Highway Cost Allocation Study
2005-2007 Biennium

Prepared for
Oregon Department of
Administrative Services,
Office of Economic Analysis

ECONorthwest
ECONOMICS • FINANCE • PLANNING

888 SW Fifth Avenue
Suite 1460
Portland, Oregon 97204
503-222-6060
www.econw.com

with
Jack Faucett Associates
HDR, Inc.
R. D. Mingo & Associates

Summary of Major Findings

The 2005 Oregon Highway Cost Allocation Study finds that:

- Light vehicles (those weighing 8,000 pounds or less) paying full fees should pay 66.4 percent of state highway user revenues, and heavy vehicles (those weighing over 8,000 pounds) paying full fees should contribute 33.6 percent during the 2005-07 biennium.

- For the 2005-07 biennium and under existing, current law tax rates, it is projected full-fee-paying light vehicles will contribute 66.6 percent of state highway user revenues and full-fee-paying heavy vehicles, as a group, will contribute 33.4 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 1.003 for light vehicles and 0.994 for heavy vehicles as a group. This means that, under existing tax rates and fees, light vehicles are projected to overpay their responsibility by 0.3 percent. Heavy vehicles, as a group, are projected to underpay their responsibility by 0.6 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 2005-07 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. The difference between what these vehicles are projected to pay and what they would pay if subject to full fees represents a cost which must be borne by all other highway users.

2005-07 Oregon Highway Cost Allocation Study

Study Team:

Carl Batten, ECONorthwest
Mark Ford, HDR
Emily French, ECONorthwest
Michael Lawrence, Jack Faucett Associates
Brian Leshko, HDR
Roger Mingo, RD Mingo & Associates
Randall Pozdena, ECONorthwest

Peer Reviewers

David Forkenbrock, University of Iowa
Anthony Rufolo, Portland State University

Study Review Team

Darrell Fuller, Oregon Automobile Dealers Association
Jim Lundy, Oregon State University
Mazen Malik, Oregon Legislative Revenue Office
Mike Marsh, Oregon Department of Transportation
Chris Monsere, Portland State University
Timothy Morgan, AAA Oregon
Tom Potiowsky, Chair, Oregon Department of Administrative Services
Bob Russell, Oregon Trucking Associations

Project Manager

Brian Hedman, Quantec

The study team received valuable assistance from John Merriss, Richard Munford, Denise Whitney, Steve Specht, Dave Kavanaugh, Bert Hartman, and Becky Knudson at the Oregon Department of Transportation, from Jon Oshel at the Association of Oregon Counties, and from Ron Chastain.

HCAS 2005 Report
Contents

Introduction and Background

Basic Structure and Parameters of Study

General Methodology and Study Approach

Study Data and Forecasts

Expenditure Allocation and Revenue Attribution Results

Comparison of Expenditures Allocated to Revenues Paid

Recommendations for Changes in Tax Rates

HCAS 2005 Report
Exhibits

General Methodology and Study Approach

Study Data and Forecasts

Expenditure Allocation and Revenue Attribution Results

Comparison of Expenditures Allocated to Revenues Paid

Recommendations for Changes in Tax Rates

Chapter 1

Introduction and Background

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 impost those costs, and is therefore necessary for the implementation of the cost responsibility policy of the State of Oregon.

For over 60 years, Oregon has based the financing of its highways on the principle of cost responsibility. This tradition has served Oregon well over the years 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, 13 such studies had been completed; the first in 1937, the most recent in 2003.

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 2005 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, and 2003. As noted above, the Oregon Constitution now requires a study be conducted biennially and highway user tax rates be adjusted, if necessary, to ensure fairness and proportionality

between light and heavy vehicles.

Prior to 1999, Oregon used the terminology "cost responsibility studies," while 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 all prior studies, highway users and other interested parties have been given the opportunity to offer their input in an open and objective process. During the 1986 Study, for example, three large public meetings were held to provide information on the study and solicit the input of all user groups.

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

In 1996, the Oregon Department of Transportation (ODOT) formed the Cost Responsibility Blue Ribbon Committee to evaluate the principles and methods of the Oregon cost responsibility studies and, if warranted, recommend improvements to the existing methodology. This eleven-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. Since 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 and 2001 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 the 2003 study, 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, 2001, and 2003 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 SRT for the 2003 study had eight members, as did the SRT for this study. The composition of the SRT has changed from study to study, but all have included motorist, trucking industry and Oregon business representatives, academics, and state officials. All three SRTs have been chaired by the State Economist. ODOT did not

[1] It should be noted that to be precise, neither term is technically correct. Since all state studies, including Oregon's, have to this point allocated expenditures rather than "true" costs, they are really "expenditure allocation" studies.

have a representative on the 1999 SRT but was represented on the SRTs subsequent studies.

Other Highway Cost Allocation Studies

Although Oregon has the longest history of conducting highway cost allocation studies, a number of other states also have conducted such studies. The majority of those have been completed over the past two decades. During the 60 years up through 1998, 32 states performed a total of 71 cost allocation studies. Since the late 1970s, some 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 has again been 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 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, includes no state police expenditures in its studies because, since 1980, state police do not receive Highway Fund monies. California, on the other hand, includes large Highway Patrol expenditures in its studies. Since policing expenditures are typically viewed as a common responsibility of all highway users and are assigned to all vehicle classes 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 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 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. Since this proved to be a productive source of revenue, the State soon

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

[3] It should be noted, however, that the results of the federal studies are not directly comparable to those of state studies. The reasons are that highway maintenance is largely a state funded activity and so 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.

annualized the fee and began to increase the rates and used the proceeds to finance highways.

The registration fee is considered payment for the fixed or non-use related costs of providing a highway system. These costs include minimal maintenance of facilities and equipment along with certain administrative functions necessary to keep the system accessible. Since these costs account for a small portion of total highway costs, registration fees in Oregon have traditionally been low (for both cars and trucks) in comparison to the corresponding fees in most other states. From 1990 to 2003, the registration fee for automobiles and other vehicles weighing 8,000 pounds or less was $30 biennially. It currently is $54 biennially.

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 since 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 level as the tax on gasoline. Oregon's fuel tax rate is $0.24 per gallon. It was last increased 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.

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 5.2 cents per equivalent single axle load (ESAL) 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 13 times based on the results of updated cost responsibility studies. The most recent revision occurred on September 1, 2000 when the 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. The last time the rates were increased was January 1, 1992, when they were increased 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 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 and will be heard by the Supreme Court in May 2005.

Organization of this Report

This volume of the 2005 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 2005 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 2005 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 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 to those from the prior two 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 report include:

- A glossary of terms;
- A report describing highway cost allocation studies completed by other states, by the federal government, and in other countries;
- A set of six Issue Papers developed for this study:
  1. General issues
  2. Issues related to federally- and locally-funded highway expenditures
  3. Bridge issues
  4. Financing issues
  5. Issues related to studded-tire damage on locally-owned roads
  6. Issues related to fuel consumption per mile;
- A report describing the results of applying an alternative cost-allocation method, the efficient-fee approach;
- The agenda and minutes of each of the SRT meetings;
- Model description and detailed documentation of the model;
- Detailed tables of input data and results.

Chapter 2

Basic Structure and Parameters of Study

The underlying approach and methods used in this study are, with a few significant exceptions, similar to those used in the last three Oregon studies. The analysis framework and basic parameters of the 2005 Study are briefly summarized below.

Study Approach and General Methodology

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

Analysis Periods

Base Year: Calendar Year 2003, the most recent full year for which data was available when the study was undertaken (2004).

Forecast Year: Calendar Year 2006, the middle 12 months of the 24-month study period.

Study Period: The 2005-07 State Fiscal Biennium, or July 1, 2005 to June 30, 2007.

The expenditures allocated are those projected for the 2005-07 biennium using ODOT's Cash Flow Forecast model. All traffic data used in the study were first developed from data for the 2003 base year, and then projected forward to the 2006 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 also is assigned to one of four ownership categories: state, county, city, or federal. Note that US 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 additional categories of our own to facilitate the allocation of costs for projects on multiple functional classes or where the functional

class was not known. Those additional categories are: all roads, all state-owned roads, and all locally-owned roads.

Vehicle Classes

Light, or basic, vehicles include all vehicles up to 8,000 pounds gross weight. This is consistent with Oregon law and registration fee schedules.

Vehicles weighing over 8,000 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 axle 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. 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 under 80,000 pounds is given a distribution of numbers of axles, and each combination of weight class and number of axles is given a distribution of operating weights. For vehicles over 26,000 pounds, these distributions are obtained from Special Weighings data supplied by ODOT.[1]

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

1 to 8,000 pounds
8,001 to 26,000 pounds
26,001 to 46,000 pounds
46,001 to 54,000 pounds
54,001 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

These groupings are the same as those used in the 2001 and 2003 Oregon studies. They 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 8,001 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 in terms of 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

[1] During a special weighing, every truck passing the weigh station is weighed and the weight recorded, even if the truck is empty.

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 expenditures by the State of highway user fee revenues are allocated, as are all expenditures by the State of federal highway funds (e.g., matching funds). Federal funds are included because they are interchangeable with State user fee revenues and any differences in the way they are spent are arbitrary and subject to change.

Expenditures by the State of money obtained by issuing bonds are allocated, but only after reducing the amount of the expenditure to the proportion that will be repaid in the study period. The remaining amount will be included in the next nine studies, with the allocation to vehicle classes carried forward from this study.

Allocated expenditures by the State of bond revenues in the 2003 study are included in this study, and will be included in the next eight studies.

Expenditures of bond revenues are included because the bonds are repaid from State user fees.

Local Government Expenditures

All expenditures by local governments of State highway user fees are allocated, as are all expenditures by local governments of federal highway funds. Federal funds are included because they are interchangeable with State user fee revenues and any differences in the way they are spent are arbitrary and subject to change.

A portion of local-government own-source revenues also are allocated, because they are interchangeable with State highway user fees. Local-government own-source revenues that were excluded were those 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 so were not considered to be 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 sources.

In the 2003 study, all expenditures by local governments were allocated. The 2005 study refines the approach taken by the 2003 study by excluding certain categories of own-source revenue that generally are not interchangeable.

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 the throughput of a facility.
- **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.
- **Maintenance and Operations.** Examples of maintenance include pothole patching, pavement striping, snow and ice removal, and maintaining bridges. Examples of operations include traffic signals and signage.

- **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. A full listing of these work categories and the allocators used for each is contained in Chapter 3.

Revenues Attributed

The revenues attributed to vehicles are based on forecasted 2005-07 biennium collections by major state revenue source under the existing tax structure and current-law tax rates (i.e., current registration and title fees, 24 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 among the expenditures allocated, the dollar amount of revenues allocated is considerable smaller than the dollar amount of expenditures allocated. This difference in absolute size does not, however, affect the calculation of equity ratios, which is a ratio of ratios (a vehicle class's share of attributed revenues divided by its share of allocated expenditures.

Chapter 3

General Methodology and Study Approach

This chapter presents the general methodology and approach used in the 2005 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". This approach starts from the premise that the best way to determine the fair share to be paid by each class of road users is to quantify the costs associated with each class's use of the road system. 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 direct users of the system and nonusers. The benefits approach starts from 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 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 aren't directly measurable, and the benefits associated with traveling a mile on a given road vary greatly between identical-appearing vehicles or individuals, and for the same vehicle or person at different times.

At both the state and federal levels there has been a long history of studies and debate regarding the proper balance of cost responsibility and tax burden between highway users and nonusers. The argument for using nonuser fees to pay for highways is based on the benefits society receives from the highway system in terms of increased mobility, safety, and economic development. There are, however, some serious conceptual problems in quantifying benefits and deciding which accrue to users and which to nonusers. There are many cases where highway improvements benefit individuals or businesses simultaneously as both users and nonusers. Additionally, many of the more readily understood effects of highway improvements on the economy are simply user benefits which are transferred to nonusers—the clearest example being reduced shipping costs which are passed along 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. Oregon studies continue to use a cost-occasioned approach.

Incremental Method

Within the cost occasioned approach, there are different methods that may be used to allocate costs or expenditures to the various vehicle classes. Virtually all recent studies, including Oregon's, have 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 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.

For a new bridge, for example, the first increment represents the cost of building the bridge to support its own weight, withstand other non-load-related stresses such as 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 assigned to all classes on the basis of each class's share of total VMT. The second increment represents 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 8,000 pounds on the basis of the relative VMT of each class over 8,000 pounds. Similarly, the additional cost of the third increment is assigned to all vehicles with gross weights over 50,000 pounds, and the cost of the fourth and final increment to vehicles having gross weights over 78,000 pounds.

National Pavement Cost Model (NAPCOM)

In the past, highway cost allocation studies typically also used an incremental methodology to allocate pavement costs. Increased depth and strength of the surface and base is required to support increases in the number, and particularly weights, 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. There still are two increments: non-load-related costs and load-related costs, but the load-related costs are allocated using the results of detailed engineering models of several different mechanisms for pavement degradation and taking into account the effects of climate, traffic levels and mix of vehicle types, and interactions between the different mechanisms. The pavement model was adapted by Roger Mingo to use Oregon's special weighings data[2] and to accept input and report results in 2,000-pound increments of declared vehicle weight. The allocation of costs in the second increment uses the detailed results of the Oregon-specific pavement cost model, which provides allocation factors by weight class

[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 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. This data replaces the more-generalized assumed distributions of operating weight and vehicle configurations used in the national model.

and number of axles for each combination of functional class and pavement type (flexible or rigid).

The Choice of Appropriate Cost Allocators

To allocate costs, 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 the use of a particular allocator as most appropriate.

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

If a detailed model exists to predict costs imposed by individual vehicles, the results of that model may be used to develop allocation factors that produce the same attribution of costs as the model. That is how pavement costs are handled in the study.

If one is attributing wear-related costs and a detailed model 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 were allocated according to axle-miles of travel because it was expected that stripes wear in proportion to the number of axles that pass over them.

Capital costs do not vary with the amount of actual use that occurs on new facilities once they are built. Conceptually, the decision to add capacity is an investment decision that is driven by the determination that the user benefits of the enhancement exceed its costs. This, in turn, usually is related to congestion levels on existing facilities, since it is relief of this congestion that forms the primary basis for user benefits. Hence, the share of efficient fees (which measure the contribution of a vehicle class to existing congestion), whether or not they are actually charged, is the appropriate allocator for capital costs expended to relieve that congestion; in this way, those vehicles responsible for the current congestion "problem" are appropriately charged for its "solution".

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 that is expected to use it. Part of the difference in construction cost, however, may be offset by increased useful life for a sturdier structure or roadway. If one is attributing capital costs and the basis for attribution is differences in the size or strength of the structure (and, hence, differences in the cost of the project) imposed by different categories of vehicles, then the incremental approach may be used. The incremental approach, used by itself, does not take into account the demand that led to the decision to make the capital expenditure, only differences in cost once the decision was made. The incremental approach may be modified to take into account the expected effects on the useful life of a structure, as was done in the allocation of bridge costs in the most recent Oregon study.

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 two 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, and assumes that the value of time is equal across all vehicle types, trip types, and vehicle occupancies.

If the benefits resulting from an expenditure relate to 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 still must be allocated to vehicles. If one is attributing costs that do not vary with use, any allocator that seems "fair" may be chosen. In these cases, there is no right allocator to use.

In general, an allocator that varies more closely with costs imposed should be preferred to one that varies less closely. If sufficient data are available, the degree of correlation may be measured. Usually, though, data permitting such a measurement are not available, so one must rely on the expected relationship, based on engineering and economic theory. In any case, the expected relationship must be strong. A strong statistical correlation is not sufficient as there is no reason to believe that an accidental correlation will persist. An allocator also must 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 that might be used in a cost allocation study. Cost allocators may be applied on either a per-vehicle or a per-vehicle-mile-traveled basis. Because it is almost always the case that it is the use of a vehicle on the highway system that imposes costs, rather than the existence of the vehicle, all costs in the current Oregon study are allocated using some variation of weighted vehicle-miles traveled (VMT).

Unweighted VMT are the most general measure of system use and are considered a fair way to assign many types of common costs, i.e., 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 by a vector consisting of zeros and ones produces allocators that restrict the allocation to a subset of weight classes. Such allocators are used to implement the incremental approach for bridge costs and for other costs that are allocated on VMT, but to only a subset of vehicles, such as the allocation of Motor Carrier Transportation Division administrative costs to all vehicles over 26,000 pounds.

There also exist a number of available factors that may be used to weight VMT 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

Exhibit 3-1 shows the allocators applied to each expenditure category in this study.

Worktype Description	Allocator 1	Share 1	Allocator 2	Share 2
Preliminary and Construction Engineering (etc.)	Congested PCE	54.5%	Other Construction	45.5%
Right of Way (and Utilities)	Congested PCE	54.5%	Other Construction	45.5%
Grading and Drainage	Congested PCE	100.0%		0.0%
New Pavements-Rigid	Congested PCE	6.9%	Rigid Pave	93.1%
New Pavements-Flexible	Congested PCE	3.3%	Flex Pave	96.7%
New Shoulders-Rigid	Congested PCE	100.0%		0.0%
New Shoulders-Flexible	Congested PCE	100.0%		0.0%
Pavement and Shoulder Reconstruction-Rigid	Congested PCE	26.9%	Rigid Pave	73.1%
Pavement and Shoulder Reconstruction-Flexible	Congested PCE	23.3%	Flex Pave	76.7%
Pavement and Shoulder Rehab-Rigid	All VMT	26.9%	Rigid Pave	73.1%
Pavement and Shoulder Rehab-Flexible	All VMT	23.3%	Flex Pave	76.7%
Pavement and Shoulder Rehab-Other	All VMT	100.0%		0.0%
New Structures	None-Bridge Split	100.0%		0.0%
Replacement Structures	None-Bridge Split	100.0%		0.0%
Structures Rehabilitation	None-Bridge Split	100.0%		0.0%
Climbing Lanes	Uphill PCE	100.0%		0.0%
Truck Weight/Inspection Facilities	Over 26 VMT	100.0%		0.0%
Truck Escape Ramps	Over 26 VMT	100.0%		0.0%
Interchanges	None-Bridge Split	100.0%		0.0%
Roadside Improvements	All VMT	100.0%		0.0%
Safety Improvements	Congested PCE	100.0%		0.0%
Traffic Service Improvements	Congested PCE	100.0%		0.0%
Other Construction (modernization)	Other Construction	100.0%		0.0%
Other Construction (preservation)	All VMT	100.0%		0.0%
Surface and Shoulder Maintenance-Rigid	All VMT	26.9%	Rigid Pave	73.1%
Surface and Shoulder Mainenance-Flexible	All VMT	23.3%	Flex Pave	76.7%
Surface and Shoulder Maintenance-Other	All AMT	100.0%		0.0%
Drainage Facilities Maintenance	All VMT	100.0%		0.0%
Structures Maintenance	All VMT	100.0%		0.0%
Roadside Items Maintenance	All VMT	100.0%		0.0%
Safety Items Maintenance	All VMT	100.0%		0.0%
Traffic Service Items Maintenance	Congested PCE	100.0%		0.0%
Pavement Striping and Marking (maintenance)	All AMT	100.0%		0.0%
Sanding and Snow and Ice Removal (maintenance)	All VMT	100.0%		0.0%
Extraordinary Maintenance	All VMT	100.0%		0.0%
Truck Scale Maintenance-Flexible	Over 26 VMT	100.0%		0.0%
Truck Scale Maintenance-Rigid	Over 26 VMT	100.0%		0.0%
Truck Scale Maintenance-Buildings and Grounds	Over 26 VMT	100.0%		0.0%
Studded Tire Damage	Basic VMT	100.0%		0.0%
Miscellaneous Maintenance	All VMT	100.0%		0.0%
Bike/Pedestrian Projects	All VMT	100.0%		0.0%
Railroad Safety Projects	All VMT	100.0%		0.0%
Transit and Rail Support Projects	Congested PCE	100.0%		0.0%
Fish and Wildlife Enabling Projects	All VMT	100.0%		0.0%

Exhibit 3-1, continued

Worktype Description	Allocator 1	Share 1	Allocator 2	Share 2
Highway Planning	All VMT	100.0%		0.0%
Transportation Demand & Transportation System Management	Congested PCE	100.0%		0.0%
Multimodal	Congested PCE	100.0%		0.0%
Reserve Money, Fund Exchange, Immediate Opportunity Fund	All VMT	100.0%		0.0%
Seismic Retrofits on Structures	All VMT	100.0%		0.0%
Other Common Costs	All VMT	100.0%		0.0%
Other--Over 26,000 Only	Over 26 VMT	100.0%		0.0%
Other--Basic Only	Basic VMT	100.0%		0.0%
Other--Over 8,000 Only	Over 8 VMT	100.0%		0.0%
Other--Under 26,000 Only	Under 26 VMT	100.0%		0.0%
Other Administration	All VMT	100.0%		0.0%
Bridge Type 1 --All Vehicles Share	All VMT	100.0%		0.0%
Bridge Type 1 --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Bridge Type 1 --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Bridge Type 1 --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Bridge Type 1 -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%
Bridge Type 2 --All Vehicles Share	All VMT	100.0%		0.0%
Bridge Type 2 --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Bridge Type 2 --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Bridge Type 2 --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Bridge Type 2 -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%
Bridge Type 3 --All Vehicles Share	All VMT	100.0%		0.0%
Bridge Type 3 --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Bridge Type 3 --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Bridge Type 3 --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Bridge Type 3 -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%
Interchange --All Vehicles Share	All VMT	100.0%		0.0%
Interchange --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Interchange --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Interchange --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Interchange -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%

Exhibit 3-1, continued

Worktype Description	Allocator 1	Share 1	Allocator 2	Share 2
Local Gov: Preliminary and Construction Engineering (and etc.)	Congested PCE	55.9%	Other Construction	44.1%
Local Gov: Right of Way (and Utilities)	Congested PCE	55.9%	Other Construction	44.1%
Local Gov: Grading and Drainage	Congested PCE	100.0%		0.0%
Local Gov: New Pavements-Rigid	Congested PCE	8.6%	Rigid Pave	91.4%
Local Gov: New Pavements-Flexible	Congested PCE	5.8%	Flex Pave	94.2%
Local Gov: New Shoulders-Rigid	Congested PCE	100.0%		0.0%
Local Gov: New Shoulders-Flexible	Congested PCE	100.0%		0.0%
Local Gov: Pavement and Shoulder Reconstruction-Rigid	Congested PCE	28.6%	Rigid Pave	71.4%
Local Gov: Pavement and Shoulder Reconstruction-Flexible	Congested PCE	25.8%	Flex Pave	74.2%
Local Gov: Pavement and Shoulder Rehab-Rigid	All VMT	28.6%	Rigid Pave	71.4%
Local Gov: Pavement and Shoulder Rehab-Flexible	All VMT	25.8%	Flex Pave	74.2%
Local Gov: Pavement and Shoulder Rehab-Other	All VMT	100.0%		0.0%
Local Gov: New Structures	None-Bridge Split	100.0%		0.0%
Local Gov: Replacement Structures	None-Bridge Split	100.0%		0.0%
Local Gov: Structures Rehabilitation	None-Bridge Split	100.0%		0.0%
Climbing Lanes	Uphill PCE	100.0%		0.0%
Truck Weight/Inspection Facilities	Over 26 VMT	100.0%		0.0%
Truck Escape Ramps	Over 26 VMT	100.0%		0.0%
Interchanges	None-Bridge Split	100.0%		0.0%
Roadside Improvements	All VMT	100.0%		0.0%
Local Gov: Safety Improvements	All VMT	100.0%		0.0%
Local Gov: Traffic Service Improvements	Congested PCE	100.0%		0.0%
Local Gov: Other Construction	Other Construction	100.0%		0.0%
Local Gov: Other Rehabilitation	All VMT	100.0%		0.0%
Local Gov: Surface and Shoulder-Rigid	All VMT	28.6%	Rigid Pave	71.4%
Local Gov: Surface and Shoulder-Flexible	All VMT	25.8%	Flex Pave	74.2%
Local Gov: Surface and Shoulder-Other	All AMT	100.0%		0.0%
Local Gov: Drainage Facilities	All VMT	100.0%		0.0%
Local Gov: Structures	All VMT	100.0%		0.0%
Local Gov: Roadside Items	All VMT	100.0%		0.0%
Local Gov: Safety Items	All VMT	100.0%		0.0%
Local Gov: Traffic Service Items	Congested PCE	100.0%		0.0%
Local Gov: Pavement Striping and Marking	All AMT	100.0%		0.0%
Local Gov: Sanding and Snow/Ice Removal	All VMT	100.0%		0.0%
Local Gov: Extraordinary Maintenance	All VMT	100.0%		0.0%
Truck Scale-Flexible	Over 26 VMT	100.0%		0.0%
Truck Scale-Rigid	Over 26 VMT	100.0%		0.0%
Truck Scale-Buildings and Grounds	Over 26 VMT	100.0%		0.0%
Local Gov: Studded Tire Damage	Basic VMT	100.0%		0.0%
Local Gov: Miscellaneous / Unspecified	All VMT	100.0%		0.0%
Bike/Pedestrian Projects	All VMT	100.0%		0.0%
Railroad Safety Projects	All VMT	100.0%		0.0%
Transit and Rail Support Projects	Congested PCE	100.0%		0.0%
Fish, Wildlife Enabling Projects	All VMT	100.0%		0.0%

Exhibit 3-1, continued

Worktype Description	Allocator 1	Share 1	Allocator 2	Share 2
Planning	All VMT	100.0%		0.0%
Transportation Demand & Transportation System Management	Congested PCE	100.0%		0.0%
Multimodal	Congested PCE	100.0%		0.0%
Reserve Money, Fund Exchange, Immediate Opportunity Fund	All VMT	100.0%		0.0%
Seismic Retrofits	All VMT	100.0%		0.0%
Local Gov: Other Admin	All VMT	100.0%		0.0%
Bridge Type 1 --All Vehicles Share	All VMT	100.0%		0.0%
Bridge Type 1 --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Bridge Type 1 --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Bridge Type 1 --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Bridge Type 1 -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%
Bridge Type 2 --All Vehicles Share	All VMT	100.0%		0.0%
Bridge Type 2 --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Bridge Type 2 --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Bridge Type 2 --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Bridge Type 2 -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%
Bridge Type 3 --All Vehicles Share	All VMT	100.0%		0.0%
Bridge Type 3 --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Bridge Type 3 --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Bridge Type 3 --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Bridge Type 3 -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%
Interchange --All Vehicles Share	All VMT	100.0%		0.0%
Interchange --Over 8,000 Vehicles Share	Over 8 VMT	100.0%		0.0%
Interchange --Over 50,000 Vehicles Share	Over 50 VMT	100.0%		0.0%
Interchange --Over 80,000 Vehicles Share	Over 80 VMT	100.0%		0.0%
Interchange -- Over 106,000 Vehicle Share	Over 106 VMT	100.0%		0.0%

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

For costs that are not accounted for as a part of specific construction projects, but that are expected to vary with the overall level of construction activity, special allocation factors are developed during the allocation process that allocate these costs in the same proportion as the construction costs that were allocated from project costs. 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 HCAS 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 and traffic volumes, and so that the study results will be applicable for the period in which legislation enacted to implement the study recommendations will become effective.

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, and it does not allow for addressing issues related to facilities having useful lives far in excess of the two-year study period.

The 1996 Cost Responsibility Blue Ribbon Committee recommended the Oregon studies continue allocating only projected future expenditures. This study continues to follow that recommendation, with the exception of incorporating study-period expenditures on the repayment of bonds issued in the prior study period, allocated in the same proportions as in the prior study.

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 the correct, 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 would add to the breadth and completeness of the analysis, and could help determine appropriate user charges necessary to reflect these costs.

There are several disadvantages associated with including external costs in a highway cost allocation study. 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 would increase the data requirements and complexity of the studies, and could reduce their overall accuracy.

The 1996 Blue Ribbon Committee recommended the Oregon studies continue to exclude social costs until such time as 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 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.

Expenditure Allocation

The Oregon studies allocate expenditures rather than costs. Over the long run, expenditures must cover the full direct costs being imposed on the system or the system will permanently deteriorate. Over any shorter period, however, expenditures will exceed or fall short of the costs being imposed on the system.

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 (actual expenditure) level 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 exist strong arguments for moving toward a full cost-based approach in highway cost allocation studies. The problem to this time has been that "true" costs are more difficult to quantify and incorporate in the analysis than are direct highway expenditures. As a practical matter, therefore, most studies, including this study, have continued to focus on the allocation of expenditures rather than costs.

Treatment of Debt-Financed Expenditures and Debt Service

Oregon traditionally has relied much less on debt financing of its highway program than 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 the 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 will 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 in that 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.

Projects funded through the OTIA bonding program 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 being allocated. This method allows the project detail to be retained in order 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.

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 subject to full fees is termed 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) is then reassigned to all other, full-fee-paying vehicles on a per-VMT basis, i.e., this amount is treated as a common cost to be shared proportionately by all full-fee-paying vehicles.

The rationale for this approach is 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 has the effect of increasing the light vehicle responsibility share and reducing the heavy vehicle share.

Treatment of Tax Avoidance and Evasion

When vehicles that are subject to Oregon's fuel tax purchase fuel in another state, paying that state's fuel tax, and then drive in Oregon, they avoid the Oregon fuel tax. The reverse also is 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, 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 2.5 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 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 five 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. It also assumes that an additional 2.0 percent of the use-fuel tax on diesel (beyond the 2.5 percent avoidance) is successfully evaded.

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 F, Model Description and Documentation.

The remainder of this chapter presents the traffic, expenditure, and revenue data used in the 2005 Study, and compares them with the data used in the prior two 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 both in the allocation of expenditures and 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 was first collected for the 2003 base year, the latest year for which complete historical data was available. This data then was projected forward to calendar year 2006, the middle 12 months of the 2005-07 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, HPMS submittals, MCTD and Driver & Motor Vehicle Services vehicle registrations

data, and the Special Truck Weighings previously discussed. For each road system used in the study, travel estimates are developed for light vehicles and each 2,000-pound truck 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 the Special Truck Weighings 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 data are used to spread VMT to functional classifications.

Exhibit 4-1 shows total vehicle travel in Oregon is projected to increase from 34.6 billion miles in 2003 to 36.3 billion miles in 2006. This represents an average annual growth of about 1.6 percent. Light vehicle travel is projected to increase from 32.0 billion miles in 2003 to 33.5 billion miles in 2006, also an average annual growth of 1.56 percent. Total heavy vehicle travel is forecast to grow from 2.61 billion miles in 2003 to 2.74 billion miles in 2004, an average annual growth of about 1.64 percent. These projections are based on, and consistent with, the projections from ODOT's revenue forecast model.

The traffic growth projections for the current study are higher than those in the 2001 and 2003 studies, but lower than in the 1999 study. The 1999 study, projected 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 improved (1.6 percent annual) growth projections for the current study reflect recovery from the economic downturn in Oregon and the nation that limited growth in the early part of the decade.

As in recent studies, travel by heavy vehicles is expected to grow faster than travel by light vehicles. Because of this, the share of travel accounted for by light vehicles is expected to decrease from 92.5 percent to 92.3 percent between 2003 and 2006. This is one reason for the slightly higher cost responsibility share for heavy vehicles reported in this study compared to the previous study.

Exhibit 4-1 also shows the growth projected for heavy vehicle travel varies by weight group. The fastest growth is expected to continue to be in the heaviest weight classes.

Exhibit 4-2 shows the distribution of projected 2006 travel between light and heavy vehicles

Exhibit 4-1: Current and Forecasted VMT by Weight Group (Millions of Miles)

Declared Weight in Pounds			2001 VMT (estimate)	2004 VMT (forecast)	Average Annual Growth Rate
1	to	8,000	31,994	33,517	1.6%
8,001	to	26,000	657	690	1.7%
26,001	to	46,000	281	244	-4.5%
46,001	to	54,000	106	113	2.0%
54,001	to	78,000	80	86	2.3%
78,001	to	80,000	1,055	1,136	2.5%
80,001	to	104,000	208	221	2.0%
104,001	to	105,500	218	245	4.0%
105,501	and	up	2	2	4.5%
			34,601	36,254	1.6%
Total for Vehicles Under 8,001 pounds			31,994	33,517	1.6%
% for Vehicles Under 8,001 pounds			92.5%	92.4%	
Total for Vehicles Over 8,000 pounds			2,607	2,737	1.6%
% for Vehicles Over 8,000 pounds			7.5%	7.6%	
Total for Vehicles Under 26,001 pounds			32,650	34,207	1.6%
% for Vehicles Under 26,001 pounds			94.4%	94.4%	
Total for Vehicles Over 26,000 pounds			1,950	2,047	1.6%
% for Vehicles Over 26,000 pounds			5.6%	5.6%	

Exhibit 4-2: Projected VMT by Road System (Millions of Miles)

Road System	Light Vehicles		Heavy Vehicles		Total VMT
	Miles of Travel	Percent of Total	Miles of Travel	Percent of Total	
Interstate Urban	3,743.2	91.7%	334.6	8.2%	4,083.7
Interstate Rural	3,868.2	81.9%	848.6	18.0%	4,723.5
Other State Urban	5,087.9	95.8%	214.5	4.0%	5,310.0
Other State Rural	7,236.5	90.5%	745.0	9.3%	7,992.8
Subtotal-State Systems	19,935.8	90.2%	2,142.7	9.7%	22,110.0
County Roads	7,545.1	94.9%	392.4	4.9%	7,948.9
City Streets	5,934.5	96.7%	195.9	3.2%	6,139.2
Subtotal-Local Systems	13,479.7	95.7%	588.3	4.2%	14,088.2
Total-All Systems	33,415.5	92.3%	2,731.0	7.5%	36,198.2

note: federally-owned roads not included in total

for different combinations of functional classification and ownership. Although light vehicles are projected to account for 92.4 percent and heavy vehicles 7.6 percent of total statewide VMT, the mix of traffic varies significantly among the different road systems. Heavy vehicles are projected to account for 18.0 percent of the travel on rural interstate highways, but only 3.2 percent of the travel on city streets. Heavy vehicles are expected to account for 9.7 percent of the overall travel on state highways and 4.2 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, 61.1 percent of total travel in the state is expected to be on state highways and 38.9 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 13.0 percent of the total travel in 2004, but 31.1 percent of the heavy vehicle travel. At the other extreme, 17.5 percent of light vehicle travel, but only 7.2 percent of heavy vehicle travel, is forecast to be on city streets. State highways are expected to handle about 59.7 percent of the total travel by light vehicles and 78.5 percent of the travel by heavy vehicles.

Exhibit 4-4 compares the VMT projections by road system used in the 1999, 2001, and 2003 studies. It shows the VMT shares on the six road systems have not changed substantially from the comparable projections made in the 2001 Study. The two systems projected to account for the largest shares of total statewide travel are Other State Rural highways and County Roads. The current study projects a higher share of travel on city streets than did prior studies.

Exhibit 4-3: Distribution of Projected VMT by Road System

Road System	Percent of Light Vehicle Total	Heavy Vehicle Percent of Total	All Vehicle Percent of Total
Interstate Urban	11.2%	12.3%	11.3%
Interstate Rural	11.6%	31.1%	13.0%
Other State Urban	15.2%	7.9%	14.7%
Other State Rural	21.7%	27.3%	22.1%
Subtotal State Systems	59.7%	78.5%	61.1%
County Roads	22.6%	14.4%	22.0%
City Streets	17.8%	7.2%	17.0%
Subtotal Local Systems	40.3%	21.5%	38.9%
Total All Systems	100.0%	100.0%	100.0%

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 are also included. This change substantially increased the level and breadth of expenditures allocated in the 2003 study as compared to previous studies.

The current study includes expenditures of State, federal, and local revenues, but excludes certain categories of local revenues that were determined not to 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 the 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 2005-07 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 2003 Local Roads and Streets Survey combined with information from ODOT's Agency Request Budget.

Care was taken to accurately identify the bonded (OTIA) projects and treat them as a separate, independent funding source. It was assumed that any bridge projects

Exhibit 4-4: Comparison of Forecast VMT Used in OR HCASs: 1999, 2001, 2003, and 2005 (Billions of Miles)

	1999 Study		2001 Study		2003 Study		2005 Study	
Road System	VMT	Percent of Total	VMT	Percent of Total	VMT	Percent of Total	VMT	Percent of Total
Interstate Urban	4.0	11.8%	3.9	11.4%	3.9	11.2%	4.1	11.3%
Interstate Rural	4.4	12.9%	4.4	12.7%	4.4	12.6%	4.7	13.0%
Other State Urban	4.5	13.2%	5.5	15.7%	5.2	15.1%	5.3	14.7%
Other State Rural	7.5	22.1%	7.8	22.5%	7.5	21.6%	8.0	22.1%
Subtotal-State Systems	20.4	60.0%	21.7	62.3%	21	60.5%	22.1	61.1%
County Roads	8.6	25.3%	8	22.9%	8.9	25.6%	7.9	22.0%
City Streets	5.0	14.7%	5.1	14.8%	4.8	13.9%	6.1	17.0%
Subtotal-Local Systems	13.6	40.0%	13.1	37.7%	13.7	39.5%	14.1	38.9%
Total	34.0	100.0%	34.8	100.0%	34.7	100.0%	36.2	100.0%

that still remained in "option packages" and had not been assigned real project numbers by November of 2004 would not start construction until after the end of the 2005-07 biennium. Those projects were not included in the analysis.

Exhibit 4-5 presents the average annual expenditures projected for the 2005-07 biennium by major category (modernization, preservation, maintenance, bridge, and other) and funding source (state, federal, bond, and local). As shown, projected expenditures total $1.499 billion. This compares to annual expenditures allocated in the 1999, 2001, and 2003 studies of $691 million, $649 million, and $1.491 billion respectively.

Of the $1,499 million total expenditures, $572 million (38.1 percent) are projected to be state-funded, $302 million (20.1 percent) federally-funded, and $571 million (38.1 percent) locally-funded. The remaining $55 million (3.7 percent) of allocated expenditures are the allocated portion of the $345 million of expended bond revenue. An additional $27.5 million of pre-allocated bond expenditure from the prior study 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 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. Preservation and bridge expenditures, in particular, have a large federal funds component. Almost 50 percent of preservation expenditures and 40 percent

Exhibit 4-5: Average Annual Expenditures by Category and Funding Source (Thousands of Dollars)

Major Expenditure Category	State Funds	Percent of Total	Federal Funds	Percent of Total	Local Funds	Percent of Total	Bond Funds	Percent of Total	Total Funds
Modernization	33,508	23.5%	41,578	29.1%	63,025	44.2%	4,643	3.3%	142,755
Preservation	33,330	21.1%	67,447	42.7%	55,266	35.0%	1,783	1.1%	157,825
Maintenance	165,186	41.4%	20,093	5.0%	214,082	53.6%	120	0.0%	399,481
Bridge	34,733	18.9%	65,864	35.8%	35,663	19.4%	47,903	26.0%	184,163
Other	304,881	49.6%	106,544	17.3%	202,673	33.0%	920	0.2%	615,018
Total	571,638	38.1%	301,526	20.1%	570,709	38.1%	55,369	3.7%	1,499,241

of bridge expenditures will be federally funded. Maintenance expenditures, on the other hand, are largely state-, and to a lesser extent, locally-funded, with a very small federal funds component. About 87 percent of the OTIA expenditures in the study period will be on 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, i.e., 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, etc.) 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, allocated expenditures exceed attributed revenues by $695 million.

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 October 2004 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 2005-07 biennium are expected to total $818.0 million. 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 $400.2 million per year (48.5 percent of total revenues) and weight-mile tax revenue is forecast to average $227.5 million (27.6 percent of total revenues). These two sources account for 76 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 $196.1 million annually (23.8 percent of total revenues), up sharply from prior studies as a result of the fee increases enacted to repay OTIA bonds. 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, and 2005 studies. Total revenues forecast for the 1999, 2001, and 2003 studies were $691.1 million, $690.0 million, and $712.8 million respectively.

Exhibit 4-6: Revenue Forecasts by Tax/Fee Type (Thousands of Dollars) - Average Annual Amounts for 2005-07 Biennium

Tax/Fee	Forecast Revenue	Percent of Total
Fuel Tax	400,201	48.5%
Weight-Mile Tax	227,489	27.6%
Registration Fees	129,561	15.7%
Title Fees	66,522	8.1%
Other Motor Carrier Revenue	750	0.1%
Road Use Assessment Fees	999	0.1%
Total	825,523	100.0%

The total revenues of forecast for the current study are $825.5 million, or 15.8 percent higher than in the prior study.

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

Exhibit 4-7: Comparison of Forecast Revenue (Millions of Dollars) Used in OR HCASs: 1999, 2001, 2003, and 2005

Year of Study	Average Annual Forecast Revenue
1999	691.1
2001	690.0
2003	712.8
2005	825.5

Chapter 5

Expenditure Allocation and Revenue Attribution Results

This chapter presents the expenditure allocation and revenue attribution results of the 2005 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.

5.1 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; the 2005 Study does the same. This approach was considered necessary to address the impacts of the federal advance construction program on the expenditure. This change in approach means the expenditure allocation results for the 2003 study are not directly comparable to those of the earlier Oregon studies. For the 2005 study, 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. As a result, the expenditure allocations in this study are not directly comparable to those in the 2003 study or any prior study.

The results presented in this chapter are for all—full fee and alternative fee—vehicles, but do not include the allocated expenditure of bond revenues that are carried forward from the 2003 study. For this reason, most of the results presented in this chapter will show slightly lower allocated expenditures than are shown in the exhibits in Chapter 6.

Exhibit 5-1 presents the expenditure allocation results by major expenditure category and vehicle weight group. Light (up to 8,000 pound) and heavy (over 8,000 pound) vehicles are projected to be responsible for 64.7 percent and 35.3 percent (respectively) of average annual total expenditures for the 2005-07 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 modernization and preservation expenditures (64.1 percent and 58.9 percent, respectively). The group is responsible for significantly smaller shares of maintenance, bridge, and other expenditures (38.4 percent, 46.7 percent, and 16.9 percent, respectively); this illustrates the point made previously that the mix of expenditures allocated can have a significant impact on the overall results.

The responsibility amounts for state, federal, local, and bond expenditures are broken out separately in Exhibit 5-2. In this exhibit, the expenditure of state

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	Total
1	to	8,000	51,245	65,695	244,981	98,185	510,591	970,697
8,001	to	26,000	3,661	3,298	9,021	15,676	13,154	44,809
26,001	to	46,000	5,745	5,002	11,338	5,771	9,927	37,782
46,001	to	54,000	3,406	3,073	6,457	2,817	4,762	20,514
54,001	to	78,000	2,868	2,703	5,219	2,278	3,663	16,731
78,001	to	80,000	52,124	56,220	83,487	26,278	49,941	268,050
80,001	to	104,000	10,691	11,071	16,137	14,995	10,370	63,264
104,001	to	105,500	12,344	12,319	19,942	17,947	11,893	74,445
105,501	and	up	672	609	1,235	216	216	2,949
Total			142,755	159,990	397,816	184,163	614,518	1,499,241
Total for Vehicles Under 8,001 Pounds			51,245	65,695	244,981	98,185	510,591	970,697
% for Vehicles Under 8,001 Pounds			35.9%	41.1%	61.6%	53.3%	83.1%	64.7%
Total for Vehicles Over 8,000 Pounds			91,509	94,295	152,835	85,978	103,927	528,545
% for Vehicles Over 8,000 Pounds			64.1%	58.9%	38.4%	46.7%	16.9%	35.3%
Total for Vehicles Under 26,001 Pounds			54,906	68,992	254,002	113,860	523,745	1,015,506
% for Vehicles Under 26,001 Pounds			38.5%	43.1%	63.8%	61.8%	85.2%	67.7%
Total for Vehicles Over 26,000 Pounds			87,849	90,997	143,815	70,302	90,773	483,736
% for Vehicles Over 26,000 Pounds			61.5%	56.9%	36.2%	38.2%	14.8%	32.3%

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.

Exhibit 5-2: Expenditure Allocation Results for Weight Groups by Funding Source (thousands of dollars)

Allocation to Vehicles

Funding Source	Average Annual Total Expenditures Allocated	Under 8,001 Pounds	Over 8,000 Pounds	Under 26,001 Pounds	Over 26,000 Pounds
State (Highway Fund)	817,628	573,622	244,006	594,447	223,181
		70.2%	29.8%	72.7%	27.3%
Federal	416,581	246,069	170,512	0	156,788
		59.1%	40.9%	0.0%	37.6%
Local	209,663	124,423	85,240	130,528	79,135
		59.3%	40.7%	62.3%	37.7%
Bond	55,369	26,582	28,787	30,738	24,631
		48.0%	52.0%	55.5%	44.5%
Total	1,499,241	970,697	528,545	755,713	483,736
		64.7%	35.3%	50.4%	32.3%

Light vehicles are projected to be responsible for 70.2 percent of state, 59.1 percent of federal, 59.3 percent of local, and 48 percent of bond expenditures. Heavy vehicles are projected to be responsible for 29.8 percent of state, 40.9 percent of federal, 40.7 percent of local, and 52.2 percent of bond expenditures. Overall, state-funded expenditures are expected to average $817.6 million annually over the 2005-2007 biennium. Comparable annual amounts for federal, local, and bond-funded expenditures are $416.6 million, $209.7 million, and $55.4 million, respectively.

The allocation results for state, federal, local and bond expenditures are further broken out

Exhibit 5-3: Average Annual Cost Responsibility, State Highway Fund Detail (thousands of dollars)

Category and Weight Group State Highway Fund Detail (average annual, thousands of dollars)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Total
1	to	8,000	22,433	29,263	173,132	27,334	321,460	573,622
8,001	to	26,000	1,547	1,097	5,751	4,531	7,898	20,825
26,001	to	46,000	2,447	1,745	5,775	1,657	6,867	18,491
46,001	to	54,000	1,461	1,053	3,269	782	3,268	9,832
54,001	to	78,000	1,224	904	2,687	627	2,523	7,965
78,001	to	80,000	21,717	17,550	45,210	6,651	34,697	125,823
80,001	to	104,000	4,450	3,510	8,816	3,726	7,014	27,515
104,001	to	105,500	5,117	3,981	10,570	4,736	7,893	32,297
105,501	and	up	279	214	586	60	119	1,259
Total			60,674	59,316	255,796	50,105	391,738	817,628
Total for Vehicles Under 8,001 Pounds			22,433	29,263	173,132	27,334	321,460	573,622
% for Vehicles Under 8,001 Pounds			37.0%	49.3%	67.7%	54.6%	82.1%	70.2%
Total for Vehicles Over 8,000 Pounds			38,240	30,052	82,664	22,771	70,279	244,006
% for Vehicles Over 8,000 Pounds			63.0%	50.7%	32.3%	45.4%	17.9%	29.8%
Total for Vehicles Under 26,001 Pounds			23,980	30,360	178,884	31,865	329,358	594,447
% for Vehicles Under 26,001 Pounds			39.5%	51.2%	69.9%	63.6%	84.1%	72.7%
Total for Vehicles Over 26,000 Pounds			36,693	28,955	76,913	18,240	62,380	223,181
% for Vehicles Over 26,000 Pounds			60.5%	48.8%	30.1%	36.4%	15.9%	27.3%

Exhibit 5-4: Average Annual Cost Responsibility, Federal Detail (thousands of dollars)

Category and Weight Group Federal Detail (average annual, thousands of dollars)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Total
1	to	8,000	21,464	27,378	35,620	39,817	121,790	246,069
8,001	to	26,000	1,339	1,676	1,470	5,671	3,568	13,724
26,001	to	46,000	1,740	2,235	2,132	1,978	2,015	10,100
46,001	to	54,000	1,046	1,434	1,216	1,011	1,006	5,713
54,001	to	78,000	922	1,331	976	860	815	4,903
78,001	to	80,000	19,113	31,512	15,035	12,062	12,284	90,006
80,001	to	104,000	4,019	6,179	2,896	5,573	2,724	21,391
104,001	to	105,500	4,437	6,572	3,671	6,028	3,141	23,848
105,501	and	up	204	270	236	55	63	827
Total			54,284	78,588	63,252	73,053	147,403	416,581
Total for Vehicles Under 8,001 Pounds			21,464	27,378	35,620	39,817	121,790	246,069
% for Vehicles Under 8,001 Pounds			39.5%	34.8%	56.3%	54.5%	82.6%	59.1%
Total for Vehicles Over 8,000 Pounds			32,820	51,210	27,632	33,237	25,614	170,512
% for Vehicles Over 8,000 Pounds			60.5%	65.2%	43.7%	45.5%	17.4%	40.9%
Total for Vehicles Under 26,001 Pounds			22,803	29,054	37,090	45,488	125,358	259,793
% for Vehicles Under 26,001 Pounds			42.0%	37.0%	58.6%	62.3%	85.1%	62.4%
Total for Vehicles Over 26,000 Pounds			31,481	49,534	26,162	27,566	22,046	156,788
% for Vehicles Over 26,000 Pounds			58.0%	63.0%	41.4%	37.7%	15.0%	37.6%

Exhibit 5-5: Average Annual Cost Responsibility, Local Government Detail (thousands of dollars)

Category and Weight Group Local Government Detail (average annual, thousands of dollars)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Total
1	to	8,000	5,795	8,361	36,120	7,655	66,492	124,423
8,001	to	26,000	661	479	1,797	1,499	1,670	6,105
26,001	to	46,000	1,400	958	3,430	620	1,040	7,447
46,001	to	54,000	809	552	1,970	277	486	4,094
54,001	to	78,000	639	437	1,556	190	323	3,145
78,001	to	80,000	9,527	6,549	23,237	1,261	2,933	43,507
80,001	to	104,000	1,815	1,246	4,424	655	627	8,767
104,001	to	105,500	2,338	1,605	5,700	929	853	11,425
105,501	and	up	170	117	414	16	34	750
Total			23,154	20,303	78,648	13,102	74,457	209,663
Total for Vehicles Under 8,001 Pounds			5,795	8,361	36,120	7,655	66,492	124,423
% for Vehicles Under 8,001 Pounds			25.0%	41.2%	45.9%	58.4%	89.3%	59.3%
Total for Vehicles Over 8,000 Pounds			17,359	11,943	42,528	5,446	7,965	85,240
% for Vehicles Over 8,000 Pounds			75.0%	58.8%	54.1%	41.6%	10.7%	40.7%
Total for Vehicles Under 26,001 Pounds			6,456	8,839	37,917	9,154	68,162	130,528
% for Vehicles Under 26,001 Pounds			27.9%	43.5%	48.2%	69.9%	91.5%	62.3%
Total for Vehicles Over 26,000 Pounds			16,528	11,464	40,731	3,947	6,295	78,966
% for Vehicles Over 26,000 Pounds			71.4%	56.5%	51.8%	30.1%	8.5%	37.7%

Exhibit 5-6: Average Annual Cost Responsibility, Bond Detail (thousands of dollars)

Declared Weight in Pounds			Modernization	Preservation	Maintenance	Bridge	Other	Total
1	to	8,000	1,553	693	108	23,379	850	26,582
8,001	to	26,000	114	46	3	3,975	18	4,156
26,001	to	46,000	157	64	1	1,516	6	1,745
46,001	to	54,000	90	34	0	747	3	875
54,001	to	78,000	84	32	0	601	2	719
78,001	to	80,000	1,766	608	5	6,305	28	8,713
80,001	to	104,000	407	136	1	5,041	6	5,591
104,001	to	105,500	453	162	1	6,254	7	6,876
105,501	and	up	20	8	0	85	0	113
Total			4,643	1,783	120	47,903	920	55,369
Total for Vehicles Under 8,001 Pounds			1,553	693	108	23,379	850	26,582
% for Vehicles Under 8,001 Pounds			33.4%	38.9%	90.4%	48.8%	92.4%	48.0%
Total for Vehicles Over 8,000 Pounds			3,091	1,090	12	24,524	70	28,787
% for Vehicles Over 8,000 Pounds			66.6%	61.1%	9.6%	51.2%	7.6%	52.0%
Total for Vehicles Under 26,001 Pounds			1,666	739	111	27,354	868	30,738
% for Vehicles Under 26,001 Pounds			35.9%	41.4%	92.5%	57.1%	94.4%	55.5%
Total for Vehicles Over 26,000 Pounds			2,977	1,044	9	20,549	52	24,631
% for Vehicles Over 26,000 Pounds			64.1%	58.6%	7.5%	42.9%	5.6%	92.7%

by major category in Exhibits 5-3 through 5.6. For most funding sources, heavy vehicles are projected to be responsible for the majority of modernization and preservation expenditures while light vehicles are projected to bear larger shares of maintenance, bridge, and other expenditures.

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 and preservation) 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. This is particularly the case at the present time with ODOT's use of the federal advance construction programming technique and aggressive strategy to "federalize" a large portion of the construction program for the 2005-07 biennium.

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 many types of expenditures are allocated on a relative travel basis and heavy vehicles account

Exhibit 5-7: Comparison of Pavement Responsibility Results from 2003 and 2005 OR HCASs (thousands of dollars)

	2003 Study			2005 Study		
Expenditure Work Type	Expends. Allocated	Light Vehicle Respon.	Heavy Vehicle Respon.	Expends. Allocated	Light Vehicle Respon.	Heavy Vehicle Respon.
New Pavements	55,146	8,024	47,122	185,880	41,673	144,207
	3.7%	14.6%	85.4%	6.2%	22.4%	77.6%
Pavement and Shoulder Reconstruction	36,627	10,742	25,885	39,491	11,592	27,900
	2.5%	29.3%	70.7%	1.3%	29.4%	70.6%
Pavement and Shoulder Rehabilitation	159,690	47,635	112,054	295,014	107,606	187,408
	10.7%	29.8%	70.2%	9.8%	36.5%	63.5%
Pavement Maintenance	178,460	76,781	101,678	445,010	178,776	266,234
	12.0%	43.0%	57.0%	14.8%	40.2%	59.8%
Other Pavement Expenditures	23,733	21,763	1,970	(all pavement expenditures allocated in categories above)		
	1.6%	91.7%	8.3%			
Total Pavement Expenditures	453,656	164,945	288,709	965,395	339,647	625,749
	30.4%	36.4%	63.6%	32.2%	35.2%	64.8%

Note: Percents in the Expends. Allocated columns are the share of total expenditures allocated in each study accounted for the the expenditures for each pavement work type. Percents in the Light and Heavy Vehicle Respon. Columns are the light and heavy vehicle shares of the Expends. Allocated.

for a comparatively small share of the total travel on local roads and streets. This factor, however, is somewhat offset by the fact local governments spend most 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. Thus, although heavy vehicles will tend to be responsible for a relatively smaller share of local expenditures, the difference will be less than would be suggested by simply comparing relative travel shares on local versus state roads.

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 5-7 and 5-8.

Exhibit 5-7 shows that pavement expenditures allocated in the 2005 Study total $965.4 million, more than twice the pavement expenditure allocated in the 2003 Study.

The responsibility shares for particular types of pavement work are roughly the same between the two studies. Both studies found heavy vehicles responsible for relatively larger shares of new pavement, pavement reconstruction, and pavement rehabilitation expenditures and slightly smaller shares of maintenance expenditures. 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.

Exhibit 5-8 compares the bridge plus interchange expenditure amounts and responsibility results in the 2003 and present studies. As shown, these dollars account for a slightly higher share of overall expenditures in the current study (13.2 percent) than in the 2003 Study (10.7

Exhibit 5-8: Comparison of Bridge and Interchange Responsibility Results from 2003 and 2005 OR HCASs (thousands of dollars)

	2003 Study			2005 Study		
Expenditure Work Type	Expends. Allocated	Light Vehicle Respon.	Heavy Vehicle Respon.	Expends. Allocated	Light Vehicle Respon.	Heavy Vehicle Respon.
New, Replaced, and Rehabilitated Bridges	120,745	52,623	68,121	356,805	187,154	169,651
	8.1%	43.6%	56.4%	11.9%	52.5%	47.5%
Interchanges	18,707	13,642	5,065	6,600	4,772	1,828
	1.3%	72.9%	27.1%	0.2%	72.3%	27.7%
Bridge and Interchange Subtotal	139,452	66,265	73,186	363,405	191,926	171,479
	9.3%	47.5%	52.5%	12.1%	52.8%	47.2%
Bridge Maintenance	19,651	18,131	1,519	31,103	28,352	2,751
	1.3%	92.3%	7.7%	1.0%	91.2%	8.8%
Total Bridge and Interchange Expenditures	159,102	84,396	74,705	394,508	220,278	174,230
	10.7%	53.0%	47.0%	13.2%	55.8%	44.2%

Note: Percents in the Expends. Allocated columns are the share of total expenditures allocated in each study accounted for the the expenditures for each pavement work type. Percents in the Light and Heavy Vehicle Respon. Columns are the light and heavy vehicle shares of the Expends. Allocated.

percent), which was considerably higher than in the 2001 study. This reflects the continued emphasis currently being placed on bridge rehabilitation and replacement by both ODOT and local governments.

The heavy vehicle responsibility share for total bridge plus interchange expenditures in the present study is 44.2 percent, as compared to 47.0 percent in the 2003 Study. This reflects differences in the mix of bridge types, as well as a slight change to the way in which the results of the 2002 bridge cost allocation study were applied. In the 2003 study it was assumed that bridges without heavy truck traffic would last longer. Because we were unable to find empirical engineering evidence to support this assumption (see Issue Paper 3), this study assumes that bridge life is unaffected by the weight of the vehicles that pass over it.

Exhibit 5-9 shows the amounts of allocated expenditures of bond revenues that were carried forward from the 2003 study. These represent amounts that were spent in the 2003-05 biennium and that will be repaid during the 2005-07 biennium. The 2007 study will include the same allocated expenditures from the 2003 study as well as allocated bond expenditures from the current study.

For illustrative purposes, Exhibit 5-10 compares the expenditure allocation results (with prior allocated costs) for the present study with those of the previous study. As shown, the shares are nearly identical: the all-vehicle responsibility shares in the 2003 Study were 64.4 percent for light vehicles and 35.6 percent for heavy vehicles; the 2005 Study shares are 64.5 percent for light vehicles and 35.5 percent for heavy vehicles.

5.2 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 (i.e., fuel, registration, weight-mile, etc.), is obtained from ODOT's revenue forecasting model. Every effort is made to ensure the data used in the HCAS is consistent with the most recent revenue forecast available at the time the study is being conducted. 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

Exhibit 5-9: 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	8,000	970,697	4,595	975,292
8,001	to	26,000	44,809	520	45,329
26,001	to	46,000	37,782	309	38,092
46,001	to	54,000	20,514	148	20,662
54,001	to	78,000	16,731	175	16,906
78,001	to	80,000	268,050	5,187	273,237
80,001	to	104,000	63,264	1,433	64,697
104,001	to	105,500	74,445	1,297	75,743
105,501	and	up	2,949	106	3,055
Total			1,499,241	13,770	1,513,011

Exhibit 5-10: Cost Responsibility Distributions by Weight Group: Comparison Between 2003 and 2005 OR HCASs

Declared Weight in Pounds			2003 Study	2005 Study	Change in Percentage
1	to	8,000	64.4%	64.5%	0.1%
8,001	and	up	35.6%	35.5%	-0.1%
8,001	to	26,000	3.1%	3.0%	-0.1%
26,001	to	46,000	2.1%	2.5%	0.4%
46,001	to	54,000	0.8%	1.4%	0.6%
54,001	to	78,000	0.8%	1.1%	0.3%
78,001	to	80,000	19.1%	18.1%	-1.0%
80,001	to	104,000	4.9%	4.3%	-0.6%
104,001	to	105,500	4.4%	5.0%	0.6%
105,501	and	up	0.4%	0.2%	-0.2%
			100.0%	100.0%	

tax payments to the detailed vehicle classes.

The revenue attribution results are summarized in Exhibit 5-11. For the next biennium, under existing tax rates, it is forecast light vehicles will contribute 66.2 percent of State Highway Fund revenues and heavy vehicles will contribute 33.8 percent. The 33.8 percent projected payment share for heavy vehicles is less than the overall responsibility share of 35.4 percent for these vehicles reported in Section 5.1. However, these results need to be adjusted to reflect the impacts of tax exemptions and reduced rates granted to certain types of vehicles. As explained in the following chapter, these adjustments have a significant effect on the relative shares of attributed revenues and allocated expenditures for the various vehicle classes.

Exhibit 5-11 also illustrates how the relative payments of different vehicle weight groups vary by tax instrument. Light vehicles are projected to contribute approximately 97 percent of fuel tax

Exhibit 5-11: 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	8,000	386,804	153,946	0	0	0	0	540,750
8,001	to	26,000	10,155	14,750	0	0	0	0	24,906
26,001	to	46,000	2,756	1,668	5,071	42	2	0	9,539
46,001	to	54,000	130	1,325	5,970	40	84	0	7,550
54,001	to	78,000	59	1,138	6,468	32	96	0	7,793
78,001	to	80,000	183	15,998	141,236	458	168	0	158,044
80,001	to	104,000	42	3,210	25,229	80	3,833	22	32,394
104,001	to	105,500	72	3,938	30,951	96	842	14	35,899
105,501	and	up	0	110	0	1	0	951	111
Total			400,201	196,083	214,926	750	5,024	987	816,985
Total for Vehicles Under 8,001 Pounds			386,804	153,946	0	0	0	0	540,750
% for Vehicles Under 8,0001 Pounds			96.7%	78.5%	0.0%	0.0%	0.0%	0.0%	66.2%
Total for Vehicles Over 8,000 Pounds			13,398	42,138	214,926	750	5,024	987	276,235
% for Vehicles Over 8,000 Pounds			3.3%	21.5%	100.0%	100.0%	100.0%	100.0%	33.8%
Total for Vehicles Under 26,001 Pounds			396,959	168,696	0	0	0	0	565,655
% for Vehicles Under 26,001 Pounds			99.2%	86.0%	0.0%	0.0%	0.0%	0.0%	69.2%
Total for Vehicles Over 26,000 Pounds			3,242	27,387	214,926	750	5,024	987	251,330
% for Vehicles Over 26,000 Pounds			0.8%	14.0%	100.0%	100.0%	100.0%	100.0%	30.8%

revenues and 79 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 5-12 compares the revenue attribution results of the present study with those of the 2003 Study. The projected share of revenues contributed by light vehicles has increased from 64.8 percent in the 2003 Study to 66.2 percent in the present study. Conversely, the overall heavy vehicle share of projected payments has decreased from 35.2 percent in the previous study to 33.8 percent in the present study.

Exhibit 5-12: Revenue Attribution Distributions by Weight Group-Comparison Between 2003 and 2005 OR HCASs

Declared Weight in Pounds			2003 Study	2005 Study	Change in Percentage
1	to	8,000	64.8%	66.2%	1.4%
8,001	and	up	35.2%	33.8%	-1.4%
8,001	to	26,000	4.0%	3.1%	-1.0%
26,001	to	46,000	1.7%	1.2%	-0.5%
46,001	to	54,000	0.9%	0.9%	0.0%
54,001	to	78,000	1.0%	1.0%	-0.1%
78,001	to	80,000	20.6%	19.3%	-1.3%
80,001	to	104,000	3.6%	4.0%	0.4%
104,001	to	105,500	3.3%	4.4%	1.1%
105,501	and	up	0.1%	0.0%	-0.1%
Total			100.0%	100.0%	

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 groupings of vehicles (e.g., all heavy vehicles combined). This comparison is facilitated by the calculation of equity ratios, or the ratio of the share 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 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 the vehicles in that class are projected to pay less than their cost-responsible share.

The comparison of revenue share to cost responsibility share in Oregon studies traditionally is 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]

6.1 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 results 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 2006 VMT for full-fee-paying vehicles are 35.328 billion, 93.2 percent of these miles being by light vehicles and 6.8 percent by heavy vehicles. This compares to projected 2006 miles of travel by all vehicles of 36.254 billion, 92.5 percent by light vehicles and 7.6 percent by heavy vehicles. As explained in the previous chapter, 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 responsibility of full-fee-paying vehicles is $1,449.2 million, with responsibility shares of 66.1 percent for light vehicles and 33.9 percent for heavy vehicles. This compares

[1] If, for example, 80 percent of the VMT in a weight class is by full-fee-paying vehicles and 20 percent 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.

to the projected total responsibility for all vehicles of $1,513.0 million. 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 $800.3 million, 66.6 percent from light vehicles and 33.4 percent from heavy vehicles. The difference between this total and the $818.0 million total for all vehicles represents projected revenues from alternative-fee-paying vehicles.

The total of the Allocated 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 $14.0 million annually for the next biennium under existing tax rates.[2] Following the approach of previous studies, this amount is reassigned to the full-fee-paying vehicle classes based on the relative VMT of each of these classes.

Because the current study includes expenditures of funds from federal and local revenue sources, the allocated expenditures for full-fee-paying vehicles are nearly twice the attributed State revenues for these vehicles. This does not present a problem in calculating the equity ratios themselves, but does raise an issue as to how and at what stage the alternative-fee difference adjustment should be made.[3] In this study, the allocated alternative-fee difference is added to allocated costs for full-fee-paying vehicles before calculating the share of costs in the denominator of the equity ratio.

The equity ratios are calculated four different ways to illustrate the effects of considering only full-fee-paying vehicle costs and revenues and of adding the allocated alternative-fee difference. The bottom table in Exhibit 6-1 presents both the unadjusted and alternative-fee difference-adjusted equity ratios for all vehicles and for full-fee-paying vehicles. The adjusted ratios in the final column are the more important, however, since it is these results that form the basis for the determination whether rates should be adjusted.

This study finds overall equity ratios of 1.0072 for light vehicles and 0.9860 for heavy vehicles as a group. This means that, for the 2005-07 biennium, under the existing tax structure and rates, light and heavy vehicles are each expected to pay almost exactly their fair shares.

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 weights between 8,001 pounds and 26,000 pounds are projected to overpay their responsibility by 18 percent. This is almost entirely a result of the adjustments for full-fee-paying vehicles in the equity-ratio calculation, as all vehicles in this group pay close to their fair share.

Vehicles with declared weights between 26,001 and 78,000 pounds underpay their fair share and those between 78,001 and 80,000 pounds overpay by 6.1 percent.

---

[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. The amounts, however, do not necessarily represent an underpayment relative to the cost responsibility of these vehicles. Some flat-fee vehicles, for instance, pay more under the alternative fee structure than they would under the weight-mile tax, while others pay less.

[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.

Exhibit 6-1: Comparison of Average Annual Cost Responsibility and User Fees Paid by Full-Fee-Paying Vehicles by Declared Weight Class (Thousands)

			Annual VMT			Percent of Annual VMT		
Declared Weight			All	Full-Fee	Alternative Fee	All	Full-Fee	Alternative Fee
1	to	8,000	33,517,105,565	32,933,390,185	583,715,380	92.5%	93.2%	63.0%
8,001	and	up	2,737,278,725	2,394,567,218	342,711,507	7.6%	6.8%	37.0%
8,001	to	26,000	690,274,916	545,665,578	144,609,337	1.9%	1.5%	15.6%
26,001	and	up	2,047,003,810	1,848,901,640	198,102,170	5.6%	5.2%	21.4%
26,001	to	105,500	2,044,552,661	1,846,450,491	198,102,170	5.6%	5.2%	21.4%
26,001	to	80,000	1,578,521,864	1,413,217,515	165,304,349	4.4%	4.0%	17.8%
26,001	to	46,000	244,167,749	104,354,169	139,813,580	0.7%	0.3%	15.1%
46,001	to	54,000	112,674,248	99,376,331	13,297,917	0.3%	0.3%	1.4%
54,001	to	78,000	85,515,359	79,776,806	5,738,553	0.2%	0.2%	0.6%
78,001	to	80,000	1,136,164,508	1,129,710,208	6,454,300	3.1%	3.2%	0.7%
80,001	to	105,500	466,030,797	433,232,976	32,797,821	1.3%	1.2%	3.5%
80,001	to	104,000	221,078,106	196,946,881	24,131,226	0.6%	0.6%	2.6%
104,001	to	105,500	244,952,690	236,286,095	8,666,595	0.7%	0.7%	0.9%
105,501	and	up	2,451,149	2,451,149	0	0.0%	0.0%	0.0%
Total			36,254,384,290	35,327,957,404	926,426,887	100.0%	100.0%	100.0%

			Annual Cost Responsibility					Percent of Cost Responsibility				
Declared Weight			State	Federal	Local	Total	Full-Fee	State	Federal	Local	Total	Full-Fee
1	to	8,000	458,220,042	177,790,162	339,281,849	975,292,053	958,306,906	71.5%	59.0%	59.5%	64.5%	66.1%
8,001	and	up	182,556,943	123,735,346	231,426,612	537,718,901	490,938,310	28.5%	41.0%	40.6%	35.5%	33.9%
8,001	to	26,000	18,362,506	10,373,932	16,592,060	45,328,498	34,946,095	2.9%	3.4%	2.9%	3.0%	2.4%
26,001	and	up	164,194,437	113,361,414	214,834,552	492,390,404	455,992,215	25.6%	37.6%	37.6%	32.5%	31.5%
26,001	to	105,500	163,590,420	112,945,669	212,799,476	489,335,565	452,956,847	25.5%	37.5%	37.3%	32.3%	31.3%
26,001	to	80,000	112,129,878	78,787,737	157,978,530	348,896,145	322,411,855	17.5%	26.1%	27.7%	23.1%	22.2%
26,001	to	46,000	11,856,205	6,013,174	20,222,126	38,091,505	16,760,092	1.9%	2.0%	3.5%	2.5%	1.2%
46,001	to	54,000	6,079,112	3,466,581	11,116,406	20,662,100	18,229,610	0.9%	1.2%	1.9%	1.4%	1.3%
54,001	to	78,000	5,189,780	3,176,875	8,539,107	16,905,762	15,737,573	0.8%	1.1%	1.5%	1.1%	1.1%
78,001	to	80,000	89,004,781	66,131,108	118,100,890	273,236,778	271,684,580	13.9%	21.9%	20.7%	18.1%	18.7%
80,001	to	105,500	51,460,543	34,157,932	54,820,946	140,439,421	130,544,992	8.0%	11.3%	9.6%	9.3%	9.0%
80,001	to	104,000	24,315,460	16,579,810	23,801,557	64,696,826	57,482,222	3.8%	5.5%	4.2%	4.3%	4.0%
104,001	to	105,500	27,145,083	17,578,122	31,019,389	75,742,595	73,062,769	4.2%	5.8%	5.4%	5.0%	5.0%
105,501	and	up	604,017	415,745	2,035,076	3,054,838	3,035,368	0.1%	0.1%	0.4%	0.2%	0.2%
Total			640,776,985	301,525,508	570,708,461	1,513,010,954	1,449,245,216	100.0%	100.0%	100.0%	100.0%	100.0%

Exhibit 6-1 (continued)

Declared Weight			Annual User Fees: All	Full-Fee	Alternative-Fee Difference	Allocated Alternative-Fee Difference	Percent of User Fees: All	Full-Fee	Subsidy	Allocated Subsidy
1	to	8,000	540,749,570	532,994,793	1,692,087	13,033,857	66.1%	66.6%	12.1%	93.2%
8,001	and	up	277,222,408	267,328,931	12,289,454	947,684	33.9%	33.4%	87.9%	6.8%
8,001	to	26,000	24,905,617	22,782,662	4,597,154	215,955	3.1%	2.8%	32.9%	1.5%
26,001	and	up	252,316,791	244,546,269	7,692,300	731,729	30.8%	30.6%	55.0%	5.2%
26,001	to	105,500	251,254,671	243,484,149	7,692,300	730,759	30.7%	30.4%	55.0%	5.2%
26,001	to	80,000	182,925,967	179,996,519	7,782,089	559,301	22.4%	22.5%	55.7%	4.0%
26,001	to	46,000	9,538,654	6,801,397	5,533,667	41,300	1.2%	0.9%	39.6%	0.3%
46,001	to	54,000	7,549,958	7,531,169	999,590	39,330	0.9%	0.9%	7.2%	0.3%
54,001	to	78,000	7,793,432	7,732,713	459,217	31,573	1.0%	1.0%	3.3%	0.2%
78,001	to	80,000	158,043,924	157,931,241	789,616	447,099	19.3%	19.7%	5.6%	3.2%
80,001	to	105,500	68,328,704	63,487,630	-89,789	171,458	8.4%	7.9%	-0.6%	1.2%
80,001	to	104,000	32,415,982	28,440,884	-509,270	77,945	4.0%	3.6%	-3.6%	0.6%
104,001	to	105,500	35,912,723	35,046,745	419,481	93,514	4.4%	4.4%	3.0%	0.7%
105,501	and	up	1,062,120	1,062,120	0	970	0.1%	0.1%	0.0%	0.0%
Total			817,971,979	800,323,724	13,981,541	13,981,541	100.0%	100.0%	100.0%	100.0%

Declared Weight			Equity Ratios: Plain	Subsidy-Adjusted	Full-Fee Plain	Full-Fee Subsidy-Adjusted
1	to	8,000	1.0256	1.0214	1.0072	1.0032
8,001	and	up	0.9536	0.9607	0.9860	0.9936
8,001	to	26,000	1.0163	1.0208	1.1805	1.1846
26,001	and	up	0.9479	0.9552	0.9711	0.9789
26,001	to	105,500	0.9498	0.9571	0.9734	0.9812
26,001	to	80,000	0.9698	0.9772	1.0110	1.0189
26,001	to	46,000	0.4632	0.4670	0.7348	0.7401
46,001	to	54,000	0.6759	0.6808	0.7481	0.7537
54,001	to	78,000	0.8527	0.8590	0.8898	0.8965
78,001	to	80,000	1.0699	1.0780	1.0526	1.0610
80,001	to	105,500	0.8999	0.9072	0.8807	0.8880
80,001	to	104,000	0.9268	0.9342	0.8960	0.9034
104,001	to	105,500	0.8770	0.8840	0.8686	0.8759
105,501	and	up	0.6431	0.6489	0.6336	0.6395
Total			1.0000	1.0000	1.0000	1.0000

Vehicles in the 78,001-80,000 pound class alone account for 47.2 percent of the VMT by full-fee-paying heavy vehicles, and 61.1 percent of the VMT by over 26,000-pound vehicles. These vehicles also account for 55.3 percent of the cost responsibility and 59.2 percent 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 substantially lower fraction of their declared weight than for other declared weight classes, and the wear-related costs they impose per mile are correspondingly lower.

Vehicles between 80,001 and 105,500 pounds (Schedule B vehicles) pay 9.0 percent less than their fair share. Those in the 104,001 to 105,500 range pay 11.2 percent less than their fair share.

Vehicles over 105,500 pounds all pay

the Road Use Assessment Fee, as do some vehicles between 96,001 and 105,500 pounds. Those over 105,500 pounds underpay their fair share by 45.9 percent. This is a smaller underpayment than reported in the 2003 study (underpayment by 73.2 percent) primarily because the model was changed for this study to attribute vehicle registration fees to these vehicles. Since no vehicle can register above 105,500 pounds, no registration fees were attributed to these vehicles in prior studies.

6.2 Comparison with 1999, 2001, and 2003 Oregon Studies

The overall light and heavy vehicle equity ratios found by this study are slightly different from those determined by the prior three Oregon studies. 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 1999-01 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 of near-perfect equity for the 2001-03 biennium analysis period, i.e., a 0.3 percent projected overpayment by full-fee-paying light vehicles and 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, even closer to perfect equity than the 2001 study. The 2003 legislature did not change rates as a result of the 2003 study, but did increase registration and other fees in anticipation of the debt-service requirements of OTIA III. Those fee increases were designed to preserve light/heavy equity given the nature of the projects they would fund and the results of this study indicate they succeeded.

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

Exhibit 6-2: Comparison of Equity Ratios from the 1999, 2001, 2003, and 2005 Oregon Highway Cost Allocation Studies

	Alternative-Fee Difference-Adjusted Equity Ratios for Full-Fee-Paying Vehicles Only			
Declared Weight	1999	2001	2003	2005
1 to 8,000	0.9700	1.0027	0.9921	1.0032
8,001 and up	1.0500	0.9952	1.0158	0.9936
8,001 to 26,000	1.0000	0.9440	1.3803	1.1846
26,001 and up		0.9996	0.9870	0.9789
26,001 to 105,500				0.9812
26,001 to 80,000				1.0189
26,001 to 46,000		0.9596	1.0091	0.7401
46,001 to 54,000		0.8517	1.1727	0.7537
54,001 to 78,000		0.9291	1.2561	0.8965
78,001 to 80,000		1.0603	1.0931	1.0610
80,001 to 105,500				0.8880
80,001 to 104,000		0.9479	0.7430	0.9034
104,001 to 105,500		0.8712	0.7576	0.8759
105,501 and up	1.3500	0.4727	0.2678	0.6395
Total	1.0000	1.0000	1.0000	1.0000

[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 either the 1999 or 2001 studies.

Exhibit 6-3: Detailed Comparison of Average Annual Cost Responsibility and User Fees Paid by Full-Fee-Paying Vehicles by Declared Weight Class (Thousands)

		Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
Weight Class	Axles	All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
1		33,517,105,565	32,933,390,185	975,292,053	958,306,906	540,749,570	532,994,793	1,692,087	13,033,857	1.0256	1.0214	1.0072	1.0032
8001		110,056,974	93,133,433	5,962,549	5,045,683	3,299,877	3,079,276	338,943	36,859	1.0237	1.0268	1.1051	1.1077
10001		94,141,889	75,436,572	5,247,664	4,204,991	2,975,962	2,671,405	357,847	29,855	1.0490	1.0527	1.1504	1.1533
12001		87,146,294	70,957,676	5,075,798	4,132,899	2,944,414	2,687,965	356,796	28,083	1.0730	1.0770	1.1777	1.1811
14001		119,565,352	105,159,041	7,718,880	6,788,840	4,564,672	4,356,173	388,277	41,618	1.0939	1.0980	1.1619	1.1660
16001		79,294,261	69,263,301	5,227,051	4,565,814	3,221,331	3,049,264	269,538	27,412	1.1399	1.1445	1.2094	1.2137
18001		72,445,917	62,779,137	4,868,902	4,219,223	3,183,802	3,066,896	355,337	24,846	1.2095	1.2145	1.3163	1.3212
20001		31,654,930	22,282,889	2,456,925	1,729,506	1,293,482	1,130,168	312,028	8,819	0.9738	0.9793	1.1833	1.1887
22001		26,084,660	13,811,856	2,307,137	1,221,632	989,124	807,484	535,866	5,466	0.7930	0.7985	1.1969	1.2031
24001		69,884,638	32,841,674	6,463,592	3,037,508	2,432,953	1,934,032	1,682,523	12,998	0.6962	0.7013	1.1530	1.1591
26001		28,501,304	3,873,202	3,561,932	484,051	990,050	198,398	469,882	1,533	0.5141	0.5187	0.7422	0.7470
28001		26,231,813	6,415,547	3,354,394	820,388	886,600	353,714	559,661	2,539	0.4889	0.4930	0.7807	0.7858
30001		53,871,698	13,355,359	7,678,601	1,903,606	1,924,183	710,148	940,351	5,286	0.4635	0.4675	0.6755	0.6802
32001		30,547,238	21,578,180	4,590,551	3,242,707	1,316,692	1,263,903	472,558	8,540	0.5305	0.5345	0.7058	0.7107
34001		15,501,428	5,336,595	2,668,159	918,553	433,230	350,353	584,456	2,112	0.3003	0.3029	0.6907	0.6957
36001		22,829,736	2,998,567	4,696,905	616,914	227,786	213,040	1,394,207	1,187	0.0897	0.0905	0.6253	0.6302
38001		6,093,648	4,459,787	1,001,306	732,831	313,102	303,518	101,610	1,765	0.5784	0.5827	0.7500	0.7554
40001		6,486,100	3,993,946	1,031,883	635,402	292,698	281,405	164,299	1,581	0.5247	0.5287	0.8020	0.8077
42001		8,323,309	4,071,851	1,564,296	765,270	329,943	307,136	297,877	1,612	0.3901	0.3933	0.7268	0.7322
44001		45,781,478	38,271,137	7,943,478	6,640,370	2,824,370	2,819,781	548,766	15,146	0.6577	0.6625	0.7690	0.7746
46001		34,417,666	31,914,904	6,322,556	5,862,797	2,335,346	2,307,463	153,068	12,631	0.6832	0.6882	0.7127	0.7180
48001		28,944,987	24,153,422	5,292,020	4,415,977	1,880,853	1,826,183	307,609	9,559	0.6574	0.6623	0.7488	0.7544
50001		16,502,969	15,326,035	3,091,645	2,871,159	1,150,231	1,158,794	97,551	6,066	0.6882	0.6932	0.7308	0.7363
52001		32,808,627	27,981,972	5,955,878	5,079,677	2,183,528	2,238,728	441,362	11,074	0.6781	0.6831	0.7981	0.8040
54001		29,553,775	26,288,824	5,888,900	5,238,324	2,199,997	2,180,942	251,808	10,404	0.6910	0.6962	0.7539	0.7597
56001		7,656,084	6,935,024	1,741,332	1,577,331	590,428	589,139	59,966	2,745	0.6272	0.6320	0.6764	0.6817
58001		6,651,470	5,973,111	1,251,272	1,123,659	521,121	526,921	65,642	2,364	0.7704	0.7760	0.8492	0.8555

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
60001		1,702,042	1,554,089	330,272	301,563	138,895	141,665	16,256	615	0.7779	0.7836	0.8507	0.8571
62001		3,251,118	3,216,609	660,861	653,847	301,738	301,756	3,255	1,273	0.8445	0.8507	0.8357	0.8421
64001		11,986,848	11,936,231	2,345,832	2,335,927	1,169,435	1,169,836	5,362	4,724	0.9221	0.9288	0.9069	0.9138
66001		3,517,847	3,425,211	687,691	669,582	362,065	360,600	8,288	1,356	0.9739	0.9809	0.9752	0.9826
68001		7,922,598	7,847,309	1,554,660	1,539,886	874,823	874,958	8,530	3,106	1.0409	1.0484	1.0289	1.0367
70001		5,291,007	5,114,390	905,155	874,941	600,356	604,412	24,928	2,024	1.2268	1.2354	1.2509	1.2601
72001		1,972,028	1,883,224	317,289	303,001	237,033	235,743	9,827	745	1.3818	1.3913	1.4089	1.4190
74001		3,925,952	3,879,180	674,179	666,147	507,568	507,856	6,411	1,535	1.3926	1.4023	1.3805	1.3906
76001		2,084,592	1,723,605	548,318	453,367	289,973	238,886	-1,055	682	0.9782	0.9860	0.9542	0.9619
78001		1,136,164,508	1,129,710,208	273,236,778	271,684,580	158,043,924	157,931,241	789,616	447,099	1.0699	1.0780	1.0526	1.0610
80001	5	3,951,582	2,566,036	1,213,585	788,065	619,906	386,654	-24,475	1,016	0.9448	0.9528	0.8885	0.8959
80001	6	482,572	313,367	142,703	92,667	49,085	31,063	-1,250	124	0.6362	0.6416	0.6070	0.6120
80001	7	37,505	24,354	10,210	6,630	6,732	3,716	-1,009	10	1.2195	1.2296	1.0150	1.0233
80001	8	217,128	140,996	56,721	36,833	17,436	11,413	139	56	0.5686	0.5733	0.5611	0.5656
80001	9	11,291	7,332	4,271	2,774	863	565	7	3	0.3736	0.3768	0.3687	0.3719
82001	5	7,615,548	6,998,010	2,487,929	2,286,185	1,126,834	1,041,105	6,144	2,770	0.8378	0.8446	0.8246	0.8316
82001	6	977,001	897,777	283,441	260,457	139,229	125,549	-2,601	355	0.9086	0.9158	0.8729	0.8801
82001	7	170,603	156,769	45,384	41,703	20,149	18,621	116	62	0.8212	0.8277	0.8086	0.8151
82001	8	84,340	77,501	21,549	19,802	9,497	8,777	55	31	0.8152	0.8215	0.8026	0.8091
82001	9	1,835	1,686	670	615	197	182	1	1	0.5430	0.5475	0.5346	0.5392
84001	5	11,238,569	9,410,251	4,329,434	3,625,111	1,845,249	1,498,570	-55,522	3,724	0.7884	0.7950	0.7486	0.7550
84001	6	9,133,504	7,647,643	2,689,324	2,251,818	1,285,524	1,010,352	-78,870	3,027	0.8842	0.8913	0.8125	0.8192
84001	7	328,566	275,114	93,188	78,028	41,864	35,208	185	109	0.8310	0.8377	0.8171	0.8238
84001	8	215,786	180,681	57,799	48,396	23,030	19,258	-30	72	0.7370	0.7429	0.7206	0.7264
84001	9	5,637	4,720	2,197	1,839	561	474	4	2	0.4726	0.4765	0.4662	0.4702
86001	5	2,353,252	1,690,997	969,245	696,479	403,325	274,135	-21,829	669	0.7697	0.7763	0.7127	0.7189
86001	6	22,977,061	16,510,828	6,685,721	4,804,217	3,466,501	2,357,758	-185,360	6,534	0.9591	0.9670	0.8887	0.8961
86001	7	1,060,473	762,033	252,864	181,703	127,576	91,142	-739	302	0.9332	0.9407	0.9083	0.9156
86001	8	1,305,517	938,116	280,942	201,879	122,173	87,447	-479	371	0.8044	0.8107	0.7844	0.7905
86001	9	141,420	101,621	38,951	27,989	12,312	8,897	70	40	0.5847	0.5895	0.5756	0.5803

		Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
Weight Class	Axles	All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
88001	5	482,627	426,433	207,652	183,475	83,912	75,565	1,611	169	0.7475	0.7538	0.7458	0.7523
88001	6	28,997,091	25,620,892	8,459,869	7,474,867	4,245,926	3,700,168	-58,167	10,140	0.9284	0.9358	0.8964	0.9038
88001	7	1,218,375	1,076,516	299,793	264,887	174,178	150,328	-4,040	426	1.0747	1.0831	1.0277	1.0359
88001	8	529,877	468,182	116,396	102,844	70,919	57,988	-5,290	185	1.1270	1.1356	1.0210	1.0290
88001	9	12,274	10,845	2,471	2,183	1,321	1,183	17	4	0.9892	0.9966	0.9809	0.9884
90001	5	395,898	376,537	165,713	157,609	70,235	66,210	-621	149	0.7840	0.7905	0.7607	0.7673
90001	6	6,256,830	5,950,851	1,976,410	1,879,757	961,755	899,057	-16,471	2,355	0.9001	0.9073	0.8661	0.8733
90001	7	3,121,992	2,969,317	740,598	704,381	402,983	384,260	1,035	1,175	1.0065	1.0142	0.9879	0.9957
90001	8	54,314	51,658	11,598	11,031	7,626	7,196	-60	20	1.2162	1.2253	1.1813	1.1905
90001	9	10,235	9,735	2,740	2,606	1,197	1,141	3	4	0.8081	0.8145	0.7932	0.7997
92001	5	63,137	50,142	27,092	21,516	12,008	11,407	2,355	20	0.8198	0.8268	0.9600	0.9684
92001	6	1,579,675	1,254,532	557,715	442,921	278,616	216,133	-6,467	497	0.9241	0.9318	0.8836	0.8912
92001	7	1,327,564	1,054,313	371,545	295,070	148,377	126,438	10,831	417	0.7387	0.7447	0.7759	0.7823
92001	8	31,282	24,843	7,388	5,867	3,326	2,840	250	10	0.8328	0.8393	0.8765	0.8835
92001	9	2,259	1,794	721	572	228	195	17	1	0.5853	0.5902	0.6164	0.6216
94001	5	340,548	320,039	183,629	172,571	59,291	56,440	766	127	0.5972	0.6023	0.5922	0.5975
94001	6	4,838,777	4,547,370	1,727,685	1,623,638	852,420	781,071	-21,296	1,800	0.9126	0.9201	0.8711	0.8786
94001	7	24,985,352	23,480,651	6,580,956	6,184,629	3,444,000	3,249,541	13,780	9,293	0.9680	0.9756	0.9514	0.9592
94001	8	1,191,454	1,119,700	285,807	268,594	155,903	146,024	-522	443	1.0090	1.0167	0.9845	0.9923
94001	9	100,810	94,739	21,847	20,531	12,034	11,462	162	38	1.0189	1.0266	1.0109	1.0188
96001	5	460,330	446,623	201,612	195,609	104,199	99,741	-1,397	177	0.9560	0.9640	0.9233	0.9314
96001	6	3,388,976	3,288,065	1,098,771	1,066,054	567,103	535,574	-15,092	1,301	0.9547	0.9624	0.9097	0.9174
96001	7	29,649,022	28,766,188	7,755,811	7,524,873	4,225,361	4,068,192	-32,316	11,385	1.0077	1.0155	0.9790	0.9869
96001	8	1,575,297	1,528,391	373,813	362,682	217,479	204,319	-6,890	605	1.0761	1.0843	1.0201	1.0283
96001	9	91,192	88,476	21,271	20,637	-11,343	-10,985	21	35				
98001	5	2,975	2,522	1,793	1,520	52	44	0	1	0.0532	0.0536	0.0525	0.0530
98001	6	431,218	365,602	172,990	146,667	61,878	52,839	445	145	0.6616	0.6672	0.6524	0.6580
98001	7	9,419,690	7,986,358	2,555,564	2,166,701	1,421,449	1,185,162	-23,583	3,161	1.0288	1.0371	0.9905	0.9986
98001	8	1,521,223	1,289,748	362,778	307,576	184,714	158,129	1,795	510	0.9418	0.9492	0.9310	0.9384
98001	9	9,304	7,888	2,650	2,247	11,768	6,860	-3,677	3	8.2139	8.2801	5.5286	5.5742

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
100001	5	10,822	10,209	5,945	5,608	195	185	1	4	0.0607	0.0613	0.0599	0.0604
100001	6	106,698	100,650	44,685	42,152	1,836	1,744	13	40	0.0760	0.0766	0.0749	0.0756
100001	7	8,494,893	8,013,361	2,459,445	2,320,031	1,284,218	1,211,625	214	3,171	0.9658	0.9735	0.9457	0.9535
100001	8	3,743,219	3,531,035	956,940	902,695	503,394	477,123	2,400	1,398	0.9730	0.9806	0.9571	0.9649
100001	9	8,896	8,391	2,779	2,622	1,112	1,054	5	3	0.7400	0.7459	0.7279	0.7340
102001	5	1,854	1,822	1,227	1,206	33	33	0	1	0.0499	0.0503	0.0490	0.0494
102001	6	38,796	38,132	17,694	17,391	665	655	2	15	0.0695	0.0701	0.0682	0.0688
102001	7	10,043,278	9,871,307	3,157,947	3,103,873	1,530,414	1,512,142	8,071	3,907	0.8964	0.9036	0.8822	0.8896
102001	8	14,203,834	13,960,622	4,083,326	4,013,407	2,003,592	1,977,407	8,263	5,525	0.9076	0.9148	0.8922	0.8996
102001	9	27,032	26,570	6,038	5,935	3,568	3,513	6	11	1.0930	1.1012	1.0718	1.0802
104001	5	561,852	541,974	449,941	434,022	9,678	9,475	144	215	0.0398	0.0401	0.0395	0.0399
104001	6	598,282	577,115	288,443	278,238	10,170	9,957	153	228	0.0652	0.0658	0.0648	0.0654
104001	7	72,973,352	70,391,505	24,324,361	23,463,749	11,142,810	10,929,483	187,549	27,858	0.8473	0.8542	0.8435	0.8506
104001	8	166,353,347	160,467,650	49,218,898	47,477,500	24,195,034	23,557,552	226,571	63,507	0.9093	0.9165	0.8985	0.9060
104001	9	4,465,857	4,307,852	1,460,951	1,409,261	555,031	540,279	5,064	1,705	0.7027	0.7084	0.6942	0.7001
106001	5	0	0	181	0	0	0	0	0				
106001	6	0	0	143	0	0	0	0	0				
106001	7	28,152	28,152	19,523	19,523	6,627	6,627	0	11	0.6279	0.6333	0.6147	0.6203
106001	8	48,261	48,261	23,969	23,969	7,983	7,983	0	19	0.6160	0.6212	0.6031	0.6084
106001	9	4,022	4,022	1,472	1,472	585	585	0	2	0.7348	0.7408	0.7194	0.7255
108001	5	0	0	0	0	0	0	0	0				
108001	6	0	0	3,514	0	0	0	0	0				
108001	7	45,403	45,403	25,755	25,755	11,596	11,596	0	18	0.8328	0.8399	0.8153	0.8226
108001	8	82,293	82,293	35,210	35,210	14,435	14,435	0	33	0.7583	0.7646	0.7424	0.7488
108001	9	14,189	14,189	4,634	4,634	2,063	2,063	0	6	0.8236	0.8302	0.8063	0.8131
110001	5	0	0	0	0	0	0	0	0				
110001	6	0	0	1,911	0	0	0	0	0				
110001	7	20,637	20,637	10,989	10,989	5,477	5,477	0	8	0.9219	0.9297	0.9025	0.9106
110001	8	40,562	40,562	16,462	16,462	7,521	7,521	0	16	0.8450	0.8520	0.8273	0.8344
110001	9	9,963	9,963	3,110	3,110	1,548	1,548	0	4	0.9208	0.9281	0.9014	0.9090

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
112001	5	0	0	0	0	0	0	0	0				
112001	6	0	0	2,248	0	0	0	0	0				
112001	7	13,368	13,368	11,180	11,180	3,682	3,682	0	5	0.6091	0.6144	0.5963	0.6018
112001	8	28,277	28,277	16,883	16,883	5,526	5,526	0	11	0.6054	0.6106	0.5927	0.5980
112001	9	9,769	9,769	4,232	4,232	1,616	1,616	0	4	0.7063	0.7122	0.6915	0.6975
114001	5	0	0	0	0	0	0	0	0				
114001	6	0	0	0	0	0	0	0	0				
114001	7	24,389	24,389	14,063	14,063	6,961	6,961	0	10	0.9155	0.9234	0.8963	0.9043
114001	8	57,262	57,262	34,179	34,179	12,907	12,907	0	23	0.6985	0.7045	0.6838	0.6900
114001	9	24,389	24,389	10,561	10,561	4,034	4,034	0	10	0.7066	0.7124	0.6917	0.6977
116001	5	0	0	0	0	0	0	0	0				
116001	6	0	0	0	0	0	0	0	0				
116001	7	11,450	11,450	7,540	7,540	3,497	3,497	0	5	0.8579	0.8653	0.8398	0.8474
116001	8	29,770	29,770	20,328	20,328	7,008	7,008	0	12	0.6377	0.6432	0.6243	0.6299
116001	9	16,030	16,030	7,825	7,825	2,812	2,812	0	6	0.6646	0.6702	0.6507	0.6564
118001	5	0	0	1,869	0	0	0	0	0				
118001	6	0	0	2,094	0	0	0	0	0				
118001	7	25,894	25,894	17,337	17,337	8,685	8,685	0	10	0.9266	0.9346	0.9071	0.9154
118001	8	77,683	77,683	25,920	25,920	19,841	19,841	0	31	1.4159	1.4273	1.3861	1.3978
118001	9	48,742	48,742	17,953	17,953	9,037	9,037	0	19	0.9311	0.9387	0.9115	0.9193
120001	5	0	0	0	0	0	0	0	0				
120001	6	0	0	0	0	0	0	0	0				
120001	7	8,944	8,944	4,900	4,900	3,179	3,179	0	4	1.1999	1.2101	1.1747	1.1851
120001	8	31,942	31,942	16,718	16,718	8,478	8,478	0	13	0.9380	0.9459	0.9182	0.9264
120001	9	22,998	22,998	8,941	8,941	4,494	4,494	0	9	0.9298	0.9374	0.9102	0.9181
122001	5	0	0	0	0	0	0	0	0				
122001	6	0	0	0	0	0	0	0	0				
122001	7	5,333	5,333	2,997	2,997	2,002	2,002	0	2	1.2357	1.2462	1.2097	1.2205
122001	8	23,270	23,270	11,420	11,420	6,641	6,641	0	9	1.0758	1.0848	1.0531	1.0624
122001	9	19,877	19,877	7,277	7,277	4,480	4,480	0	8	1.1388	1.1481	1.1149	1.1244

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
124001	5	0	0	0	0	0	0	0	0				
124001	6	0	0	0	0	0	0	0	0				
124001	7	7,987	7,987	7,264	7,264	3,158	3,158	0	3	0.8042	0.8113	0.7873	0.7946
124001	8	46,926	46,926	35,828	35,828	13,862	13,862	0	19	0.7157	0.7219	0.7006	0.7070
124001	9	44,929	44,929	24,339	24,339	10,577	10,577	0	18	0.8038	0.8106	0.7869	0.7939
126001	5	0	0	0	0	0	0	0	0				
126001	6	0	0	0	0	0	0	0	0				
126001	7	3,441	3,441	4,446	4,446	1,430	1,430	0	1	0.5947	0.6000	0.5822	0.5876
126001	8	30,971	30,971	32,202	32,202	9,459	9,459	0	12	0.5433	0.5481	0.5319	0.5368
126001	9	34,413	34,413	24,772	24,772	8,445	8,445	0	14	0.6306	0.6361	0.6173	0.6229
128001	5	0	0	0	0	0	0	0	0				
128001	6	0	0	0	0	0	0	0	0				
128001	7	2,613	2,613	7,941	7,941	1,190	1,190	0	1	0.2772	0.2797	0.2714	0.2740
128001	8	57,488	57,488	59,773	59,773	19,282	19,282	0	23	0.5967	0.6020	0.5841	0.5896
128001	9	70,554	70,554	50,789	50,789	18,020	18,020	0	28	0.6563	0.6620	0.6425	0.6483
130001	5	0	0	0	0	0	0	0	0				
130001	6	0	0	0	0	0	0	0	0				
130001	7	0	0	769	0	0	0	0	0				
130001	8	19,314	19,314	11,601	11,601	6,864	6,864	0	8	1.0945	1.1039	1.0715	1.0811
130001	9	25,602	25,602	11,207	11,207	6,795	6,795	0	10	1.1215	1.1308	1.0979	1.1075
132001	5	0	0	0	0	0	0	0	0				
132001	6	0	0	0	0	0	0	0	0				
132001	7	0	0	0	0	0	0	0	0				
132001	8	21,724	21,724	13,916	13,916	7,938	7,938	0	9	1.0551	1.0642	1.0329	1.0423
132001	9	35,445	35,445	23,916	23,916	9,407	9,407	0	14	0.7276	0.7339	0.7123	0.7188
134001	5	0	0	0	0	0	0	0	0				
134001	6	0	0	946	0	0	0	0	0				
134001	7	0	0	0	0	0	0	0	0				
134001	8	23,419	23,419	18,540	18,540	9,026	9,026	0	9	0.9005	0.9083	0.8815	0.8896
134001	9	45,460	45,460	38,506	38,506	12,974	12,974	0	18	0.6233	0.6287	0.6102	0.6158
136001	5	0	0	0	0	0	0	0	0				

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
136001	6	0	0	0	0	0	0	0	0				
136001	7	0	0	0	0	0	0	0	0				
136001	8	11,388	11,388	16,745	16,745	4,617	4,617	0	5	0.5100	0.5146	0.4993	0.5039
136001	9	26,572	26,572	24,955	24,955	7,849	7,849	0	11	0.5818	0.5869	0.5696	0.5748
138001	5	0	0	0	0	0	0	0	0				
138001	6	0	0	0	0	0	0	0	0				
138001	7	0	0	0	0	0	0	0	0				
138001	8	25,011	25,011	17,767	17,767	10,640	10,640	0	10	1.1077	1.1173	1.0844	1.0943
138001	9	75,033	75,033	54,014	54,014	22,915	22,915	0	30	0.7847	0.7916	0.7682	0.7752
140001	5	0	0	0	0	0	0	0	0				
140001	6	0	0	0	0	0	0	0	0				
140001	7	0	0	929	0	0	0	0	0				
140001	8	7,950	7,950	7,161	7,161	3,700	3,700	0	3	0.9557	0.9641	0.9356	0.9442
140001	9	29,906	29,906	18,889	18,889	9,433	9,433	0	12	0.9237	0.9317	0.9043	0.9124
142001	5	0	0	0	0	0	0	0	0				
142001	6	0	0	0	0	0	0	0	0				
142001	7	0	0	0	0	0	0	0	0				
142001	8	4,284	4,284	7,865	7,865	2,122	2,122	0	2	0.4991	0.5036	0.4886	0.4932
142001	9	20,917	20,917	23,500	23,500	7,225	7,225	0	8	0.5687	0.5737	0.5567	0.5619
144001	5	0	0	0	0	0	0	0	0				
144001	6	0	0	0	0	0	0	0	0				
144001	7	0	0	0	0	0	0	0	0				
144001	8	7,723	7,723	6,928	6,928	3,981	3,981	0	3	1.0627	1.0721	1.0404	1.0500
144001	9	56,635	56,635	33,524	33,524	20,129	20,129	0	22	1.1106	1.1201	1.0873	1.0970
146001	5	0	0	0	0	0	0	0	0				
146001	6	0	0	0	0	0	0	0	0				
146001	7	0	0	0	0	0	0	0	0				
146001	8	2,586	2,586	4,630	4,630	1,359	1,359	0	1	0.5429	0.5478	0.5315	0.5365
146001	9	29,741	29,741	22,494	22,494	10,867	10,867	0	12	0.8936	0.9014	0.8749	0.8828
148001	5	0	0	0	0	0	0	0	0				

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
148001	6	0	0	0	0	0	0	0	0				
148001	7	0	0	0	0	0	0	0	0				
148001	8	3,272	3,272	5,727	5,727	1,883	1,883	0	1	0.6081	0.6136	0.5953	0.6009
148001	9	78,535	78,535	49,603	49,603	29,483	29,483	0	31	1.0994	1.1089	1.0763	1.0860
150001	5	0	0	0	0	0	0	0	0				
150001	6	0	0	0	0	0	0	0	0				
150001	7	0	0	0	0	0	0	0	0				
150001	8	0	0	465	0	0	0	0	0				
150001	9	22,688	22,688	18,783	18,783	8,971	8,971	0	9	0.8835	0.8912	0.8649	0.8728
152001	5	0	0	0	0	0	0	0	0				
152001	6	0	0	0	0	0	0	0	0				
152001	7	0	0	0	0	0	0	0	0				
152001	8	0	0	931	0	0	0	0	0				
152001	9	21,564	21,564	32,853	32,853	8,742	8,742	0	9	0.4922	0.4966	0.4819	0.4864
154001	5	0	0	0	0	0	0	0	0				
154001	6	0	0	0	0	0	0	0	0				
154001	7	0	0	0	0	0	0	0	0				
154001	8	0	0	1,480	0	0	0	0	0				
154001	9	61,890	61,890	89,922	89,922	26,328	26,328	0	25	0.5416	0.5464	0.5302	0.5352
156001	5	0	0	0	0	0	0	0	0				
156001	6	0	0	0	0	0	0	0	0				
156001	7	0	0	0	0	0	0	0	0				
156001	8	0	0	624	0	0	0	0	0				
156001	9	20,931	20,931	35,459	35,459	9,951	9,951	0	8	0.5191	0.5238	0.5082	0.5129
158001	5	0	0	0	0	0	0	0	0				
158001	6	0	0	0	0	0	0	0	0				
158001	7	0	0	0	0	0	0	0	0				
158001	8	0	0	0	0	0	0	0	0				
158001	9	83,004	83,004	92,378	92,378	41,121	41,121	0	33	0.8234	0.8307	0.8061	0.8135
160001	5	0	0	0	0	0	0	0	0				

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
160001	6	0	0	0	0	0	0	0	0				
160001	7	0	0	0	0	0	0	0	0				
160001	8	0	0	354	0	0	0	0	0				
160001	9	14,564	14,564	10,933	10,933	7,506	7,506	0	6	1.2699	1.2810	1.2432	1.2545
162001	5	0	0	0	0	0	0	0	0				
162001	6	0	0	0	0	0	0	0	0				
162001	7	0	0	0	0	0	0	0	0				
162001	8	0	0	1,012	0	0	0	0	0				
162001	9	34,890	34,890	39,432	39,432	18,680	18,680	0	14	0.8763	0.8841	0.8578	0.8658
164001	5	0	0	0	0	0	0	0	0				
164001	6	0	0	0	0	0	0	0	0				
164001	7	0	0	0	0	0	0	0	0				
164001	8	0	0	0	0	0	0	0	0				
164001	9	45,734	45,734	102,060	102,060	26,316	26,316	0	18	0.4769	0.4813	0.4669	0.4713
166001	5	0	0	0	0	0	0	0	0				
166001	6	0	0	0	0	0	0	0	0				
166001	7	0	0	0	0	0	0	0	0				
166001	8	0	0	0	0	0	0	0	0				
166001	9	14,974	14,974	35,493	35,493	9,065	9,065	0	6	0.4724	0.4767	0.4625	0.4669
168001	5	0	0	0	0	0	0	0	0				
168001	6	0	0	0	0	0	0	0	0				
168001	7	0	0	0	0	0	0	0	0				
168001	8	0	0	0	0	0	0	0	0				
168001	9	47,874	47,874	118,033	118,033	30,419	30,419	0	19	0.4767	0.4810	0.4667	0.4711
170001	5	0	0	0	0	0	0	0	0				
170001	6	0	0	0	0	0	0	0	0				
170001	7	0	0	0	0	0	0	0	0				
170001	8	0	0	0	0	0	0	0	0				
170001	9	26,428	26,428	68,414	68,414	17,321	17,321	0	11	0.4683	0.4726	0.4585	0.4628
172001	5	0	0	0	0	0	0	0	0				

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
172001	6	0	0	0	0	0	0	0	0				
172001	7	0	0	0	0	0	0	0	0				
172001	8	0	0	0	0	0	0	0	0				
172001	9	21,370	21,370	57,781	57,781	15,075	15,075	0	9	0.4826	0.4870	0.4724	0.4769
174001	5	0	0	0	0	0	0	0	0				
174001	6	0	0	0	0	0	0	0	0				
174001	7	0	0	0	0	0	0	0	0				
174001	8	0	0	0	0	0	0	0	0				
174001	9	49,066	49,066	80,168	80,168	35,593	35,593	0	19	0.8212	0.8286	0.8040	0.8115
176001	5	0	0	0	0	0	0	0	0				
176001	6	0	0	0	0	0	0	0	0				
176001	7	0	0	0	0	0	0	0	0				
176001	8	0	0	0	0	0	0	0	0				
176001	9	19,801	19,801	58,975	58,975	14,958	14,958	0	8	0.4691	0.4734	0.4593	0.4636
178001	5	0	0	0	0	0	0	0	0				
178001	6	0	0	0	0	0	0	0	0				
178001	7	0	0	0	0	0	0	0	0				
178001	8	0	0	0	0	0	0	0	0				
178001	9	49,653	49,653	88,544	88,544	39,991	39,991	0	20	0.8354	0.8430	0.8179	0.8256
180001	5	0	0	0	0	0	0	0	0				
180001	6	0	0	0	0	0	0	0	0				
180001	7	0	0	0	0	0	0	0	0				
180001	8	0	0	0	0	0	0	0	0				
180001	9	11,590	11,590	37,668	37,668	9,682	9,682	0	5	0.4755	0.4798	0.4655	0.4699
182001	5	0	0	0	0	0	0	0	0				
182001	6	0	0	0	0	0	0	0	0				
182001	7	0	0	0	0	0	0	0	0				
182001	8	0	0	0	0	0	0	0	0				
182001	9	35,207	35,207	67,725	67,725	30,469	30,469	0	14	0.8322	0.8397	0.8147	0.8224
184001	5	0	0	0	0	0	0	0	0				

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
184001	6	0	0	0	0	0	0	0	0				
184001	7	0	0	0	0	0	0	0	0				
184001	8	0	0	0	0	0	0	0	0				
184001	9	62,445	62,445	219,508	219,508	57,163	57,163	0	25	0.4817	0.4861	0.4716	0.4761
186001	5	0	0	0	0	0	0	0	0				
186001	6	0	0	0	0	0	0	0	0				
186001	7	0	0	0	0	0	0	0	0				
186001	8	0	0	0	0	0	0	0	0				
186001	9	13,105	13,105	48,553	48,553	12,259	12,259	0	5	0.4670	0.4713	0.4572	0.4616
188001	5	0	0	0	0	0	0	0	0				
188001	6	0	0	0	0	0	0	0	0				
188001	7	0	0	0	0	0	0	0	0				
188001	8	0	0	0	0	0	0	0	0				
188001	9	25,331	25,331	54,935	54,935	24,708	24,708	0	10	0.8320	0.8395	0.8145	0.8222
190001	5	0	0	0	0	0	0	0	0				
190001	6	0	0	0	0	0	0	0	0				
190001	7	0	0	0	0	0	0	0	0				
190001	8	0	0	0	0	0	0	0	0				
190001	9	12,013	12,013	48,437	48,437	12,318	12,318	0	5	0.4704	0.4747	0.4605	0.4649
192001	5	0	0	0	0	0	0	0	0				
192001	6	0	0	0	0	0	0	0	0				
192001	7	0	0	0	0	0	0	0	0				
192001	8	0	0	0	0	0	0	0	0				
192001	9	10,844	10,844	45,096	45,096	11,553	11,553	0	4	0.4739	0.4782	0.4639	0.4683
194001	5	0	0	0	0	0	0	0	0				
194001	6	0	0	0	0	0	0	0	0				
194001	7	0	0	0	0	0	0	0	0				
194001	8	0	0	0	0	0	0	0	0				
194001	9	17,126	17,126	41,542	41,542	18,760	18,760	0	7	0.8353	0.8429	0.8177	0.8255
196001	5	0	0	0	0	0	0	0	0				

Weight Class	Axles	Annual VMT		Annual Cost Responsibility		Annual User Fees				Equity Ratio (all vehicles)		Equity Ratio (full-fee only)	
		All	Full-Fee	All	Full-Fee	All	Full-Fee	Subsidy	Allocated Subsidy	Plain	Subsidy-Adjusted	Plain	Subsidy-Adjusted
196001	6	0	0	0	0	0	0	0	0				
196001	7	0	0	0	0	0	0	0	0				
196001	8	0	0	0	0	0	0	0	0				
196001	9	9,487	9,487	42,890	42,890	10,867	10,867	0	4	0.4686	0.4729	0.4588	0.4632
198001	5	0	0	0	0	0	0	0	0				
198001	6	0	0	0	0	0	0	0	0				
198001	7	0	0	0	0	0	0	0	0				
198001	8	0	0	0	0	0	0	0	0				
198001	9	19,123	19,123	87,932	87,932	22,477	22,477	0	8	0.4728	0.4771	0.4629	0.4673
200001	5	0	0	0	0	0	0	0	0				
200001	6	0	0	0	0	0	0	0	0				
200001	7	0	0	0	0	0	0	0	0				
200001	8	0	0	0	0	0	0	0	0				
200001	9	77,742	77,742	371,636	371,636	94,488	94,488	0	31	0.4703	0.4746	0.4604	0.4648
		36,254,384,290	35,327,957,404	1,513,010,954	1,449,245,216	817,971,979	800,323,724	13,981,541	13,981,541	1.0000	1.0000	1.0000	1.0000

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 2005-2007 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 to fund additional highway projects, 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 noticeably changing the total amount of revenue collected from heavy vehicles.

The inequities within heavy vehicle classes may be generalized as follows:

- vehicles weighing over 80,000 pounds are paying less than their fair share,
- vehicles with a declared weight of 78,000 to 80,000 pounds (which account for 55 percent of all vehicle miles by vehicles over 26,000 pounds and 41 percent of all heavy vehicle miles) are paying more than their fair share,
- vehicles weighing more than 26,000 pounds, but less than 78,000 pounds, are paying less than their fair share, with inequity decreasing as weights increase, and
- vehicles between 8,000 and 26,000 pounds paying more than their fair share.

To achieve equity within heavy vehicle classes, several rate schedules would need to be changed. These include the registration fees paid by 8,001-26,000 pound commercial vehicles, 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.

7.1 Registration Fees for 8,001-26,000 Pound Commercial Vehicles

Commercial vehicles registered at gross weights of 8,001 to 26,000 pounds pay the state fuel tax and relatively higher registration fees in place of the weight-mile tax. The existing annual registration fees for these vehicles range from $169 for vehicles registered at 8,001-10,000 pounds to $375 for vehicles registered at 24,001-26,000 pounds. In contrast, a vehicle weighing 26,001 pounds would pay $184 per year for registration, along with the weight-mile tax.

To achieve better equity within heavy vehicles, the registration fees for vehicles between 8,001 and 26,000 pounds could be decreased by 15%, as shown in Exhibit 7-1.

7.2 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 4.00 cents per mile for vehicles declared at 26,001-28,000 pounds to 13.16 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 6.00 cents per mile to 12.00 cents per mile as shown in Exhibit 7-2. These rates are higher than existing rates for lower weights and lower than existing rates for the highest weights and would result in a 4.4 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

Exhibit 7-1

Registered Weight			Current Rate	Alternative Rate
8,001	to	28,000	$169	$144
10,001	to	30,000	$192	$163
12,001	to	32,000	$215	$183
14,001	to	34,000	$238	$202
16,001	to	36,000	$261	$222
18,001	to	38,000	$291	$247
20,001	to	40,000	$314	$267
22,001	to	42,000	$345	$293
24,001	to	44,000	$375	$319

Exhibit 7-2

Declared Weight			Current Rate	Alternative Rate	Difference	Percent Difference
26,001	to	28,000	0.0400	0.0600	0.0200	50.0%
28,001	to	30,000	0.0424	0.0623	0.0199	46.9%
30,001	to	32,000	0.0443	0.0646	0.0203	45.8%
32,001	to	34,000	0.0463	0.0669	0.0206	44.5%
34,001	to	36,000	0.0481	0.0692	0.0211	43.9%
36,001	to	38,000	0.0506	0.0715	0.0209	41.3%
38,001	to	40,000	0.0525	0.0738	0.0213	40.6%
40,001	to	42,000	0.0544	0.0762	0.0218	40.1%
42,001	to	44,000	0.0564	0.0785	0.0221	39.2%
44,001	to	46,000	0.0583	0.0808	0.0225	38.6%
46,001	to	48,000	0.0602	0.0831	0.0229	38.0%
48,001	to	50,000	0.0622	0.0854	0.0232	37.3%
50,001	to	52,000	0.0645	0.0877	0.0232	36.0%
52,001	to	54,000	0.0669	0.0900	0.0231	34.5%
54,001	to	56,000	0.0694	0.0923	0.0229	33.0%
56,001	to	58,000	0.0723	0.0946	0.0223	30.8%
58,001	to	60,000	0.0756	0.0969	0.0213	28.2%
60,001	to	62,000	0.0795	0.0992	0.0197	24.8%
62,001	to	64,000	0.0839	0.1015	0.0176	21.0%
64,001	to	66,000	0.0887	0.1038	0.0151	17.0%
66,001	to	68,000	0.0950	0.1062	0.0112	11.8%
68,001	to	70,000	0.1017	0.1085	0.0068	6.7%
70,001	to	72,000	0.1084	0.1108	0.0024	2.2%
72,001	to	74,000	0.1146	0.1131	-0.0015	-1.3%
74,001	to	76,000	0.1205	0.1154	-0.0051	-4.2%
76,001	to	78,000	0.1263	0.1177	-0.0086	-6.8%
78,001	to	80,000	0.1316	0.1200	-0.0116	-8.8%

[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, a portion of a vehicle's miles may be reported under Table A and a portion under Table B.

Exhibit 7-3

Declared Weight			Axles	Current Rate	Alternative Rate	Difference	Percent Difference
80,001	to	82,000	5	0.1359	0.1589	0.0230	16.9%
80,001	to	82,000	6	0.1243	0.1385	0.0142	11.4%
80,001	to	82,000	7	0.1162	0.1276	0.0114	9.8%
80,001	to	82,000	8	0.1104	0.1185	0.0081	7.4%
80,001	to	82,000	9	0.1041	0.1140	0.0099	9.5%
82,001	to	84,000	5	0.1403	0.1715	0.0312	22.2%
82,001	to	84,000	6	0.1263	0.1448	0.0185	14.6%
82,001	to	84,000	7	0.1181	0.1294	0.0113	9.6%
82,001	to	84,000	8	0.1118	0.1197	0.0079	7.1%
82,001	to	84,000	9	0.1055	0.1148	0.0093	8.9%
84,001	to	86,000	5	0.1445	0.1850	0.0405	28.0%
84,001	to	86,000	6	0.1292	0.1515	0.0223	17.3%
84,001	to	86,000	7	0.1200	0.1313	0.0113	9.4%
84,001	to	86,000	8	0.1132	0.1209	0.0077	6.8%
84,001	to	86,000	9	0.1070	0.1157	0.0087	8.2%
86,001	to	88,000	5	0.1494	0.1995	0.0501	33.5%
86,001	to	88,000	6	0.1320	0.1588	0.0268	20.3%
86,001	to	88,000	7	0.1219	0.1334	0.0115	9.4%
86,001	to	88,000	8	0.1152	0.1223	0.0071	6.1%
86,001	to	88,000	9	0.1084	0.1167	0.0083	7.7%
88,001	to	90,000	5	0.1552	0.2151	0.0599	38.6%
88,001	to	90,000	6	0.1354	0.1666	0.0312	23.1%
88,001	to	90,000	7	0.1239	0.1356	0.0117	9.5%
88,001	to	90,000	8	0.1171	0.1237	0.0066	5.6%
88,001	to	90,000	9	0.1104	0.1177	0.0073	6.6%
90,001	to	92,000	5	0.1619	0.2318	0.0699	43.2%
90,001	to	92,000	6	0.1393	0.1750	0.0357	25.6%
90,001	to	92,000	7	0.1257	0.1380	0.0123	9.8%
90,001	to	92,000	8	0.1190	0.1252	0.0062	5.2%
90,001	to	92,000	9	0.1123	0.1188	0.0065	5.8%
92,001	to	94,000	5	0.1692	0.2496	0.0804	47.5%
92,001	to	94,000	6	0.1431	0.1840	0.0409	28.5%
92,001	to	94,000	7	0.1277	0.1405	0.0128	10.0%
92,001	to	94,000	8	0.1209	0.1269	0.0060	4.9%
92,001	to	94,000	9	0.1138	0.1200	0.0062	5.5%
94,001	to	96,000	5	0.1769	0.2686	0.0917	51.9%
94,001	to	96,000	6	0.1475	0.1935	0.0460	31.2%
94,001	to	96,000	7	0.1301	0.1432	0.0131	10.1%
94,001	to	96,000	8	0.1229	0.1286	0.0057	4.6%
94,001	to	96,000	9	0.1156	0.1213	0.0057	4.9%
96,001	to	98,000	5	0.1851	0.2889	0.1038	56.1%
96,001	to	98,000	6	0.1528	0.2037	0.0509	33.3%
96,001	to	98,000	7	0.1330	0.1461	0.0131	9.9%
96,001	to	98,000	8	0.1249	0.1305	0.0056	4.5%
96,001	to	98,000	9	0.1176	0.1226	0.0050	4.3%
98,001	to	100,000	5				
98,001	to	100,000	6	0.1585	0.2145	0.0560	35.3%

five-axle vehicle is 18.51 cents and the rate for a six-axle vehicle is 15.28 cents. Thus, by adding an axle, a carrier can reduce his or her tax liability by over three cents per mile. Current Table B rates range from 10.41 cents per mile for a nine-axle vehicle declared at 82,000 pounds to 18.51 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 heavy vehicles, Table B rates could be increased as shown in Exhibit 7-3. These rates are a little higher for eight-and nine-axle vehicles and substantially higher for the heaviest five- and six-axle vehicles. For example, a 98,000 pound vehicle with nine axles would pay 0.5 cents per mile more under these rates, but a 98,000 pound vehicle with only five axles would pay 10.38 cents more. This reflects the costs imposed by very heavy vehicles with few axles to spread the weight. These rates would

result in a 9.7 percent increase in revenue from vehicles paying Table B rates if truckers did not respond by increasing the number of axles on their trucks.

Exhibit 7-3, continued

Declared Weight			Axles	Current Rate	Alternative Rate	Difference	Percent Difference
98,001	to	100,000	7	0.1359	0.1492	0.0133	9.8%
98,001	to	100,000	8	0.1272	0.1324	0.0052	4.1%
98,001	to	100,000	9	0.1195	0.1241	0.0046	3.8%
100,001	to	102,000	5				
100,001	to	102,000	6				
100,001	to	102,000	7	0.1388	0.1525	0.0137	9.8%
100,001	to	102,000	8	0.1301	0.1345	0.0044	3.4%
100,001	to	102,000	9	0.1215	0.1256	0.0041	3.4%
102,001	to	104,000	5				
102,001	to	104,000	6				
102,001	to	104,000	7	0.1417	0.1559	0.0142	10.0%
102,001	to	104,000	8	0.1330	0.1368	0.0038	2.8%
102,001	to	104,000	9	0.1239	0.1272	0.0033	2.7%
104,001	to	105,500	5				
104,001	to	105,500	6				
104,001	to	105,500	7	0.1455	0.1596	0.0141	9.7%
104,001	to	105,500	8	0.1359	0.1391	0.0032	2.4%
104,001	to	105,500	9	0.1263	0.1289	0.0026	2.1%

7.3 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.

The existing statutory flat fee rate for carriers transporting logs is $6.10 per 100 pounds of declared combined weight. The comparable rates for carriers transporting wood chips and sand and gravel are $24.62 and $6.05, respectively. These are annual rates that typically are paid in monthly installments. The monthly flat fee applicable to a log truck declared at 80,000 pounds, for example, is $370 (i.e., $6.10 x 800 = $4,880/12 months = $407). This amount must be paid each month the vehicle remains on a flat fee basis, regardless of the number of miles traveled during the month.

The flat fee rates are required to be reviewed biennially and appropriate adjustments in these rates presented to each regular legislative session. This review is accomplished through the biennial flat fee studies, the latest of which was completed in November 2004. That study compared flat fee revenues in 2003 to what those vehicles would have paid in weight-mile tax in 2003. On January 1, 2004, both flat-fee rates and weight-mile rates were increased as a result of the OTIA III legislation. The study found that wood chip haulers reporting on a flat fee basis paid more than they would have on a mileage basis in 2001, while flat fee log and sand and gravel haulers paid less than they would have on a mileage basis.

We applied 2004 flat-fee rates and weight-mile rates to the 2003 data and found that current flat-fee rates for wood-chip haulers result in overpayment and current flat-fee rates for sand and gravel haulers result in underpayment relative to the weight-mile taxes those haulers would otherwise pay. 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. If one assumes that 50 percent of log-truck miles are empty, current flat-fee rates result in a slight underpayment. If one assumes that 55 percent of log-truck miles are empty, current flat-fee rates result in a

slight overpayment.

Exhibit 7-4 shows the flat fee rates necessary to implement the flat fee study results in combination with the overall light and heavy vehicle HCAS results. These rates represent an increase in the statutory rate for sand and gravel trucks, and a reduction in the statutory rates for log and wood chip trucks. The flat-fee rates presented here were recalculated to match the alternative weight-mile tax rates presented above, using 2003 flat-fee mileage data. Those rates would result in 2.2 percent higher revenues from flat-fee paying vehicles.

Exhibit 7-4

	Log	Sand & Gravel	Wood Chips
Current Flat Fee Rate	6.10	6.05	24.62
Flat Fee Rate to Match Current WMT	5.95	6.55	17.90
Flat Fee Rate to Match Alternative WMT Rate	6.22	6.50	20.31

7.4 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 5.7 cents per 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 the weight classes above 105,500 pounds are significantly underpaying their responsibility. To increase equity within heavy vehicles, Road Use Assessment Fee rates could be increased to 8.9 cents per ESAL-mile. Doing so would increase revenues from the Road Use Assessment Fee by 55 percent.