHIBIT 4-3: DISTRIBUTION OF PROJECTED 2016 VMT BY ROAD SYSTEM

Road System	Percent of Light Vehicle Total	Percent of Heavy Vehicle Total	Percent of All Vehicle Total
Interstate Urban	13.4%	15.1%	13.6%
Interstate Rural	11.1%	30.1%	12.6%
Other State Urban	14.5%	7.9%	14.0%
Other State Rural	18.7%	24.1%	19.1%
Subtotal State Systems	57.7%	77.2%	59.3%
County Roads	20.8%	13.8%	20.2%
City Streets	21.4%	8.9%	20.3%
Subtotal Local Systems	42.2%	22.6%	40.5%
Federal Roads	0.2%	0.1%	0.2%
Total All Systems	100%	100%	100%

91.7 percent in 2016), but the light vehicle share in 2013 is now estimated to be more than a full percentage point lower than was previously forecasted for 2014 (91.7% v. 92.9%). It is apparent that truck VMT has recovered along with the economy, but light vehicle VMT has not.

Exhibit 4-1 also shows that the growth projected for heavy vehicle travel varies by weight group. The lowest growth among the heavy vehicle weight classes, 2.5 percent, is expected to be in the 78,001 to 80,000 pound weight class group. The 80,001 to 104,000 pound group is expected to experience the fastest growth, 8.0 percent, from 2013 to 2016.

Exhibit 4-2 shows the distribution of projected 2016 travel between light and heavy vehicles for different combinations of road system and ownership. Although light vehicles are projected to account for 91.7 percent and heavy vehicles 8.3 percent of total statewide VMT, the mix of traffic varies significantly among the different road systems. Heavy vehicles are projected to account for 19.9 percent of the travel on rural interstate highways but only 3.6 percent of the travel on city streets. Heavy vehicles are expected to account for 10.9 percent of the overall travel on state highways and 4.7 percent of the travel on local roads.

Exhibit 4-3 illustrates, in a slightly different manner, how the relative mix of traffic varies by road system. It presents the separate distributions of projected VMT by road system for light vehicles, heavy vehicles, and all vehicles. As shown, 59.3 percent of total travel in the state is expected to be on state highways and 40.5 percent on local roads and streets. These shares, however, differ significantly for light versus heavy vehicles. Rural interstate highways, for example, are projected to handle 12.6 percent of total travel in 2016 but 30.1 percent of heavy vehicle travel. At the other extreme, 21.4 percent of light vehicle travel, but only 8.9 percent of heavy vehicle travel, is forecast to be on city streets. State highways are expected to handle about 57.7 percent of total travel by light vehicles and 77.2 percent of travel by heavy vehicles.

Exhibit 4-4 compares the VMT projections by road system used in the 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015 studies. It shows a steady decline in VMT on rural road systems and a corresponding increase in VMT on urban roads. The systems projected to account for the largest shares of total statewide travel are Other State Rural highways, County Roads, and City Streets. The 2013 study projected a higher share of travel on interstate urban highways than did prior studies; the current study projects shares more similar to prior studies.

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 particular 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 substantially increased the level and breadth of expenditures allocated in the 2003 Study as compared to previous studies.

EXHIBIT 4-4: COMPARISON OF FORECAST VMT USED IN OR HCASs: 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, AND 2015 (BILLIONS OF MILES)

Road System	1999 Study		2001 Study		2003 Study		2005 Study		2007 Study		2009 Study		2011 Study		2013 Study		2015 Study	
	2000 VMT	% of Total	2002 VMT	% of Total	2004 VMT	% of Total	2006 VMT	% of Total	2008 VMT	% of Total	2010 VMT	% of Total	2012 VMT	% of Total	2014 VMT	% of Total	2016 VMT	% of Total
State Roads	20.4	60.0%	21.7	62.3%	21.0	60.5%	22.1	61.1%	23.6	60.8%	23.7	61.6%	23.4	61.7%	23.8	62.0%	21.3	59.4%
Urban Interstate	4.0	11.8%	3.9	11.4%	3.9	11.2%	4.1	11.3%	5.0	12.9%	5.1	13.2%	5.0	13.2%	5.5	14.4%	4.9	13.6%
Rural Interstate	4.4	12.9%	4.4	12.7%	4.4	12.6%	4.7	13.0%	4.8	12.4%	4.8	12.6%	4.8	12.7%	4.8	12.6%	4.5	12.7%
Urban Other	4.5	13.2%	5.5	15.7%	5.2	15.1%	5.3	14.7%	6.1	15.7%	6.1	15.9%	5.7	15.1%	5.8	15.2%	5.0	14.0%
Rural Other	7.5	22.1%	7.8	22.5%	7.5	21.6%	8.0	22.1%	7.7	19.8%	7.7	19.9%	7.8	20.6%	7.6	19.8%	6.9	19.2%
Local Roads	13.6	40.0%	13.1	37.7%	13.7	39.5%	14.1	38.9%	15.2	39.2%	14.7	38.4%	14.6	38.3%	14.6	38.0%	14.6	40.6%
County Roads	8.6	25.3%	8.0	22.9%	8.9	25.6%	8.0	22.0%	8.3	21.3%	7.4	19.3%	7.0	18.4%	7.0	18.2%	7.3	20.2%
City Streets	5.0	14.7%	5.1	14.8%	4.8	13.9%	6.1	17.0%	6.9	17.9%	7.3	19.0%	7.6	19.9%	7.6	19.7%	7.3	20.4%
Total All Roads	34.0	100.0%	34.8	100.0%	34.7	100.0%	36.2	100.0%	38.8	100.0%	38.4	100.0%	38.0	100.0%	38.3	100.0%	35.8	100.0%

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

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 a number of sources. Data from ODOT's monthly Budget and Cash Flow Forecast were used to develop projected construction expenditures by project for the 2015-17 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 relatively 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 2013 Local Roads and Streets Survey combined with information from ODOT's Agency Request Budget.

Exhibit 4-5 presents the average annual expenditures projected for the 2015-17 biennium by major category (modernization, preservation, maintenance, bridge, and other) and funding source (state, federal, bond, and local). As shown, projected expenditures total $1.4 billion. This compares to annual expenditures allocated in the 1999, 2001, 2003, 2005, 2007, 2009, 2011, and 2013 studies of $691 million, $649 million, $1.5 billion, $1.5 billion, $1.7 billion, $1.8 billion, $1.5 billion, and $1.4 billion respectively. These totals do not include the expenditure of bond revenues.

Of the $1.4 billion total annual expenditures, $887 million (61.7 percent) are projected to be state funded, $499 million (34.7 percent) federally funded, and $30 million (2.1 percent) locally funded. The remaining $21 million (1.5 percent) of allocated expenditures are the

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

Major Expenditure Category	State Funds	Percent of All Sources	Federal Funds	Percent of All Sources	Local Funds	Percent of All Sources	Bond Funds	Percent of All Sources	All Funding Sources
Modernization	67,907	25.8%	173,766	66.1%	4,918	1.9%	16,468	6.3%	263,060
Preservation	14,352	20.6%	54,343	78.0%	947	1.4%	0	0.0%	69,642
Maintenance	353,112	86.1%	40,767	9.9%	16,209	4.0%	0	0.0%	410,088
Bridge	8,861	9.3%	84,322	88.9%	120	0.1%	1,539	1.6%	94,843
Other	442,406	73.7%	146,248	24.4%	8,297	1.4%	3,088	0.5%	600,039
All Expenditures	886,638	61.7%	499,447	34.7%	30,492	2.1%	21,095	1.5%	1,437,671

allocated portion of the $131 million per year of expended bond revenue. An additional $192 million per year of previously-allocated bond expenditures from prior studies is included in the allocated costs in this study.

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 a large number of different 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, in particular, have large federal funds components. About 66 percent of modernization, 78 percent of preservation, and 89 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. About 7 percent of the OTIA and JTA bond expenditures in the study period will be on state- and locally-owned bridges, a much lower proportion than in recent studies. Modernization expenditures make up an additional 78 percent of OTIA and JTA bond expenditures. An additional 15 percent of bond expenditures fall into the "other" category. Most of those are for administration, engineering, and right-of-way expenditures associated with state- and locally-owned bridges.

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 expenditure 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 by $497 million.

EXHIBIT 4-6: REVENUE FORECASTS BY TAX/FEE TYPE (THOUSANDS OF DOLLARS), AVERAGE ANNUAL AMOUNTS FOR 2015-17 BIENNIUM

Tax/Fee	Forecast Revenue	Percent of Total
Fuel Tax	525,629	46.8%
Registration Fees	226,940	20.2%
Title Fees	72,194	6.4%
Other Motor Carrier Revenue	7,966	0.7%
Road Use Assessment Fees	2,108	0.2%
Weight-Mile Tax	287,862	25.6%
Total	1,122,700	100.0%

EXHIBIT 4-7: COMPARISON OF FORECAST REVENUE (MILLIONS OF DOLLARS) USED IN OR HCASs: 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, AND 2015

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

The revenue data required for the study are obtained directly from ODOT's revenue forecasting model. The revenue forecast used for the present study was the December 2013 forecast; the latest available at the time the study was being conducted. The forecasts include the approximately 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.

Average annual state revenues for the 2015-17 biennium are expected to total $1.1 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 $526 million per year (46.8 percent of total revenues) and weight-mile tax revenue is forecast to average $287 million (25.6 percent of total revenues). These two sources account for 72.4 percent of highway user revenues, illustrating that Oregon's system of highway finance is based heavily on taxes and fees directly related to use of the system.

Revenue from registration and title fees is anticipated to average $299 million annually (26.6 percent of total revenues), relatively consistent with the 2005, 2007, 2009, and 2011 studies, but up sharply from prior studies as a result of registration fee increases. Other revenue sources bring in smaller amounts of revenue.

Exhibit 4-7 compares the forecasts of average annual total revenues used in the 1999, 2001, 2003, 2005, 2007, 2009, 2011, and 2013 studies. The total revenues forecast for the current study are $1.1 billion. The increase between the 2009 and 2011 studies reflects the increases in the fuel tax, weight-mile tax, and registration fees enacted as part of the 2009 Jobs and Transportation Act.

Caution should be used in comparing these forecasts, however, because they were made at different times for different biennia, and they used somewhat 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.

CHAPTER 5: EXPENDITURE ALLOCATION AND REVENUE ATTRIBUTION RESULTS

This chapter presents the expenditure allocation and revenue attribution results of the 2015 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, or those financed by federal, local, and state 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, 2007, 2009, 2011, and 2013 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), bond revenues, systems development charges, and traffic impact fees.

The 2015 Study uses the same methodology as the 2005, 2007, 2009, 2011, and 2013 studies. As a result, the expenditure allocations in this study are comparable to the 2005, 2007, 2009, 2011, and 2013 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 63.6 percent and 36.4 percent (respectively) of average annual total expenditures for the 2015-17 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 the majority of preservation expenditures (77.2 percent). That group is responsible for smaller shares of modernization, maintenance, bridge, and other expenditures (46.1 percent, 46.4 percent, 34.5 percent, and 17.6 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.

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 74.8 percent of state, 57.0 percent of federal, 58.1 percent of local, and 33.5 percent of bond

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

	All Funding Sources						
Declared Weight in Pounds	**Modernization**	**Preservation**	**Maintenance**	**Bridge**	**Other**	**Prior Bonds**	**Total**
1 to 10,000	141,789	15,870	219,841	62,154	494,474	103,709	1,037,837
10,001 to 26,000	14,231	5,831	32,058	6,138	14,168	9,571	81,997
26,001 to 78,000	9,149	3,960	21,712	2,853	15,828	8,816	62,318
78,001 to 80,000	47,140	20,235	59,971	10,571	47,754	35,894	221,565
80,001 to 104,000	28,201	12,985	39,039	4,529	14,733	17,849	117,334
104,001 to 150,500	20,366	10,049	33,991	3,634	12,423	19,058	99,522
150,501 and up	2,184	712	3,477	4,964	658	0	11,995
Total for All Vehicles	263,060	69,642	410,088	94,843	600,039	194,896	1,632,567
Total for Vehicles Under 10,001 pounds	141,789	15,870	219,841	62,154	494,474	103,709	1,037,837
% for Vehicles Under 10,001 pounds	53.9%	22.8%	53.6%	65.5%	82.4%	53.2%	63.6%
Total for Vehicles Over 10,000 pounds	121,271	53,771	190,247	32,689	105,565	91,187	594,730
% for Vehicles Over 10,000 pounds	46.1%	77.2%	46.4%	34.5%	17.6%	46.8%	36.4%
Total for Vehicles Under 26,001 pounds	156,020	21,701	251,899	68,292	508,642	113,280	1,119,834
% for Vehicles Under 26,001 pounds	59.3%	31.2%	61.4%	72.0%	84.8%	58.1%	68.6%
Total for Vehicles Over 26,000 pounds	107,040	47,941	158,189	26,551	91,396	81,616	512,733
% for Vehicles Over 26,000 pounds	40.7%	68.8%	38.6%	28.0%	15.2%	41.9%	31.4%

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

	All Funding Sources				
Expenditures of Funds	**State Revenues**	**Bond Revenues**	**Federal Revenues**	**Local Revenues**	**All Sources**
State Government	651,598	0	454,921	0	1,106,519
Local Governments	235,040	0	44,525	30,492	310,057
Expenditure of Bond Revenue	0	131,433	0	0	131,433
All Expenditures	886,638	131,433	499,447	30,492	1,548,009
Allocated State Expenditures	651,598	0	454,921	0	1,106,519
Allocated Local Expenditures	235,040	0	44,525	30,492	310,057
Allocated Current Bond	0	21,095	0	0	21,095
Allocated Prior Bond	0	194,896	0	0	194,896
Allocated Expenditures	886,638	215,991	499,447	30,492	1,632,567

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

		Allocation to Vehicles			
Funding Source	**Average Annual Total Expenditures Allocated**	**Under 10,001 Pounds**	**Over 10,000 Pounds**	**Under 26,001 Pounds**	**Over 26,000 Pounds**
State (Highway Fund)	651,598	487,454	164,144	507,436	144,162
		74.8%	25.2%	77.9%	22.1%
Federal	454,921	259,334	195,587	284,205	170,717
		57.0%	43.0%	62.5%	37.5%
Local	310,057	180,275	129,782	206,349	103,708
		58.1%	41.9%	66.6%	33.4%
Bond	21,095	7,065	14,030	8,565	12,530
		33.5%	66.5%	40.6%	59.4%
Current	1,437,671	934,128	503,543	1,006,554	431,117
		65.0%	35.0%	70.0%	30.0%
Prior Bond	194,896	103,709	91,187	113,280	81,616
		53.2%	46.8%	58.1%	41.9%
Total	1,632,567	1,037,837	594,730	1,119,834	512,733
		63.6%	36.4%	68.6%	31.4%

expenditures. Heavy vehicles are projected to be responsible for 25.2 percent of state, 43.0 percent of federal, 42.0 percent of local, and 66.5 percent of bond expenditures. Overall, state-funded expenditures are expected to average $651.6 million annually over the 2015-17 biennium. Comparable annual amounts for federal, local, and bond-funded expenditures are $454.9 million, $310.1 million, and $21.1 million, respectively.

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

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 almost always have the effect of reducing the light vehicle responsibility share and increasing the heavy vehicle share.

Conversely, state funds are generally 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; specifically rehabilitation, repair, and maintenance of pavements and bridges.

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 Exhibits 5-8 and 5-9.

Exhibit 5-8 shows that pavement expenditures allocated in the 2015 Study total $369.6 million, 80.7 percent of the pavement expenditures allocated in the 2013 Study.

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

Declared Weight in Pounds	Modernization	Preservation	Maintenance	Bridge	Other	Total
1 to 10,000	15,087	4,692	154,453	5,271	307,950	487,454
10,001 to 26,000	1,718	220	9,921	483	7,640	19,982
26,001 to 78,000	1,096	147	5,960	224	11,342	18,769
78,001 to 80,000	5,849	891	29,783	845	33,637	71,004
80,001 to 104,000	3,494	559	15,514	391	9,650	29,607
104,001 to 150,500	2,423	422	11,976	313	8,059	23,193
150,501 and up	328	26	634	408	192	1,588
Total for All Vehicles	29,995	6,957	228,241	7,934	378,471	651,598
Total for Vehicles Under 10,001 pounds	15,087	4,692	154,453	5,271	307,950	487,454
% for Vehicles Under 10,001 pounds	50.3%	67.5%	67.7%	66.4%	81.4%	74.8%
Total for Vehicles Over 10,000 pounds	14,908	2,264	73,788	2,663	70,520	164,144
% for Vehicles Over 10,000 pounds	49.7%	32.5%	32.3%	33.6%	18.6%	25.2%
Total for Vehicles Under 26,001 pounds	16,806	4,912	164,374	5,754	315,591	507,436
% for Vehicles Under 26,001 pounds	56.0%	70.6%	72.0%	72.5%	83.4%	77.9%
Total for Vehicles Over 26,000 pounds	13,190	2,045	63,867	2,180	62,880	144,162
% for Vehicles Over 26,000 pounds	44.0%	29.4%	28.0%	27.5%	16.6%	22.1%

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	77,553	8,070	14,070	55,094	104,547	259,334
10,001 to 26,000	9,926	4,355	542	5,421	4,625	24,871
26,001 to 78,000	6,466	2,912	279	2,511	3,380	15,548
78,001 to 80,000	35,302	17,656	1,258	9,485	12,800	76,501
80,001 to 104,000	20,762	11,082	525	4,022	4,530	40,922
104,001 to 150,500	15,081	8,365	407	3,222	3,810	30,886
150,501 and up	1,494	521	17	4,390	439	6,861
Total for All Vehicles	166,584	52,961	17,097	84,147	134,132	454,921
Total for Vehicles Under 10,001 pounds	77,553	8,070	14,070	55,094	104,547	259,334
% for Vehicles Under 10,001 pounds	46.6%	15.2%	82.3%	65.5%	77.9%	57.0%
Total for Vehicles Over 10,000 pounds	89,032	44,891	3,028	29,052	29,585	195,587
% for Vehicles Over 10,000 pounds	53.4%	84.8%	17.7%	34.5%	22.1%	43.0%
Total for Vehicles Under 26,001 pounds	87,479	12,425	14,612	60,516	109,173	284,205
% for Vehicles Under 26,001 pounds	52.5%	23.5%	85.5%	71.9%	81.4%	62.5%
Total for Vehicles Over 26,000 pounds	79,105	40,536	2,485	23,631	24,959	170,717
% for Vehicles Over 26,000 pounds	47.5%	76.5%	14.5%	28.1%	18.6%	37.5%

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	45,846	3,108	51,319	799	79,204	180,275
10,001 to 26,000	1,259	1,256	21,595	139	1,825	26,074
26,001 to 78,000	745	901	15,473	75	1,066	18,259
78,001 to 80,000	985	1,688	28,930	76	1,193	32,872
80,001 to 104,000	571	1,344	22,999	28	514	25,456
104,001 to 150,500	556	1,262	21,608	29	521	23,975
150,501 and up	51	165	2,826	78	25	3,145
Total for All Vehicles	50,012	9,724	164,750	1,223	84,348	310,057
Total for Vehicles Under 10,001 pounds	45,846	3,108	51,319	799	79,204	180,275
% for Vehicles Under 10,001 pounds	91.7%	32.0%	31.1%	65.3%	93.9%	58.1%
Total for Vehicles Over 10,000 pounds	4,166	6,616	113,431	425	5,144	129,782
% for Vehicles Over 10,000 pounds	8.3%	68.0%	68.9%	34.7%	6.1%	41.9%
Total for Vehicles Under 26,001 pounds	47,105	4,364	72,913	938	81,029	206,349
% for Vehicles Under 26,001 pounds	94.2%	44.9%	44.3%	76.7%	96.1%	66.6%
Total for Vehicles Over 26,000 pounds	2,856	5,360	91,836	285	3,319	103,657
% for Vehicles Over 26,000 pounds	5.7%	55.1%	55.7%	23.3%	3.9%	33.4%

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	3,303	0	0	990	2,773	7,065	103,709	110,774
10,001 to 26,000	1,327	0	0	94	78	1,499	9,571	11,070
26,001 to 78,000	842	0	0	44	40	925	8,816	9,741
78,001 to 80,000	5,005	0	0	165	125	5,295	35,894	41,189
80,001 to 104,000	3,373	0	0	88	39	3,500	17,849	21,349
104,001 to 150,500	2,307	0	0	70	33	2,410	19,058	21,467
150,501 and up	310	0	0	88	2	400	0	400
Total for All Vehicles	16,468	0	0	1,539	3,088	21,095	194,896	215,991
Total for Vehicles Under 10,001 pounds	3,303	0	0	990	2,773	7,065	103,709	110,774
% for Vehicles Under 10,001 pounds	20.1%			64.3%	89.8%	33.5%	53.2%	51.3%
Total for Vehicles Over 10,000 pounds	13,165	0	0	549	316	14,030	91,187	105,216
% for Vehicles Over 10,000 pounds	79.9%			35.7%	10.2%	66.5%	46.8%	48.7%
Total for Vehicles Under 26,001 pounds	4,630	0	0	1,084	2,850	8,565	113,280	121,845
% for Vehicles Under 26,001 pounds	28.1%			70.5%	92.3%	40.6%	58.1%	56.4%
Total for Vehicles Over 26,000 pounds	11,838	0	0	455	238	12,530	81,616	94,146
% for Vehicles Over 26,000 pounds	71.9%			29.5%	7.7%	59.4%	41.9%	43.6%

The responsibility shares for particular types of pavement work are similar between the two studies. Both studies found heavy vehicles responsible for relatively larger shares of new pavement, reconstruction, rehabilitation, and maintenance expenditures, with heavy vehicles in the 2015 Study bearing relatively more responsibility for all types of pavement work except maintenance and other. For this exhibit, other pavement expenditures include those for climbing lanes, pavement striping and marking, maintenance of truck scale pavements, and studded tire damage repair.

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 highly sensitive to the light vehicle pavement factors. Overall, light vehicle pavement expenditure responsibility in the 2011 Study is about 3 percentage points lower when using the 2011 pavement factors than when using the 2009 pavement factors.

EXHIBIT 5-8: COMPARISON OF PAVEMENT RESPONSIBILITY RESULTS FROM 2013 AND 2015 OREGON HCASs (THOUSANDS OF ANNUAL DOLLARS)

	2013 Study			2015 Study		
Expenditure Work Type	**Expenditures Allocated**	**Light Vehicle Responsibility**	**Heavy Vehicle Responsibility**	**Expenditures Allocated**	**Light Vehicle Responsibility**	**Heavy Vehicle Responsibility**
New Pavements	57,185	9,986	47,199	48,984	7,530	41,454
	3.6%	17.5%	82.5%	3.4%	15.4%	84.6%
Pavement and Shoulder Reconstruction	19,734	3,029	16,705	28,823	4,233	24,590
	1.2%	15.3%	84.7%	2.0%	14.7%	85.3%
Pavement and Shoulder Rehabilitation	98,921	24,047	74,874	64,885	11,114	53,771
	6.2%	24.3%	75.7%	4.5%	17.1%	82.9%
Pavement Maintenance	263,624	63,465	200,159	221,898	54,784	167,114
	16.6%	24.1%	75.9%	15.4%	24.7%	75.3%
Other Pavement Expenditures	18,451	16,582	1,869	5,013	4,957	56
	1.2%	89.9%	10.1%	0.3%	98.9%	1.1%
Total Pavement Expenditures	457,914	117,109	340,805	369,604	82,618	286,986
	28.9%	25.6%	74.4%	25.7%	22.4%	77.6%

EXHIBIT 5-9: COMPARISON OF BRIDGE AND INTERCHANGE RESPONSIBILITY RESULTS FROM 2013 AND 2015 OREGON HCASs (THOUSANDS OF DOLLARS)

	2013 Study			2015 Study		
Expenditure Work Type	**Expenditures Allocated**	**Light Vehicle Responsibility**	**Heavy Vehicle Responsibility**	**Expenditures Allocated**	**Light Vehicle Responsibility**	**Heavy Vehicle Responsibility**
Bridge and Interchange	76,901	49,436	27,466	86,528	54,743	31,785
	4.8%	64.3%	35.7%	6.0%	63.3%	36.7%
Bridge Maintenance	51,490	47,219	4,271	20,064	17,883	2,181
	3.2%	91.7%	8.3%	1.4%	89.1%	10.9%
Total Bridge and Interchange Expenditures	128,391	96,655	31,737	106,592	72,626	33,966
	8.1%	75.3%	24.7%	7.4%	68.1%	31.9%

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	934,128	103,709	1,037,837
10,001 to 26,000	72,426	9,571	81,997
26,001 to 78,000	53,502	8,816	62,318
78,001 to 80,000	185,671	35,894	221,565
80,001 to 104,000	99,486	17,849	117,334
104,001 to 150,500	80,464	19,058	99,522
150,501 and up	11,995	0	11,995
Total	1,437,671	194,896	1,632,567

EXHIBIT 5-11: COST RESPONSIBILITY DISTRIBUTIONS BY WEIGHT GROUP: COMPARISON BETWEEN 2013 AND 2015 OREGON HCASs

Declared Weight in Pounds	2013 Study	2015 Study	Change in Percentage
1 to 10,000	64.7%	63.6%	-1.1%
10,001 to 26,000	4.1%	5.0%	0.9%
26,001 to 78,000	3.9%	3.8%	-0.1%
78,001 to 80,000	16.0%	13.6%	-2.4%
80,001 to 104,000	5.1%	7.2%	2.1%
104,001 to 150,500	5.6%	6.1%	0.5%
150,501 and up	0.7%	0.7%	0.0%
Total	100.0%	100.0%	

Exhibit 5-9 compares the bridge plus interchange expenditure amounts and responsibility results in the 2013 and present studies. Bridge-related expenditures were lower as a share of total expenditures in the current study (5.7 percent) than in the four most recent studies (8.1 percent in 2013, 11.4 percent in 2011, 10.1 percent in 2009, and 15.0 percent in 2007). This reflects the winding down of the OTIA investment in bridges.

The heavy vehicle responsibility share for total bridge plus interchange expenditures in the present study is 31.9 percent, compared to 24.7 percent in the 2013 study, 48.1 percent in the 2011 Study, and 51.3 percent in the 2009 Study. The change since 2011 reflects the results of a new bridge cost allocation study completed for the 2013 study.

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 2015-17 biennium. The 2017 Study will include the same allocated expenditures from the 2003, 2005, 2007, 2009, 2011, and 2013 studies as well as allocated bond expenditures from the current study.

For illustrative purposes, Exhibit 5-11 compares the expenditure allocation results (with prior allocated costs) for the present study with those of the previous study. As shown, the shares are similar: the all-vehicle responsibility shares in the 2013 Study are 64.7 percent for light vehicles and 35.4 percent for heavy vehicles; the 2015 Study shares are 63.6 percent for light vehicles and 36.4 percent for heavy vehicles.

REVENUE ATTRIBUTION RESULTS

The attribution of revenues to the various vehicle types and weight classes is an important 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, registration, 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, it is forecasted that light vehicles will contribute 64.1 percent of State Highway Fund revenues and heavy vehicles will contribute 35.9 percent. These shares are for all vehicles and differ from the shares for full-time fee paying vehicles that are used in the calculation of equity rates.

Exhibit 5-12 also illustrates how the relative payments of different vehicle weight groups vary by tax instrument. Light vehicles are projected to contribute approximately 92 percent of fuel tax revenues and 79.0 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 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, late payment penalties and interest, etc.

Exhibit 5-13 compares the revenue attribution results of the present study with those of the 2013 Study. The projected share of revenues contributed by light vehicles has decreased from 65.1 percent in the 2013 Study to 64.1 percent in the present study. Conversely, the overall heavy vehicle share of projected payments has increased from 34.9 percent in the previous study to 35.9 percent in the present study.

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	483,553	236,175	0	0	0	0	719,728
10,001 to 26,000	38,732	17,106	0	0	0	0	55,838
26,001 to 78,000	2,457	6,754	20,244	1,097	59	0	30,611
78,001 to 80,000	376	26,914	171,796	4,642	3,540	0	207,268
80,001 to 104,000	157	6,349	43,299	1,133	5,617	37	56,593
104,001 to 150,500	353	5,695	42,322	1,082	984	20	50,457
150,501 and up	0	142	0	13	0	2,051	2,205
Total for All Vehicles	525,629	299,134	277,662	7,966	10,200	2,108	1,122,700
Total for Vehicles Under 10,001 pounds	483,553	236,175	0	0	0	0	719,728
% for Vehicles Under 10,001 pounds	92.0%	79.0%	0.0%	0.0%	0.0%	0.0%	64.1%
Total for Vehicles Over 10,000 pounds	42,075	62,959	277,662	7,966	10,200	2,108	402,972
% for Vehicles Over 10,000 pounds	8.0%	21.0%	100.0%	100.0%	100.0%	100.0%	35.9%
Total for Vehicles Under 26,001 pounds	522,286	253,281	0	0	0	0	775,566
% for Vehicles Under 26,001 pounds	99.4%	84.7%	0.0%	0.0%	0.0%	0.0%	69.1%
Total for Vehicles Over 26,000 pounds	3,343	45,853	277,662	7,966	10,200	2,108	347,134
% for Vehicles Over 26,000 pounds	0.6%	15.3%	100.0%	100.0%	100.0%	100.0%	30.9%

EXHIBIT 5-13: REVENUE ATTRIBUTION DISTRIBUTIONS BY WEIGHT GROUP: COMPARISON BETWEEN 2013 AND 2015 OREGON HCASs

Declared Weight in Pounds	2013 Study	2015 Study	Change in Percentage
1 to 10,000	65.1%	64.1%	-1.0%
10,001 to 26,000	4.2%	5.0%	0.8%
26,001 to 78,000	2.7%	2.7%	0.0%
78,001 to 80,000	19.5%	18.5%	-1.0%
80,001 to 104,000	4.1%	5.0%	0.9%
104,001 to 150,500	4.1%	4.5%	0.4%
150,501 and up	0.3%	0.2%	-0.1%
Total	100.0%	100.0%	

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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 on the basis of the relative miles of travel of each in that class.[1]

PRESENTATION OF EQUITY RATIOS

Exhibit 6-1 includes calculated equity ratios for the summary-level weight groups shown in earlier exhibits. Exhibit 6-3, at the end of this chapter, shows the equity ratios for each 2,000-pound weight class. It needs to be emphasized that these equity ratios are for full-fee-paying vehicles only, and exclude vehicles that pay on an alternative-fee basis.

As shown in the first table within Exhibit 6-1, projected 2016 vehicle miles traveled (VMT) for full-fee-paying vehicles are 34.9 billion, 92.2 percent of these miles being traveled by light vehicles and 7.8 percent by heavy vehicles. This compares to projected 2016 miles of travel by all vehicles of 36.0 billion, 91.7 percent by light vehicles and 8.3 percent by heavy vehicles. 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 percentage 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 $1.57 billion per year, with responsibility shares of 64.6 percent for light vehicles and 35.4 percent for heavy vehicles. This compares to the projected total responsibility for all vehicles of $1.63 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 $1.10 billion, 64.6 percent from light vehicles and 35.6 percent from heavy vehicles. The difference between this total and the $1.11 billion total for all vehicles represents projected revenues from alternative-fee-paying vehicles.

[1] 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.

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 $16.8 million annually for the next biennium under existing tax rates.[2] In the approach used in studies prior to 2013, this amount would be reassigned to the full-fee-paying vehicle classes based on the relative VMT of each class. In this study, it is not allocated to full-fee-paying vehicles.

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.[3]

This study finds overall equity ratios of 0.9974 for light vehicles and 1.0047 for heavy vehicles as a group. This means that, for the 2015-17 biennium, under the existing tax structure and rates, light vehicles are expected to underpay their fair share by 0.26 percent and heavy vehicles are expected to overpay by 0.47 percent.

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. Vehicles with declared weights between 10,001 pounds and 26,000 pounds are projected to overpay their responsibility by 5.0 percent. Vehicles with weights between 26,001 and 78,000 pounds as a group underpay their fair share by 10.0 percent and those between 78,001 and 80,000 pounds overpay by 34.2 percent.

Vehicles in the 78,001-80,000 pound class alone account for 42.0 percent of the VMT by full-fee-paying heavy vehicles and 56.6 percent of the VMT by over 26,000-pound vehicles. These vehicles also account for 39.4 percent of the cost responsibility and 52.7percent of the user fees paid by full-fee-paying heavy vehicles. The reason for the large difference in the equity ratio between this group and the groups above and below it is that most truckers who are capable of operating 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 28.9 percent less than their fair share. Those in the 104,001 to 105,500 range pay 26.8 percent less 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 75.9percent, an increase from the already-significant 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 THE 1999, 2001, 2003, 2005, 2007, 2009, 2011, AND 2013 OREGON STUDIES

The overall light and heavy vehicle equity ratios found by this study are slightly different from those determined by the prior five Oregon studies (see Exhibit 6-2). The alternative-fee-difference-adjusted equity ratios found by the 1999 Study were 0.97 for light vehicles and 1.05 for heavy vehicles as a group, indicating a projected underpayment of 3 percent by light vehicles and overpayment of 5 percent by heavy vehicles. The analysis period for the 1999 Study was the 1999-2001 biennium. On the basis of these results, the 1999 Legislature enacted an across-the-board 12.3 percent reduction in the weight-mile tax rates.[4] This reduction became effective September 1, 2000.

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

[2]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.

[3]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.

[4]The overall results of the 1999 Study were implemented by a proportionate reduction in all the weight-mile tax rates. The legislature, however, did not implement the detailed recommendations of the 1999 or 2001 studies.

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. As a consequence, 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 2005 Study found adjusted equity ratios of 1.0032 for light vehicles and 0.9936 for heavy vehicles. This indicated near-perfect equity for the 2005-07 biennium analysis period: a 0.32 percent projected overpayment by full-fee paying light vehicles and a 0.64 percent underpayment by full-fee paying heavy vehicles.

The 2007 Study found adjusted equity ratios of 0.9933 for light vehicles and 1.0129 for heavy vehicles. As in the 2005 Study, these equity ratios indicated near-perfect equity for the 2007-09 biennium analysis period.

The 2009 Study found adjusted equity ratios of 0.9915 for light vehicles and 1.0173 for heavy vehicles, and the 2011 Study found adjusted equity ratios of 0.9954 for light vehicles and 1.0089 for heavy vehicles. Again, these equity ratios indicated near-perfect equity for the 2009-11 and 2011-13 biennium analysis periods.

The 2013 study, like the current study, reported unadjusted full-fee equity ratios. Those were 0.9927 and 1.0139 in the 2013 study, and 0.9974 and 1.0047 in this 2015 study.

All of the recent prior studies, as well as this current study, have projected an overpayment by vehicles in the 78,001-80,000 pound class and underpayments by vehicles weighing more than 80,000 pounds.

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

	Annual VMT			Percent of Annual VMT		
Declared Weight in Pounds	**All**	**Full-Fee**	**Alternative Fee**	**All**	**Full-Fee**	**Alternative Fee**
1 to 10,000	32,927,262,617	32,251,303,582	675,959,035	91.7%	92.2%	70.3%
10,001 to 26,000	843,275,225	702,028,201	141,247,024	2.3%	2.0%	14.7%
26,001 to 78,000	410,249,237	283,034,270	127,214,967	1.1%	0.8%	13.2%
78,001 to 80,000	1,146,174,981	1,137,895,842	8,279,139	3.2%	3.3%	0.9%
80,001 to 104,000	322,878,314	319,965,924	2,912,390	0.9%	0.9%	0.3%
104,001 to 150,500	271,908,389	265,622,107	6,286,282	0.8%	0.8%	0.7%
150,501 and up	3,145,854	3,145,854	0	0.0%	0.0%	0.0%
Total	**35,924,894,615**	**34,962,995,779**	**961,898,836**	**100.0%**	**100.0%**	**100.0%**
10,001 and up	2,997,631,998	2,711,692,197	285,939,801	8.3%	7.8%	29.7%
26,001 to 80,000	1,556,424,218	1,420,930,112	135,494,106	4.3%	4.1%	14.1%
80,001 to 105,500	594,786,702	585,588,031	9,198,671	1.7%	1.7%	1.0%
26,001 to 105,500	2,151,210,920	2,006,518,143	144,692,777	6.0%	5.7%	15.0%
26,001 and up	2,154,356,774	2,009,663,996	144,692,777	6.0%	5.7%	15.0%

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

	Annual Cost Responsibility					Percent of Cost Responsiblity				
Declared Weight in Pounds	**State**	**Federal**	**Local**	**Total**	**Full-Fee**	**State**	**Federal**	**Local**	**Total**	**Full-Fee**
1 to 10,000	598,227,871	259,334,061	180,275,366	1,037,837,298	1,016,531,685	68.9%	57.0%	58.1%	63.5%	64.6%
10,001 to 26,000	31,052,459	24,870,540	26,073,697	81,996,696	66,659,482	3.6%	5.5%	8.4%	5.0%	4.2%
26,001 to 78,000	28,510,092	15,548,136	18,259,315	62,317,543	44,777,532	3.3%	3.4%	5.9%	3.8%	2.8%
78,001 to 80,000	112,192,456	76,500,581	32,871,965	221,565,002	219,964,576	12.9%	16.8%	10.6%	13.6%	14.0%
80,001 to 104,000	50,956,136	40,921,724	25,456,440	117,334,300	116,210,493	5.9%	9.0%	8.2%	7.2%	7.4%
104,001 to 150,500	44,660,687	30,885,600	23,975,266	99,521,553	97,221,086	5.1%	6.8%	7.7%	6.1%	6.2%
150,501 and up	3,097,773	6,860,806	3,145,293	13,103,873	13,101,662	0.4%	1.5%	1.0%	0.8%	0.8%
Total	**868,697,476**	**454,921,448**	**310,057,342**	**1,633,676,265**	**1,574,466,517**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
10,001 and up	270,469,605	195,587,387	129,781,976	595,838,968	557,934,832	31.1%	43.0%	41.9%	36.5%	35.4%
26,001 to 80,000	140,702,549	92,048,717	51,131,279	283,882,545	264,742,109	16.2%	20.2%	16.5%	17.4%	16.8%
80,001 to 105,500	95,616,823	71,807,324	49,431,706	216,855,854	213,431,579	11.0%	15.8%	15.9%	13.3%	13.6%
26,001 to 105,500	236,319,372	163,856,041	100,562,986	500,738,399	478,173,688	27.2%	36.0%	32.4%	30.7%	30.4%
26,001 and up	239,417,145	170,716,847	103,708,279	513,842,271	491,275,350	27.6%	37.5%	33.4%	31.5%	31.2%

	Annual User Fees			Percent of User Fees		
Declared Weight in Pounds	**All**	**Full-Fee**	**Alternative-Fee Difference**	**All**	**Full-Fee**	**Alternative-Fee Difference**
1 to 10,000	719,728,102	709,452,020	4,593,410	64.1%	64.4%	27.3%
10,001 to 26,000	55,838,035	48,965,588	3,386,959	5.0%	4.4%	20.1%
26,001 to 78,000	30,610,934	28,296,277	7,198,701	2.7%	2.6%	42.8%
78,001 to 80,000	207,267,503	206,601,899	837,597	18.5%	18.8%	5.0%
80,001 to 104,000	56,592,874	56,344,132	261,800	5.0%	5.1%	1.6%
104,001 to 150,500	50,456,970	49,828,437	550,814	4.5%	4.5%	3.3%
150,501 and up	2,205,308	2,205,301	0	0.2%	0.2%	0.0%
Total	**1,122,699,726**	**1,101,693,653**	**16,829,281**	**100.0%**	**100.0%**	**100.0%**
10,001 and up	402,971,624	392,241,634	12,235,871	35.9%	35.6%	72.7%
26,001 to 80,000	237,878,437	234,898,176	8,036,298	21.2%	21.3%	47.8%
80,001 to 105,500	107,049,845	106,172,569	812,615	9.5%	9.6%	4.8%
26,001 to 105,500	344,928,281	341,070,745	8,848,912	30.7%	31.0%	52.6%
26,001 and up	347,133,590	343,276,046	8,848,912	30.9%	31.2%	52.6%

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

	Annual User Fees		
Declared Weight in Pounds	**Share of Full-Fee Revenues**	**Share of Full-Fee Costs**	**Full-Fee Equity Ratio**
1 to 10,000	64.4%	64.6%	0.9974
10,001 to 26,000	4.4%	4.2%	1.0498
26,001 to 78,000	2.6%	2.8%	0.9031
78,001 to 80,000	18.8%	14.0%	1.3423
80,001 to 104,000	5.1%	7.4%	0.6929
104,001 to 150,500	4.5%	6.2%	0.7325
150,501 and up	0.2%	0.8%	0.2406
Total	**100.0%**	**100.0%**	**1.0000**
10,001 and up	35.6%	35.4%	1.0047
26,001 to 80,000	21.3%	16.8%	1.2680
80,001 to 105,500	9.6%	13.6%	0.7109
26,001 to 105,500	31.0%	30.4%	1.0194
26,001 and up	31.2%	31.2%	0.9986

EXHIBIT 6-2: COMPARISON OF EQUITY RATIOS FROM THE 2001, 2003, 2005, 2007, 2009, 2011, 2013, AND 2015 OREGON HIGHWAY COST ALLOCATION STUDIES

	Study Year							
Declared Weight in Pounds	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**
1 to 10,000	1.0027	0.9921	1.0032	0.9933	0.9915	0.9954	0.9927	0.9974
10,001 to 26,000	0.9440	1.3803	1.1846	1.2557	1.1576	1.2439	1.1189	1.0498
26,001 to 78,000	0.9596	1.0091	0.7401	0.7485	0.7881	0.8301	0.8885	0.9031
78,001 to 80,000	1.0603	1.0931	1.0610	1.1274	1.1234	1.2630	1.2014	1.3423
80,001 to 104,000	0.9479	0.7430	0.9034	0.8427	0.8278	0.7114	0.8084	0.6929
104,001 to 150,500	0.8712	0.7576	0.8759	0.8299	0.9210	0.6813	0.7444	0.7325
150,501 and up	0.4727	0.2678	0.6395	0.6127	0.5932	0.4776	0.3866	0.2406
Total	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**
10,001 and up	0.9952	1.0158	0.9936	1.0129	1.0173	1.0089	1.0139	1.0047
26,001 to 80,000			1.0189	1.0742	1.0655	1.1903	1.1527	1.2680
80,001 to 105,500			0.8880	0.8357	0.8763	0.6945	0.7751	0.7109
26,001 to 105,500			0.9812	1.0007	1.0068	0.9934	1.0173	1.0194
26,001 and up	0.9996	0.9870	0.9789	0.9984	1.0013	0.9857	1.0023	0.9986

EXHIBIT 6-3: DETAILED COMPARISON OF AVERAGE ANNUAL COST RESPONSIBILITY AND USER FEES PAID BY FULL-FEE-PAYING VEHICLES BY DECLARED WEIGHT CLASS[1]

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
1	0	32,927,262,617	32,251,303,582	1,037,837,298	1,016,531,685	719,728,102	709,452,020	4,593,410	0.9974
10,001	0	130,921,450	118,323,971	7,127,597	6,441,768	7,446,049	6,845,610	128,386	1.5187
12,001	0	85,084,647	70,853,557	5,217,790	4,345,073	4,849,161	4,307,938	324,036	1.4169
14,001	0	167,165,542	144,415,585	11,621,168	10,039,615	10,404,884	9,437,262	519,041	1.3434
16,001	0	89,089,769	80,009,652	7,102,831	6,378,904	5,992,773	5,526,630	161,062	1.2382
18,001	0	88,695,101	74,166,577	8,121,836	6,791,455	6,161,345	5,355,409	243,137	1.1269
20,001	0	23,980,956	14,374,539	2,745,395	1,645,630	1,389,538	1,038,584	343,126	0.9019
22,001	0	39,254,935	29,573,359	5,202,273	3,919,219	2,896,240	2,349,290	222,149	0.8567
24,001	0	219,082,825	170,310,960	34,857,807	27,097,818	16,698,042	14,104,863	1,446,023	0.7439
26,001	0	18,397,735	3,799,875	2,328,726	480,976	330,346	236,656	815,465	0.7032
28,001	0	33,554,128	8,291,584	4,203,818	1,038,808	694,273	522,184	1,418,885	0.7184
30,001	0	41,839,917	23,849,066	5,672,236	3,233,217	1,525,216	1,541,349	1,178,870	0.6813
32,001	0	34,152,283	24,648,877	5,159,688	3,723,924	2,001,358	1,804,665	499,098	0.6926
34,001	0	13,230,326	4,348,035	1,833,010	602,403	425,091	320,299	549,524	0.7599
36,001	0	17,783,585	4,791,243	2,545,427	685,788	434,884	332,428	798,984	0.6928
38,001	0	19,071,766	6,813,337	2,412,171	861,742	697,931	552,072	847,417	0.9156
40,001	0	10,722,394	6,132,121	1,403,396	802,600	577,316	521,719	334,942	0.9290
42,001	0	6,404,116	4,290,966	1,094,516	733,362	480,096	367,576	68,499	0.7163
44,001	0	40,031,045	36,569,200	6,009,925	5,490,193	3,948,213	3,671,409	70,752	0.9557
46,001	0	19,508,687	15,352,970	2,971,527	2,338,536	1,817,898	1,524,350	119,061	0.9316
48,001	0	18,400,406	15,187,191	2,894,724	2,389,226	1,773,539	1,541,277	93,832	0.9219
50,001	0	17,149,499	15,870,303	2,823,664	2,613,044	1,734,487	1,641,094	38,884	0.8976
52,001	0	33,266,173	30,823,833	5,309,578	4,919,759	3,453,617	3,277,787	83,886	0.9522
54,001	0	30,137,315	28,098,510	5,052,690	4,710,873	3,316,209	3,185,302	100,216	0.9663
56,001	0	10,278,133	9,901,552	1,966,369	1,894,323	1,137,817	1,119,610	24,374	0.8447
58,001	0	9,847,223	9,228,740	1,654,918	1,550,976	1,120,441	1,074,258	25,810	0.9899
60,001	0	1,788,245	1,706,630	269,322	257,031	210,467	203,421	2,683	1.1311
62,001	0	3,265,788	3,068,241	615,027	577,824	389,469	380,497	15,526	0.9411
64,001	0	9,660,071	9,318,388	2,008,727	1,937,677	1,235,507	1,217,713	26,857	0.8981
66,001	0	2,540,015	2,478,617	555,011	541,595	342,358	337,970	3,984	0.8918

[1]Weights displayed in the "Weight Class" column represent the initial weight of each 2,000-pound class.

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
68,001	0	4,219,781	4,077,601	872,564	843,164	594,525	587,481	13,440	0.9958
70,001	0	3,857,604	3,787,102	739,198	725,688	581,206	575,019	4,518	1.1324
72,001	0	2,713,344	2,638,683	358,512	348,647	426,941	420,351	5,304	1.7230
74,001	0	7,070,688	6,899,053	1,311,538	1,279,702	1,163,060	1,156,804	22,524	1.2919
76,001	0	1,358,970	1,062,551	251,259	196,454	198,666	182,985	35,366	1.3311
78,001	0	1,146,174,981	1,137,895,842	221,565,002	219,964,576	207,267,503	206,601,899	837,597	1.3423
80,001	5	12,044,318	11,942,522	5,217,891	5,173,790	1,966,979	1,959,838	9,565	0.5414
80,001	6	296,884	293,523	175,717	173,727	51,427	51,109	267	0.4204
80,001	7	455,110	451,599	119,102	118,183	61,423	61,191	244	0.7400
80,001	8	35,894	35,538	15,216	15,065	5,694	5,659	22	0.5369
80,001	9	15,689	15,512	2,153	2,128	2,346	2,329	10	1.5640
82,001	5	7,759,599	7,661,712	3,909,473	3,860,155	1,482,656	1,473,465	9,634	0.5455
82,001	6	746,345	736,929	365,887	361,271	130,311	129,419	762	0.5120
82,001	7	79,948	78,939	28,769	28,406	13,193	13,097	71	0.6589
82,001	8	49,999	49,369	10,409	10,277	7,885	7,825	40	1.0881
82,001	9	7,389	7,295	1,200	1,185	1,110	1,102	5	1.3285
84,001	5	8,066,278	7,894,632	4,733,744	4,633,013	1,495,081	1,481,235	18,358	0.4569
84,001	6	7,209,734	7,071,368	2,755,458	2,702,577	1,215,409	1,204,020	12,170	0.6367
84,001	7	560,465	550,931	156,351	153,692	84,466	83,746	729	0.7787
84,001	8	56,200	54,761	15,748	15,344	9,128	8,989	98	0.8372
84,001	9	7,086	6,904	1,656	1,614	1,100	1,083	11	0.9590
86,001	5	3,934,039	3,894,480	2,056,044	2,035,369	689,661	686,954	4,271	0.4823
86,001	6	30,569,105	30,335,464	11,245,321	11,159,373	4,463,432	4,449,320	20,156	0.5698
86,001	7	1,263,156	1,245,283	558,398	550,496	216,536	214,772	1,318	0.5576
86,001	8	134,432	132,684	87,429	86,292	21,437	21,271	114	0.3523
86,001	9	3,773	3,715	6,658	6,556	606	600	3	0.1308
88,001	5	1,971,156	1,940,570	829,651	816,778	387,038	384,478	3,500	0.6727
88,001	6	30,655,084	30,296,687	12,007,802	11,867,415	4,804,117	4,779,766	32,192	0.5756
88,001	7	441,988	434,364	236,043	231,971	74,654	73,933	576	0.4555
88,001	8	105,944	104,735	31,750	31,387	14,736	14,648	81	0.6669

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
88,001	9	5,040	4,945	1,840	1,805	808	798	6	0.6316
90,001	5	1,071,746	1,063,284	403,859	400,670	233,122	232,304	1,031	0.8286
90,001	6	45,567,615	45,226,130	16,096,750	15,976,120	8,568,191	8,535,700	31,959	0.7636
90,001	7	6,499,403	6,449,586	1,853,461	1,839,255	1,132,191	1,127,304	3,820	0.8759
90,001	8	76,805	76,199	11,051	10,964	12,841	12,780	41	1.6660
90,001	9	21,431	21,262	2,121	2,104	3,413	3,396	10	2.3068
92,001	5	218,379	213,145	36,250	35,381	43,091	42,723	682	1.7257
92,001	6	2,275,672	2,222,698	931,114	909,439	384,591	380,694	5,177	0.5982
92,001	7	2,233,781	2,157,610	706,859	682,755	395,669	387,955	5,981	0.8121
92,001	8	31,393	30,279	6,138	5,921	5,291	5,179	78	1.2501
92,001	9	4,537	4,376	789	761	728	712	10	1.3370
94,001	5	379,139	370,841	197,979	193,645	88,340	87,533	1,151	0.6460
94,001	6	5,359,825	5,283,841	1,732,031	1,707,477	895,656	890,609	7,760	0.7454
94,001	7	13,669,485	13,371,072	5,502,278	5,382,160	2,449,283	2,419,321	24,032	0.6424
94,001	8	674,669	660,419	233,355	228,427	113,426	112,028	1,019	0.7009
94,001	9	9,828	9,612	8,275	8,092	1,596	1,574	14	0.2780
96,001	5	1,789,137	1,778,089	662,477	658,386	422,467	421,485	1,637	0.9149
96,001	6	5,135,015	5,115,628	1,914,251	1,907,024	887,993	886,726	2,093	0.6645
96,001	7	29,343,254	29,155,725	10,378,098	10,311,773	5,312,999	5,294,576	15,631	0.7338
96,001	8	2,322,255	2,307,162	660,448	656,156	397,984	396,496	1,106	0.8636
96,001	9	149,958	149,358	60,892	60,649	15,713	15,688	38	0.3697
98,001	5	0	0	2,249	0	0	0	0	
98,001	6	2,081,579	2,051,758	813,175	801,525	421,524	418,846	3,409	0.7468
98,001	7	14,328,408	14,143,898	4,887,284	4,824,349	2,474,434	2,458,277	15,911	0.7282
98,001	8	673,457	664,154	245,290	241,902	110,279	109,447	702	0.6466
98,001	9	9,839	9,679	1,465	1,441	1,642	1,626	10	1.6123
100,001	5	2,235	2,220	1,269	1,260	62	60	-1	0.0682
100,001	6	126,522	126,522	38,077	38,077	17,589	17,589	0	0.6602
100,001	7	18,168,868	18,064,927	5,702,677	5,670,053	3,309,130	3,299,382	9,236	0.8316
100,001	8	12,496,628	12,416,013	3,471,036	3,448,644	2,225,544	2,217,439	6,293	0.9189
100,001	9	6,385	6,344	1,138	1,130	1,079	1,074	3	1.3584

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
102,001	5	59,423	59,423	17,520	17,520	10,497	10,497	0	0.8563
102,001	6	0	0	1,932	0	0	0	0	
102,001	7	5,892,794	5,881,029	2,264,101	2,259,581	1,126,680	1,125,507	1,079	0.7119
102,001	8	45,658,955	45,564,075	13,913,377	13,884,465	8,317,418	8,307,793	7,675	0.8551
102,001	9	65,239	65,104	5,526	5,515	11,176	11,162	9	2.8927
104,001	5	4,530	4,422	32,947	32,161	123	111	-9	0.0049
104,001	6	242,514	242,433	101,064	101,030	30,154	30,137	-7	0.4263
104,001	7	97,269,236	95,057,142	35,186,296	34,386,090	18,518,835	18,304,060	211,182	0.7607
104,001	8	171,445,855	167,438,907	62,509,224	61,048,289	31,431,538	31,023,959	334,849	0.7263
104,001	9	2,946,254	2,879,203	1,692,023	1,653,516	476,320	470,169	4,799	0.4064
106,001	5	0	0	181	0	5	0	0	
106,001	6	23,816	23,816	77,453	77,453	11,175	11,175	0	0.2062
106,001	7	32,638	32,638	83,656	83,656	9,765	9,765	0	0.1668
106,001	8	5,580	5,580	14,996	14,996	1,112	1,112	0	0.1059
106,001	9	891	891	2,095	2,095	151	151	0	0.1028
108,001	5	0	0	0	0	0	0	0	
108,001	6	44,820	44,820	154,954	154,954	22,375	22,375	0	0.2064
108,001	7	85,582	85,582	222,746	222,746	27,318	27,318	0	0.1753
108,001	8	5,497	5,497	17,354	17,354	1,150	1,150	0	0.0947
108,001	9	10,539	10,539	38,538	38,538	1,783	1,783	0	0.0661
110,001	5	0	0	0	0	0	0	0	
110,001	6	39,991	39,991	139,307	139,307	22,763	22,763	0	0.2335
110,001	7	35,131	35,131	94,317	94,317	11,916	11,916	0	0.1806
110,001	8	1,162	1,162	4,992	4,992	255	255	0	0.0729
110,001	9	940	940	3,107	3,107	178	178	0	0.0818
112,001	5	0	0	0	0	0	0	0	
112,001	6	27,608	27,608	102,146	102,146	16,267	16,267	0	0.2276
112,001	7	37,363	37,363	101,932	101,932	13,421	13,421	0	0.1882
112,001	8	2,499	2,499	7,391	7,391	598	598	0	0.1156
112,001	9	1,715	1,715	4,581	4,581	342	342	0	0.1066

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
114,001	5	0	0	0	0	0	0	0	
114,001	6	31,459	31,459	124,201	124,201	19,165	19,165	0	0.2205
114,001	7	103,957	103,957	304,516	304,516	39,421	39,421	0	0.1850
114,001	8	5,752	5,752	17,961	17,961	1,548	1,548	0	0.1232
114,001	9	6,559	6,559	17,039	17,039	1,307	1,307	0	0.1096
116,001	5	0	0	0	0	0	0	0	
116,001	6	18,446	18,446	74,284	74,284	12,159	12,159	0	0.2339
116,001	7	60,387	60,387	176,405	176,405	24,107	24,107	0	0.1953
116,001	8	1,293	1,293	5,119	5,119	374	374	0	0.1044
116,001	9	954	954	3,717	3,717	200	200	0	0.0768
118,001	5	0	0	1,869	0	1	0	0	
118,001	6	38,899	38,899	153,533	153,533	27,588	27,588	0	0.2568
118,001	7	132,603	132,603	391,588	391,588	55,588	55,588	0	0.2029
118,001	8	11,910	11,910	36,299	36,299	3,683	3,683	0	0.1450
118,001	9	8,006	8,006	20,999	20,999	1,755	1,755	0	0.1194
120,001	5	0	0	0	0	0	0	0	
120,001	6	5,992	5,992	28,175	28,175	4,490	4,490	0	0.2277
120,001	7	44,317	44,317	136,244	136,244	19,464	19,464	0	0.2042
120,001	8	6,855	6,855	19,626	19,626	2,188	2,188	0	0.1593
120,001	9	857	857	3,374	3,374	205	205	0	0.0869
122,001	5	0	0	0	0	0	0	0	
122,001	6	4,627	4,627	22,644	22,644	3,698	3,698	0	0.2334
122,001	7	56,361	56,361	173,996	173,996	25,881	25,881	0	0.2126
122,001	8	4,459	4,459	13,176	13,176	1,557	1,557	0	0.1689
122,001	9	938	938	4,470	4,470	253	253	0	0.0807
124,001	5	0	0	0	0	0	0	0	
124,001	6	15,347	15,347	75,642	75,642	13,340	13,340	0	0.2520
124,001	7	145,961	145,961	463,209	463,209	71,405	71,405	0	0.2203
124,001	8	8,274	8,274	25,887	25,887	2,972	2,972	0	0.1641
124,001	9	4,993	4,993	15,445	15,445	1,444	1,444	0	0.1336

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
126,001	5	0	0	0	0	0	0	0	
126,001	6	810	810	4,723	4,723	737	737	0	0.2229
126,001	7	88,338	88,338	289,207	289,207	45,865	45,865	0	0.2266
126,001	8	7,630	7,630	24,189	24,189	2,817	2,817	0	0.1664
126,001	9	1,191	1,191	5,351	5,351	356	356	0	0.0952
128,001	5	0	0	0	0	0	0	0	
128,001	6	2,434	2,434	13,699	13,699	2,432	2,432	0	0.2537
128,001	7	133,362	133,362	469,588	469,588	74,577	74,577	0	0.2270
128,001	8	15,605	15,605	49,181	49,181	6,386	6,386	0	0.1856
128,001	9	6,150	6,150	20,170	20,170	1,902	1,902	0	0.1347
130,001	5	0	0	0	0	0	0	0	
130,001	6	1,054	1,054	6,231	6,231	1,127	1,127	0	0.2584
130,001	7	58,067	58,067	200,021	200,021	34,794	34,794	0	0.2486
130,001	8	5,139	5,139	17,939	17,939	2,257	2,257	0	0.1798
130,001	9	3,538	3,538	10,696	10,696	1,129	1,129	0	0.1509
132,001	5	0	0	0	0	0	0	0	
132,001	6	74	74	537	537	85	85	0	0.2258
132,001	7	61,033	61,033	233,390	233,390	39,012	39,012	0	0.2389
132,001	8	13,325	13,325	42,133	42,133	5,986	5,986	0	0.2030
132,001	9	528	528	3,534	3,534	169	169	0	0.0681
134,001	5	0	0	0	0	0	0	0	
134,001	6	74	74	1,374	1,374	91	91	0	0.0942
134,001	7	116,112	116,112	449,811	449,811	78,864	78,864	0	0.2506
134,001	8	22,328	22,328	71,213	71,213	10,476	10,476	0	0.2102
134,001	9	12,740	12,740	38,580	38,580	4,449	4,449	0	0.1648
136,001	5	0	0	0	0	0	0	0	
136,001	6	0	0	1	0	0	0	0	
136,001	7	33,459	33,459	137,149	137,149	24,064	24,064	0	0.2508
136,001	8	10,343	10,343	36,388	36,388	5,163	5,163	0	0.2028
136,001	9	3,574	3,574	11,915	11,915	1,284	1,284	0	0.1540

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
138,001	5	0	0	0	0	0	0	0	
138,001	6	19	19	188	188	27	27	0	0.2066
138,001	7	55,234	55,234	235,057	235,057	41,934	41,934	0	0.2550
138,001	8	35,254	35,254	120,493	120,493	18,304	18,304	0	0.2171
138,001	9	18,154	18,154	56,110	56,110	6,702	6,702	0	0.1707
140,001	5	0	0	0	0	0	0	0	
140,001	6	0	0	0	0	0	0	0	
140,001	7	21,110	21,110	82,938	82,938	17,082	17,082	0	0.2944
140,001	8	19,094	19,094	65,232	65,232	10,868	10,868	0	0.2381
140,001	9	6,395	6,395	20,752	20,752	2,489	2,489	0	0.1714
142,001	5	0	0	0	0	0	0	0	
142,001	6	0	0	0	0	0	0	0	
142,001	7	12,550	12,550	94,852	94,852	10,909	10,909	0	0.1644
142,001	8	11,411	11,411	41,645	41,645	6,951	6,951	0	0.2386
142,001	9	4,410	4,410	14,835	14,835	1,849	1,849	0	0.1781
144,001	5	0	0	0	0	0	0	0	
144,001	6	0	0	0	0	0	0	0	
144,001	7	37,006	37,006	179,886	179,886	33,646	33,646	0	0.2673
144,001	8	34,886	34,886	120,842	120,842	22,299	22,299	0	0.2637
144,001	9	12,734	12,734	43,617	43,617	5,593	5,593	0	0.1833
146,001	5	0	0	0	0	0	0	0	
146,001	6	0	0	0	0	0	0	0	
146,001	7	24,570	24,570	199,999	199,999	24,059	24,059	0	0.1719
146,001	8	26,809	26,809	104,043	104,043	17,404	17,404	0	0.2391
146,001	9	9,326	9,326	31,615	31,615	4,189	4,189	0	0.1894
148,001	5	0	0	0	0	0	0	0	
148,001	6	0	0	0	0	0	0	0	
148,001	7	17,328	17,328	90,458	90,458	17,834	17,834	0	0.2818
148,001	8	32,646	32,646	132,401	132,401	23,152	23,152	0	0.2499
148,001	9	23,284	23,284	83,203	83,203	10,692	10,692	0	0.1837

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
150,001	5	0	0	0	0	0	0	0	
150,001	6	0	0	0	0	0	0	0	
150,001	7	1,825	1,825	10,026	10,026	1,970	1,970	0	0.2808
150,001	8	18,344	18,344	65,731	65,731	13,560	13,560	0	0.2948
150,001	9	8,628	8,628	30,412	30,412	4,221	4,221	0	0.1983
152,001	5	0	0	0	0	0	0	0	
152,001	6	0	0	0	0	0	0	0	
152,001	7	0	0	3	0	0	0	0	
152,001	8	21,272	21,272	90,424	90,424	16,362	16,362	0	0.2586
152,001	9	4,184	4,184	17,231	17,231	2,089	2,089	0	0.1732
154,001	5	0	0	0	0	0	0	0	
154,001	6	0	0	0	0	0	0	0	
154,001	7	586	586	3,618	3,618	703	703	0	0.2778
154,001	8	35,548	35,548	136,723	136,723	28,410	28,410	0	0.2970
154,001	9	24,506	24,506	101,985	101,985	12,723	12,723	0	0.1783
156,001	5	0	0	0	0	0	0	0	
156,001	6	0	0	0	0	0	0	0	
156,001	7	127	127	856	856	161	161	0	0.2685
156,001	8	37,809	37,809	171,023	171,023	32,486	32,486	0	0.2715
156,001	9	10,738	10,738	43,187	43,187	6,327	6,327	0	0.2094
158,001	5	0	0	0	0	0	0	0	
158,001	6	0	0	0	0	0	0	0	
158,001	7	0	0	2	0	0	0	0	
158,001	8	33,187	33,187	161,931	161,931	29,178	29,178	0	0.2575
158,001	9	47,673	47,673	178,328	178,328	29,043	29,043	0	0.2327
160,001	5	0	0	0	0	0	0	0	
160,001	6	0	0	0	0	0	0	0	
160,001	7	0	0	12	0	0	0	0	
160,001	8	9,053	9,053	41,024	41,024	8,322	8,322	0	0.2899
160,001	9	11,779	11,779	44,633	44,633	7,529	7,529	0	0.2411

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
162,001	5	0	0	0	0	0	0	0	
162,001	6	0	0	0	0	0	0	0	
162,001	7	0	0	0	0	0	0	0	
162,001	8	9,210	9,210	41,888	41,888	9,202	9,202	0	0.3140
162,001	9	12,039	12,039	54,256	54,256	7,936	7,936	0	0.2090
164,001	5	0	0	0	0	0	0	0	
164,001	6	0	0	0	0	0	0	0	
164,001	7	277	277	2,285	2,285	417	417	0	0.2612
164,001	8	9,075	9,075	50,794	50,794	9,340	9,340	0	0.2628
164,001	9	46,141	46,141	210,013	210,013	32,723	32,723	0	0.2227
166,001	5	0	0	0	0	0	0	0	
166,001	6	0	0	0	0	0	0	0	
166,001	7	0	0	0	0	0	0	0	
166,001	8	6,308	6,308	35,384	35,384	6,745	6,745	0	0.2724
166,001	9	19,846	19,846	92,791	92,791	14,869	14,869	0	0.2290
168,001	5	0	0	0	0	0	0	0	
168,001	6	0	0	0	0	0	0	0	
168,001	7	180	180	278	278	294	294	0	1.5118
168,001	8	8,409	8,409	49,733	49,733	9,496	9,496	0	0.2729
168,001	9	52,386	52,386	255,361	255,361	40,819	40,819	0	0.2284
170,001	5	0	0	0	0	0	0	0	
170,001	6	0	0	0	0	0	0	0	
170,001	7	0	0	0	0	0	0	0	
170,001	8	1,177	1,177	7,192	7,192	1,376	1,376	0	0.2735
170,001	9	15,199	15,199	79,323	79,323	12,299	12,299	0	0.2216
172,001	5	0	0	0	0	0	0	0	
172,001	6	0	0	0	0	0	0	0	
172,001	7	0	0	0	0	0	0	0	
172,001	8	0	0	123	0	0	0	0	
172,001	9	27,239	27,239	145,239	145,239	23,676	23,676	0	0.2330

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
174,001	5	0	0	0	0	0	0	0	
174,001	6	0	0	0	0	0	0	0	
174,001	7	0	0	0	0	0	0	0	
174,001	8	0	0	2	0	0	0	0	
174,001	9	62,513	62,513	284,133	284,133	56,212	56,212	0	0.2827
176,001	5	0	0	0	0	0	0	0	
176,001	6	0	0	0	0	0	0	0	
176,001	7	43	43	67	67	85	85	0	1.8253
176,001	8	0	0	11	0	0	0	0	
176,001	9	15,828	15,828	92,708	92,708	14,707	14,707	0	0.2267
178,001	5	0	0	0	0	0	0	0	
178,001	6	0	0	0	0	0	0	0	
178,001	7	0	0	0	0	0	0	0	
178,001	8	17	17	27	27	23	23	0	1.2498
178,001	9	64,284	64,284	319,212	319,212	64,233	64,233	0	0.2876
180,001	5	0	0	0	0	0	0	0	
180,001	6	0	0	0	0	0	0	0	
180,001	7	0	0	0	0	0	0	0	
180,001	8	0	0	0	0	0	0	0	
180,001	9	7,761	7,761	49,599	49,599	7,988	7,988	0	0.2302
182,001	5	0	0	0	0	0	0	0	
182,001	6	0	0	0	0	0	0	0	
182,001	7	0	0	0	0	0	0	0	
182,001	8	0	0	0	0	0	0	0	
182,001	9	23,010	23,010	124,279	124,279	24,603	24,603	0	0.2829
184,001	5	0	0	0	0	0	0	0	
184,001	6	0	0	0	0	0	0	0	
184,001	7	0	0	0	0	0	0	0	
184,001	8	14	14	22	22	23	23	0	1.4841
184,001	9	60,379	60,379	412,739	412,739	68,180	68,180	0	0.2361

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
186,001	5	0	0	0	0	0	0	0	
186,001	6	0	0	0	0	0	0	0	
186,001	7	0	0	0	0	0	0	0	
186,001	8	0	0	0	0	0	0	0	
186,001	9	17,129	17,129	123,193	123,193	19,855	19,855	0	0.2303
188,001	5	0	0	0	0	0	0	0	
188,001	6	12	12	19	19	1	1	0	0.0454
188,001	7	0	0	0	0	0	0	0	
188,001	8	26	26	41	41	47	47	0	1.6224
188,001	9	42,694	42,694	259,112	259,112	51,626	51,626	0	0.2847
190,001	5	0	0	0	0	0	0	0	
190,001	6	0	0	0	0	0	0	0	
190,001	7	0	0	0	0	0	0	0	
190,001	8	0	0	0	0	0	0	0	
190,001	9	19,618	19,618	151,388	151,388	24,900	24,900	0	0.2351
192,001	5	0	0	0	0	0	0	0	
192,001	6	0	0	0	0	0	0	0	
192,001	7	0	0	0	0	0	0	0	
192,001	8	0	0	0	0	0	0	0	
192,001	9	23,404	23,404	189,432	189,432	30,875	30,875	0	0.2329
194,001	5	0	0	0	0	0	0	0	
194,001	6	0	0	0	0	0	0	0	
194,001	7	0	0	0	0	0	0	0	
194,001	8	0	0	6	0	0	0	0	
194,001	9	37,410	37,410	98,189	98,189	50,848	50,848	0	0.7401
196,001	5	0	0	0	0	0	0	0	
196,001	6	0	0	0	0	0	0	0	
196,001	7	0	0	0	0	0	0	0	
196,001	8	0	0	0	0	0	0	0	
196,001	9	22,581	22,581	44,986	44,986	32,047	32,047	0	1.0181

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

		Annual VMT		Annual Cost Responsibility		Annual User Fees		Alternative-Fee Difference	Full-Fee Equity Ratio
Weight Class	Axles	All	Full-Fee	All	Full-Fee Cost	All	Full-Fee		
198,001	5	0	0	0	0	0	0	0	
198,001	6	0	0	0	0	0	0	0	
198,001	7	0	0	0	0	0	0	0	
198,001	8	0	0	0	0	0	0	0	
198,001	9	57,503	57,503	533,943	533,943	83,909	83,909	0	0.2246
200,001	5	0	0	0	0	0	0	0	
200,001	6	0	0	0	0	0	0	0	
200,001	7	0	0	0	0	0	0	0	
200,001	8	0	0	0	0	0	0	0	
200,001	9	144,780	144,780	1,064,607	1,064,607	218,503	218,503	0	0.2933
Total		35,924,894,615	34,962,995,779	1,633,676,265	1,574,466,517	1,122,699,726	1,101,693,653	16,829,281	

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CHAPTER 7: RECOMMENDATIONS FOR CHANGES IN TAX RATES

Because light and heavy vehicles pay equitable shares of highway costs in Oregon, there is no constitutional requirement to change user-fee rates for the 2015-17 biennium. This report does not recommend any change that would affect the distribution of revenue burdens between light and heavy vehicles. Should rates be adjusted for other reasons, such as implementing a transportation revenue package, the proportional burdens on light and heavy vehicles should be maintained.

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 substantially 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 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 57 percent of vehicle miles by full-fee vehicles over 26,000 pounds and 42 percent of all full-fee heavy vehicle miles) are paying more than their fair share
- Vehicles weighing more than 80,000 pounds are paying less than their fair share

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 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.[1]

Table A rates are specified for each 2,000-pound declared gross weight increment. The existing rates range from 4.98 cents per mile for vehicles declared at 26,001-28,000 pounds to 16.38 cents per mile for vehicles declared at 78,001-80,000 pounds.

To achieve better equity within heavy vehicle classes, Table A rates could be changed to range from 5.000 cents per mile to 12.000 cents per mile, as shown in Exhibit 7-1. These rates are higher than existing rates for lower weights and lower than existing rates for the highest weights and would result in a 24.8 percent reduction in revenue collected from vehicles paying Table A rates.

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 98,000 pounds, for example, the per-mile rate for a five-axle vehicle is 23.04 cents and the rate for a six-axle vehicle is 19.02 cents. Thus, by adding an axle, a carrier can reduce his or her tax liability by more than four

[1]Under the Oregon weight-mile tax system, a power unit (tractor) can have multiple declared weights, depending on the configuration in which it is being operated (i.e., the number of trailers/semi-trailers the truck or tractor is pulling). Hence, during any given reporting period, portions of a vehicle's miles may be reported under both Table A and Table B.

cents per mile. Current Table B rates range from 12.96 cents per mile for a nine-axle vehicle declared at 82,000 pounds to 23.04 cents per mile for a five-axle vehicle declared at 98,000 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 7-2.

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. In past studies flat fee vehicles were classified as alternative fee vehicles.

The existing statutory flat fee rate for carriers transporting logs is $7.59 per 100 pounds of declared combined weight. The comparable rates for carriers transporting wood chips and sand and gravel are $30.65 and $7.53, respectively. These are annual rates that are typically paid in monthly installments. The monthly flat fee applicable to a log truck declared at 80,000 pounds, for example, is $506 (i.e., $7.59 x 800 = $6,072/12 months = $506). This amount must be paid each

EXHIBIT 7-1: WEIGHT-MILE TAX TABLE A

Declared Weight	Current WMT Rate	Alternative Rate	Difference	Percent Difference
26,001 to 28,000	$0.0498	$0.0500	$0.0002	0.40%
28,001 to 30,000	$0.0528	$0.0517	-$0.0011	-2.08%
30,001 to 32,000	$0.0552	$0.0535	-$0.0017	-3.08%
32,001 to 34,000	$0.0576	$0.0553	-$0.0023	-3.99%
34,001 to 36,000	$0.0599	$0.0572	-$0.0027	-4.51%
36,001 to 38,000	$0.0630	$0.0592	-$0.0038	-6.03%
38,001 to 40,000	$0.0654	$0.0612	-$0.0042	-6.42%
40,001 to 42,000	$0.0677	$0.0633	-$0.0044	-6.50%
42,001 to 44,000	$0.0702	$0.0655	-$0.0047	-6.70%
44,001 to 46,000	$0.0726	$0.0677	-$0.0049	-6.75%
46,001 to 48,000	$0.0749	$0.0700	-$0.0049	-6.54%
48,001 to 50,000	$0.0774	$0.0724	-$0.0050	-6.46%
50,001 to 52,000	$0.0803	$0.0749	-$0.0054	-6.72%
52,001 to 54,000	$0.0833	$0.0775	-$0.0058	-6.96%
54,001 to 56,000	$0.0864	$0.0802	-$0.0062	-7.18%
56,001 to 58,000	$0.0900	$0.0829	-$0.0071	-7.89%
58,001 to 60,000	$0.0941	$0.0857	-$0.0084	-8.93%
60,001 to 62,000	$0.0990	$0.0886	-$0.0104	-10.51%
62,001 to 64,000	$0.1045	$0.0916	-$0.0129	-12.34%
64,001 to 66,000	$0.1104	$0.0947	-$0.0157	-14.22%
66,001 to 68,000	$0.1183	$0.0979	-$0.0204	-17.24%
68,001 to 70,000	$0.1266	$0.1013	-$0.0253	-19.98%
70,001 to 72,000	$0.1350	$0.1048	-$0.0302	-22.37%
72,001 to 74,000	$0.1427	$0.1084	-$0.0343	-24.04%
74,001 to 76,000	$0.1500	$0.1121	-$0.0379	-25.27%
76,001 to 78,000	$0.1572	$0.1159	-$0.0413	-26.27%
78,001 to 80,000	$0.1638	$0.1200	-$0.0438	-26.74%

EXHIBIT 7-2: WEIGHT-MILE TAX TABLE B

Declared Weight	Axles	Current Rate	Alternative Rate	Difference	Percent Difference
80,001 to 82,000	5	$0.1692	$0.1500	-$0.0192	-11.35%
80,001 to 82,000	6	$0.1548	$0.1400	-$0.0148	-9.56%
80,001 to 82,000	7	$0.1447	$0.1300	-$0.0147	-10.16%
80,001 to 82,000	8	$0.1374	$0.1250	-$0.0124	-9.02%
80,001 to 82,000	9	$0.1296	$0.1200	-$0.0096	-7.41%
82,001 to 84,000	5	$0.1747	$0.1598	-$0.0149	-8.53%
82,001 to 84,000	6	$0.1572	$0.1491	-$0.0081	-5.15%
82,001 to 84,000	7	$0.1470	$0.1385	-$0.0085	-5.78%
82,001 to 84,000	8	$0.1392	$0.1331	-$0.0061	-4.38%
82,001 to 84,000	9	$0.1313	$0.1278	-$0.0035	-2.67%
84,001 to 86,000	5	$0.1799	$0.1702	-$0.0097	-5.39%
84,001 to 86,000	6	$0.1609	$0.1588	-$0.0021	-1.31%
84,001 to 86,000	7	$0.1494	$0.1475	-$0.0019	-1.27%
84,001 to 86,000	8	$0.1409	$0.1418	$0.0009	0.64%
84,001 to 86,000	9	$0.1332	$0.1361	$0.0029	2.18%
86,001 to 88,000	5	$0.1860	$0.1813	-$0.0047	-2.53%
86,001 to 88,000	6	$0.1643	$0.1692	$0.0049	2.98%
86,001 to 88,000	7	$0.1518	$0.1571	$0.0053	3.49%
86,001 to 88,000	8	$0.1434	$0.1510	$0.0076	5.30%
86,001 to 88,000	9	$0.1350	$0.1450	$0.0100	7.41%
88,001 to 90,000	5	$0.1932	$0.1931	-$0.0001	-0.05%
88,001 to 90,000	6	$0.1686	$0.1802	$0.0116	6.88%
88,001 to 90,000	7	$0.1543	$0.1673	$0.0130	8.43%
88,001 to 90,000	8	$0.1458	$0.1608	$0.0150	10.29%
88,001 to 90,000	9	$0.1374	$0.1545	$0.0171	12.45%
90,001 to 92,000	5	$0.2016	$0.2057	$0.0041	2.03%
90,001 to 92,000	6	$0.1734	$0.1919	$0.0185	10.67%
90,001 to 92,000	7	$0.1565	$0.1782	$0.0217	13.87%
90,001 to 92,000	8	$0.1482	$0.1713	$0.0231	15.59%
90,001 to 92,000	9	$0.1398	$0.1646	$0.0248	17.74%
92,001 to 94,000	5	$0.2107	$0.2191	$0.0084	3.99%
92,001 to 94,000	6	$0.1782	$0.2044	$0.0262	14.70%
92,001 to 94,000	7	$0.1590	$0.1898	$0.0308	19.37%

EXHIBIT 7-2 (CONTINUED): WEIGHT-MILE TAX TABLE B

Declared Weight	Axles	Current Rate	Alternative Rate	Difference	Percent Difference
92,001 to 94,000	8	$0.1505	$0.1825	$0.032	21.26%
92,001 to 94,000	9	$0.1417	$0.1753	$0.0336	23.71%
94,001 to 96,000	5	$0.2202	$0.2334	$0.0132	5.99%
94,001 to 96,000	6	$0.1836	$0.2177	$0.0341	18.57%
94,001 to 96,000	7	$0.1620	$0.2022	$0.0402	24.81%
94,001 to 96,000	8	$0.1530	$0.1944	$0.0414	27.06%
94,001 to 96,000	9	$0.1439	$0.1867	$0.0428	29.74%
96,001 to 98,000	5	$0.2304	$0.2486	$0.0182	7.90%
96,001 to 98,000	6	$0.1902	$0.2319	$0.0417	21.92%
96,001 to 98,000	7	$0.1656	$0.2154	$0.0498	30.07%
96,001 to 98,000	8	$0.1555	$0.2071	$0.052	33.18%
96,001 to 98,000	9	$0.1464	$0.1989	$0.053	35.86%
98,001 to 100,000	6	$0.1973	$0.2470	$0.050	25.19%
98,001 to 100,000	7	$0.1692	$0.2294	$0.060	35.58%
98,001 to 100,000	8	$0.1584	$0.2206	$0.062	39.27%
98,001 to 100,000	9	$0.1488	$0.2119	$0.063	42.41%
100,001 to 102,000	7	$0.1728	$0.2444	$0.072	41.44%
100,001 to 102,000	8	$0.1620	$0.2350	$0.073	45.06%
100,001 to 102,000	9	$0.1513	$0.2257	$0.074	49.17%
102,001 to 104,000	7	$0.1764	$0.2603	$0.084	47.56%
102,001 to 104,000	8	$0.1656	$0.2503	$0.085	51.15%
102,001 to 104,000	9	$0.1543	$0.2404	$0.086	55.80%
104,0001 to 106,000	7	$0.1811	$0.2600	$0.079	43.57%
104,0001 to 106,000	8	$0.1692	$0.2500	$0.081	47.75%
104,0001 to 106,000	9	$0.1572	$0.2400	$0.083	52.67%

EXHIBIT 7-3: FLAT FEE RATES

Rate per 100 lbs. per year	Logs	Sand & Gravel	Wood Chips
Current flat fee rate	$7.59	$7.53	$30.65
Rate to match current weight-mile tax	$8.45	$9.47	
Rate to match alternative weight-mile tax	$8.12	$13.16	
Recommended Rate from Flat Fee Study	$7.86	$9.35	

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 September 2014. That study compared flat fee revenues in 2013 to what those vehicles would have paid in weight-mile tax in 2013. Both the flat fee rates and weight-mile rates were increased as of October 1, 2010 as a result of the 2009 Jobs and Transportation Act. Previously, both flat fee rates and weight-mile rates were increased as a result of the OTIA III legislation on January 1, 2004. The 2014 flat fee study found that no wood chip haulers reported on a flat fee basis in 2013, while flat fee log haulers and sand and gravel haulers paid less than they would have on a mileage basis.

When paying the weight-mile tax, log haulers are allowed to use a lower declared weight when their trailer is empty and stowed above the tractor unit. It was assumed that 50 percent of log-truck miles are with an empty, decked trailer, with a declared weight of 42,001 pounds. Weight-mile taxes apply only to miles on public roads in Oregon, but log trucks may incur some of their miles on logging roads.

The first row in Exhibit 7-3 shows current-law flat-fee rates. The second row shows the flat fee rates necessary to achieve revenue neutrality with current-law weight-mile tax rates with forecasted 2016 vehicle-miles traveled and other assumptions consistent with the highway cost allocation study. The third row shows flat fee rates necessary to achieve revenue neutrality with the weight-mile tax rates recommended in this chapter. The fourth row shows the rates recommended by ODOT based on the September 2014 Flat Fee Study, which used 2013 vehicle miles traveled and different assumptions about the number of miles on public roads in Oregon and the percent of log-truck miles that are unloaded. This study assumes that taxable miles are as reported.

However calculated, these recommended rates represent an increase in the statutory rates for log trucks and sand and gravel trucks. For the purpose of setting flat fee rates in the 2015 legislative session, the rates calculated by ODOT from the Flat Fee Study are recommended.

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 back haul portion of these trips is subject to the weight-mile tax and taxed at the vehicle's regular declared weight.

The existing statutory road use assessment fee rate is 7.1 cents per equivalent single-axle load (ESAL) mile of travel. The fees carriers actually 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.

The equity ratio results presented in Chapter 6 suggest that the weight classes above 105,500 pounds are significantly underpaying their responsibility. To increase equity within heavy vehicles, the road use assessment fee rates could be increased to 29.4 cents per ESAL-mile. Doing so would increase revenues from the fee by about 4.1 times.