Implementation of the Simplified Arizona Highway Cost Allocation Study Model

FINAL REPORT 477(3)

Prepared by:
Jason Carey
PO Box 786
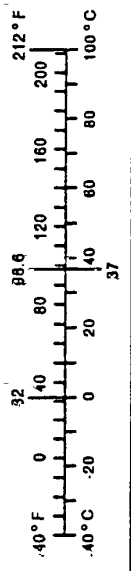Flagstaff, AZ 86002

MARCH 2001

METRIC (SI*) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	2.54	centimeters	cm
ft	feet	0.3048	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	6.452	centimeters squared	cm^2
ft^2	square feet	0.0929	meters squared	m^2
yd^2	square yards	0.836	meters squared	m^2
mi^2	square miles	2.59	kilometers squared	km^2
ac	acres	0.395	hectares	ha
		MASS (weight)		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.0328	meters cubed	m^3
yd^3	cubic yards	0.765	meters cubed	m^3

Note: Volumes greater than 1000 L shall be shown in m^3.

		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	millimeters squared	0.0016	square inches	in^2
m^2	meters squared	10.764	square feet	ft^2
km^2	kilometers squared	0.39	square miles	mi^2
ha	hectares (10,000 m^2)	2.53	acres	ac
		MASS (weight)		
g	grams	0.0353	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams (1000 kg)	1.103	short tons	T
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	meters cubed	35.315	cubic feet	ft^3
m^3	meters cubed	1.308	cubic yards	yd^3

		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

°F   -40°F   0   32   98.6   212°F
      | | | | |
°C   -40°C -20   0   20   37 40   100°C

These factors conform to the requirement of FHWA Order 5190.1A

*SI is the symbol for the International System of Measurements

Technical Report Documentation Page

1. Report No. FHWA-AZ-01-477(3)	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle **Implementation of the Simplified Arizona Highway Cost Allocation Study Model**		5. Report Date March 2001
		6. Performing Organization Code
7. Authors Jason Carey		8. Performing Organization Report No.
9. Performing Organization Name and Address Jason Carey , PO Box 786, Flagstaff, AZ 86002		10. Work Unit No.
		11. Contract or Grant No.
12. Sponsoring Agency Name and Address **ARIZONA DEPARTMENT OF TRANSPORTATION** **206 S. 17TH AVENUE** **PHOENIX, ARIZONA 85007** Project Manager: John Semmens		13.Type of Report & Period Covered
		14. Sponsoring Agency Code
15. Supplementary Notes Prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration		

16. Abstract

The Arizona Simplified Model for Highway Cost Allocation Studies (Arizona SMHCAS) was developed in 1999 as an alternative to the complicated model for highway cost allocation then available to the Arizona Department of Transportation.

The Arizona SMHCAS was refined in 2000 and back-tested to determine its suitability as a replacement for the old Arizona highway cost allocation model. Based on this testing, and on continuing problems with use of the old Arizona model, the Arizona SMHCAS was determined to be a suitable replacement. A training program for implementation of the SMHCAS model by Arizona Department of Transportation staff was subsequently initiated.

The principal means of conducting the ADOT staff training was a complete update of the Arizona Simplified Highway Cost Allocation Model for fiscal 2001 to 2005. Throughout the course of this training program and update, several improvements were made to the Arizona SMHCAS based on feedback from ADOT personnel. These improvements included the aggregation of line item expenditure data into broader categories, the addition of input categories for state highway spending funded through "non-traditional" means (e.g. the Maricopa Freeway System funded via a transportation excise tax), and the addition of revenue input categories for future means of funding, including separate inputs for future weight-based, travel-based and flat user fees. Furthermore, all growth rate calculations were converted to a three-year rolling average to minimize the impact of variance in single year observations, and new tables were added to simplify the reporting of local government expenditures. Finally, based on a consensus in the literature regarding allocation of capacity-driven expenditures, passenger car equivalency factors were added as an option for allocating cost responsibility in urbanized areas.

17. Key Words cost allocation, tax equity	18. Distribution Statement Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22161		23. Registrant's Seal
19. Security Classification Unclassified	20. Security Classification Unclassified	21. No. of Pages 131	22. Price	

Table of Contents

List of Tables

List of Figures

Summary of Key Findings

The Arizona Simplified Model for Highway Cost Allocation Studies (Arizona SMHCAS) was developed in 1999 as an alternative to the complicated model for highway cost allocation then available to the Arizona Department of Transportation. Unlike traditional methodologies for highway cost allocation, which have tended to become more complex over time, the allocation of responsibility for highway expenditures in the Arizona SMHCAS was based on two simple premises. First, construction costs in urbanized areas were allocated based on the premise the these costs are driven primarily by the need to provide sufficient roadway capacity. In contrast, rural construction costs were assigned to vehicle and weight classes based on the premise that these costs are primarily incurred through the need to provide pavements of sufficient strength to handle heavy vehicles. As a result, in urban areas, costs were allocated based on vehicle miles of travel, whereas costs in rural areas were allocated based on vehicle axle loads per mile driven.

The Arizona SMHCAS was refined in 2000 and back-tested to determine its suitability as a replacement for the old Arizona highway cost allocation model. A comparison of highway cost allocation outputs between the two models from fiscal 1988 to 2004 (forecast) yielded an aggregate variance of roughly 6 percent. Based on this finding, and on continuing problems with use of the old Arizona model, the Arizona SMHCAS was determined to be a suitable replacement. A training program for implementation of the SMHCAS model by Arizona Department of Transportation staff was subsequently initiated.

The principal means of conducting the ADOT staff training was a complete update of the Arizona Simplified Highway Cost Allocation Model for fiscal 2001 to 2005. Throughout the course of this training program and update, several improvements were made to the Arizona SMHCAS based on feedback from ADOT personnel. These improvements included the aggregation of line item expenditure data into broader categories, the addition of input categories for state highway spending funded through "non-traditional" means (e.g. the Maricopa Freeway System funded via a transportation excise tax), and the addition of revenue input categories for future means of funding, including separate inputs for future weight-based, travel-based and flat user fees. Furthermore, all growth rate calculations were converted to a three-year rolling average to minimize the impact of variance in single year observations (i.e. outliers), and new tables were added to simplify the reporting of local government expenditures. Finally, based on a consensus in the literature regarding allocation of capacity-driven expenditures, passenger car equivalency factors (PCEs) were added as an option for allocating cost responsibility in urbanized areas.

These improvements serve to heighten the flexibility of the Arizona SMHCAS, making the model easier to update and providing the user with a greater variety of methodological options. During the course of this update, an error in the Arizona SMHCAS method of calculating total vehicle traffic was discovered. This error was corrected to make total vehicle miles of travel dependent upon the urban and rural distributions of travel calculated in the model, rather than an independently calculated distribution. Subsequent to this adjustment, the model was re-run for all update periods covered in Phase 2. It was determined that variance in share outputs between the Arizona SMHCAS and the old Arizona model were virtually unchanged. This observation was true for both the VMT-weighted and the PCE-weighted distributions of cost responsibility.

A summary of aggregated highway user revenues, cost responsibility and equity ratios by vehicle class for fiscal 1988 to 2005 is presented in the table below. It should be noted that the forecast results differ substantially from those reported in Phase 2. This disparity is due to the reporting of excise tax spending on the Maricopa Freeway System (MAG system). These amounts were not included in the ADOT spending programs evaluated in the 1999 to 2003 and 2000 to 2004 updates. Over these fiscal periods, annual MAG system spending averaged approximately $250 million. The addition of more specific expenditure inputs to the SMHCAS as discussed above should remedy any future changes in expenditure reporting.

Aggregated Cost Allocation Results by Vehicle Class, 1988 to 2005

(Dollars in Millions)

Vehicle Class	Revenue	Cost Resp. (VMT)[2.]	Equity Ratio	Cost Resp. (PCE)[2.]	Equity Ratio
Autos	$12,405.5	$15,452.7	80.3%	$14,248.8	87.1%
Light Trucks[1]	$7,685.4	$7,399.8	103.9%	$6,966.0	110.3%
Buses	$130.6	$142.3	91.7%	$173.5	75.3%
Single Unit Trucks	$1,551.2	$1,873.7	82.8%	$2,119.3	73.2%
Combination Trucks	$7,028.2	$7,600.6	92.5%	$8,961.5	78.4%
Totals	$28,801.0	$32,469.1	88.7%	$32,469.1	88.7%

Notes: 1. Includes pick-up trucks, vans, and sport-utility vehicles. 2. Totals have been adjusted to reflect freeway spending not accounted for in the state spending programs beginning in fiscal 1999 and 2000.

The upward revision of urban freeway spending produced a distribution of highway user equity less skewed than previously reported. With the exception of light trucks, all vehicle classes were projected to have paid less than their cost responsibility over the aggregated fiscal period. Also notable is the impact of the PCE factor on the overall distribution of cost responsibility. If urban travel is weighted according to passenger car equivalents, roughly $1.6 billion in total cost responsibility is transferred from passenger vehicles to larger trucks. However, the intensive spending on the Maricopa Freeway System is projected to be largely complete by 2007. Future differences in output between the two allocation methods are expected to be less pronounced, as the percentage of total highway spending decreases in urbanized areas.

During the course of this update, an attempt was made to reevaluate the FHWA model for highway cost allocation. While outputs were produced using the beta version of the FHWA model made available in fall 2000, continuing functional problems inherent to the FHWA model design created results that could not be considered reliable. While resolution of these operational problems would conceivably increase the reliability of the model's output, the inherent complexity of the FHWA model and the time required for a complete update make it unsuitable for the type of *ad hoc* analysis regularly done in Arizona. The SMHCAS produces comparable results to more complicated methodologies without the complexities of data classification and research that constrain the utility of the FHWA model. While the need for uniform reporting may dictate use of the FHWA model for infrequent analyses at some point in the future, the Arizona SMHCAS remains the most useful option for Arizona HCAS updates.

I.   Introduction to Highway Cost Allocation

A highway cost allocation study (HCAS) is an attempt to compare revenues collected from various highway users to the expenses incurred by highway agencies in providing facilities for these users. The basic premise behind a HCAS is that highway users should pay an amount sufficient to cover the cost incurred by highway agencies in providing these facilities. Likewise, highway users should not be forced to pay more than it costs to provide the facilities they require.

Highway cost allocation studies are undertaken in order to assess the equity of the existing highway user tax structure and determine whether changes in that structure are needed. Because highway user taxes are generally collected through indirect means such as taxation of fuel or the value of the vehicle, and not through direct charges for use of the roadway, determination of equity is a complicated endeavor. Highway cost allocation studies have been devised in order to resolve the complicated distribution of revenues and expenses among different groups of highway users.

Highway users are grouped according to such variables as vehicle type, vehicle weight, commercial and non-commercial status, etc. in order to estimate the expenses that each group imposes on the highway system and the revenues that each group generates. The expenditure side of the HCAS equation includes all actual planned and estimated outlays for roads (including overhead), regardless of the source of these funds. These expenditures represent what it costs to serve the needs of highway users. The cost allocation study does not consider issues of "need," nor does it evaluate how much money should be spent on highways. The HCAS merely allocates responsibility to various classes of highway users for the amounts of money that various government agencies plan to spend on highways.

Revenues allocated among the various classes of highway users in a HCAS include only those revenues directly attributable to taxes paid by highway users for the use of the highways. The revenue side of the HCAS equation does not include non-user taxes that may be spent on highways. For example, sales taxes spent by the Arizona Department of Transportation (ADOT) on the Maricopa County regional freeway system and property taxes spent by local governments on roads and streets are not a charge for use of the highway system and are consequently not considered as revenues by the HCAS. Arizona highway user revenues include gasoline and diesel fuel taxes, motor carrier fees, vehicle license and registration fees, and other miscellaneous fees related to the use of a motor vehicle.

Options for Conducting Highway Cost Allocation Studies in Arizona

Highway cost allocation studies have been conducted by a number of state governments and by the Federal Highway Administration (FHWA) over the past several decades. Methods and assumptions for the distribution of cost responsibility have often varied considerably among these highway cost allocation studies, but the general premises tend to reflect a "common" cost responsibility related to the provision and administration of basic roadway requirements, with added cost responsibility based upon proportional increments of axle loads, gross weight, vehicle width, etc. that different vehicles impose on the highway system. All highway cost allocation studies require a significant degree of abstraction: it is not known that a given vehicle class is responsible for a certain expenditure level, nor for a certain proportion of travel, fuel tax revenues, etc. While reasonable estimates may be made from the data at hand, it is not clear that a more complicated (and theoretically justifiable) attribution of revenues and cost responsibility will actually result in a more accurate distribution.

A number of methodologies of varying complexity exist for preparing a HCAS. Attempts to compare results between states and among various levels of government have historically been thwarted by the different methods of highway cost allocation in use. Cost allocation can be a useful tool for analysis of the equity of taxes and fees imposed on users of the highway system, but the benefits of allocation must also be weighed against the cost of completing studies on a regular basis. Because the process can be a time-consuming endeavor, regular updates are more likely to occur when the process is simplified.

Options available to the Arizona Department of Transportation for conducting highway cost allocation studies have been limited by the availability of appropriate resources. Until recently, the only option available for Arizona HCAS updates was a model developed for ADOT by SYDEC in 1993. This model used a series of Fortran programs to allocate revenues and cost responsibilities among vehicle classes based on a variety of print file and database inputs. However, the SYDEC model was both complicated and inflexible, with "hard-wired" components that could not be altered to reflect changes in tax policy since the model's creation. Missing components and the sheer size of the model made it both unwieldy and unreliable for future updates.

In light of the problems experienced with the older ADOT model, a simplified model for highway cost allocation (SMHCAS) was developed for ADOT in 1999 as a part of the cost allocation update for fiscal 1999 to 2003. The SMHCAS was created to provide ADOT and third-party researchers with a cost effective tool that makes the allocation of revenues and expenditures an easier and far less time-consuming process. In Phase 2 of this study, the new SMHCAS was back-tested against results obtained with the older SYDEC model used by the Arizona Department of Transportation. The output results of both models were examined to determine whether the simplicity of the SMHCAS had a detrimental effect on its accuracy relative to the more complicated SYDEC model. While some variance in output results was found, the SMHCAS outputs were generally quite close to those of the older model. In addition, the SMHCAS required significantly less

time to perform updates for new fiscal periods. In light of these results, it was determined that the SMHCAS model provided a reasonable allocation of revenue-to-cost responsibility for various vehicle and weight classes that was both theoretically justifiable and far more user-friendly than the older ADOT HCAS model.

Phase 2 of this study recommended the use of the SMHCAS for future highway cost allocation updates in Arizona. This recommendation was received favorably, and a training program was initiated to instruct ADOT Financial Management Services (FMS) employees in the use of the SMHCAS. Section II of this report provides an overview of the SMHCAS design, methods and assumptions, as well as the results of the training program for FMS personnel. The training program consisted primarily of a complete highway cost allocation update for fiscal 2001 to 2005. The results of this update are presented in Section III.

In the past year, a standardized model has been developed for the use of state governments with the support of the FHWA. This "Federal Model" (FHCAS) is expected to provide an alternative for future cost allocation updates prepared by ADOT. In previous phases of this study, it was determined that the FHCAS *as provided* did not suit the needs of the Arizona Department of Transportation. However, this finding was a result of the incompleteness of the FHWA model at the time of attempted testing. As of the completion of Phase 2 of the Arizona Highway Cost Allocation Update, the FHCAS remained incomplete. However, a completed "beta version" of the Federal HCAS was made available by the FHWA in August, 2000. This beta version of the FHWA highway cost allocation model is assessed as an alternative to the Arizona SMHCAS in Section IV.

II.   Arizona Simplified Highway Cost Allocation Model

This section provides a brief overview of the Arizona SMHCAS, including a summary of the basic premise of the model and a discussion of the basic means of allocating revenues and expenditures to vehicle and weight classes. The overview of the model is followed by results of the implementation training program conducted with ADOT FMS staff in the Fall of 2000. These results include a number of modifications intended to further simplify use of the Arizona SMHCAS, as well as additional data used to strengthen forecast reliability. A detailed discussion of these changes is included in this section as well. Documentation of meetings and correspondence pertaining to the implementation and training are included in Appendix A.

Overview of the Arizona Simplified Model for Highway Cost Allocation (SMHCAS)

The Arizona SMHCAS is contained within a single Excel spreadsheet workbook that fits on a standard 3½-inch floppy disk. All equations and calculations are visible to the operator, and can be modified to suit future changes in spending or taxation. Worksheets are grouped according to functional categories: Inputs, Adjustment Factors, Reference files and Outputs. In accordance with the goal of providing a portable, easy-to-use model, the SMHCAS contains no macros, external references, algorithms or other complications. All calculations are made using standard Excel formulas and internal look-up references.

The Arizona SMHCAS differs from other highway cost allocation models primarily in its treatment of expenditures. Whereas revenues are distributed in similar ways by the FHCAS, the old Arizona HCAS and the Arizona SMHCAS models, the distribution of cost responsibility in the SMHCAS is far less complicated than in the other two models. The SMHCAS allocation of expenditures is based on the following two premises:

1.   Capital expenditures in urbanized areas are primarily the result of the need for additional *capacity*. Any construction on highway segments in an urbanized area will therefore be allocated according to an unadjusted share of highway usage (i.e. vehicle miles of travel). This method shares the rationale used for the allocation of "common" expenditures (e.g. signs, highway patrol, etc.) in the SMHCAS and other models, specifically that the *volume* of traffic on a given highway segment has the greatest impact on expenditures associated with that segment.[1]

2.   Capital expenditures on highway segments outside of urban areas are considered in terms of added *strength* (thickness) required for heavier vehicles. The share of VMT on these segments is therefore weighted in accordance with standardized equivalent single axle loads (ESALs) prior to allocation of cost responsibility.

---

[1] Note that this method was modified during the course of the training program documented herein. Based on a review of recent HCAS literature (e.g. FHWA 1997 HCAS Update and FHWA State HCAS 2000 documentation), the option to distribute capacity-related construction according to VMT weighted by passenger car equivalents has been built into the SMHCAS model. A discussion of this change and its implications can be found in *Phase 3 Changes to the Arizona SMHCAS* in this section.

The only variables considered are VMT and ESAL factors. Incremental analysis of width and gross weight used in other models are not considered. Similarly, no attempt is made to discern the need for capacity versus strength on a segment-by-segment basis. All strength-driven capital expenditures are allocated according to ESAL-weighted VMT.

Very little engineering data are required for the SMHCAS allocation, which relies solely on shares of travel[2] and accepted ESAL factors for a variety of vehicle configurations. As such, the SMHCAS should not be considered a scientific methodology for distribution of expenditures. The SMHCAS model was developed in order to reduce the burden of data collection and reporting on state highway agencies performing highway cost allocation studies, but is not intended to supplant the research performed by developers of other HCAS models.

Distribution of Revenues

Revenue data used for the SMHCAS are obtained from forecasts produced by the ADOT Finance Department. The SMHCAS uses an average of annual revenues for the forecast period to make the allocation to vehicles and weight classes. The principal means of allocating each revenue source are shown in Table 1 below.

Table 1: Distribution of Revenues in the SMHCAS

Revenue Source	Primary Allocation Factor	Weighted?	Weighting Factors
Fuel taxes	VMT	Yes	Fuel efficiency
VLT	Historical distribution	Yes	Vehicle values
Registration fees	Registration counts	No	None
Weight & use fees	Registration counts	Yes	Relative magnitude
Federal Sales tax	Commercial registrations	Yes	Relative magnitude
Federal Tire tax	Commercial registrations	Yes	Tire configuration

Each of the revenue categories is allocated by the SMHCAS to vehicle and weight classes based on different criteria. Fuel revenues are allocated based on VMT and relative fuel efficiency of vehicle classes and weight classes. The motor carrier tax is assigned to commercial vehicles based on the proportion of registrations in each category weighted by the differential in motor carrier fees assessed by weight. The vehicle license tax,

---

[2] It should be noted that the collection of vehicle classification data and the corresponding measurement of VMT are subject to limitations in the frequency and scope of collection. Data collected in Arizona are from samples taken mainly on the State Highway System and are collected for short periods of time and/or infrequent intervals on some highway segments. The data collected are therefore likely to exhibit substantial fluctuation between measurement periods for any given portion of the highway system. While these data are assumed to provide reasonable estimates for statewide aggregates of cost responsibility, the application to smaller subsets of roadways may not be appropriate. Any enhancements that are made to monitor traffic streams will serve to refine and improve the effectiveness and fairness of the HCAS.

registration fees and other miscellaneous taxes and fees require the use of external data sets, as well as a more detailed breakdown of the latter two categories in order to make an accurate allocation. Methods used to assign all fees to vehicle and weight classes are described in greater detail in *Refinement of the Simplified Arizona Cost Allocation Study Model* (Carey, 2000).

Distribution of Cost Responsibility

Expenditure data are compiled in three categories: "Capacity-driven" expenditures, "Strength-driven" expenditures, and "Common" costs such as ADOT's overhead and operating expenses. Expenditure data from different levels of government are allocated to each category based on different methods, depending on the manner in which the source data are presented. The allocation methods for each category and data source are indicated in the following table.

Table 2: Allocation Methods by Level of Government and Type of Expenditure

Allocation Method	State Level [1.]	Local Levels [2.]	
		Metropolitan Areas [3.]	Counties
Capacity	Spending Program Share (Urban)	Construction estimates for Cities & Towns; Regional government expenditures	---
Strength	Spending Program Share (Rural)	Maintenance (pavement)	Construction estimates for Counties; Maintenance (pavement)
Common	Overhead and Administration; Highway Patrol and Safety; Spending Program Share	Administration and Safety; Interest on Debt; Road and Street Services; Maintenance (non-pavement)	Administration and Safety; Interest on Debt; Road and Street Services; Maintenance (non-pavement)
Notes: (1.) Includes federally-funded portion of the state Spending Program forecast. (2.) Includes expenditures funded by transfers from state and federal sources. (3.) Local Government reports for cities and towns, counties and regional governments.			

Of the three methods for allocating cost responsibility, the means of distributing Capacity-driven and Common expenditures are most similar. Both types of expenditure are distributed among vehicle and weight classes according to share of VMT.[3] However,

---

[3] As mentioned in Footnote 1., the option to distribute capacity-driven expenditures using a PCE factor has been included in the latest version of the Arizona SMHCAS. However, the PCE factor serves to weight the urban VMT distribution, not to replace it. While some shift in cost responsibility will occur, the order of magnitude is far smaller than that of the ESAL factor applied to rural VMT. Share of travel still makes up the most important element of capacity-related distribution of expenditures, even when the PCE option is chosen.

capacity-driven expenditures are distributed according to *urban* VMT only, whereas common expenditures are distributed according to share of total VMT. This distinction is made in order to account for the distribution of system-wide common costs (e.g. highway signs and safety improvements) that pertain to travel on all state highways.

Strength-driven highway expenditures are allocated according to the share of rural VMT applicable to each vehicle or weight class, but are adjusted by equivalent single axle load (ESAL) factors for each configuration and weight class. While it is likely that some of these expenditures on rural segments are driven by the need for capacity (and that some urban segment expenditures are a function of added strength and width requirements), the adverse effect of axle loading has been shown to have a greater impact on the flexible pavements common on rural highways than on the rigid concrete of urban freeways (FHWA, 1995). Capacity and strength-driven expenditures are split according to this basic premise: that, in the aggregate, highways in urbanized areas are built primarily for capacity, and that the cost of construction on non-urban highway segments is primarily a function of vehicle weight.

Automobiles and pick-ups account for the majority of travel on both rural and urban systems. These vehicles can therefore be expected to receive the bulk of cost responsibility for capacity-driven and common expenditures, which are attributed based on VMT. However, while autos and pick-ups also account for most of the VMT measured on non-urban segments, the share of strength-related expenditures attributed to these vehicle classes is greatly offset by their relatively small ESAL coefficients. Combination trucks are more highly represented on non-urban segments than most other vehicle types. The combination of higher ESAL factors and a proportionally greater share of rural VMT suggests combination trucks will bear the highest cost responsibility for construction and maintenance of highways outside of urbanized areas.

While federal funds are not specifically called out in the table, it is implied that expenditures funded with federal aid are included in the state and local expenditure sources. Federal funds allocated to a specific expenditure program are allocated according to the means of distributing the state and/or local funds for that particular program. For example, federal aid makes up a significant portion of the state Spending Program. The sorted Spending Program distributes federal funds to capacity, strength and common expenditure categories in the same way that state funds are distributed. Similarly, "State Aid to Local Governments" from the Highway User Revenue Fund (HURF) is distributed according to the share of local expenditures in each category, and not according to state level distributions such as the Spending Program.

ADOT Implementation and Training Program Recommendations

Staff training sessions were held with Brad Steen, Nettie Klingler and Phil Chan of the ADOT Financial Management Services group. The intent of these meetings was twofold. First, a complete update for the fiscal 2001 to 2005 period was conducted in order to provide one or more ADOT FMS employees with the requisite knowledge conducting highway cost allocation updates using the SMHCAS model. Second, detailed discussions and demonstrations of the worksheet interactions within the SMHCAS model were performed so that these employees would be able to make changes or adjustments to the model as required for new tax policies, additional data or reporting. Summaries of these meetings, as well as records of correspondence pertaining to the training and updates, are included in Appendix A of this report.

In the course of these training sessions, several suggestions were made regarding improvements to the general utility of the SMHCAS format. Generally speaking, two types of changes to the model were suggested:

1. Input adjustments: Changes of this sort included the reduction or simplification of some inputs to make updates to the model easier to perform. For example, state overhead and administrative line items in the Discretionary Fund report were condensed into a single input for "Overhead Expenses." In some cases, lines or worksheets were added to make the model more flexible for future updates. These additions allowed the input of additional years' data without deleting or changing inputs from prior years.

2. Growth rate adjustments: Growth rates between single-year data sets used in forecasting variables such as share of traffic or VLT were replaced with changes in three-year averages. This adjustment was made to lessen the influence of occasional outliers in sensitive data sets (e.g. traffic shares, in which a change of 0.1 percent could substantially influence the forecast results). By replacing year-to-year growth rates with average growth over three-year periods, more reliable forecast results were obtained.

These changes were made to several worksheets in the Arizona SMHCAS model. Additionally, it was recommended that the contacts for various data requirements in the model be updated to reflect changes in staffing and/or responsibility. A thorough discussion of the changes made to the individual worksheets in the model, as well as a revised list of contacts for data requirements, is contained in the next section. Appendix B of this report contains cell reference formulas for the altered worksheets. These formulas should replace those in Appendix C *of Refinement of the Arizona Simplified Highway Cost Allocation Study Model*.

Phase 3 Changes to the Arizona SMHCAS Model

The principal changes to the Arizona SMHCAS worksheets are reflected in the INPUTS and ADJUSTMENTS sections of the model. However, changes to these worksheets required some adjustment of the REFERENCE section, as well as additions to all OUTPUT worksheets. Whereas the changes to the former two sections were enacted to simplify or improve the flexibility of inputs, the changes to the latter sections are formulaic, and will not be visible to the user. Table 3 summarizes the changes made to each component of the Arizona SMHCAS model, and provides an outline for the following discussion of changes made to each worksheet. It is anticipated that interested state DOTs will find that the recent modifications to the Arizona SMHCAS make the model more portable and enhance its utility and ease of use, not only for conducting highway cost allocation updates in Arizona, but for conversion to other states' cost allocation requirements as well. New cell reference formulas for the following worksheets are contained in Appendix B.

Table 3: Summary of Changes to Arizona SMHCAS Model

Worksheet	Summary of Changes
EXP IN	• Addition of "Other Funding" for State Spending Program • Elimination of redundancies in Disc Fund (e.g. Debt Service) and Regional CIPs • Overall reduction in number and complexity of inputs • Addition of user-specified allocation method (VMT or PCE) for capacity-driven expenditures
REV IN	• Added cell references for any new fees (flat, weight-based and/or travel-based)
HPMS IN	• Added HPMS data sets from 1995 to 1999
VLT ADJ	• Added cell references for new data • Included 1999 and 2000 data for current update • Changed growth forecasts to 3-year period forecast method
LOCAL ADJ	• Added 2 worksheets (CITIES, COUNTIES -- see below) for future updates of local government spending • Recalculated allocation ratios by type of spending and forecast factors by type of funds according to multiple years' data (replaces 1997 allocation) • Added summary tables of forecast spending by allocation method • Changed growth forecasts to 3-year period forecast method
CITIES	• New worksheet • Reflects Local Government Finance Report for Cities and Towns (FHWA-536) for allocation factors in LOCAL ADJ
COUNTIES	• New worksheet • Reflects Local Government Finance Report for Counties (FHWA-536) for allocation factors in LOCAL ADJ

Table 3 (continued)

Worksheet	Summary of Changes
FEE ADJ	• Added blank field for new fees as needed • Revised motor carrier and use fees upward
FEE SPLIT	• Added FY 1999 and FY 2000 data • Simplified "Other Fees Breakdown" to list "truck" and "non-truck" • Revised allocation of weight fees and motor carrier fees to reflect apportionments to Arizona and out-of-state commercial carriers
EXP ARRAY	• Changed fields to reflect updates to EXP IN and LOCAL ADJ
UVMT	• Added 4 years of data to reflect additions to HPMS IN • Changed growth forecasts to 3-year period forecast method • Included aggregated PCE factors and distribution scenarios based on user-specified allocation method in EXP IN
RVMT	• Added 4 years of data to reflect additions to HPMS IN • Changed growth forecasts to 3-year period forecast method
VMT	• Eliminated independent share tables and forecasts • Replaced overall VMT forecast with weighted results from UVMT and RVMT • Changed growth forecasts to 3-year period forecast method
EXP OUT	• Changed "Local" cell references to reflect adjustments in LOCAL ADJ data locations
REV OUT	• Added output ranges for new fees (Flat, Weight, Traffic) as needed

'EXP IN'

The changes made to worksheet 'EXP IN' were done primarily to simplify the required spending inputs. Specific regional capital improvement plans (i.e. MAG and PAG) were omitted, as the majority of spending in these regions is administered by the state DOT, and the remainder should be captured by the 'LOCAL ADJ' spending forecast. However, to reflect the portion of these plans administered by ADOT, a new section was added to the state construction program. The "Other Funding" section of the construction program (cells D10:D12) captures state-administered highway spending funded by such sources as the Maricopa County Transportation Excise Tax and contributions to state projects from local governments and third parties.

The Discretionary Fund Analysis was reduced to line items specifically relevant to the highway cost allocation. For example, "Debt Service" was altered to reflect *only* the interest payments on various highway bond obligations. While the calculation of outputs in the previous version of the model also took this into account, some confusion arose in the training sessions as to why non-essential inputs would be included. Thus "Debt Service" has been changed from a user-defined input to a summation of cells H21:L23, "Interest on Bonds by Type of Issue." Similarly, individual line items that collectively constituted common overhead expenditures have been replaced with a single line for "Overhead Expenses," which includes the cost such items as administration, land and buildings and property improvements.

The "State Programmable Funds" section of Federal Apportionments (cells H16:L16) has been unrestricted to allow user-defined input amounts. The restricted cells in the previous version did not facilitate the adjustment of federal apportionment ratios, which can be expected to change with each forecast. Elimination of the "State Programmable Funds" cell restrictions makes the update of federal apportionments easier, regardless of the apportionment ratio for a given year, and allows the user to experiment with different federal funding scenarios.

Finally, the option to distribute capacity-driven expenditures according to VMT *weighted by passenger car equivalents* (PCEs) has been added to the 'EXP IN' worksheet via checkboxes located in cell range D1:E3. The option selected changes the share of capacity-driven expenditures located in 'UVMT' cells S3:S38. The user now has the option of allocating capacity-driven expenditures solely by share of urban VMT, or by urban VMT weighted by PCEs. The latter method assumes that vehicles of different configurations and weights require different amounts of roadway space, not only in terms of obvious differences in size, but also in terms of acceleration, maneuverability and stopping distance. While research has traditionally assigned varying PCE factors base on such elements as grade and functional class of roadway, a composite approach has been used for the Arizona SMHCAS, based on the assumption that a single factor for each vehicle and weight class will reasonably approximate the conditions on the majority of relevant highway segments. The discussion for changes to 'UVMT' includes the location of specific factors by vehicle and weight class, derivation of these factors from available data, and means of weighting urban VMT.

'REV IN'
The only change made to 'REV IN' was the addition of three lines for new fees (cells G12:K14). This change was suggested to improve the flexibility of the Arizona SMHCAS model in the event that new fees are enacted in future years. The new lines accommodate flat fees per vehicle (distributed according to registrations), weight-based registration fees (distributed according to scaled magnitude per each registered vehicle -- see 'FEE ADJ' below), and travel-based fees (distributed according to vehicle miles of travel. These categories can be used for future forecasts of new fees in Arizona, or for fees in other states that are not encompassed by the Arizona-specific categories. For example, in the event that electronic tolling were adopted in Arizona on a fee-per-mile basis, the forecast for the toll fee amounts would be input in cells G14:K14 ("Other Travel-based Fees"). The distribution of these hypothetical toll revenues would be allocated according to the forecast share of traffic for different vehicle classes. Note that more complicated fees (e.g. a return to the weight-distance tax) would require some modification of the formulas in 'REV OUT', as the allocation of such fees incorporates multiple means of distribution.

'HPMS IN'
Vehicle travel data in 'HPMS IN' were augmented through the addition of four more years of data. The layout and composition of the worksheet was otherwise unchanged. The seven periods of data now available in HPMS IN facilitate the calculation of growth rates based on three-period averages in 'UVMT' and 'RVMT' below. The addition of new

data also helps to mitigate the influence of outlier observations in any given year or period. As discussed in Footnote 1. (Section II. Distribution of Revenues), VMT data in any given year are subject to considerable fluctuation based on the limited sample size and scope for many segments on the State Highway System.

'VLT ADJ'
The input range for vehicle license tax collections by vehicle class was expanded to accommodate ten years of data (B3:K10). All annualized growth rates were converted from a year-to-year formula to growth between three-year periods. The growth rates for both total collections and share of total collections are thus calculated based on the change from the average of the previous three-year period (i.e. fiscal 1995 to 1997) to the average of the most recent three-year period (i.e. fiscal 1998 to 2000). Data may be changed in the input range without altering the forecast formulas as long as the relevant year of each data set is updated in cells B3:K3. This allows for the use of multiple-year periods in lieu of single year data in any or all cells in the input range. As noted in the Phase 2 documentation of the Arizona SMHCAS, the forecast share data from 'VLT ADJ' are not used to estimate total VLT collections in the period of analysis, but rather to distribute the *total* forecast collection among different vehicle classes.

'LOCAL ADJ'
Several modifications have been made to 'LOCAL ADJ'. First, this worksheet no longer contains input ranges for the ADOT "Survey of Local Expenditures." Two new worksheets ('CITIES' and 'COUNTIES' below) have been added to accommodate current and future surveys. The consolidated shares of expenditures by type from these new worksheets have replaced the "hard-wired" share values in cells B4:C9. Expenditures by type will now fluctuate according to forecast changes in the type of local highway spending based on trends in the years available.

Second, the adjustment factors used to forecast total local spending based on expected receipts from state and federal sources have been consolidated in cell range A24:B34. These factors reference receipts and expenditures in 'CITIES' and 'COUNTIES' column J, and are used to factor total spending upward or downward based on historical spending relative to receipts from these sources. Because the current version of the model contains only local finance data from fiscal 1997 and 1999 in 'CITIES' and 'COUNTIES', a consolidated version of FHWA-536 for fiscal 1992 to 1996 has been included in cells A37:H52. Data from these periods has been used to moderate the consolidated adjustment factors in B28:B34.

Lastly, the shares of local expenditures by allocation method have been aggregated in cell matrix D12:F17. The distribution of forecast local expenditures among vehicle and weight classes in 'EXP OUT' columns E:G now references these aggregated shares. In so doing, the complexity of the formulas in 'EXP OUT' has been reduced, and a simplified picture of the distribution of local government expenditures is now available. It should be noted that changes to 'LOCAL ADJ' are no longer necessary unless the user wishes to adjust maintenance spending according to pavement and non-pavement maintenance

(cells B14:B20). All future inputs for local government finance should be made in 'CITIES' and 'COUNTIES'.

'CITIES'

This new worksheet was added to facilitate the addition of future data contained in the "Survey of Local Expenditures," conducted by ADOT on a biannual basis. The worksheet layout mirrors that of the FHWA Local Finance Report (FHWA-536), and should be updated with local finance data for cities and towns. Note that the years shown in B3:H3 reflect the expected years of future surveys based on the current ADOT practice of biannual updates. These cells are unrestricted, and years may be changed as necessary should the time frame for future updates change. Note that entry cells for future years should be left *blank*; zeros entered in these cells will skew the forecast results in 'LOCAL ADJ'. Summary shares and growth rates (based on three-period averages) for Local Highway Revenues and Expenditures for cities and towns are shown in cells A70:J87. Entries in column J are referenced in the "Consolidated Adjustment Factors" of 'LOCAL ADJ' (cells A24:B34).

'COUNTIES'

This new worksheet is identical to 'CITIES' above, except that Local Highway Revenues and Expenditures should be listed for counties.

'FEE ADJ'

A column has been added (E2:E24) for the input of new weight-based fees, should any be enacted in Arizona. Such fees are allocated according to magnitude in matrix G79:W103. This matrix provides the means of distributing any new fee totals entered in 'REV IN' cells G13:K13. Note that at least one cell in column E must contain a positive value, regardless of whether the weight-based fee actually exists. However, as long as zeros are entered in 'REV IN'G13:K13, the values entered in 'FEE ADJ' column E will have *no* effect on the overall distribution of revenues.

'FEE SPLIT'

As in the case of 'VLT ADJ' above, the input range for registration and weight fees has been expanded. Nine years (or periods) of data can now be entered in cell range B11:J13. Growth rates for the forecast period have been changed to reflect the change in three-year period averages. The "Other Fees Breakdown" (cell A20) has been simplified to reflect truck-specific fees versus all other fees. Because non-truck-specific fees are all allocated in the same way (share of registrations), there was no need for the added complication of determining the share amounts of such items as driver license fees , title fees and license plate fees. The other fees category now reflects the following three items: oversize permits and penalties, use fuel permits and penalties, and all other miscellaneous fees. The first two items are allocated only to commercial vehicles, while the latter category is distributed among all vehicles.

Additional tables were added to adjust weight and use fees and motor carrier fee collections for apportionments to Arizona-based (L28:Y53) and non-Arizona commercial carriers. Based on the results of a 1997 study by ADOT FMS, an estimate of the foreign

(i.e. registered outside of Arizona) population of commercial carriers was made for weight classes above 26,000 pounds. This population was then used to make a proportional distribution of apportioned weight fees ('FEE SPLIT' cell C7) and motor carrier fees paid by non-Arizona vehicles. The remainders of these fees were then allocated to Arizona-based buses and trucks, with a provision for out-of-state travel of 40 percent for combination trucks in the 70,000 pound to 80,000+ pound weight classes.

'EXP ARRAY'
The array of expenditures has been updated to reflect cell reference changes in the worksheets discussed above. Expenditures shown in the "Adjusted Construction Program" section of 'EXP IN' are distributed as follows: both "state" and "other" funding sources are shown in the "State" section of 'EXP ARRAY' (C11:E12); expenditures of federal funds remain in cells F11:H12. Local government expenditures are forecast separately for municipalities (cities and towns) and counties, based on the "Consolidated Adjustment Factors for Local Expenditures" ('LOCAL ADJ'B28:B34) and the forecast distributions of state funds and federal aid to local governments in 'EXP IN'.

'UVMT'
Worksheets 'UVMT' and 'RVMT' have been altered to reflect all new data contained in the revised version of 'HPMS IN'. Total shares of urban traffic for each year by vehicle configuration are shown in 'UVMT' cells A5:O11. Average shares and multiple-period growth rates are contained in cell range B13:N18. As in the case of 'VLT ADJ' and 'FEE SPLIT', growth rates are calculated according to the change between three-period averages. The 'UVMT' and 'RVMT' worksheets calculate two separate growth rate calculations ("Earliest period" and "Latest period" in rows 15 and 16), from which an average growth rate is derived. In order to further minimize the impact of outliers in a given data set, annualized share growth rates above 20 percent have been restricted using an exponential function in range B18:N18.

Forecast shares of urban traffic by vehicle configuration are shown in 'UVMT' cells B24:N25. These forecasts use the adjusted annualized share growth rates in row 18 to adjust the average share over the preceding periods upward or downward. The growth rate is raised to an exponential power based on the difference in years between the base period and the forecast period, and then multiplied by the average share in row 13 to yield the forecast share. Share projections by vehicle class and weight class are aggregated for the distribution of revenues and expenditures in cells Q5:R9 (vehicle class) and Q16:R38 (weight class). The final distribution of expenditures has been moved to S3:S38 to reflect the option to weight urban VMT by passenger car equivalents (PCEs) in 'EXP IN'. In the event that unweighted VMT are chosen, column S will simply duplicate column R. Otherwise, column S will contain the PCE-weighted distribution calculated in cell range Z5:AC38.

The PCE-weighted distribution factors in Z5:AC38 have been calculated in three steps. First, each vehicle and weight class has been assigned a PCE value based on the average of flat-grade PCE values for the six functional classes of *urban* roadway as reported in the FHWA cost allocation details (2000). In cases where a specific weight class in the

Arizona SMHCAS does not match the federal weight classes for reported PCE values, an estimate has been made for the Arizona SMHCAS weight class based on the average of the two closest FHWA weight classes. These values are reported in cells AA5:AA38. Second, each PCE value is multiplied by the share of urban VMT calculated in column R to yield a weighted PCE adjustment in cells AB5:AB38. Lastly, these weighted values are scaled to 100 percent by dividing each PCE-adjusted value by the sum of all adjusted values. These results, in cell range AC5:AC38, represent the final PCE-weighted share of capacity-driven cost responsibility. As noted above, these shares will be reported in column S *only if* the PCE option is chosen in worksheet 'EXP IN'.

The net result of using PCE-weighted VMT will be a shift in capacity-driven cost responsibility (and thus overall responsibility) from smaller, lighter vehicles to larger, heavier vehicles. The most notable changes by vehicle class are observed for passenger autos and combination trucks; the former having the greatest unadjusted share of urban traffic and the latter the largest PCE value. While the PCE adjustment changes the magnitude of the various share of capacity-driven cost responsibility, in no case does the adjustment change the relative position of a vehicle class in terms of ordering share values. In other words, after adjusting for PCEs, passenger autos still make up the largest share of capacity-driven expenditures, light trucks (e.g. pick-ups and SUVs) are still allocated the second largest share, and so forth.

'RVMT'
See 'UVMT' above for discussion of changes. All adjustments for 'RVMT' are the same, except that only rural traffic data from 'HPMS IN' are used and PCEs are not considered .

'VMT'
In the course of making the adjustments to 'UVMT' and 'RVMT' above, it was discovered that the 'VMT' worksheet generated a forecast at odds with the results of the 'UVMT' and 'RVMT' worksheets. This error was determined to be caused by the duplication of forecast methods in all three worksheets. Because the share values in 'VMT' should reflect the weighted totals of 'UVMT' and 'RVMT', duplicating the methods used in the other two worksheets is not the appropriate method for determining total share of VMT. The following changes have been made to worksheet 'VMT' to correct this error.

All direct share references to 'HPMS IN' (i.e. the data in rows 1 to 18 of 'UVMT' and 'RVMT') have been removed. These have been replaced with consolidated shares of "urban" versus "rural" traffic from 'HPMS IN' in cell range B11:I12. Using the average distribution of traffic among urban and rural systems, and the growth rate for traffic on each type of roadway, a forecast share of *all* traffic for rural highways and urban highways is calculated in cells L11:L12. These values (34.7 percent rural and 65.3 percent urban as of the latest forecast) are then used to estimate the adjusted share of all VMT in cells B7:O8. As in the 'UVMT' and 'RVMT' worksheets, the aggregated shares of total VMT are calculated in cells Q5:R9 (share by vehicle class) and Q16:R38 (by weight class). In addition, an estimate of average annual VMT by vehicle and weight class for the forecast period has been provided in T5:T38, based on the total forecast of VMT for the midpoint of the forecast period as shown in 'HPMS IN' N19.

The changes to 'VMT' have reduced the influence of the rural distribution of traffic and increase the influence of the urban distribution. Because the distribution of traffic has a significant impact on the distribution of revenues and expenditures in the Arizona SMHCAS, the results for previous updates periods have been restated in Section III.

'EXP OUT'

Changes to cell formulas in 'EXP OUT' reflect new cell ranges for worksheets mentioned above. All dollar amounts still reflect average totals in 'EXP ARRAY.' However, the "Local Expenditures" cell ranges now use the "Allocation of Local Expenditures" matrix in 'LOCAL ADJ'D14:F17 to distribute local spending according to various means. The methodology for allocating expenditures by type has not changed; only the cell references from which these allocations are made.

'REV OUT'

As in the 'EXP OUT' worksheet, changes made to 'REV OUT' do not adjust the methodology for distributing expenditures, but have been updated to reflect changes in cell references for other worksheets. Three new "State Revenues" columns have been added (I:K) to incorporate the new fees section of 'REV IN'. The cells in this range will return zero values until fee forecasts are entered in 'REV IN'. The outputs for vehicle license taxes and motor carrier and registration and weight fees reflect changes to worksheets 'VLT ADJ' and 'FEE SPLIT' respectively. No other changes were made.

Revised Contact List for Arizona SMHCAS Inputs

The individuals listed in Table 4 were contacted for data sets required for the fiscal 2001 to 2005 update of the Arizona SMHCAS. In some cases, the contact for a particular data set has changed from the original model. The individuals listed below are the current source for the data shown in Table 4 as of October 2000. Departmental information has been provided to facilitate data collection in the event of future changes. Note that the Arizona Five-Year Spending Program is now available on the internet. The program can be presorted and/or downloaded in its entirety from http://map.azfms.com/index.html.

Table 4: Revised Contact List for Arizona SMHCAS Inputs

Data Requirements	Source	Contact Information
ADOT Discretionary Fund Analysis	Thom Noss	FMS (602)712-6642 Tnoss@dot.state.az.us
ADOT Federal Apportionments	Debbie Garrett	FMS (602)712- Dgarrett@dot.state.az.us
ADOT 5-Year Spending Program[1.]	Arnold Burnham	TPD (602)712-8591 Aburnham@dot.state.az.us
VMT estimates	Mark Catchpole	TPD (602)712-8596 Mcatchpole@dot.state.az.us
Survey of Local Expenditures	Jess Jarvis	FMS (602)712- Jjarvis@dot.state.az.us
Note: (1.) The 5-Year Spending Program is also available at http://map.azfms.com/index.html		

III.   Arizona SMHCAS Forecast Results, FY 2001-05

A number of changes were made to the Arizona SMHCAS model as a result of the training and implementation sessions held with ADOT FMS employees. While these changes are expected to enhance the functionality and reliability of the model, certain alterations have influenced the distribution of revenues and expenditures among vehicle and weight classes. For this reason, the forecast results shown below have been restated to reflect the allocation produced by the Arizona SMHCAS in its current format. Additionally, results from 1999 to 2004 have been revised to reflect the omission of portions of urban freeway spending in Maricopa County. For these periods, expenditures from the Regional Area Road Fund were not included in the ADOT Spending Program, and were not adequately accounted for in the MAG forecast. The net result has been an average annual increase in total expenditures of approximately $200-250 million over these forecast years. Alterations to the reporting format for the ADOT Spending Program, and to the data input requirements for the Arizona HCAS, should prevent such a forecast error in the future.

Cost Allocation Results by Vehicle Class

Cost allocation results were calculated using both capacity-related distribution methods (i.e. VMT and PCE) available in the SMHCAS model. Recent research sponsored by the FHWA suggests that the use of VMT rather than PCE-weighted miles to allocate common costs tends to under-assess larger vehicles for their contribution to the decision to increase highway capacity, such as widening projects (FHCAS, 2000). While the use of PCE-weighted miles of travel is becoming the standard for cost responsibility calculations (Stowers, 2000), it is recognized that unadjusted VMT are easier to obtain and more conceptually straightforward. Thus, both sets of figures are presented in the following tables.

The upward revision of urban freeway spending produced a distribution of highway user equity less skewed than previously reported. With the exception of light trucks, all vehicle classes were projected to have paid less than their cost responsibility over the aggregated fiscal period. Relative to the 1999 to 2004 periods, a slight decline in total user revenues to cost responsibility was observed for the 2001 to 2005 forecast period. In contrast to the earlier forecasts, expected growth in highway user revenue collections over the 2001 to 2005 forecast failed to keep pace with increases in spending estimates.

The most pronounced growth in spending between 1999 and 2001 forecasts occurred in the local governments portion of expenditures, with State Aid distributions from the HURF up 18 percent, and estimated Federal transfers for local government projects up over 27 percent. In dollar terms, most of this differential went to cities, towns and urban regional planning organizations (e.g. Maricopa Association of Governments), which tended to shift cost responsibility to passenger autos and light trucks. This shift was compounded by slight declines in average annual fuel tax and vehicle license tax revenues for the 2001 to 2005 forecast.

Also notable was the impact of the PCE factor on the overall distribution of cost responsibility. If urban travel was weighted according to passenger car equivalents, roughly $1.6 billion in total cost responsibility was transferred from passenger vehicles to larger trucks. However, the intensive spending on the Maricopa Freeway System is projected to be largely complete by 2007. Future differences in output between the two allocation methods are expected to be less pronounced, as the percentage of total highway spending decreases in urbanized areas.

In comparisons among vehicle classes, the most consistent results have been observed for light trucks, which are assessed a slightly greater relative share of cost responsibility than passenger autos, but pay a significantly greater relative share of fuel taxes due to differences in fuel economy. Under both the VMT-weighted and PCE-weighted allocation methods, these vehicles were expected to be overpaying relative to their cost responsibility in the three most recent updates, and were assigned more equitable ratios (despite underpayment) than passenger autos in the earlier forecasts. Light trucks comprised the only vehicle class expected to be paying its fair share or more in user revenues over the cumulative 1988 to 2005 forecast period (104 percent and 110 percent under the VMT and PCE-weighted methods respectively).

General improvements in ratios of revenue to cost responsibility were observed for passenger autos and combination trucks from earlier to more recent forecast periods. However, these improvements in equity declined slightly in the most recent forecast, particularly for combination trucks. Under the VMT-weighted allocation, both passenger autos and combination trucks were estimated to be paying roughly 92 percent of their respective cost responsibilities over the 2001 to 2005 period. However, assuming a PCE-weighted allocation, passenger autos were estimated to be paying slightly more than their share (101 percent), while the equity ratio for combination trucks fell to 78 percent. This shift was observed over the cumulative period as well. Although both vehicle classes were expected to pay less than their cost responsibility from 1988 to 2005, the cumulative revenue to cost responsibility ratio for combination trucks (92 percent) *exceeded* that of passenger autos (80 percent) when the VMT-weighted allocation method was chosen. In contrast, passenger autos were assigned a cumulative equity ratio of 87 percent under the PCE-weighted method, while the equity ratio for combination trucks fell to 78 percent.

Clearly the choice of method for allocating highway spending in urban areas (VMT-weighted or PCE-weighted) had a substantial impact on overall measures of equity. This observation was most pronounced for the vehicle classes with the largest shares of cost responsibility. Over the cumulative period, replacing the VMT-weighted allocation with the PCE method shifted over $1.6 billion from passenger vehicles to commercial vehicles, with over 80 percent of the total transferred from passenger autos to combination trucks. Although the use of PCE factors has been recommended in several recent studies, users of the SMHCAS should recognize that this method creates a significant transfer of cost responsibility of from smaller to larger vehicles.

Table 5: Cost Allocation Results by Vehicle Class, 2001 to 2005

(Dollars in Millions)

Vehicle Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
Autos	$925.4	$1,008.4	91.8%	$925.4	$915.3	101.1%
Light Trucks[1.]	$637.8	$498.5	128.0%	$637.8	$468.3	136.2%
Buses	$9.6	$9.9	96.8%	$9.6	$11.9	80.4%
Single Unit Trucks	$117.1	$148.0	79.2%	$117.1	$167.0	70.1%
Combination Trucks	$514.0	$555.2	92.6%	$514.0	$657.4	78.2%
Totals	$2,203.9	$2,220.0	99.3%	$2,203.9	$2,220.0	99.3%

Note: (1.) Includes pick-up trucks, vans and sport utility vehicles.

Table 6: Cost Allocation Results by Vehicle Class, 2000 to 2004

(Dollars in Millions)

Vehicle Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
Autos	$895.8	$943.1	95.0%	$895.8	$865.4	103.5%
Light Trucks[1.]	$616.2	$463.5	133.0%	$616.2	$431.2	142.9%
Buses	$8.0	$9.1	87.4%	$8.0	$11.0	72.9%
Single Unit Trucks	$104.3	$131.3	79.4%	$104.3	$147.7	70.7%
Combination Trucks	$513.8	$509.2	100.9%	$513.8	$600.9	85.5%
Totals	$2,138.2	$2,056.2	104.0%	$2,138.2	$2,056.2	104.0%

Note: (1.) Includes pick-up trucks, vans and sport utility vehicles.

Table 7: Cost Allocation Results by Vehicle Class, 1999 to 2003

(Dollars in Millions)

Vehicle Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
Autos	$854.1	$949.2	90.0%	$854.1	$873.7	97.8%
Light Trucks[1.]	$586.5	$463.8	126.5%	$586.5	$432.7	135.5%
Buses	$8.0	$9.1	88.1%	$8.0	$10.9	73.4%
Single Unit Trucks	$100.2	$122.2	82.0%	$100.2	$137.9	72.7%
Combination Trucks	$495.6	$481.5	102.9%	$495.6	$570.5	86.9%
Totals	$2,044.5	$2,025.8	100.9%	$2,044.5	$2,025.8	100.9%

Note: (1.) Includes pick-up trucks, vans and sport utility vehicles.

Table 8: Cost Allocation Results by Vehicle Class, 1993 to 1997

(Dollars in Millions)

Vehicle Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
Autos	$592.8	$762.4	77.8%	$592.8	$709.4	83.6%
Light Trucks[1.]	$318.3	$360.0	88.4%	$318.3	$339.7	93.7%
Buses	$6.5	$6.8	95.5%	$6.5	$8.3	78.1%
Single Unit Trucks	$74.5	$77.9	95.7%	$74.5	$88.5	84.2%
Combination Trucks	$336.3	$331.7	101.4%	$336.3	$392.9	85.6%
Totals	$1,328.4	$1,538.7	86.3%	$1,328.4	$1,538.7	86.3%

Note: (1.) Includes pick-up trucks, vans and sport utility vehicles.

Table 9: Cost Allocation Results by Vehicle Class, 1988 to 1992

(Dollars in Millions)

Vehicle Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
Autos	$468.3	$770.2	60.8%	$468.3	$718.9	65.1%
Light Trucks[1.]	$249.9	$353.7	70.6%	$249.9	$335.2	74.6%
Buses	$5.5	$6.6	82.7%	$5.5	$8.2	66.2%
Single Unit Trucks	$60.2	$78.1	77.1%	$60.2	$88.6	68.0%
Combination Trucks	$270.3	$353.6	76.4%	$270.3	$411.4	65.7%
Totals	$1,054.1	$1,562.3	67.5%	$1,054.1	$1,562.3	67.5%

Note: (1.) Includes pick-up trucks, vans and sport utility vehicles.

Table 10: Aggregated Cost Allocation Results by Vehicle Class, 1988 to 2005

(Dollars in Millions)

Vehicle Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
Autos	$12,405.5	$15,452.7	80.3%	$12,405.5	$14,248.8	87.1%
Light Trucks[1.]	$7,685.4	$7,399.8	103.9%	$7,685.4	$6,966.0	110.3%
Buses	$130.6	$142.3	91.7%	$130.6	$173.5	75.3%
Single Unit Trucks	$1,551.2	$1,873.7	82.8%	$1,551.2	$2,119.3	73.2%
Combination Trucks	$7,028.2	$7,600.6	92.5%	$7,028.2	$8,961.5	78.4%
Totals	$28,801.0	$32,469.1	88.7%	$28,801.0	$32,469.1	88.7%

Note: (1.) Includes pick-up trucks, vans and sport utility vehicles.

Cost Allocation Results by Weight Class

Forecast results of highway user revenues and cost responsibility by weight class reflect the distribution of revenues and cost responsibility among the predominant vehicle class(es) in each weight class. For example, revenue and cost allocation results for the 0 to 10,000 pound weight class represent the relative distribution of revenues and cost responsibility to passenger autos and light trucks, which collectively make up about 98 percent of the lightest weight class. Forecast results for the lightest and the heaviest weight classes are expected to be the most reliable, as these two categories make up over 90 percent of total revenues and cost responsibility.

The cumulative underpayment for fiscal 1988 to 2005 was estimated at $3.6 billion, for an overall revenue to cost responsibility ratio of 89 percent. Regardless of the allocation method used, vehicles in the heaviest weight class underpaid by the widest margin. Vehicles registered at 75,000 pounds or more were expected to have paid from 70 percent (PCE-weighted allocation) to 80 percent (VMT-weighted allocation) of their cost responsibility from fiscal 1988 to 2005. Vehicles in the lightest weight class, 0 to 10,000 pounds, were estimated to have paid from 88 percent to 95 percent of their cumulative cost responsibility, under the VMT-weighted and PCE-weighted allocations respectively.

Greater divergence in cost responsibility results was observed for the intermediate weight classes. Vehicles weighing between 10,000 and 75,000 pounds were projected to overpay in the VMT-weighted forecast, with revenues exceeding cost responsibility by over 18 percent. In contrast, the PCE-weighted allocation for these weight classes projected underpayment by nearly 6 percent. Similarly large disparities between results for these weight classes were observed in the five-year forecast periods. These results indicate not only the degree to which the choice of allocation method can influence estimates of equity, but also that vehicle and weight classes with very small shares of revenues and cost responsibility are subject to greater relative fluctuation.

For the weight classes with the largest shares of revenues and cost responsibility (lightest and heaviest), some general trends were observed from the earliest to the most recent forecasts. From the 1988 forecast to the 2000 to 2004 projections, revenue to cost responsibility ratios for the lightest weight class steadily increased. This was likely due to population increases in the metropolitan areas, corresponding increases in passenger vehicle registrations, and the increasing popularity of less fuel-efficient sport-utility vehicles. The highway user revenues attributed to this weight class were more than sufficient to offset cost responsibility in the three most recent updates, with an average overpayment forecast of approximately 10 percent from 1999 to 2005. The heaviest weight class generally followed a similar trend, though forecast equity ratios for this weight class were expected to peak in the 1999 to 2003 forecast. However, while the heaviest weight class has shown an improvement in highway user revenue to cost responsibility (from about 62 percent in the earliest period to about 75 percent in the most recent period), these vehicles were projected to underpay their cost responsibility in all forecast estimates.

Table 11: Cost Allocation Results by Weight Class, 2001 to 2005

(Dollars in Millions)

Weight Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
0-10,000 lb.	$1,594.5	$1,538.4	103.6%	$1,594.5	$1,425.5	111.9%
10,000-20,000 lb.	$35.8	$31.5	113.8%	$35.8	$36.2	98.9%
20,000-40,000 lb.	$54.5	$44.0	123.7%	$54.5	$55.1	98.9%
40,000-60,000 lb.	$64.2	$60.4	106.3%	$64.2	$77.2	83.2%
60,000-75,000 lb.	$37.1	$34.3	108.2%	$37.1	$42.4	87.5%
75,000 lb. or more	$417.7	$511.4	81.7%	$417.7	$583.6	71.6%
Totals	$2,203.9	$2,220.0	99.3%	$2,203.9	$2,220.0	99.3%

Table 12: Cost Allocation Results by Weight Class, 2000 to 2004

(Dollars in Millions)

Weight Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
0-10,000 lb.	$1,541.9	$1,434.7	107.5%	$1,541.9	$1,329.5	116.0%
10,000-20,000 lb.	$33.5	$28.3	118.5%	$33.5	$32.7	102.5%
20,000-40,000 lb.	$50.6	$39.8	127.0%	$50.6	$50.1	101.0%
40,000-60,000 lb.	$64.9	$54.2	119.7%	$64.9	$69.8	93.0%
60,000-75,000 lb.	$39.0	$31.1	125.5%	$39.0	$38.6	100.9%
75,000 lb. or more	$408.3	$468.1	87.2%	$408.3	$535.5	76.2%
Totals	$2,138.2	$2,056.2	104.0%	$2,138.2	$2,056.2	104.0%

Table 13: Cost Allocation Results by Weight Class, 1999 to 2003

(Dollars in Millions)

Weight Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
0-10,000 lb.	$1,469.4	$1,440.0	102.0%	$1,469.4	$1,338.1	109.8%
10,000-20,000 lb.	$32.5	$27.3	118.9%	$32.5	$31.6	102.9%
20,000-40,000 lb.	$49.4	$38.7	127.9%	$49.4	$48.6	101.7%
40,000-60,000 lb.	$61.7	$51.4	120.0%	$61.7	$66.5	92.8%
60,000-75,000 lb.	$37.4	$29.4	126.9%	$37.4	$36.8	101.7%
75,000 lb. or more	$394.1	$439.0	89.8%	$394.1	$504.3	78.2%
Totals	$2,044.5	$2,025.8	100.9%	$2,044.5	$2,025.8	100.9%

Table 14: Cost Allocation Results by Weight Class, 1993 to 1997
(Dollars in Millions)

Weight Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
0-10,000 lb.	$934.0	$1,140.6	81.9%	$934.0	$1,070.7	87.2%
10,000-20,000 lb.	$24.9	$18.7	133.3%	$24.9	$21.7	114.9%
20,000-40,000 lb.	$38.8	$27.0	143.6%	$38.8	$33.9	114.3%
40,000-60,000 lb.	$40.6	$33.6	121.0%	$40.6	$43.8	92.6%
60,000-75,000 lb.	$26.8	$19.5	137.1%	$26.8	$24.5	109.3%
75,000 lb. or more	$263.4	$299.4	88.0%	$263.4	$344.1	76.5%
Totals	$1,328.4	$1,538.7	86.3%	$1,328.4	$1,538.7	86.3%

Table 15: Cost Allocation Results by Weight Class, 1988 to 1992
(Dollars in Millions)

Weight Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
0-10,000 lb.	$736.6	$1,140.5	64.6%	$736.6	$1,074.0	68.6%
10,000-20,000 lb.	$20.4	$17.2	118.5%	$20.4	$20.3	100.8%
20,000-40,000 lb.	$31.9	$26.5	120.1%	$31.9	$33.4	95.5%
40,000-60,000 lb.	$31.2	$33.2	94.2%	$31.2	$43.0	72.7%
60,000-75,000 lb.	$21.2	$20.2	105.1%	$21.2	$24.9	85.2%
75,000 lb. or more	$212.8	$324.6	65.6%	$212.8	$366.8	58.0%
Totals	$1,054.1	$1,562.3	67.5%	$1,054.1	$1,562.3	67.5%

Table 16: Aggregated Cost Allocation Results by Weight Class, 1988 to 2005
(Dollars in Millions)

Weight Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
0-10,000 lb.	$20,538.2	$23,261.5	88.3%	$20,538.2	$21,723.1	94.5%
10,000-20,000 lb.	$500.7	$415.8	120.4%	$500.7	$481.8	103.9%
20,000-40,000 lb.	$769.6	$598.9	128.5%	$769.6	$751.5	102.4%
40,000-60,000 lb.	$858.0	$784.0	109.4%	$858.0	$1,011.4	84.8%
60,000-75,000 lb.	$533.9	$455.0	117.3%	$533.9	$565.0	94.5%
75,000 lb. or more	$5,600.7	$6,954.0	80.5%	$5,600.7	$7,936.3	70.6%
Totals	$28,801.1	$32,469.1	88.7%	$28,801.1	$32,469.1	88.7%

IV.   FHWA Model for State Highway Cost Allocation Studies

A new model for State Highway Cost Allocation has been developed by consultants[4] in conjunction with the Federal Highway Administration. The FHWA model (FHCAS) has undergone several changes in layout and design since 1999. In each preceding phase of this study, an effort was made to assess the merits and drawbacks of the FHCAS relative to the old model used by the Arizona Department of Transportation and to the recently developed Arizona SMHCAS. It was concluded in both Phase 1 and Phase 2 of this project that the versions of the FHCAS available to ADOT at the time (July 1999 and July 2000) were not suitable for performing a complete HCAS update. Highlights of Phase 1 and Phase 2 comparisons are included below, followed by a discussion of the "beta version" of the completed FHCAS made available by the FHWA in August 2000.

Summary of Previous Versions of the FHCAS: Phases 1 and 2

The user interface of the FHWA model was greatly simplified relative to the old Arizona HCAS model. Just as in the case of the SMHCAS, the FHCAS replaced the multitude of FORTRAN files in the old Arizona model with a simple spreadsheet for user inputs. Visual Basic routines embedded in the spreadsheet of the FHCAS are used to make the final allocation of revenues and expenditures. Previous versions of the FHCAS model consisted of two files: the State HCAS spreadsheet, which contained all user input and the allocation programs, and Load Equivalency spreadsheet from which the allocation programs extracted weight-related data.

As examined in Phase 1 and Phase 2 of this study, the Federal model was not complete. Problems experienced with the earlier versions of the FHCAS are listed below:

1. Revenue totals were forecast from base year control totals, whereas the preference of the Arizona Department of Transportation has been to use control totals established for the forecast period. Although projected totals could be effectively "controlled" by using the same amounts in the base period and setting the growth rate equal to zero,[5] the option for states to specify forecast controls did not exist without "fooling" the model.
2. Expenditure inputs required the assignment of costs both to functional class of roadway and to highly detailed expenditure subcategories. A means of allocating ADOT's Obligation Program among the new classes of project expenditures in the FHCAS has not been developed. Because the version of the FHCAS received did not include details or descriptions of the expenditure categories utilized, allocation of the ADOT Obligation Program to these expenditure classes would

---

[4] Note that the same team of consultants that designed the Arizona HCAS Model in 1993 has been retained by the FHWA for development of the FHWA HCAS Model. Comparisons between the old Arizona model and the FHCAS highlight the design changes enacted by this same development team in order to emphasize the drawbacks of the old Arizona HCAS in terms of complexity and user interface.

[5] Stowers, et. al., *State Highway Cost Allocation Study Spreadsheets: Description Of First Full Working Version 2.1 For Production Use By The States,* July, 1999 (page 11).

be arbitrary. Documentation of version 2 indicated that a conversion matrix for the various construction categories would be provided with the final version of the model.[6] However, the lack of such a tool during previous updates made the model impossible to test.

3. The available version of the FHCAS dealt with a limited scenario, comparing only state expenditures to state revenues. Local revenue input functions and the allocation of costs for different levels of government were not available options in the version provided to ADOT. Because the available version of the FHWA model did not incorporate local-level data, it would only be possible to make partial comparisons between the FHWA model and others based solely on state-level expenditures.

Assessment of the New "Beta Version" FHWA HCAS Model

A complete "beta" version of the FHWA Highway Cost Allocation model was made available for download on the FHWA web site in August 2000. The download consists of a self-extracting archive containing a documentation package and the following EXCEL spreadsheets that comprise the model:

COSTALLOC.XLS: Contains detailed input matrices for expenditures by level of government, class of roadway and type of expenditure. Also included are VMT control data, options for allocating costs, tables for cost allocation results and various engineering parameters for pavement design, axle and load equivalency and other cost data.

REV&TABL.XLS: Contains input matrices for various highway user revenues by level of government, type of fee, and applicability to various vehicle classes. Also includes distribution of VMT, user-defined vehicle characteristics, tax rate controls and output summary tables.

SPECIALV.XLS: Contains input adjustment functions for analysis of a user-specified vehicle, including options for adjusting fuel type, tax and fee exemptions, and traffic shares.

APPENDIX.XLS: Contains sample data for local expenditures sorted by the various types of expenditure required in COSTALLOC.XLS.

In general, the FHWA model has become more complicated as development progressed. While the current version of the model provides the user with a multitude of options and adjustable parameters, it is not clear that these enhancements provide benefits commensurate with the time and effort required to use them properly. Further discussion of the component spreadsheets of the FHWA model is included in the following section. It should be noted that some components of the FHWA model as provided in the

---

[6] Stowers, et. al., *State Highway Cost Allocation Study Spreadsheets: Description Of First Full Working Version 2.1 For Production Use By The States,* July, 1999 (page 7).

download do not function properly.[7] However, a preliminary update of the FHWA model was performed for this analysis, using simplified assumptions to assign various inputs. The results of this update are shown in the next section.

COSTALLOC.XLS

The most complicated data required for the FHWA highway cost allocation model are contained in the Cost Allocation worksheet. Of particular importance is the assignment of spending to various expenditure categories and functional classes of roadway. As described in the review of previous versions, the FHWA model requires a breakdown of construction expenditures among different categories than those reported by ADOT in the state spending program. These inputs for state-level spending are shown in Figure 1.

While the assignment of state spending program projects to the expenditure categories and classes of roadway shown in Figure 1 is conceivable, assuming a significant investment of time and effort, the beta version of the FHWA model now requires that this effort be duplicated for State Aid, Federal Aid and other local expenditures (see Figure 2). As local expenditures are reported via a biannual survey that contains far less detail than the state spending program, much less the required inputs for the FHWA model, these requirements appear unrealistic.

Figure 1: FHWA Model State Expenditure Inputs

26

A matrix for the conversion of typical spending program categories to the expenditure categories in the FHWA model was mentioned in the documentation of the previous version, but has not been provided. The authors cite both the difficulty inherent in preparing the data and the lack of specific guidelines in the beta version documentation (page 21), but do not address the issue of standardization in a meaningful way.

A sample conversion matrix is provided for maintenance expenditures in Appendix A of the FHWA model documentation. It is therefore plausible that a standardized format has been or will be developed for the final report. However, the continued lack of a specific frame of reference for conversion of expenditures to the format required by the FHWA model remains a significant impediment to use of the model for highway cost allocation updates in Arizona. In the absence of a reliable means of converting aggregate data to the detailed classifications shown below, the current update for Arizona was done using simplified assumptions for local-level expenditures, regardless of the source of funds. Similarly, the Arizona state spending program was distributed among spending categories and highway classes as best as could be done in a limited amount of time. However, even a very basic distribution of expenditures according to the classification requirements of the FHWA model was a time-consuming process.

Figure 2: FHWA Model Local Expenditure Inputs

7. Expenditures of Local Funds for Construction and Maintenance

	Rur Int	Rur OPA	Rur MA	Rur MajC	Rur MnC	Rur Loc	Urb Int	Urb OFE	Urb OPA	Urb MA	Urb Coll
New Flexible Pavement	0.0	0.0	0.0	0.0	0.0	0.0	28.6	7707.3	9011.6	7221.1	2521.2
New Rigid Pavement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flexible Pavement Repair	885.8	19490.0	11192.1	12722.5	0.0	0.0	18.0	2064.6	2414.0	1934.4	675.4
Rigid Pavement Repair	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Bridge	73.6	500.8	287.6	326.9	0.0	0.0	8.9	3918.5	4581.6	3671.3	1281.8
Replacement Bridge	32.5	221.4	127.1	144.5	0.0	0.0	6.6	2893.2	3382.8	2710.7	946.4
Bridge Repair	126.8	3844.6	2207.8	2509.7	0.0	0.0	1203.4	127.0	148.5	119.0	41.6
Special Bridge	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading and Drainage	374.5	2939.4	1688.0	1918.8	0.0	0.0	13.5	3624.9	4238.3	3396.2	1185.8
General Construction (Residual)	568.1	4805.1	2759.3	3136.6	0.0	0.0	1002.3	4808.6	5622.3	4505.2	1573.0
Transit and Rail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck VMT Construction	14.5	111.8	64.2	73.0	0.0	0.0	125.7	238.2	278.6	223.2	77.9
Travel-Related Maintenance	5747.8	25380.6	14574.8	16567.8	0.0	0.0	2404.2	2013.0	2353.6	1886.0	658.5
Wear-Rltd Flex Pave Maint	4933.7	14651.5	8413.6	9564.1	0.0	0.0	1299.7	1159.3	1355.5	1086.2	379.2
Wear-Rltd Rigid Pave Maint	100.8	38.3	22.0	25.0	0.0	0.0	31.0	3.7	4.3	3.5	1.2
Axle-Related Maint	1125.4	2910.6	1671.4	1900.0	0.0	0.0	449.9	296.0	346.1	277.3	96.8
Truck-Mile Maint	154.9	721.3	414.2	470.9	0.0	0.0	71.6	62.6	73.2	58.7	20.5
Light-Vehicle Maint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest Area Maintenance	453.2	458.6	263.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Multi-System Travel-Related	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
State Police Traffic Management	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Related	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Large Truck Related	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gasoline Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Fuel Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Registration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total by FC	14591.5	76074.1	43685.6	49659.1	0.0	0.0	6663.3	######	######	######	9459.4

REV&TABL.XLS

The spreadsheet REV&TABLES.XLS contains inputs for various highway user revenues by level of government. These include control totals for each revenue source, as well as tax rates applicable to each revenue category. The tax rates are used to break down each control total among vehicle and weight classes based on share of travel or derived share of registrations. As shown in Figure 3, each revenue source (i.e. type of tax) can be allocated among all vehicles, or limited to certain vehicles (light or heavy).

Figure 3: FHWA Model Revenue Controls
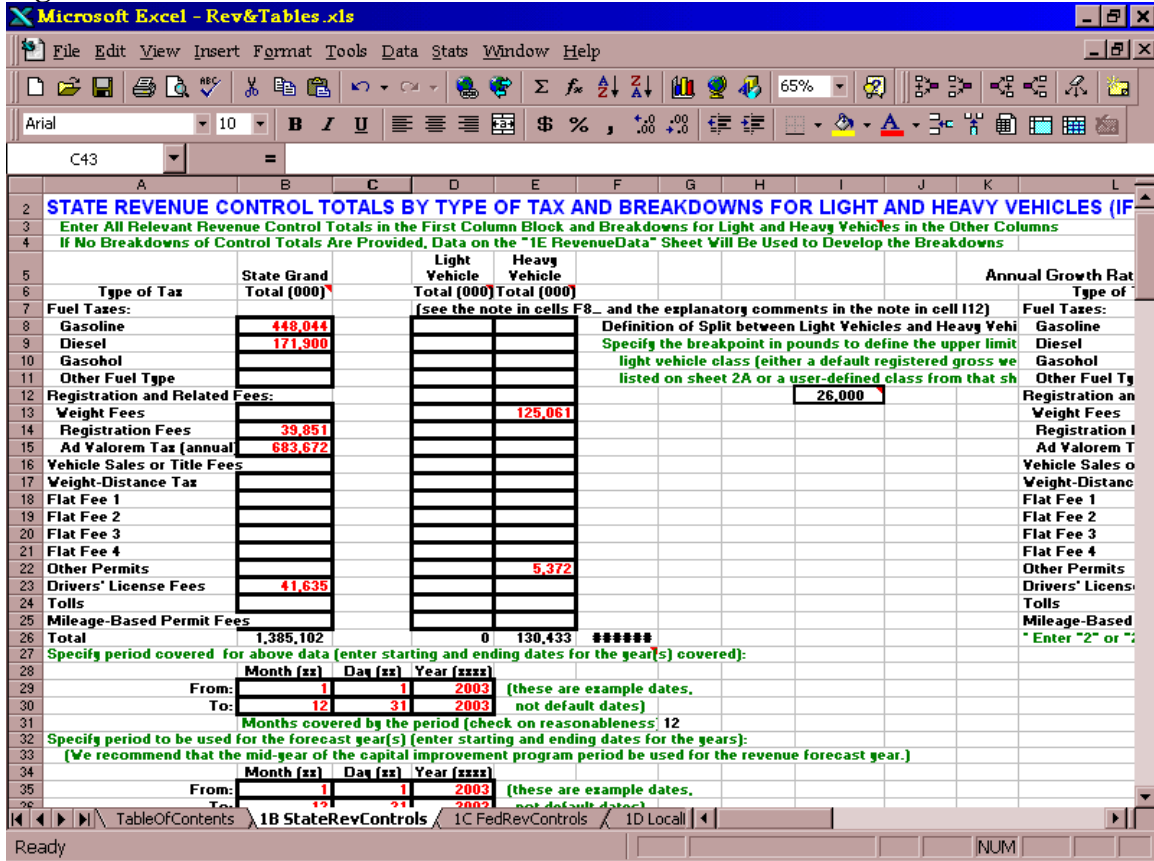
The revenue control totals shown in Figure 3 are allocated among vehicle and weight classes according to user-specified tax rates, vehicle travel and fee exemptions. These various inputs are shown for state-level data in Figure 4. The FHWA model provides input sheets for state, federal and local tax rates, just as in the case of revenue controls. However, several shortcomings to the model become evident in working with the tax rate worksheets. First, vehicle registrations are derived in the model. Rather than providing an input section for registration data, a combination of total VMT and VMT per vehicle are used to project registrations. While the end result is presumed to be the same as if vehicle registrations were entered, this method requires added steps for calculation and data entry. Should the derivation not produce the same number of registrations, the distribution of any flat fees will be affected.

Second, as shown in Figure 4, the FHWA model provides a separate section for fees that vary according to vehicle weight. This section is particularly important for the distribution of fees in Arizona, as a weight-distance tax has been abandoned in favor of a flat weight and use fee on commercial vehicles. However, the detailed fee tables in Figure 4 (columns Q and S in the figure) *did not function properly*. When attempts were made to distribute the weight fee control total using only these inputs (as instructed on worksheet 2B), the FHWA model returned no results for the weight fees (i.e. zeroes were the output in all fields). While the fees could be distributed using the broad "light" and "heavy" vehicle categories in C14:J14, this level of aggregation is not consistent with the detailed approach favored in the FHWA model.

Figure 4: FHWA Model Tax Rate Inputs

Finally, as depicted in Figure 5, the FHWA model provides the user with the option to run an allocation using default data entirely, user-specified data entirely, or a combination of default and user specified data. This option allows for the conversion of data to multiple vehicle and weight class divisions, and heightens the detail of the analysis by incorporating such variables as out-of-state mileage, fuel type used by different vehicles, fee exemptions and weight by vehicle configuration. However, after the data were specified and the "Create Data" button selected, a Visual Basic run time error was displayed, indicating that the data specified were not within the available data range.

Because the model still produced outputs, it is not clear what impact the default data file[8] will have on the allocation results. While the user could override all default data by selecting each category in column H and performing the desired modifications, this method would restrict the option to compare various alternative specifications to the default data.[9]

Figure 5: FHWA Model Revenue Data Specification
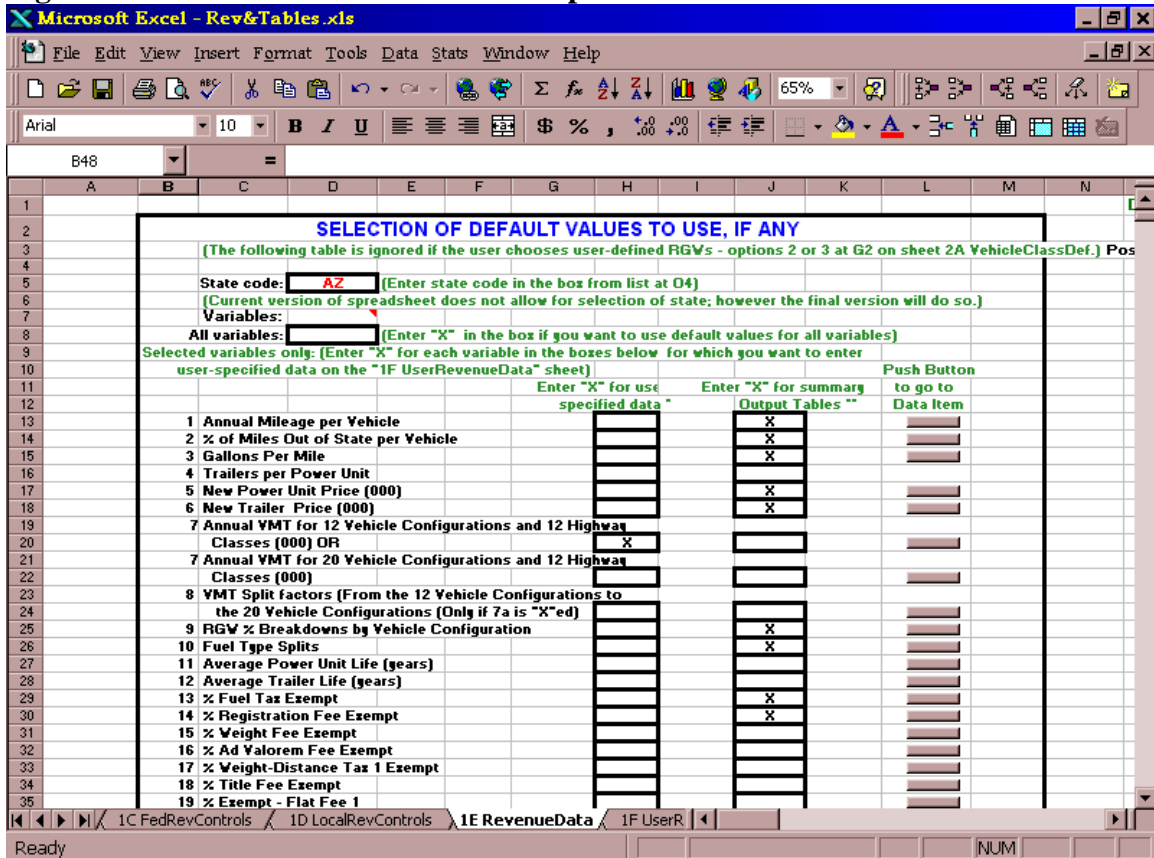
It could not be determined whether the derivation of registrations and the default data error message are actual functional problems rather than simple nuisances. However, the problems experienced with the rates for variable fees in sheet 2B present a clear impediment to the utility of the FHWA model for Arizona HCAS updates. The basic assumption of the FHWA model design is that an increase in the amount of detail and number of calculations required for a cost allocation update produce more accurate results. In light of this assumption, the inability to specify variance in a large revenue source is a serious flaw.

---

[8] This file was not distributed with the original software package, and was not available until December 2000. The initial results of this update suggest that some modification to either the "Rev&Tables" file or the "Def_Data" file will be required before an accurate assessment can be made.

[9] The solution discussed above would in effect replace "variable" (i.e. user-specified) data in column H with the new default data, eliminating the immediate possibility of running alternate data combinations. However, this difficulty could conceivably be overcome by creating multiple copies of the Rev&Tables.xls file or by linking the user-specified tables to a workbook displaying various scenarios.

SPECIALV.XLS

The Special Vehicle Analysis spreadsheet is intended for the examination of a specific vehicle class or configuration under user-defined scenarios. The worksheet allows the user to select a type of vehicle, set parameters for hypothetical "what-if" scenarios, and run those scenarios using the most recent results of the cost allocation update. The user can modify any of the characteristics associated with the selected vehicle as desired, or can elect to use one or more default values assigned to that vehicle class. All of the inputs and outputs required to analyze a particular vehicle are contained in the "Summary" worksheet, shown in Figure 5. The remaining worksheets contain more detailed analyses of specific revenue and cost data, as well as various parameters specific to each vehicle class. While the Special Vehicle Analysis workbook appears to be an interesting tool for testing the effects of fees or other variables on a particular vehicle class, the added value of the worksheet could not be ascertained given that the FHWA model did not function as provided.

Figure 6: FHWA Model Special Vehicle Worksheet
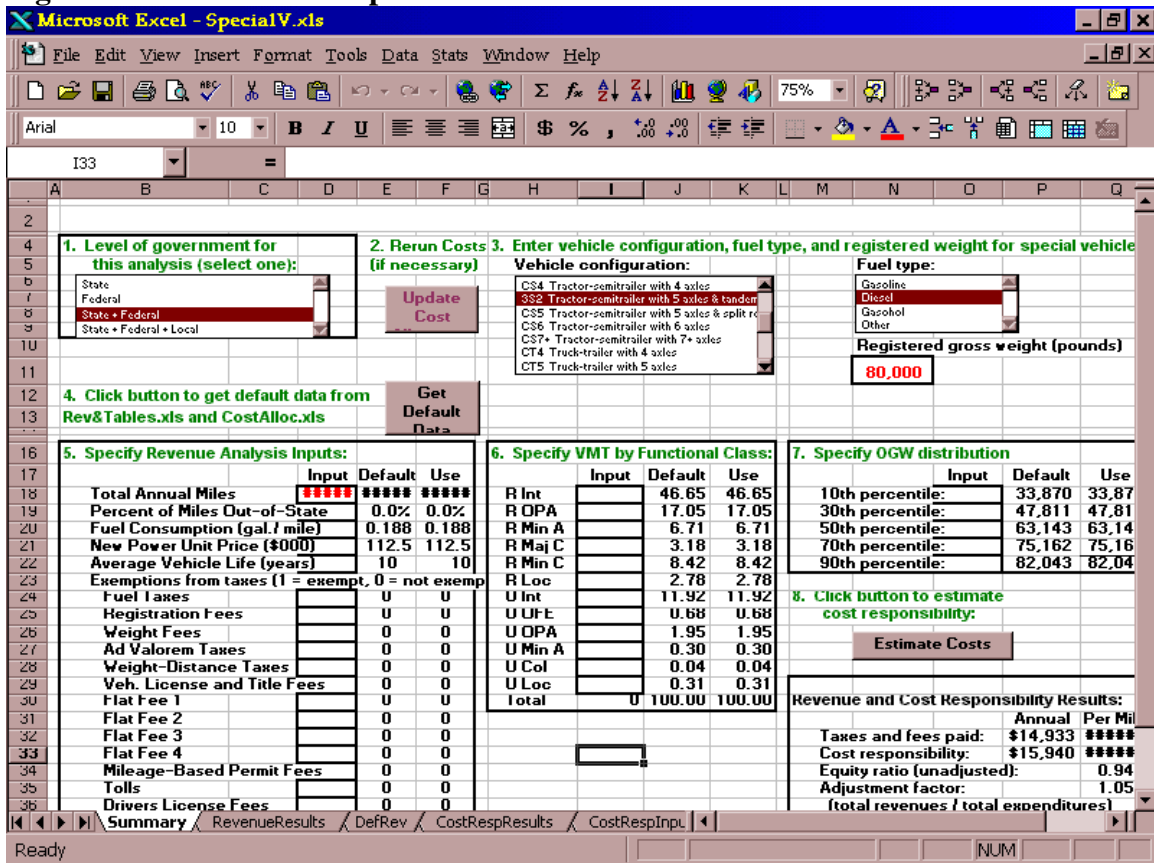
FHWA "Beta" HCAS Model Update Procedure and Results, FY 2001 to 2005

Despite the inherent complexity of the expenditure distribution requirements in the FHWA model, an attempt was made to perform an update for fiscal 2001 to 2005 in order to compare results between the FHWA model and the Arizona SMHCAS. In addition to the difficulty of classifying expenditures at various levels of government, a number of other problems with the FHWA model were encountered in the course of this update. This section will outline the methods used to assign Arizona data for fiscal 2001-05 to the various inputs in the FHWA model, discuss any problems or difficulties experienced, and present the outputs produced by the FHWA model. When possible, these outputs are then compared to the Arizona SMHCAS outputs in the following section.

FHWA Model Update Procedures

The Arizona spending program was subdivided into State, State Aid, Federal Aid and Local expenditure estimates persuant to the input categories in "CostAlloc" worksheet 1A. These totals were obtained from the Arizona Highway Spending Program for fiscal 2001 to 2005, projected State Aid allocations from the Highway User Road Fund (HURF), and forecasts of local expenditures derived from the bi-annual Survey of Local Government Expenditures for the past several years. All forecasts of spending were prepared in the same manner as that used for the SMHCAS to ensure that comparisons would begin from a uniform set of control totals. The steps followed to allocate the various capital expenditure subtotals are outlined below.

- State capital expenditures, including spending of such state-administered monies as the Maricopa Regional Area Road Fund (RARF), were allocated among functional class of roadway according to the beginning milepost of each improvement. While this method does not capture the distribution of any single project over multiple classes of highway, it was determined to be the most expedient means of allocating over seven hundred projects in a reasonably accurate manner. Similarly, each project was assigned a spending category based on what could be gleaned from the brief description accompanying each project in the spending program spreadsheet. For example, "chip sealing" was classified as flexible pavement maintenance, whereas "milling and seal coating" to a specified depth (e.g. 3 inches) was classified as pavement repair. Due to the inherent complexity of the various project category designations in the FHWA model, some degree of subjectivity went into the classification of various projects for input. However, it is assumed that a reasonable approximation of the spending categories can be made based on the spending program descriptions.

- No attempt was made to subdivide State-level administration spending by project type or functional class of roadway. While an estimate might be tenable based on the distribution of statewide lane mileage by functional class, the share of capital spending by project type and class of roadway, or even by the distribution of travel by type of highway, such detail was beyond the scope of this preliminary assessment. However, the FHWA model includes a "multi-system travel-related" spending category, which was assumed to be a suitable proxy for administration spending. For

this reason, all state administrative spending for the operating program, debt service, land, buildings and improvements was assigned to this category in "CostAlloc" worksheet 1A, Table 2.

- Federal Aid expenditures, the majority of which are accounted for in the state spending program, were allocated in the same manner as state-level capital improvements. Because the administration of federally-funded expenditures is not called out as a separate line item in the spending program, the "Federal-Aid Administration" category (Table 6) was left blank. It was assumed that these administrative expenditures would be captured by the distribution of the Federal-Aid capital spending and/or the allocation of State-level administration.

- The allocation of State-Aid and Local funds could not be made at the same level of detail as State and Federal spending programs. With the exception of funds dedicated to regional planning organizations (e.g. Maricopa and Pima Associations of Governments), very little detail on planned expenditures is available for State-Aid distributions from the HURF. Local expenditures are generally reported to the state as part of the Survey of Local Government Expenditures, conducted every other year in Arizona. Expenditures of State-Aid and Local funds were therefore distributed among a subset of expenditure categories based on the historical allocation of local highway expenditures to categories reported in the Survey of Local Government expenditures. These include (1.) capital outlays, (2.) pavement and (3.) non-pavement maintenance, (4.) road and street services, (5.) highway law enforcement and safety, (6.) general administration, and (7.) interest on local obligations. Each of these subcategories was first assigned a share of total spending according to data from the last three surveys. Allocations to the Maricopa and Pima Associations of Governments and to "cities and towns" were categorized as urban, and allocations to "counties" were categorized as rural. Urban and rural spending in each subcategory was then distributed among the functional classes of roadway according to the lane mileage estimates by functional class for urban and rural areas. Finally, the subcategories were converted to selected FHWA project classes: (a.) "flexible pavement" for all capital outlays except MAG/PAG, which were allocated to "rigid pavement, Other Freeways and Expressways (OFE);" (b.) "rigid pavement maintenance" for cities and towns, "flex pavement maintenance" for counties; (c.) "axle-related maintenance" for all non-pavement maintenance expenditures; (d.) "travel-related maintenance" for all road and street services; (e.) "traffic management" for law enforcement and safety; and (f.) "muti-system travel-related spending" for administration and debt service.

All other components of the "CostAlloc" worksheet were left as defaults. Changes to the "Rev&Tables" worksheet included control totals and specific rates for various highway user fees, and vehicle miles of travel by vehicle configuration. Vehicle miles of travel data were forecast using the same methodology as the SMHCAS. Shares of travel by vehicle configuration and functional class of roadway ("Rev&Tables" sheet 1F) were therefore the same as those contained in the SMHCAS forecast. However, for the average annual travel by vehicle configuration (worksheet 1F, cells B179:V260), the default values were accepted. Because the FHWA model derives registration counts (and

associated flat-fee user revenues) from a combination of total VMT and average VMT per vehicle, it is likely that the election to use the default values for the latter category created much of the disparity in revenue results between the FHWA model and the Arizona SMHCAS (see below). Default values for gross vehicle weight to operating weight ratios, fuel economy by vehicle configuration, and tax and fee exemptions were also accepted for the preliminary evaluation.

The "Rev&Tables" control totals and specific rates for highway user fees were allocated as follows:

- State and federal revenue control totals (worksheets 1B and 1C) were estimated for the midpoint year of the forecast (fiscal 2003) using the average of the annual control totals from the Arizona SMHCAS forecast. These figures were therefore expected to match the results of the Arizona SMHCAS when aggregated. The annual growth rates for user fee collections were eliminated because a single year average was used for the forecast. State controls for gasoline and diesel fuel revenues, registration and vehicle license (ad valorem) taxes, and drivers license fees were enetered in the "State Grand Total" column (B8:25) of worksheet 1B. Control totals for state weight fees and "other permits" were allocated specifically to the "Heavy Vehicle" column (D8:25), as commercial vehicles over 26,000 are the primary source of these revenues.

- Federal gasoline, diesel and ad valorem tax control totals were allocated to all vehicles in column B of worksheet 1C. The federal tire and use taxes were distributed among heavy vehicles only (column D), under the same assumption that these fees are paid primarily by large commercial vehicles. Local revenue control totals were omitted from the analysis, as direct highway user fees are not generally assessed by local governments Arizona.

- State tax rates were entered in the "all vehicles" column of worksheet 2B, with the exception of weight fees. Because the Arizona weight-distance tax was replaced with a variable flat fee assessed on each weight class, these fees were assigned in their various increments in the "weight fees" detail (coumn Q). However, after the initial run of the FHWA model, it was discovered that values entered in this column were not being used to create output data (i.e zero values were returned for *all* weight fees). Weighted averages of these fees were subsequently entered for buses and the three aggregated classes of trucks in G14:J14. While this method produced weight fee results, the overall distribution of these revenues was compromised by the lack of discrete differences provided by the weight fees detail.

- Federal tax rates were already available with the model and required no adjustments.

- The only specification of user-defined data for the "Create Data" macro in worksheet 1E was the election to generate results based on the annual VMT for 12 vehicle classes instead of twenty. This selection was chosen because the Highway Performance Monitoring System (HPMS) data reported in Arizona, and utilized for the Arizona SMHCAS updates, use the 12 vehicle-class methodology. All other data specifications (e.g. power unit life, tax and fee exemptions, vehicle fuel type) were left as defaults.

Cost allocation output tables were generated for the 12 HPMS vehicle configurations according to the default table format specifications in worksheet 2G. While acceptable outputs appeared to be generated for each vhicle class, several functional problems were observed during the course of the update and upon closer inspection of the FHWA model results.

Problems Encountered in FHWA Model Update

In addition to the need for various broad assumptions discussed in the update procedures, a number of functional difficulties were experienced in recent attempts to update the FHWA model. These difficulties were all a byproduct of the model itself, either through programming errors in the allocation macros, invalid code specification of data ranges or mismatched cell references. The three functional problems that had the most deleterious effect on producing viable outputs with the FHWA model are discussed below.

1. First, as discussed in the workbook description for "Rev&Tables.xls" above, the FHWA model provides input categories for variable flat fees assigned to different weight classes, but these inputs do not function properly. When the variable weight and use fees assessed in Arizona are entered in the State Tax Rates worksheet (Rev&Tables 2B, Q8:S87), the subsequent user fee output for these fees are zero for all weight and vehicle classes. In order to produce outputs for the weight fees allocation, it was necessary to aggregate these fees into estimated averages for four vehicle classes (buses, trucks from 0 to 10,000 kips, trucks from 10,000 to 26,000 kips, and trucks over 26,000 kips). Because a substantial amount of variation occurs in the fees assessed on different weight classes within these categories, the failure to distribute these fees by distinct weight class is a major impediment to the functionality of the FHWA model's revenue distribution. For example, the weight and use fee assessed on trucks registered at 28,000 to 30,000 pounds in Arizona is $702. A truck registered at 75,000 to 80,000 pounds is assessed weight and use fees of $3,135, more than four times the annual cost to the lighter category. However, as currently available, the FHWA model assesses the same annual amount on both vehicles, generating fee estimates that would only be useful for the most broad allocation by vehicle class.

2. Second, the default data for truck registrations and travel were not available at the inception of this assessment. However, these data were available from the FHWA website as of December, 2000. The initial run of the FHWA model was done without these data, despite the election to allocate various expenditure categories based on the default results. This process produced an error message in the "Create Data" program of the "Rev&Tables" worksheet, but the model produced results nonetheless. A second iteration of the FHWA model was attempted under the same assumptions but using the "State Default Data" file now available.[10] This attempt was also thwarted, though in this case by a run time error (out of range) displayed in the Visual Basic

---

[10] The FHWA model "Create data" macro in "Rev&Tables.xls" references file name "Def_Data.xls", which requires the user to rename the download file prior to use.

editor. The initial results of this update suggest that some modification to either the "Rev&Tables" file or the "Def_Data" file will be required before an accurate assessment can be made. The error messages received during the course of this update suggest that the original data range references in the "Rev&Tables" file do not correspond to the available selections in the "Def_Data" worksheet.

3. Finally, summary tables in worksheet 3A of the FHWA model Rev&Tables file contain totals that do not match the controls entered in the cost allocation file. State-level expenditures by cost allocation category in Table 3 of worksheet 3A contain the correct totals, but this output is followed by Table 4: Cost Responsibility by Level of Government. In the latter table, all spending has been factored upward from the control totals by varying amounts. Additionally, the totals for several vehicle classes have been switched. For example, the share of cost responsibility allocated to buses in the summary table should have been allocated to light trucks (e.g. pick-ups and SUVs), according to the state-level details. No appropriate summary totals could be identified for buses or combination trucks based on the state-level details.

While this problem would only be a minor nuisance if confined to the Table 4 summary, the equity ratios in subsequent tables have been based on these figures as well. Not only does this produce a distorted picture of overall equity, with cost responsibilities factored upward inexplicably, but determining the proper cost responsibility for each vehicle class becomes more complicated as well. Table 17 provides a summary of the variation between control (detail) totals and summary totals produced by the FHWA model.

Table 17: FHWA Model Variation in Annual Cost Responsibility Outputs

Level of Government	Control Totals[1]	Summary Totals[2]	Over-Allocation[3]
State Expenditures	$1,545,153	$1,764,322	14.2%
Federal Expenditures	$505,905	$638,189	26.1%
Local Expenditures	$168,928	$195,973	16.0%
Total Expenditures	$2,219,986	$2,598,484	17.0%

Notes: (1.) Control totals represent the original inputs to the FHWA model. These amounts were taken from the current SMHCAS update. State-level details were verified in Table 3 of the FHWA model outputs. (2.) Summary totals represent the total cost responsibility outputs shown in Table 4 of the FHWA model. It is not clear how these figures were adjusted, and in many cases the amounts have been misallocated among vehicle classes. (3.) This figure represents the percentage amount by which the summary totals exceed the control totals.

The result of these problems was a highway cost allocation output that could not be considered complete. However, as the FHWA model did produce *aggregate* revenue and cost responsibility[11] results that were similar to those of the Arizona SMHCAS model, a brief comparison of these outputs has been included in the following section.

---

[11] While the summary tables were inexplicably factored upward, totals could be calculated for most vehicle classes using the detailed cost responsibility tables in "Rev&Tables" worksheet 3C.

Summary of the FHWA "Beta Version" HCAS for Use in Arizona

Of the three major concerns raised in Phase 1 and 2 assessments regarding the utility of previous versions of the FHWA model, two have been rectified in the beta version. Specifically, the preference in Arizona for using control totals to forecast results has been adequately met in the beta version, as user preferences can be specified in lieu of default values for virtually all inputs. The lack of local-level inputs for user revenues and expenditure has also been addressed, albeit in considerably more detail than is available from the Arizona Survey of Local Government Expenditures.

The level of detail required for the expenditure inputs in the FHWA model remains the most consistent inhibitor to its use. Not only have the excessive levels of detail for state expenditures been retained in the beta version, but these requirements have also been applied to State Aid expenditures, Federal Aid expenditures, and other spending by local governments. While the documentation package provided with the model lists guidelines for assiging state spending to the various categories of expenditure required for the update, little mention is made of the relative lack of information pertaining to local level expenditures. The conversion matrix alluded to in the documentation of the previous version of the model has not been provided, and the guidelines for distributing state spending among the various categories do not serve to lessen the amount of time required, but rather to affirm that the process is a tedious one.

A summary of cost allocation outputs produced by the FHWA model and the SMHCAS model for the fiscal 2001 to 2005 period is shown in Table 18. While results are reasonably similar for passenger autos and combination trucks, several interesting disparities exist in the allocation of revenues and cost responsibility to the remaining vehicle classes. Most notable in the revenue distribution is the relatively high allocation of user revenues to buses and comparatively low allocation to light trucks in the FHWA model. Because both models used the same base vehicle miles of travel for the allocation, it appears that disparities in average travel per vehicle and allocation of registration-based fees were the major cause of these differences. A comparison of revenues by source revealed that fuel tax distributions are the primary source of variance for autos and light trucks, whereas registration and weight fees are the primary source of variance for buses and commercial trucks.

The FHWA model allocated a lower share of cost responsibility to combination trucks than the SMHCAS, ostensibly due to differences in PCE factors ascribed to the various vehicle classes. It should be noted that the PCE factors used in the SMHCAS results were calculated based on the figures reported in the at-grade distribution for the FHWA model. However, the SMHCAS uses the same PCE factors for all urban scenarios, and does not adjust these figures for grade, road size and type or traffic volume. The most significant differences in allocation of cost responsibility between the two models occurred for light trucks and combination trucks. In the case of the former, the FHWA model estimate of cost responsibility was more than 33 percent higher than the light truck allocation in the SMHCAS. In contrast, the SMHCAS allocation of cost responsibility to combination trucks was nearly 36 percent greater than that of the FHWA model.

Table 18: Comparison of FHWA and SMHCAS Model Results, 2001 to 2005
(Dollars in millions)

Vehicle Class	Revenue		Cost Resp.[2.]		Equity Ratio	
	FHWA	SMHCAS	FHWA	SMHCAS	FHWA	SMHCAS
Autos	$1,083.9	$925.4	$931.0	$915.3	116.4%	101.1%
Light trucks[1.]	$491.0	$637.8	$625.3	$468.3	78.5%	136.2%
Buses	$33.3	$9.6	$13.1	$11.9	254.2%	80.4%
Single-unit trucks	$208.8	$117.1	$165.4	$167.0	126.2%	70.1%
Combination trucks	$386.9	$514.0	$485.2	$657.4	79.7%	78.2%
Total	$2,203.9	$2,203.9	$2,220.0	$2,220.0	99.3%	99.3%

Notes: (1.) Includes pick-up trucks, vans, and sport-utility vehicles. (2.) Reflects cost responsibility estimates produced by the Arizona SMHCAS using the PCE-weighted distribution of expenditures in urban areas.

The relatively large disparities in revenue to cost responsibility ratios produced by the two models may also be attributable to two problems experienced during the course of the FHWA model update. First, as stated in the previous section, the weight fee schedule in the FHWA model was inoperable. Thus the FHWA model outputs did not reflect an accurate weighting of the varying weight and use fees assessed in Arizona. Second, the FHWA model relies on "average travel per vehicle" in order to derive registration estimates. Because these figures were left as defaults for the update, a less accurate estimate of vehicle registrations may have been produced. In order to correct for the major differences in the allocation of fuel tax revenues and weight and use fees, a summary of aggregated results has been produced in Table 19. It is accepted that greater levels of aggregation will necessarily produce greater similarity of results. However, it remains notable that results for the most significant vehicle classes are quite close when presented in this fashion.

Table 19: Consolidated Share Results, FHWA and SMHCAS Models, 2001 to 2005

Vehicle Class	Share of Revenue		Share of Cost Resp.[3.]		Equity Ratios	
	FHWA	SMHCAS	FHWA	SMHCAS	FHWA	SMHCAS
Passenger vehicles[1]	71.5%	70.9%	70.1%	62.3%	101.2%	113.0%
Buses	1.5%	0.4%	0.6%	0.5%	254.2%	80.4%
Commercial trucks[2]	27.0%	28.6%	29.3%	37.1%	91.6%	76.6%
Total	100.0%	100.0%	100.0%	100.0%	99.3%	99.3%

Notes: (1.) Refers to sum of autos and light trucks. (2.) Refers to sum of single-unit and combination trucks. (3.) Calculated based on PCE-weighted distribution of expenditures in urbanized areas.

Although comparable results were obtained with this most recent attempt to update the beta version of the FHWA model, the functional problems experienced make the accuracy of these results questionable. The three principal flaws discussed in the previous section (i.e. lack of weight fee details, the unusable default data file, and variance between output tables) render the final results of an FHWA model allocation

unreliable. When these flaws are considered in conjunction with the inherent complexity and added time required for an update of the FHWA model,[12] the applicability of the FHWA model to highway cost allocation updates in Arizona is severely diminished.

The FHWA model provides a more thorough means of distributing cost responsibility among various vehicle and weigh classes than does the Arizona SMHCAS. However, the added value of this complexity remains to be determined. Perhaps most illustrative of this fact is that the weighted variance in cost responsibility outputs between the Arizona SMHCAS and the FHWA model is far *lower* than the variance in their revenue outputs. Weighted variance[13] in cost responsibility by vehicle class between the FHWA and SMHCAS results for fiscal 2001 to 2005 was 15.8 percent.[14] In contrast, the weighted variance of revenue results for the same period was 27.0 percent, nearly twice the variance observed in for the cost responsibility results.

The variance findings between the two models' outputs are significant because the majority of research and added complexity that has been built into cost allocation methods over time has focused on the means of distributing cost responsibility. The findings in this update, as well as the results of back-testing the SMHCAS against the old Arizona HCAS model, suggest that much of this added research effort and complexity has not produced commensurate gains in the accuracy of allocation results for highway cost responsibility.

Any attempt to produce a reliable highway cost allocation study, regardless of the methodology used, is dependent upon the reliability of data provided for the update. Particularly lacking in Arizona are frequent measures of vehicle miles of travel by vehicle configuration and operating weight, with many road segments evaluated only once a year for several hours or even more infrequently. Given the crucial component that such data as VMT estimates play in all aspects of the highway cost allocation process, as well as other planning activities, it seems that the dedication of scarce resources to the accurate measure of these variables rather than more complicated cost allocation estimates would provide far greater return on research investment. The FHWA model, while demonstrating a thorough application of complex engineering research to the problem of highway cost allocation, fails to make a case for the utility of these data. In light of this observation, as well as the continuing functional problems and excessive classification requirements inherent in the model, the FHWA model can not be recommended for regular highway cost allocation updates in Arizona.

---

[12] In terms of time required for an update, even the very basic assignment of the Arizona Highway Spending Program to the fields required in the FHWA model took approximately the same amount of time as a complete update of the SMHCAS. Given that this researcher was more familiar with the Spending Program details and categories, it is expected that an update by ADOT FMS personnel would require an even greater commitment of time and energy.

[13] Weighted variance refers to the absolute value of the difference in revenue or cost responsibility shares, minus one (i.e. one hundred percent or a perfect match), multiplied by the average share of revenue or cost responsibility attributable to that vehicle class.

[14] This variance reflects the PCE-weighted distribution of cost responsibility in the SMHCAS. Despite the recommendation for a PCE-weighted distribution in the literature, the VMT-weighted allocation in the SMHCAS is closer to that of the FHWA model, with a weighted variance of 13.8 percent.

V.   Conclusions and Recommendations

A training program for implementation of the Arizona Simplified Model for Highway Cost Allocation was completed by several employees from the Financial Management Section (FMS) of the Arizona Department of Transportation.   The training program consisted of a complete update of the Arizona SMHCAS for fiscal 2001 to 2005. This update included data collection and identification of data sources, revised instructions for formatting and sorting the state spending program in MS Access (see Appendix C), and analysis and tracking of inputs through the model components.

During the course of the training program, several enhancements were made to the SMHCAS at the request of FMS personnel.   These included the elimination of redundancies in required inputs, the addition of new fields for hypothetical highway user fees and future years' data for such variables as vehicle miles of travel and user fee distributions, and the conversion of growth rates to multiple-period averages. Several input fields were simplified to cover a greater range of similarly-distributed revenues and expenditures (e.g. conversion of various operating program expenditures to "overhead"). More recent data were included in the Highway User Fund Distribution Forecasts, and the HPMS and Local Government Spending sections were expanded with additional data to allow forecasts from a greater number of measured periods. The option to distribute expenditures in urbanized areas according to travel weighted by passenger car equivalency for various vehicles was added to the 'EXP_IN' worksheet, providing the user with a choice between VMT and VMT weighted by PCE factors.

Several problems with the SMHCAS were also observed during the training program. A programming error that mis-allocated total travel among vehicle and weight classes was corrected during the update. Due to the magnitude of influence that this variable has on the distribution of revenues and expenditures, updates for previous forecast periods were run again to correct for this error. An omission of the motor carrier portion of motor carrier and use fees was identified and revised upward. This error was not determined to have a significant effect on the overall outcome of the cost allocation, as the revised fees are only used to allocate proportional shares of control totals among commercial vehicles. Since the added fees followed a progressive scale (by weight) similar to that in effect for the existing fees, the change in share distribution was negligible.   For this reason, previous forecasts were not updated with the new fee schedule.

A revised forecast of SMHCAS results for various forecast periods produced an aggregate forecast for fiscal 1988 to 2005 in which overall cost responsibility was considerably greater than the findings in Phase 2 of this research. This difference is attributable to the omission of certain urban freeway expenditures from the spending programs evaluated in the 1999 to 2003 and the 2000 to 2004 updates. These results have been restated in Section III of this report.   The aggregate revenue and cost responsibility results for fiscal 1988 to 2005 are presented in Table 20 below. For the cumulative period, virtually all vehicle classes are expected to have imposed greater costs on the highway system than they have paid in highway user revenues, regardless of the

method used to allocate cost responsibility. Light trucks are the exception to this general observation, with an expected revenue to cost responsibility ratio of 104 percent to 110 percent, depending on the cost allocation method chosen. As discussed in Phase 2, the likely cause of this overpayment was the combination of lower fuel efficiency for these vehicles (resulting in greater fuel tax collections per mile of travel), and the increased popularity of sport-utility vehicles over the past decade.

It should be noted that the underpayment observed for the cumulative forecast period is the result of heavy capital spending on new freeways in the earlier forecast periods. Even after the upward revision of cost responsibility for urban freeway spending, ratios of total user revenues to cost responsibility for the 1999-2003, 2000-2004 and 2001-2005 forecast periods were 101 percent, 104 percent and 99 percent respectively. In contrast, underpayment averaged 14 percent (roughly $200 million per year) from 1993 to 1997 and 32 percent from 1988 to 1992 (a shortfall of over $500 million annually). The trend toward greater equity in recent periods has thus made an improvement in the ratio of revenues to expenditures for the cumulative forecast. However, the cumulative results do not suggest that a reduction in highway user fees is warranted at this time, with a remaining shortfall of $3.7 billion over the 18-year period.

Table 20: Aggregated Cost Allocation Results by Vehicle Class, 1988 to 2005
(Dollars in Millions)

Vehicle Class	VMT-weighted Results			PCE-weighted Results		
	Revenue	Cost Resp.	Equity Ratio	Revenue	Cost Resp.	Equity Ratio
Autos	$12,444.3	$15,452.7	80.5%	$12,444.3	$14,248.8	87.3%
Light Trucks[1.]	$7,710.6	$7,399.8	104.2%	$7,710.6	$6,966.0	110.7%
Buses	$123.3	$142.3	86.7%	$123.3	$173.5	71.1%
Single Unit Trucks	$1,505.6	$1,873.7	80.4%	$1,505.6	$2,119.3	71.0%
Combination Trucks	$7,017.3	$7,600.6	92.3%	$7,017.3	$8,961.5	78.3%
Totals	$28,801.0	$32,469.1	88.7%	$28,801.0	$32,469.1	88.7%

Note: (1.) Includes pick-up trucks, vans and sport utility vehicles.

The SMHCAS has been demonstrated as a cost-effective and user-friendly replacement for the earlier HCAS model used in Arizona. However, an alternative highway cost allocation model has been under development by a consultant team in conjunction with the Federal Highway Administration. Although previous versions of this "FHWA model" were found to be unsuitable for performing HCAS updates in Arizona, the recent completion of an enhanced "beta version" of the FHWA HCAS model occasioned a reassessment of that model as a part of this study.

In order to evaluate the latest version of the FHWA HCAS model, a cost allocation update was made for the fiscal 2001 to 2005 period, using the same data collected for the update of the Arizona SMHCAS. During the course of the FHWA model update, several functional problems were observed. Of particular concern were three issues:

- The option to allocate progressive fees such as the Arizona motor carrier fee did not work. These fees could only be distributed among three very broad weight classes, or by using proportional registrations. Neither of these options captured the large differential between fees assessed on various weight classes.

- Information contained in the "default data" worksheet provided with the model did not correspond to the range specifications in the Visual Basic codes used for the update. It is not known to what extent this liability affected the final allocation. However, the same default data were returned regardless of changes to the user-defined parameters, and an error message was returned whenever the default data were referenced, indicating that the default data worksheet or the reference macros required revision and were not functional as provided.

- Several output tables contained conflicting data, output arrays that exceeded the number of vehicle classes, and mis-allocations among vehicle and weight classes. Subsequent calculations of equity ratios were adversely impacted by these problems. However, detail tables provided in other worksheets could be aggregated to obtain the correct totals. This problem simply made the already complicated model more difficult to work with.

In addition to the problems outlined above, use of the FHWA model continued to be hampered by its complexity. As discussed in previous evaluation attempts, the conversion of spending program data to various functional classes of roadway and to spending sublevels (e.g. a breakout of grading and drainage estimates for each construction item) is not considered feasible for updates in Arizona, particularly since a conversion matrix discussed in earlier documentation of the FHWA model has not materialized. The most recent version of the FHWA model takes these details to greater extremes, requiring the same level of detail for expenditures of administrative funds, federal and state aid to local governments, and local government funds.

While the FHWA model for highway cost allocation provides a number of theoretically superior means of allocating costs among vehicles,[15] the model's lack of utility does not make it feasible for the type of *ad hoc* analysis typically done in Arizona. Furthermore, the functional problems experienced during the update attempt suggest that the added complexity does not necessarily increase the reliability of results. While the estimates of highway user revenues and cost responsibility obtained with the FHWA model were similar to those of the SMHCAS for the two largest vehicle classes (passenger autos and combination trucks), substantial variation occurred in the attribution of revenues and cost responsibility to the remaining vehicle classes. Of particular importance was the degree to which the allocation of *revenues* impacted results; weighted variance between the revenue outputs for the two models was nearly twice the variance in cost responsibility results (28 percent versus 16 percent). This finding suggests that the amount of time and effort dedicated to ever-greater specificity in the allocation of expenditures has not produced correspondingly exacting results.

---

[15] As an example, refer to the discussion of pavement replacement versus pavement deterioration research in Stowers, et. al., *Draft Guidelines for State Highway Cost Allocation Studies Using Excel Spreadsheet Software*, August 2000.

Testing of the Arizona SMHCAS against the old Arizona model results for several forecast periods indicated that the increased level of detail and accuracy required by more complicated highway cost allocation models tends to occur at the margins (Carey, 2000). Results obtained through the simpler, more straightforward methodology of the SMHCAS captured over 90 percent of the allocation of expenditures and revenues to various vehicle classes. A highway cost allocation study is by nature subject to a significant amount of speculation with regard to forecast reliability, vehicle operating weight, traffic measurements and the like. Given that similar results can be obtained using readily available data with little additional effort, the added labor required to collect, sort and input the data requirements for more complicated methodologies such as that of the FHWA model appears unwarranted. This finding is particularly apt in light of the continued functional problems experienced with the FHWA highway cost allocation model.

The SMHCAS model has been adopted for use by ADOT Financial Management Services in performing analyses of various revenue and expenditure scenarios as needed. Results of the training sessions suggest that the SMHCAS model can be readily adopted with a small investment of time and effort. Inputs have been geared to standardized reporting formats in the event of any future changes to taxes or fee structures, and several blank cell ranges have been identified for future revenue or spending sources. The SMHCAS model will require periodic updates of various inputs, most of which are referenced by ADOT report number or data source in the cell comments for each input range. However, the model also relies on several data sets that are not readily available. Updates of vehicle registrations by weight were requested for this analysis but were subsequently found to be too expensive to generate in a timely manner. Updates of these data, as well as updates of vehicle operating weight to registered weight, would enhance the reliability of revenue and cost responsibility outputs respectively. As such, it is recommended that these data be updated as soon as it becomes feasible to do so.

References

Arizona Department of Transportation. Highway User Revenue Fund Revenue Forecast. December, 2000.

Arizona Department of Transportation. Highway User Revenue Fund Distribution Forecast. December, 2000.

Carey, Jason. *1999 Update of the Arizona Highway Cost Allocation Study*. Prepared for Arizona Department of Transportation. August, 1999.

Carey, Jason. *Refinement of the Simplified Arizona Highway Cost Allocation Study Model*. Prepared for Arizona Department of Transportation. September, 2000.

FHWA. *1997 Federal Highway Cost Allocation Study*. Federal Highway Administration. 1997.

Mansour, Nadia and John Semmens. *The Value of Arizona's State Highway System: A Corporate-Style Financial Analysis*. Prepared for Arizona Department of Transportation. September, 1999.

Semmens, John. *Arizona Highway Cost Allocation Study: FY1996 Update*. Arizona Transportation research Center, Arizona Department of Transportation. January, 1996.

Stowers, et. al. *Draft Guidelines for State Highway Cost Allocation Studies Using Excel Spreadsheet Software*. FHWA working paper. August, 2000.

Stowers, et. al. *State Highway Cost Allocation Study Spreadsheets: Description of First Full Working Version 2.1 For Production Use By The States*. for Federal Highway Administration. July, 1999.

SYDEC, Inc., Cambridge Associates and R.D. Mingo and Associates. *Arizona Highway Cost Allocation Study*. Prepared for Arizona Department of Transportation. January, 1993.

SYDEC, Inc., et. al. *Highway Cost Allocation Study: Documentation of Computer Program Package*. Prepared for Arizona Department of Transportation. January, 1993.

Appendix A: Meeting Logs and Correspondence

Meeting Logs

The following pages contain summaries of SMHCAS training meetings and copies of meeting documents (if any).

Meeting 1

Date:	September 26, 2000 9:00AM
Attendees:	Nettie Klingler, Brad Steen, Jason Carey
Topic(s):	Introduction to the SMHCAS, Data Requirements, Training Schedule
Notes:	Discussed the layout of the SMHCAS model, including premises and data requirements. Individual worksheets were examined to provide an overview and an idea of data reporting requirements. The limitations of the Obligation Program query (Access) were discussed, but no improvements were suggested at this time. Handout 1 was distributed to attendees. Brad Steen and Nettie Klingler had collected the following input requirements prior to the meeting:

Continued from the Notes cell:

HURF Revenue Forecast
HURF Distribution Forecast
Debt Service Report
HPMS Traffic Data for 1995 to 1999

Collection of additional data was delegated as follows:

Obligation Program -- Jason Carey
MAG Lifecycle Forecast -- Jason Carey
Discretionary Funds Analysis -- Jason Carey
Survey of Local Govt. Expenditures -- Brad Steen
PAG Capital Improvements -- Jason Carey

Due to workloads, ADOT FMS personnel will not have time for training during mid- to late-October. Training schedule to be accelerated from Oct 1 to Oct 15, to include:

Data Collection
Sort of Obligation Program
Preliminary Update

Tracking of revenues and expenditures will be done as needed during the preliminary update. As suggested changes are made to the model (see below), a more thorough discussion of data paths will be done. This is expected to occur in Nov 2000. Meeting 2 scheduled for Oct 2, 2000 at 1:00PM in Phoenix.

Suggestions:

- Add worksheet to SMHCAS to track historical items for Local Expenditures. Link these to worksheet 'LOCAL ADJ' to provide more reliable averages and growth rates.
- ADOT FMS to obtain annual run report of registrations by weight from DMV.
- Service on new funding sources (e.g. GANs, BFOs and SIB loans) to be included in debt service line item for worksheet 'EXP IN'. Data source: Thom Noss, Scott Freedson, ADOT

Meeting 1 Handout:

SPR 477, Phase 3
Simplified Model for Highway Cost Allocation:
ADOT FMS Training and FY2001-05 Update

Meeting 1
Jason Carey, Nettie Klingler, Brad Steen

a. Introduction and overview of the Simplified Model (SMHCAS)
b. List of data requirements and points of contact
c. Training and update schedule

SMHCAS Introduction and Overview

Basic Premise: The distribution of cost responsibility among vehicles and weight classes is a function of the type of expenditure. Expenditures may be grouped according to the need for added capacity or the need for added strength.

Capacity-driven expenditures, such as urban freeway construction and safety improvements, are allocated according to roadway usage (VMT).

Strength-driven expenditures (e.g. flexible pavement of greater than minimal thickness) are assigned to vehicles based on the loads those vehicles impose on the pavement. The variables used in assigning these coasts are equivalent single axle loads (ESALs) and VMT.

Format: The SMHCAS is contained within a single Excel spreadsheet. File "SMHCAS2001.XLS" will be provided to ADOT FMS for conducting the current update. The individual worksheets contained in the SMHCAS are formatted as follows: cell ranges for user inputs have been left white and outlined with a black border; cells shaded gray and black contain adjustment formulas and worksheet outputs. Shaded cell ranges have been protected to avoid unintentional changes to formulas and references. The password "SMHCAS" can be used to turn off cell protection if desired.

The worksheets have been grouped in four sections according to function:
    INPUTS
    REFERENCE
    ADJUSTMENTS
    OUTPUTS

Meeting 1 Handout (continued):

Data Requirements and Points of Contact

The following are necessary for performing an update of the SMHCAS:

ADOT Obligation Program and MAG Lifecycle Forecast, FY2001-05	**Arnold Burnham** **712-8591**
ADOT Discretionary Funds Analysis and Federal Apportionments	**Thom Noss** **712-6642**
HURF Revenue Forecast, HURF Distribution Forecast and Debt Service (RARF and HURF)	**ADOT FMS** **712-4638**

The following should be included as a part of this update. These data need not be adjusted with every update, but will improve the accuracy of the results and aid in understanding the SMHCAS model.

ADOT Survey of Local Government Expenditures	~~**Thom Noss**~~ ~~**712-6642**~~ **Jess Jarvis**
Pima Association of Governments Capital Improvements Plan	**Tim Ahrens** **Pima Assn. of Govts.** **Tahrens@pagnet.org**
ADOT Highway Performance Monitoring System (HPMS) traffic data, any or all years 1998 to 2000, any available VMT forecasts	**Mark Catchpole** **ADOT TPD**

Meeting 1 Handout (continued):

Update and Training Schedule

Listed below are the steps required for an update of the SMHCAS model. It is anticipated that a schedule will be planned for these items during the course of Meeting 1. An estimate of the meeting time required for each item is shown as well. The listed items and time estimates are subject to revision based on the progress made in the FY2001-2005 update and any enhancements that made be made to the SMHCAS. Note that in some cases (e.g. data collection), the estimated time for completion reflects potential delays in delivery and should not be interpreted as a "non-stop" time requirement.

Model Overview and Preliminary Discussion	2 hours
Data Collection	2 days
Obligation Program formatting and sort	4 days
Input of revenues, expenditures and traffic	2 days
Data tracking* Refers to the tracing of inputs through the model to the output	5 days

Worksheet adjustments*
    Refers to suggested changes or new data collected (e.g. local
    expenditures, weight fees, etc.)
	2+ days

Output formatting and reporting	1 day

In most cases, multi-day steps need not be completed on concurrent days. For example, a block of time might be scheduled to trace user revenues from input to output (Data tracking), with a later date reserved for following federal apportionments. However, because the formatting and sorting of the Five-Year Obligation Program is somewhat complicated, it is recommended that a larger block of time with little interruption be committed to this step.

The schedule for completion of these steps will be subject to the availability of ADOT FMS personnel involved in the update. The timeframes estimated above provide a suggested amount of "hands-on" interaction for training on the SMHCAS. It is assumed that additional time will be spent on examining the model and performing the update without direct guidance. An external update for the same period will be performed concurrently to ensure uniformity of results. Comparisons will be made for relevant sections of the model at scheduled meetings and as requested.

Meeting 2

Date:	October 2, 2000 2:00PM
Attendees:	Nettie Klingler, Brad Steen, Jason Carey
Topic(s):	Model Update: Discretionary Fund, Revenues and Local Expenditures

Notes:	Meeting 2 was originally scheduled for an introduction to the ACCESS sort methodology used for distributing the ADOT Spending Program among urban (capacity), rural (weight-based) and common expenditures. However, the Spending Program was not available at the time of the meeting. Meeting 2 focused instead on the input of data sets available at the time. These included:
	
	        HURF Revenue Forecast, FY 2001-05
	        ADOT Discretionary Fund Analysis, FY 2001-05
	        Bond interest and tax rates
	        Survey of Local Expenditures, FY 1999
	
	The requested run of vehicle registrations by weight (see Meeting 1 "Suggestions") was determined to be too costly for inclusion in the update at this time. Input of the HURF Revenue forecast was completed. Revenues were tracked from 'REV IN' to 'REV OUT' through the various manipulations performed by the model. Bond interest and tax rate data were also input and tracked. An update of the Discretionary Fund Analysis was begun, but questions were raised regarding the applicability of all of the data contained in the Discretionary Fund Analysis. There was some confusion over the "Debt Service" line item versus the Bond Interest section of the 'EXP IN' worksheet. It was suggested that the 'EXP IN' worksheet be modified to reflect only the bond interest portion of debt service, since this was the only debt service expense considered relevant to the cost allocation program.
	
	Suggestions:
	Several other changes to the model were suggested in Meeting 2. In addition to the historical items for local spending and additional debt service suggested in Meeting 1, the following items were discussed:
	
	• Add cell ranges to worksheet 'REV IN' so that the model will be more flexible if changes in taxes or user fees are enacted in the future. These would include sections for "Other Flat Fees," "Other Weight-Based Fees," and "Other Travel-Based Fees."
	• Omit obsolete items (e.g. GITA) and redundancies in expenditure inputs ('EXP IN') and simplify the data required to include only necessary items from Discretionary Fund and other sources.
	• Reduce detail of "Other Fee" items in the 'FEE SPLIT' worksheet to reflect "truck" versus "non-truck."

	Suggestions (cont.): • Add new cell ranges for input of additional historical data as these become available. Relevant worksheets to change include: 'VLT ADJ', 'LOCAL ADJ', 'HPMS IN' and 'FEE SPLIT' • Change growth rate forecasts to a 3-year period average method instead of using specific years. This would cut variance in forecast results for data sets with outliers (e.g. 'HPMS IN' shares of travel) The Federal Apportionments data were requested from Debbie Garrett, ADOT FMS, during the course of Meeting 2. However, as ISTEA requirements only mandated a forecast of apportionments through fiscal 2003, the remaining years were not available. Ms. Garrett indicated that a forecast for the remaining years could be prepared in a short period of time. Due to the number of requested changes/simplifications to the model, as well as the need for the Spending Program and Federal Apportionments, it was decided that a third meeting would not be scheduled until significant progress has been made with regard to these requirements.

Meeting 3

Date:	November 2, 2000
Attendees:	Nettie Klingler, Brad Steen, Jason Carey
Topic(s):	Spending Program Sort, Input and Tracking of Expenditures
Notes:	Meeting 3 was divided into two sections, as discussed below:
	(1.) Demonstration of changes made to the SMHCAS, based on suggestions from prior meetings. A correction to the VMT worksheet was also made, based on analysis during model development. These changes were summarized in the Meeting 3 Follow-up handout on the following page. All changes made were determined to suit the requirements discussed in previous correspondence (e.g. 3-year growth periods, simplification of expenditure inputs).
	(2.) The ObProQuery ACCESS database was demonstrated for the FY2001-05 Spending Program. Training consisted of a complete classification of the Spending Program according to the requirements of the SMHCAS. Nettie Klingler operated the database and spreadsheet files, with guidance from Jason Carey. Brad Steen observed the process. Due to the specific sequence and formatting requirements for the classification, several steps had to be repeated. The final output was slightly greater than a 90 percent success rate for automated classification, with the remaining segments classified manually. Upon conclusion of the classification, it was suggested that a more detailed documentation of the required steps be provided, as both Nettie and Brad expressed doubts regarding uninstructed duplication of these procedures. A step-by-step instruction manual for using the ObProQuery database function was also included in the Meeting 3 Follow-up handout. This document was distributed to Nettie Klingler and Brad Steen via e-mail on November 8, 2000.
	The following items remained for further examination at the end of Meeting 3:
	• Update of the HURF Distribution Forecast, expected to be complete by early December, 2000. Responsible party: Brad Steen
	• Procurement of debt service payments for new instruments (e.g. SIBs, GANs, BFOs). Responsible party: Brad Steen
	• Inclusion of passenger car equivalents (PCEs) as a means of allocating urban highway expenditures, suggested based on a review of recent highway cost allocation literature. If a suitable matrix is available, the SMHCAS will incorporate PCEs as an allocation option. Responsible party: Jason Carey
	Meeting 4 is expected to complete the SMHCAS update for FY2001-05. In addition to the update, Meeting 4 will repeat the Spending Program classification (see item 2 above) to reinforce the process. Correspondence after Meeting 4 will be comprised of answers/demonstrations of specific items or concerns.

Meeting 3 Handout:

Arizona SMHCAS Model
Meeting 3 Follow-up

1. Summary of Changes to Arizona SMHCAS Model

Worksheet	Summary of Changes
EXP IN	• Addition of "Other Funding" for State Spending Program • Elimination of redundancies in Disc Fund (e.g. Debt Service) and Regional CIPs • Overall reduction in number and complexity of inputs
REV IN	• Added cell references for any new fees (flat, weight-based and/or travel-based)
HPMS IN	• Added HPMS data sets from 1995 to 1999
VLT ADJ	• Added cell references for new data • Included 1999 and 2000 data for current update • Changed growth forecasts to 3-year period forecast method
LOCAL ADJ	• Added 2 worksheets (CITIES, COUNTIES -- see below) for future updates of local government spending • Recalculated allocation ratios by type of spending and forecast factors by type of funds according to multiple years' data (replaces 1997 allocation) • Added summary tables of forecast spending by allocation method • Changed growth forecasts to 3-year period forecast method
CITIES	• New worksheet • Reflects Local Government Finance Report for Cities and Towns (FHWA-536) for allocation factors in LOCAL ADJ
COUNTIES	• New worksheet • Reflects Local Government Finance Report for Counties (FHWA-536) for allocation factors in LOCAL ADJ
FEE ADJ	• Added blank field for new fees as needed
FEE SPLIT	• Added FY 1999 and FY 2000 data • Simplified "Other Fees Breakdown" to list "truck" and "non-truck"
EXP ARRAY	• Changed fields to reflect updates to EXP IN and LOCAL ADJ
UVMT	• Added 4 years of data to reflect additions to HPMS IN • Changed growth forecasts to 3-year period forecast method
RVMT	• Added 4 years of data to reflect additions to HPMS IN • Changed growth forecasts to 3-year period forecast method
VMT	• Eliminated independent share tables and forecasts • Replaced overall VMT forecast with weighted results from UVMT and RVMT • Changed growth forecasts to 3-year period forecast method
EXP OUT	• Changed "Local" cell references to reflect adjustments in LOCAL ADJ data locations
REV OUT	• Added output ranges for new fees (Flat, Weight, Traffic) as needed

2. Steps for Formatting and Sorting the Five-Year Spending Program

(*This information is contained in Appendix C of this report* **)**

Meeting 4

Date:	January 17, 2001
Attendees:	Brad Steen, Phil Chan, Jason Carey
Topic(s):	Final revenue allocation, update results, SMHCAS review
Notes:	Meeting 4 consisted of a run-through of the SMHCAS from start to finish, completing the update for FY2001-2005. Brad Steen demonstrated the use of the model to Phil Chan, with technical support from Jason Carey. Both Brad Steen and Phil Chan indicated that the model was familiar enough to require no further training sessions. Jason Carey suggested that, as time permitted, Mr. Chan should examine the instructions for updating the Spending Program, as Mr. Chan was not present at the training session for this procedure. Mr. Carey said that he would be available to go over these details in the next few months if necessary. The SMHCAS was updated with the following current data obtained by Brad Steen: HURF Revenue and Distribution forecasts, interest payments on new obligations (e.g. GANs), and registration and weight fee splits for years 1999 and 2000. A change in the VLT tax rate required the manual input of the total VLT estimate for fiscal 2001, as the new rate did not apply to calendar 2000. The Arizona diesel fuel tax was changed to $0.26 per gallon, and weight fees for assessed vehicles in the lightest weight class were increased to $7.50. Two potential problems were identified by Mr. Steen in this iteration of the model. First, the "motor carrier and use fees" column in worksheet FEE_ADJ reflected only the use fee charged to commercial carriers, with the motor carrier fee omitted. Second, the model does not directly account for the partial credit permitted to Arizona-based commercial vehicles (ARS 28-5473 p. B), by which these vehicles may use their VLT payments to offset USE fee payments. These problems were addressed as follows. The motor carrier fees were added to use fees for all weight classes in FEE_ADJ. However, because the model uses control totals for expected fee collections (REV_IN) to allocate revenues, these fee changes had no impact on total fees collected from commercial vehicles. The fees are listed in FEE_ADJ to make a *proportional* distribution of the control total among commercial vehicles in different weight classes. Therefore, some degree of share reallocation among the various weight classes was expected to occur. However, as both fees are assessed by weight on a progressive scale, this impact on the final revenue allocation was expected to be minimal.

Meeting 4 (continued)

	The VLT credit was also expected to have a minimal impact on the revenue allocation, as the distribution of the VLT is based on historical shares by vehicle class, and worksheet FEE_SPLIT breaks out the share of apportioned and Arizona-based weight and motor carrier fees. Again, the use of control totals for forecasting mitigated the impact of these potential problems, and no substantive changes were made to the SMHCAS allocation methods as a result of these findings.

Correspondence Records

The following records document correspondence undertaken to perform the training program on the Simplified Model for Highway Cost Allocation. These include correspondence related to the training schedule, questions and answers regarding the use of the model, and requests for data required in the FY2001-05 update. The "Notes" section of each entry provides the full text of any e-mail messages sent between correspondents, or a summary of telephone conversations. Actual meetings have been documented in the preceding section.

Date:	Wednesday, September 20, 2000 10:24 AM
Type:	E-mail
From:	Jason Carey [mailto:jasoncarey@hotmail.com]
To:	bsteen@dot.state.az.us; jmcgee@dot.state.az.us; kmorley@dot.state.az.us; nklinger@dot.state.az.us
Subject:	Re: SPR-477, phase 3: status update
Notes:	I would like to arrange a preliminary meeting to discuss the training program for a fiscal 2001-05 update of the Simplified Highway Cost Allocation Model. The September 26-28 timeframe would be ideal for me, but I am open to alternate dates. I envision the first meeting as an introduction to the model and discussion of scheduling and data requirements. This should not take more than 2 hours. Please advise me as to which FMS employee(s) will be participating in the training program. I will then work out an update schedule that meets the requirements of this/these person(s). Thank you for your assistance. Jason Carey jasoncarey@hotmail.com PO BOX 786 Flagstaff, AZ 86002 (520) 226-8656

Date:	Wed, 20 Sep 2000 11:43:32 -0700
Type:	E-mail
From:	Brad Steen <BSteen@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com> Nettie Dee Klingler <NKlingler@dot.state.az.us>
Subject:	RE: SPR-477, phase 3: status update
Notes:	Jason, Nettie and I will be the FMS trained on the Highway Cost Allocation model. How does 9:00 on Sept. 26 in my office sound? Thanks, Brad

Date:	Thursday, September 21, 2000 8:02 AM
Type:	E-mail
From:	Jason Carey [mailto:jasoncarey@hotmail.com]
To:	nklingler@dot.state.az.us, bsteen@dot.state.az.us
Subject:	RE: SPR-477, phase 3: status update
Notes:	Sept. 26 at 9:00 will be fine. I'll bring a copy of the SMHCAS model (Excel) and the database for sorting the Obligation Program (Access) so that you and Nettie can look them over. Did you receive a copy of the Phase 2 report? A copy of the users manual was included in that report. Let me know if a new copy would be helpful. I'll send requests to Tim Ahrens and Arnold Burnham for (respectively) the Discretionary Fund Analysis and the FY 2001-05 Obligation Program. In order to expedite the process, I think it would be best if these were sent to you or to Nettie. If you have any questions or suggestions prior to the meeting, please contact me. Thank you, Jason Carey jasoncarey@hotmail.com (520) 226-8656

Date:	Wednesday, September 27, 2000 7:32 AM
Type:	E-mail
From:	Jason Carey [SMTP:jasoncarey@hotmail.com]
To:	aburnham@dot.state.az.us, bsteen@dot.state.az.us, nklingler@dot.state.az.us
Subject:	FY 2001-05 Obligation Program
Notes:	Mr. Burnham, I am working with Brad Steen and Nettie Klingler on the Highway Cost Allocation Update for FY 2001-05. As a part of this analysis, the 5-Year Obligation Program is used to distribute capital expenditures. For previous updates, your office has provided this document as an Excel spreadsheet. I would appreciate it if you could e-mail the FY2001-05 Obligation Program either to me or to Brad or Nettie. The MAG Lifecycle Program for the same period would also be helpful. Thank you for your assistance. Jason Carey jasoncarey@hotmail.com (520)226-8656

Date:	Wed, 27 Sep 2000 15:19:01 -0700
Type:	E-mail
From:	Arnold Burnham <ABurnham@dot.state.az.us>
To:	Debbie Mayfield DMayfield@dot.state.az.us, 'jasoncarey@hotmail.com'" <jasoncarey@hotmail.com>
Subject:	RE: FY 2001-05 Obligation Program
Notes:	Debbie, please email the requested information to Jason Carey. Check with him as to what he means by the obligation program.

Date:	Sep 28 2000
Type:	E-mail
From:	Jason Carey [SMTP:jasoncarey@hotmail.com]
To:	DMayfield@dot.state.az.us
Subject:	RE: FY 2001-05 Obligation Program
Notes:	Ms. Mayfield, I think I should have used the term "spending program" instead of "obligation program." I have attached a sample of the first 40 items from the FY2000-2004 report (Excel format). If you have any questions, please e-mail or call me at (520)226-8656. Thank you. Jason Carey

Date:	Sep 27 2000
Type:	E-mail
From:	Jason Carey [SMTP:jasoncarey@hotmail.com]
To:	tnoss@dot.state.az.us, bsteen@dot.state.az.us, nklingler@dot.state.az.us
Subject:	Discretionary Funds Analysis Report
Notes:	Mr. Noss, I am working with Brad Steen and Nettie Klingler on the Highway Cost Allocation Update for FY 2001-05. One of the crucial inputs for this analysis is the Discretionary Funds Analysis Report. For previous updates, your office has provided this document as an Excel spreadsheet. I would appreciate it if you could e-mail the current Discretionary Funds Analysis for FY2001-05 either to me or to Brad or Nettie. Thank you for your assistance. Jason Carey jasoncarey@hotmail.com (520)226-8656

Date:	Wednesday, September 27, 2000 7:41 AM
Type:	E-mail
From:	"Jason Carey" <jasoncarey@hotmail.com>
To:	<TAhrens@pagnet.org> Cc: <bsteen@dot.state.az.us>; <nklingler@dot.state.az.us>
Subject:	Highway cost allocation
Notes:	Mr. Ahrens, I am working with Brad Steen and Nettie Klingler from ADOT FMS on the state Highway Cost Allocation Update for FY 2001-05. Regional expenditures for MAG and PAG are included as a part of this analysis. If PAG has a forecast of planned expenditures from fiscal 2001-05, these would be helpful in performing the cost allocation. Please let me know if this information is available, and if so, whether an annual summary can be e-mailed to me or to ADOT FMS. Thank you for your assistance. Jason Carey jasoncarey@hotmail.com (520)226-8656

Date:	Wed, 27 Sep 2000 08:15:05 -0700
Type:	E-mail
From:	TAhrens@pagnet.org (Tim Ahrens)
To:	"Jason Carey" <jasoncarey@hotmail.com>
Subject:	Re: Highway cost allocation
Notes:	i will be glad to help you...i need to ask a few questions...on expenditures...do you want design, right-of-way, and actual construction? on regional do you want local streets, city maintenance..or just state highway costs? you are gathering this information for what purpose? who do you work for? (this will help me - help you) if you would like to call me at 520.792.1093..i could probably help you better...tim

Date:	Sep 27 2000
Type:	E-mail
From:	"Jason Carey" <jasoncarey@hotmail.com>
To:	<TAhrens@pagnet.org>
Subject:	Re: Highway cost allocation
Notes:	I won't be able to call you until tomorrow morning, but to answer your questions in the meantime: the more information, the better, although a breakdown by type (ROW, etc) would be helpful. I'm most interested in regional and local spending, as these are the weak points in the data I've been using. I'm doing the highway cost allocation as a student researcher for ADOT, reporting to John Semmens (602-712-3137) and training Brad Steen and Nettie Klingler on how to use the allocation model. Local spending is one of the cost category inputs for the allocation. I'll call you tomorrow morning (9/28) to provide more details. Thank you again. Jason Carey jasoncarey@hotmail.com 520-226-8656

Date:	Wed, 27 Sep 2000 16:39:07 -0700
Type:	E-mail
From:	TAhrens@pagnet.org (Tim Ahrens)
To:	"Jason Carey" <jasoncarey@hotmail.com> CC: <bsteen@dot.state.az.us>, <nklingler@dot.state.az.us>
Subject:	Re:
Notes:	a forecast for expenditures in this region can be prepared. the parameters need to be created e.g. do we include fed funds?, state highway money?, is transit included? etc......please call me tomorrow so we can discuss.....

Date:	September 28, 2000
Type:	Phone call
From:	Jason Carey (520)226-8656
To:	Tim Ahrens (520)792-1093
Subject:	PAG Capital Improvements Plan
Notes:	Request for PAG CIP spending for FY2001-05. Expenditure detail for capital improvements and maintenance within PAG region will be prepared, excluding state monies. Statewide portion of spending on interstate routes (I-10, I-19) to be excluded to avoid double-counting at suggestion of Mr. Ahrens. Breakdown to include federal and local funding sources and projects by major classification (e.g. construction, maintenance). Report expected to be ready on 10/1/00 or 10/2/00. Mr. Ahrens will be at ADOT on those dates, so report will be delivered to Brad Steen or Nettie Klingler.

Date:	Thu, 28 Sep 2000 09:48:14 -0700
Type:	E-mail
From:	Thom Noss <TNoss@dot.state.az.us>
To:	'jasoncarey@hotmail.com'" <jasoncarey@hotmail.com>
	Brad Steen <BSteen@dot.state.az.us>, Nettie Dee Klingler
	<NKlingler@dot.state.az.us>
Subject:	hwycstalloc.xls
Notes:	Attached per your request are the estimated expenditures for the Statewide Discretionary Program for fiscal years 2001-2005: <<hwycstalloc.xls>>

Date:	Mon, 2 Oct 2000 07:59:18 -0700
Type:	E-mail
From:	Nettie Dee Klingler <NKlingler@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com>
Subject:	RE: HCAS Update
Notes:	We are also still obtaining data and Brad suggested postponing our meeting this afternoon until next week, maybe Tuesday. How does that work for you? Nettie
	-----Original Message-----
	From: Jason Carey [mailto:jasoncarey@hotmail.com]
	Sent: Monday, October 02, 2000 7:00 AM
	To: bsteen@dot.state.az.us; nklingler@dot.state.az.us
	Subject: HCAS Update
	As of this morning, I have still not received the Spending Program information for FY2001-05. I sent another request to Debbie Mayfield on the morning of Sep 28 that included a sample of previous years' data. I suspect that Ms. Mayfield may be out of town. For the sake of expediency, I suggest we use the meeting time this afternoon to go over revenue inputs and update the traffic (HPMS) data. Tim Ahrens should have the PAG capital improvements forecast ready today or tomorrow, and will be delivering it to your office. These expenditures (and perhaps the Local Governments data) could also be examined if ready. Otherwise, if you would prefer, we can reschedule the meeting when I receive the Spending Program information. Please let me know which option would be best for you. Thanks. Jason

Date:	Mon, 2 Oct 2000 08:28:48 -0700
Type:	E-mail
From:	Nettie Dee Klingler <NKlingler@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com>
Subject:	RE: HCAS Update
Notes:	How does Thursday, October 5 from 9 AM to 11:30 sound? I will fax over the information from Mark Catchpole, but be warned it is 18 pages and I'm not sure how well it will come through the fax. Nettie -----Original Message----- From: Jason Carey [mailto:jasoncarey@hotmail.com] Sent: Monday, October 02, 2000 8:09 AM To: NKlingler@dot.state.az.us Subject: RE: HCAS Update Next week would be fine. Later in the week would be better for me (Wed - Fri), but if this is not feasible, Tuesday would work. We can arrange a more specific time at your convenience. Would you mind faxing or e-mailing the HPMS data that you had collected from Mark Catchpole? I'd like to see how the numbers fall out under a few different scenarios.

Date:	Thu, 5 Oct 2000 08:05:25 -0700
Type:	E-mail
From:	Debbie Mayfield <DMayfield@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com>
Subject:	RE: FY 2001-05 Obligation Program
Notes:	As per your request, attached is the current 2001-2005 program. You can also access the current program on the internet! Here is the web address: http://map.azfms.com/index.html This address takes you to the TPD index page. Scroll though until you find the yellow label "Priority Programming" (last one!). Click on the "programming process" link in the paragraph and you'll see our site and have access to the current program! If you have any questions, please call me at (602)712-7622. -----Original Message----- From: Jason Carey [mailto:jasoncarey@hotmail.com] Sent: Monday, October 02, 2000 6:31 PM To: DMayfield@dot.state.az.us; aburnham@dot.state.az.us Cc: bsteen@dot.state.az.us; nklingler@dot.state.az.us Subject: RE: FY 2001-05 Obligation Program The data that I am looking for are the forecast expenditures by segment and type for FY2001-05. I have attached a sample of the first 40 items from the FY2000-2004 report (Excel format). If you have any questions, please e-mail or call me at (520)226-8656. Thank you. Jason Carey

Date:	Wed, 18 Oct 2000 11:01:30 -0700
Type:	E-mail
From:	Nettie Dee Klingler <NKlingler@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com>
Subject:	RE: FY 2001-05 Obligation Program
Notes:	Jason, I have entered the data for the Federal Apportionments, however, Thom Noss, Debbie Garrett, and I are confused on one item. We are wondering why the amount shown for State Programmable Funds is 88% of the Federal Aid. Shouldn't the amount be ADOT's share of Federal Apportionments? According to Debbie's last spreadsheet, ADOT's 2001 estimate is $366.0 plus, according to Debbie, the $14.3 under the "to be allocated" category. I have attached Debbie's latest spreadsheet in case you don't have it and the updated model. Also, I was not able to update FY 1994 as the report had already been sent to archives. <<SMHCAS2001.xls>> <<2001-2005apprdistfOCT2000D.xls>> Thanks, Nettie -----Original Message----- From: Jason Carey [mailto:jasoncarey@hotmail.com] Sent: Monday, October 02, 2000 6:31 PM To: DMayfield@dot.state.az.us; aburnham@dot.state.az.us Cc: bsteen@dot.state.az.us; nklingler@dot.state.az.us Subject: RE: FY 2001-05 Obligation Program << File: FY00-04 Sample.xls >> The data that I am looking for are the forecast expenditures by segment and type for FY2001-05. I have attached a sample of the first 40 items from the FY2000-2004 report (Excel format). If you have any questions, please e-mail or call me at (520)226-8656. Thank you. Jason Carey >From: Arnold Burnham <ABurnham@dot.state.az.us> >To: Debbie Mayfield <DMayfield@dot.state.az.us> >CC: "'jasoncarey@hotmail.com'" <jasoncarey@hotmail.com> >Subject: RE: FY 2001-05 Obligation Program >Date: Wed, 27 Sep 2000 15:19:01 -0700 > >Debbie, please email the requested information to Jason Carey. Check with >him as to what he means by the obligation program. > > >

Date:	Wednesday, October 18, 2000 11:17 AM
Type:	E-mail
From:	From: Jason Carey [mailto:jasoncarey@hotmail.com]
To:	NKlingler@dot.state.az.us <mailto:NKlingler@dot.state.az.us>
Subject:	RE: FY 2001-05 Obligation Program
Notes:	Nettie, Thank you for the input data. The 88% should only be listed in the first cell of State Programmable-this was the figure reported in the Discretionary Fund Analysis a few years ago. It should not be interpreted as a "rule;" instead, it should be changed to reflect ADOT's share of federal apportionments, just as you said. With each new update, the figure should be adjusted according to Debbie's report. I have obtained and run a preliminary sort of the 2001-05 spending program. I've made a few changes to the ACCESS files, resulting in a 90% success rate for the sort query. I am in the process of making the requested flexibility changes to the SMHCAS model, and expect to have them finished within the next week. I'll be in Phoenix from 11/1 to 11/3 for afternoon meetings. If you and Brad are available, I'd like to schedule some time in the morning on one or more of those days to walk through the spending program allocation and the changes to the model. Please let me know if you have time free. Jason From: Nettie Dee Klingler > <NKlingler@dot.state.az.us > <mailto:NKlingler@dot.state.az.us> > > >To: 'Jason Carey' <jasoncarey@hotmail.com > <mailto:jasoncarey@hotmail.com> > > >Subject: RE: FY 2001-05 Obligation Program > >Date: Wed, 18 Oct 2000 11:01:30 -0700 > > > >Jason, I have entered the data for the Federal > Apportionments, however, > >Thom > >Noss, Debbie Garrett, and I are confused on one > item. We are wondering why > >the amount shown for State Programmable Funds is > 88% of the Federal Aid. > >Shouldn't the amount be ADOT's share of Federal > Apportionments? According > >to Debbie's last spreadsheet, ADOT's 2001 > estimate > is $366.0 plus, > >according > >to Debbie, the $14.3 under the "to be allocated" > category. I have attached > >Debbie's latest spreadsheet in case you don't > have > it and the updated > >model. > > > >Also, I was not able to update FY 1994 as the > report had already been sent > >to archives. > > > > > <<SMHCAS2001.xls>> > <<2001-2005apprdistfOCT2000D.xls>> > > > >Thanks, > > > >Nettie

Date:	Thu, 19 Oct 2000 13:04:37 -0700
Type:	E-mail
From:	Nettie Dee Klingler <NKlingler@dot.state.az.us>
To:	jasoncarey@hotmail.com
Subject:	RE: FW: FY 2001-05 Obligation Program
Notes:	That sounds great. I think it would be a good idea for me to review the Spending Program before the meeting. Also, we have set the meeting for November 2 at 9 AM. Will that work for you? Nettie -----Original Message----- From: Jason Carey [mailto: jasoncarey@hotmail.com] Sent: Thursday, October 19, 2000 7:18 AM To: Nettie Dee Klingler Subject: Re: FW: FY 2001-05 Obligation Program Let's schedule for Nov. 2 so that Nov. 3 remains an option in the event of a rescheduling. Would you like to take a look at the Spending Program in ACCESS prior to the meeting? I'll send a zipped archive if you think you'll have time to look at it. Jason --- Nettie Dee Klingler <NKlingler@dot.state.az.us> wrote: See Brad's note below. > > Nettie > > -----Original Message----- > From: Brad Steen > Sent: Wednesday, October 18, 2000 12:49 PM > To: Nettie Dee Klingler > Subject: RE: FY 2001-05 Obligation Program > > Nettie, > > We have the forecast review on Nov. 1 at 8:30. I'm > open on the 2nd and 3rd > but this may change if we have to do some work on > the forecast. I would > schedule something with Jason on the 2nd or 3rd with > the idea we may have to > cancel. > > Thanks, > Brad > > -----Original Message----- > From: Nettie Dee Klingler > Sent: Wednesday, October 18, 2000 11:41 AM > To: Brad Steen > Subject: FW: FY 2001-05 Obligation Program > > Do you have time one morning on November 1, 2 or 3 > to meet > with Jason? > > Nettie > >

Date:	10/26/00 03:38PM
Type:	E-mail
From:	jasoncarey@hotmail.com
To:	March, Jim <FHWA> <Jim.March@fhwa.dot.gov>
Subject:	Highway Cost Allocation
Notes:	Mr. March, I am a student researcher working on a highway cost allocation study for the Arizona Department of Transportation. I have downloaded the recent version of the FHWA model, but have not been able to access the "REV&TABL.XLS" file. All other files are functioning properly, but "REV&TABL.XLS" will not open in EXCEL. The file returns encoded text instead of an EXCEL spreadsheet. Has this file been updated since August? Is it possible to obtain a functional version of "REV&TABL.XLS"? Any assistance would be greatly appreciated. Thank you, Jason Carey

Date:	Wednesday, November 01, 2000 1:38 AM
Type:	E-mail
From:	March, Jim <FHWA> <Jim.March@fhwa.dot.gov>
To:	IPM Return requested (Receipt notification requested) <jasoncarey@hotmail.com>
Subject:	Re: Highway Cost Allocation
Notes:	The "REV&TABL.XLS" file inadvertently was included in the zip file you downloaded from the website in zip format itself, even though it has an xls extension. If you unzip that file you should get the Excel file. Alternatively, the problem has been corrected on our website and the downloadable, self-extracting zip file now contains the unzipped "REV&TABL.XLS" file. Sorry for the confusion on this. Jim March FHWA, Office of Transportation Policy Studies Voice -- 202-366-9237 Fax -- 202-366-7696 jim.march@fhwa.dot.gov

Date:	Wednesday, November 29, 2000 8:54 AM
Type:	E-mail
From:	Brad Steen <BSteen@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com>
Subject:	RE: Meeting follow-up: Procedures for sorting ADOT Spending Program
Notes:	Jason, Just a quick note to let you know we have not yet finalized the HURF forecast. We hope to complete it within the next week. Also, Nettie has transferred to Department of Corrections, so I'll take the lead from our side. Thanks, Brad -----Original Message----- From: Jason Carey [mailto:jasoncarey@hotmail.com] Sent: Wednesday, November 08, 2000 6:37 PM To: bsteen@dot.state.az.us; nklingler@dot.state.az.us Subject: Meeting follow-up: Procedures for sorting ADOT Spending Program << File: Mtg3Summary.doc >> I have attached a document that describes the procedure we went over on Nov. 2. The first page outlines the changes made to the model prior to the meeting. The following pages provide a step-by-step reference for the procedure we followed in sorting and classifying the Spending Program. I think we should do another run through this process the next time we meet. Let me know when the HURF forecast is ready so that we can schedule a time. Thank you.

Date:	Monday, December 04, 2000 9:19 AM
Type:	E-mail
From:	Jason Carey <jasoncarey@hotmail.com>
To:	Brad Steen <BSteen@dot.state.az.us>
Subject:	Re: Meeting follow-up: Procedures for sorting ADOT Spending Program
Notes:	Thanks for the update. Please let me know when the forecast is ready. I'd also like to get your feedback on your "comfort level" with the model. Would you like to have additional training sessions, or would a completed update with the new forecast suffice? I suggest another run of the spending program, but that could be done concurrently with the forecast update. I've also added an option to distribute urban costs by passenger car equivalents (PCEs), but this is a relatively straightforward procedure. Just let me know how you'd like to proceed. Thanks. Jason Carey

Date:	Monday, December 18, 2000 2:57 PM
Type:	E-mail
From:	Jason Carey <jasoncarey@hotmail.com>
To:	Brad Steen <BSteen@dot.state.az.us>
Subject:	Re: Meeting follow-up: Procedures for sorting ADOT Spending Program
Notes:	Brad, I have attached the final version of the SMHCAS model. The file is zipped in self-extracting format. The EXP_IN worksheet now contains the option to allocate urban spending by VMT or by PCE (passenger car equivalents). The cell references for these allocation methods are referenced in worksheet UVMT. We can go over this procedure during the next training session. I will be in Phoenix on Dec 28-29. If the HURF forecast is ready, I'd like to schedule a training session for one of these days. Please let me know if you will have time. Thank you. Jason Carey 520-226-8656 jasoncarey@hotmail.com

Date:	Monday, December 18, 2000 4:41 PM
Type:	E-mail
From:	Brad Steen <BSteen@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com>; Brad Steen <BSteen@dot.state.az.us>
Subject:	RE: Meeting follow-up: Procedures for sorting ADOT Spending Program
Notes:	Jason, I'm not sure if I'll have the time to meet because I'll be out of the office next week and I need to finish the Forecast and various other reports before Friday. Can you call me Thursday to see if I have the time? Thanks, Brad

Date:	Thursday, December 21, 2000 2:01 PM
Type:	E-mail
From:	Jason Carey [mailto:jasoncarey@hotmail.com]
To:	Brad Steen <BSteen@dot.state.az.us>
Subject:	Re: Meeting follow-up: Procedures for sorting ADOT Spending Program

Notes:	Brad, I seem to have misplaced your phone number. All I have are Nettie's and the departmental fax. How does next week look for a meeting? Will you be out of the office on the dates I mentioned (Dec 28-29)? I can call you on the 28th, or we can shoot for a time in January. Either way, what are your thoughts on additional training sessions? Do you feel comfortable with using the model for updates, or would you like to spend more time on it? I'd like to get an idea of the number of meetings you'd like to have. Thank you. Jason Carey 520-226-8656 jasoncarey@hotmail.com

Date:	Thursday, December 21, 2000 1:58 PM
Type:	E-mail
From:	Brad Steen <BSteen@dot.state.az.us>
To:	'Jason Carey' <jasoncarey@hotmail.com>
Subject:	RE: Meeting follow-up: Procedures for sorting ADOT Spending Program
Notes:	Jason, My phone number is (602) 712-4637 I'll be out of the office from Dec. 23- Jan.2. I believe 1 - 2 additional training would be sufficient. I have a new staff member starting on Jan. 3rd , so I would like him to sit in on at least one training session. We have completed the HURF forecast so all I need is the vehicle count by type and weight. This may be a challenge to obtain from MVD. Brad

Date:	December 21, 2000
Type:	Phone call
From:	Jason Carey
To:	Brad Steen
Subject:	HURF Forecast, Meeting 4
Notes:	HURF forecast complete and ready for final update. Debt service for "unusual" items (e.g. GANs, BFOs and SIBs) also complete per Brad Steen. Meeting 4 set for January 17, 2001 at 1:00 pm. Meeting 4 to include final distribution of HURF revenues, state aid forecast and debt service. Complete SMHCAS update for fiscal 2001-05 to be completed during meeting.

	Brad Steen indicated that Meeting 4 should be sufficient training on the SMHCAS model to permit future FMS staff updates. However, as Phil Chan will be new to the process, a summary overview of the SMHCAS should be included during the final update. If determined during the course of Meeting 4 that SMHCAS operational deficiencies exist, another session will be scheduled to repeat the Spending Program sort methodology and provide additional guidance for potential changes to the model.

Date:	Monday, February 05, 2001 2:51 PM
Type:	E-mail
From:	John Semmens
To:	Jason Carey
Subject:	SPR477 Status Update
Notes:	I presume you received my comments on your last draft and have or will incorporate them into the final report. Would you like to make the 15 minute oral presentation at the Mar 21 (sometime between 2 and 4 p.m.) Research Council meeting? Do you think that Brad or Phil could be induced to attend to attest to the completion of the training? -----Original Message----- From: Jason Carey [mailto:jasoncarey@hotmail.com] Sent: Monday, February 05, 2001 10:07 AM To: John Semmens Subject: SPR477 Status Update I met with Brad Steen and Phil Chan on Friday, 2/2/01. Brad did a demonstration update from start to finish, except for the Spending Program classification. Both indicated that they had a satisfactory understanding of the model, and that additional training sessions would not be necessary. The revised HURF forecasts (revenues and distributions) and interest payments for new funding sources were available for the update, so the "final numbers" for FY2001-05 are now ready. I will need to update portions of the FHWA model with these revised figures prior to completing the report. I expect to have this done by the end of the week.

Date:	Monday, February 05, 2001 8:38 AM
Type:	E-mail
From:	Brad Steen
To:	Jason Carey
Subject:	SPR477
Notes:	<<UPDATE020201.xls>>
	Jason,
	Here is a file containing the five worksheets we updated Friday.
	Brad
	-----Original Message-----
	From: Jason Carey [mailto:jasoncarey@hotmail.com]
	Sent: Monday, February 05, 2001 8:17 AM
	To: BSteen@dot.state.az.us
	Subject: RE: SPR477
	No problem. If it's easier to send the individual pages, I
	think I'll just
	need the following:
	"EXP IN", "REV IN", "FEE SPLIT", "FEE ADJ", "HURF DIST"
	Jason Carey
	jasoncarey@hotmail.com
	>From: Brad Steen <BSteen@dot.state.az.us>
	>To: 'Jason Carey' <jasoncarey@hotmail.com>
	>Subject: RE: SPR477
	>Date: Mon, 5 Feb 2001 08:03:49 -0700
	>Jason,
	>The file is too big to send. It's being rejected on my end. I'll have to get
	>someone to zip it foe me or send you copies of the
	>pages we changed.
	>Brad
	> -----Original Message-----
	> From: Jason Carey
	[mailto:jasoncarey@hotmail.com]
	> Sent: Monday, February 05, 2001 7:49 AM
	> To: Brad Steen
	> Cc: jecarey01@juno.com
	> Subject: SPR477
	> Brad,
	> Would you mind re-sending the SMHCAS01.xls file to me? The
	>first attempt has not made it through. Carbon-copying my alternate
	>address might minimize the chances of a repeat failure in
	>transmission. I'll send a summary of the last meeting in the next few days.
	>Thanks.
	> Jason Carey
	> jasoncarey@hotmail.com
	>

Date:	Wednesday, February 28, 2001 11:37 AM
Type:	E-Mail
From:	Brad Steen <BSteen@dot.state.az.us>
To:	'Jason Carey' jasoncarey@hotmail.com, John Semmens jsemmens@dot.state.az.us, Philip Chan Yew Onn PChan@dot.state.az.us,
Subject:	RE: Question
Notes:	Jason, The foreign based motor carriers prorated fees are in the Apportioned and Motor Carrier Fee revenue categories. In FY 2000, these two revenue categories generated $106 million of the HURF revenues. It should be noted that a very high percentage of the interstate motor carriers have a GVW of 75,000 - 80,000. The 6% relates to the average foreign based Arizona mileage compared to the total mileage throughout the US. The 6% does not relate to the % of HURF revenues (Apportioned and Motor Carrier Fee). Example: If an Ohio based motor carrier's (75,000-80,000 GVW) Arizona mileage was 6% of his/her total mileage in the US, then he/she is liable for 6% of Arizona's fees as follows: Motor Carrier Fee: $800 x .06 = $48 Highway Use Fee: $2,217 x .06 = $133.02 Weight Fee: $918 x .06 = $55.08 All of this added up to $106 million. Arizona based motor carrier fees are within the Registration & Weight category and a little in Motor Carrier Fee categories. I'll try and call you this afternoon or tomorrow to discuss. Thanks, Brad -----Original Message----- From: Jason Carey [mailto:jasoncarey@hotmail.com] Sent: Wednesday, February 28, 2001 10:49 AM To: BSteen@dot.state.az.us Cc: jsemmens@dot.state.az.us; PChan@dot.state.az.us Subject: RE: Question Brad, Thanks for clarifying these definitions. The control totals should cover all fees, but the motor carrier fees have all been distributed in the same way. It appears that we do need to consider adjusting the distribution according to the expected proportion of out-of-state carriers. However, if these vehicles only make up about 6% of total fee collections, I don't think an adjustment to the model is warranted, as the net effect would be a transfer

of only about 0.6 percent of motor carrier fee revenue from other vehicles to combination trucks (i.e. 6% of the 10.8% of motor carrier fees not allocated to CMB trucks). This transfer would have virtually no effect on the overall distribution of revenues or user equity. Let me know what you think about such an adjustment. I'd be happy to walk you or Phil through the calculations if necessary.

Jason

jasoncarey@hotmail.com

>From: Brad Steen <BSteen@dot.state.az.us>
>To: 'Jason Carey' <jasoncarey@hotmail.com>
>CC: John Semmens <jsemmens@dot.state.az.us>, Philip Chan Yew Onn
><PChan@dot.state.az.us>
>Subject: RE: Question
>Date: Tue, 27 Feb 2001 10:00:15 –0700
>Jason,
>Thanks!
>I believe we may be okay.
>The Motor Carrier Fee would include both the AZ based and foreign based
>motor carrier fee which would be apportioned if they are an interstate
>motor carrier. Only the AZ based intrastate MC would not pay a apportioned
>Motor Carrier Fee.
>The Registration and Weight category contains Arizona based
>commercial and non-commercial vehicle registration and weight fees. A
>portion of this category would include apportioned registration and weight
>fees for AZ based interstate motor carriers.
>The Apportioned category includes only foreign based apportioned fees for
>registration, weight, and highway use fees.
>The Registration Permit & Penalties category includes
>non-resident permits, unassigned registration, and registration penalties. No
>apportioned fees in this category.
>I'm still trying to verify these definitions so I may have
>to change them as more information becomes available today.
>Thanks,
>Brad
>
> -----Original Message-----
> From: Jason Carey
[mailto:jasoncarey@hotmail.com]
> Sent: Monday, February 26, 2001 3:46 PM
> To: Brad Steen
> Cc: John Semmens; Philip Chan Yew Onn
> Subject: Re: Question
>
> Brad,
>

> The apportioned fees are shown in the "HURF Reg & Wgt Split"
>in cells F25:L30 of the 'REV_IN' worksheet. This split is based on
>the data Nettie provided for the "Registration Fee Breakdown" in the
>'FEE_SPLIT' worksheet (source: HURF Revenue Forecast). This amount is
>used as a control total in accounting for the various apportioned fees. These
>are then distributed solely among combination trucks (see the references to
>'REV IN'!$L$29 in the "Registration and Weight Fees" section of worksheet
>REV OUT), based on the assumption that combination trucks make up
>the vast majority of commercial vehicles doing interstate runs.
>
> I believe we covered the FEE_SPLIT breakout of apportioned fees in
>meeting 1 (see "suggestions" in the first handout). My assumption was
>that the "apportioned" amount of the HURF Revenue Forecast accounted
>for all apportionments. However, if I am interpreting your question
>correctly, an additional portion of the motor carrier fee control total
>(6%) would need to be allocated exclusively to combination trucks (per the
>above assumption), rather than among all commercial vehicles. In order to
>answer this question, I need to know whether the "Apportioned" amount of
>registration and weight fees from the HURF Revenue Forecast (FEE_SPLIT
>range A1:C8) includes ALL expected collections of apportioned fees. If
>so, we have accounted for them. If not, a small revision to the distribution of
>the motor carrier fee controls would be warranted.
>
> Jason
> jasoncarey@hotmail.com
> ----- Original Message -----
> From: "Brad Steen" <BSteen@dot.state.az.us>
> To: "'Jason Carey'" <jasoncarey@hotmail.com>
> Cc: "John Semmens"
<jsemmens@dot.state.az.us>; "Philip Chan
>Yew Onn"
> <PChan@dot.state.az.us>
> Sent: Monday, February 26, 2001 2:59 PM
> Subject: Question
> > Jason,
> >
> > I've been reading the SHCAS report John sent for approval. It just dawned
> > on me that we incorporated the fees for Motor Carrier Fee, Weight Fee
> > and Highway Use Fee into the model but never accounted for the
> > apportionment of these fees. (FEE_ADJ) Motor Carriers (AZ based and
> > foreign based interstate carriers) are only liable for a certain percentage of
> > Arizona fee's based on their Arizona mileage to their total U.S. mileage.
> > Based on a 1997 analysis we did for the repeal of the weight distance tax,
> > we assumed the foreign based motor carriers Arizona mileage
> > accounted for only 6 percent of their total mileage so they were only
> > liable for 6 percent of our Motor Carrier Fee, Weight Fee and Highway

73

	>> Use Fee. The same applies for Arizona based interstate motor carriers.
	>> We assumed approximately 60 percent of their mileage was in Arizona.
	>>
	>> Would this impact the outcome of the model? I can not recall whether we
	>> discussed this matter or not. The majority of the interstate motor carriers
	>> (AZ based and foreign based) are in the 75,000-80,000 GVW class.
	>>
	>> Thanks,
	>> Brad

Date:	Wednesday, February 28, 2001 7:01 PM
Type:	E-mail
From:	Jason Carey
To:	Brad Steen, John Semmens, Philip Chan Yew Onn
Subject:	Re: Question
Notes:	Brad,
	I've attached a revised version of the model. Please have a look at worksheets FEE_SPLIT and REV_OUT. The FEE_SPLIT worksheet has been changed to redistribute weight fees and motor carrier fees per our telephone discussion this afternoon. The REV_OUT worksheet formulas have been changed for the "Registration and Weight Fees" column and the "Motor Carrier Fees" column. I have summarized these changes below and in a revised version of the report sent to John Semmens.
	Weight fees: The "Apportioned" amount of total registration and weight fees (FEE_SPLIT C7) was assigned to foreign-based combination trucks using the split of registrations from the 1997 WDT repeal study. The remaining weight fees (shares in row 13) are allocated to Arizona-based vehicles in FEE_SPLIT L28:Y53 using the commercial registration matrix in REG O29:T54. These fees are adjusted for magnitude (FEE_ADJ) and reflect 60% payment for vehicles with GVW of 70,000 lb. or more, based on our discussion of out-of-state travel by AZ-based carriers.
	Motor carrier fees are estimated for foreign vehicles based on the share of apportioned weight fees to total registration and weight fees (i.e. in FEE_SPLIT, C7/(C4+C7+C8)= % of C3 assigned to foreign vehicles). This amount is then allocated to foreign vehicles in A28:H53, and the remaining amount allocated to AZ-based vehicles using the same assumptions as for weight fees. The only difference in the allocation is the relative magnitude from FEE_ADJ.

Worksheet REV_OUT now uses the amounts and/or shares from FEE_SPLIT to allocate the fees discussed above. The worksheets labeled REV_OUT(2) and RATIOS_OUT(2) reflect these changes, and should be used for future updates. I have included the old worksheets for comparison. Give me a call if you have any questions.
Thanks.
Jason
jasoncarey@hotmail.com

----- Original Message -----
From: <jasoncarey@hotmail.com>
To: <BSteen@dot.state.az.us>
Cc: <jsemmens@dot.state.az.us>; <PChan@dot.state.az.us>
Sent: Wednesday, February 28, 2001 12:01 PM
Subject: RE: Question

> Brad,
> This calls for reassessment. The "Apportioned" fee category is covered, but I think the foreign-based motor carrier fees should be reallocated. This will be a straightforward process if we can assume the following:
>
> >>Is the ratio of foreign-based to Arizona motor carrier fees about the same as the ratio of apportioned registration and weight fees to total registration and weight fees?
>
> If this assumption is valid, about 50% of motor carrier fees would be reallocated. Again, the net result would be small (about 6 percent), but in this case significant. We may also want to incorporate the foreign-based weight schedule from the 1997 WDT repeal analysis. I believe this would have
the added impact of reallocating shares of these fees to heavier vehicles.
>
> I will be out of town for a wedding tomorrow, so I'll try to get in touch with you this afternoon.
>
> Jason

Appendix B: Cell References for Modified Worksheets

The following pages contain cell references for Arizona SMHCAS worksheets modified during the course of the training sessions and fiscal 2001-2005 update. It should be noted that the worksheets shown comprise only the parts of the Arizona SMHCAS that were modified for this study. The Arizona SMHCAS *is not* duplicated here in its entirety. To duplicate the Arizona SMHCAS, the worksheets in this appendix should be used in conjunction with the references contained in *Refinement of the Simplified Arizona Highway Cost Allocation Study Model* (Carey, 2000). Copies of this report are available from the Arizona Transportation Research Center. Contact John Semmens, Arizona Department of Transportation, (602)712-3137, for further details.

EXP_IN

	A	B	C	D	E	F	G	H
1	**PROGRAM PERIOD**			**Allocation Method**			**EXPENDITURE PROGRAM INPUTS (Thousands of Dollars)**	
2	**Start Year**	**2001**		**VMT**			**Category Inputs**	**YEAR 1**
3	**End Year**	**2005**		**PCE**				=B2
4	**Midpoint**	=(B3-B2+1)/2+B2					**Discretionary Fund** [a.]	
5							Overhead Expenses	=258266+9936
6	**ADOT Obligation Program (Sorted)** [d.]						DPS Transfer (Highway Patrol)	12500
7	(Thousands of Dollars)						Debt Service (Interest ONLY)	=SUM(H21:H23)
8	**Expend Class**	**Funding Source**			**Total**		Gross HURF Available for Construction	404186
9		**State**	**Federal**	**Other**			Federal Aid	323673
10	Urban	482503	546471.540298137	1315899	=SUM(B10:D10)		Federal Aid (PLH FL HPP)	11250
11	Rural	237359	902549.459701863	0	=SUM(B11:D11)		Set Asides	0
12	Common	473597	383002	58824	=SUM(B12:D12)		Local/Private/3rd Party Funding	1212
13	Total	=SUM(B10:B12)	=SUM(C10:C12)	=SUM(D10:D12)	=SUM(E10:E12)		Inflation Cost Estimate	0
14							Programmed/Scheduled Bids	891504
15	**Adjusted Construction Program**						**Federal Apportionments** [b.]	
16	(Thousands of Dollars)						State Programmable Funds	365987
17	**Expend Class**	**Funding Source**			**Total**		Maricopa Urban Programmable	79690
18		**State**	**Federal**	**Other**			Pima Urban Programmable	16757
19	Urban	=IF(SUM($N$8,$N$16)>SUM($B$13,$C$13),$N$8*($B10/$B$13),B10)	=IF(SUM($N$8,$N$16)>SUM($B$13,$C$13),$N$16*($C10/$C$13),C10)	=D10	**=SUM(B19:D19)**		Other Local Programmable	24210
20	Rural	=IF(SUM($N$8,$N$16)>SUM($B$13,$C$13),$N$8*($B11/$B$13),B11)	=IF(SUM($N$8,$N$16)>SUM($B$13,$C$13),$N$16*($C11/$C$13),C11)	=D11	**=SUM(B20:D20)**		**Interest on Bonds** [c.]	
21	Common	=IF(SUM($N$8,$N$16)>SUM($B$13,$C$13),$N$8*($B12/$B$13),B12)	=IF(SUM($N$8,$N$16)>SUM($B$13,$C$13),$N$16*($C12/$C$13),C12)	=D12	**=SUM(B21:D21)**		RARF	36430
22	**Total**	=SUM(B19:B21)	=SUM(C19:C21)	=SUM(D19:D21)	**=SUM(E19:E21)**		HURF	28673
23							Other Obligations	
24							**HURF Distribution Forecast** [e.]	
25							Highway Fund	420917
26							MAG/PAG	75447
27							Cities & Towns	299785
28							Counties	186751
29								

EXP_IN

	I	J	K	L	M	N
1						
2	YEAR 2	YEAR 3	YEAR 4	YEAR 5	AVERAGE	TOTAL
3	=H3+1	=I3+1	=J3+1	=K3+1		
4						
5	=271014+10000	=278994+10000	=287214+10000	=295681+10000	=AVERAGE(H5:L5)	=SUM(H5:L5)
6	10000	10000	10000	10000	=AVERAGE(H6:L6)	=SUM(H6:L6)
7	=SUM(I21:I23)	=SUM(J21:J23)	=SUM(K21:K23)	=SUM(L21:L23)	=AVERAGE(H7:L7)	=SUM(H7:L7)
8	176157	217360	217268	189260	=AVERAGE(H8:L8)	=SUM(H8:L8)
9	334219	339244	344761	350377	=AVERAGE(H9:L9)	=SUM(H9:L9)
10	15607	38800	5800	0	=AVERAGE(H10:L10)	=SUM(H10:L10)
11	0	0	0	0	=AVERAGE(H11:L11)	=SUM(H11:L11)
12	7000	5000	2333	0	=AVERAGE(H12:L12)	=SUM(H12:L12)
13	-10000	-18854	-16399	-13509	=AVERAGE(H13:L13)	=SUM(H13:L13)
14	475605	538692	468536	385981	=AVERAGE(H14:L14)	=SUM(H14:L14)
15						
16	338027	340650	349000	349000	=N16/5	=SUM(H16:L16)
17	73146	70824	75000	75000	=N17/5	=(0.88*H17)+(0.98*SUM(I17:L17))
18	15833	15842	16000	16000	=N18/5	=(0.88*H18)+(0.98*SUM(I18:L18))
19	22919	22677	23000	23000	=N19/5	=(0.88*H19)+(0.98*SUM(I19:L19))
20						
21	30334	38232	33165	28193	=AVERAGE(H21:L21)	=SUM(H21:L21)
22	26050	23279	21657	19516	=AVERAGE(H22:L22)	=SUM(H22:L22)
23						
24						
25	439117	455861	476545	496159	=AVERAGE(H25:L25)	=SUM(H25:L25)
26	78710	81711	85419	88934	=AVERAGE(H26:L26)	=SUM(H26:L26)
27	312747	324673	339404	353373	=AVERAGE(H27:L27)	=SUM(H27:L27)
28	194826	202255	211432	220134	=AVERAGE(H28:L28)	=SUM(H28:L28)
29						

REV_IN

	A	B	C	D	E	F	G	H
1	**PROGRAM PERIOD**					**REVENUE INPUTS (Thousands of Dollars)**		
2	**Start Year**	**2001**				**Category Inputs**	**YEAR 1**	**YEAR 2**
3	**End Year**	**2005**					=B2	=G3+1
4	**Midpoint**	=(B3-B2+1)/2+B2				**HURF Revenue Forecast**		
5						Gas Tax	419753	434580
6	**State Fuel Tax Rates**					Use Fuel (Diesel) Tax	166398	170650
7	Gas	0.18				Vehicle License Tax (HURF) [a.]	249156	267021
8	Diesel	0.27				Adjusted VLT (Total)	=G7/$B$15	=H7/$B$15
9						Registration & Weight Fees	123844	125716
10	**Federal Fuel Tax Rates**					Motor Carrier Fees	34402.7	34771.6
11	Gas	0.184				Other State Taxes & Fees	42784	44854
12	Diesel	0.244				*Other Flat Fees (NEW)*	0	0
13						*Other Weight-Based Fees (NEW)*	0	0
14	**VLT Distribution**					*Other Travel-Based Fees (NEW)*	0	0
15	HURF	0.4274				**State Subtotal**	=SUM(G5:G6,G8:G14)	=SUM(H5:H6,H8:H14)
16						**Federal Revenue Forecast**		
17						Gas Tax	=($B$11/$B$7)*G5	=($B$11/$B$7)*H5
18						Use Fuel (Diesel) Tax	=($B$12/$B$8)*G6	=($B$12/$B$8)*H6
19						Truck/Trailer Sales Tax		
20						Use Tax		
21						Tire Tax		
22						**Federal Subtotal**	=SUM(G17:G21)	=SUM(H17:H21)
23						**Total**	=SUM(G15,G22)	=SUM(H15,H22)
24								
25						**HURF Reg. & Wgt. Split**		
26						Reg. & Weight	=G$9*'FEE SPLIT'!$F4	=H$9*'FEE SPLIT'!$F4
27						Registration	=G$9*'FEE SPLIT'!$F5	=H$9*'FEE SPLIT'!$F5
28						Weight	=G$9*'FEE SPLIT'!$F6	=H$9*'FEE SPLIT'!$F6
29						Apportioned	=G$9*'FEE SPLIT'!$F7	=H$9*'FEE SPLIT'!$F7
30						Reg. Permit and Penalties	=G$9*'FEE SPLIT'!$F8	=H$9*'FEE SPLIT'!$F8
31								
32						**HURF Other Fees Split**		
33						Common	='FEE SPLIT'!$D25*G$11	='FEE SPLIT'!$D25*H$11
34						Truck	='FEE SPLIT'!$D26*G$11	='FEE SPLIT'!$D26*H$11
35								
36						**Federal Revenue Projections**		
37						Sales Tax	=IF(G19=0,('FED FEES'!$F36*('FED FEES'!$G36^('REV IN'!G$3-AVERAGE('FED FEES'!$B$35:$E$35)))),G19)	=IF(H19=0,('FED FEES'!$F36*('FED FEES'!$G36^('REV IN'!H$3-AVERAGE('FED FEES'!$B$35:$E$35)))),H19)
38						Use Tax	=IF(G20=0,('FED FEES'!$F37*('FED FEES'!$G37^('REV IN'!G$3-AVERAGE('FED FEES'!$B$35:$E$35)))),G20)	=IF(H20=0,('FED FEES'!$F37*('FED FEES'!$G37^('REV IN'!H$3-AVERAGE('FED FEES'!$B$35:$E$35)))),H20)
39						Tire Tax	=IF(G21=0,('FED FEES'!$F38*('FED FEES'!$G38^('REV IN'!G$3-AVERAGE('FED FEES'!$B$35:$E$35)))),G21)	=IF(H21=0,('FED FEES'!$F38*('FED FEES'!$G38^('REV IN'!H$3-AVERAGE('FED FEES'!$B$35:$E$35)))),H21)

REV_IN

	I	J	K	L	M
1					
2	YEAR 3	YEAR 4	YEAR 5	AVERAGE	TOTAL
3	=H3+1	=I3+1	=J3+1		
4					
5	447727	463630	474529	=AVERAGE(G5:K5)	=SUM(G5:K5)
6	168717	173963	179772	=AVERAGE(G6:K6)	=SUM(G6:K6)
7	289671	314475	340685	=AVERAGE(G7:K7)	=SUM(G7:K7)
8	=I7/$B$15	=J7/$B$15	=K7/$B$15	=AVERAGE(G8:K8)	=SUM(G8:K8)
9	128881	132354	136265	=AVERAGE(G9:K9)	=SUM(G9:K9)
10	35395.3	36079.6	36850.2	=AVERAGE(G10:K10)	=SUM(G10:K10)
11	46966	49119	51311	=AVERAGE(G11:K11)	=SUM(G11:K11)
12	0	0	0	=AVERAGE(G12:K12)	=SUM(G12:K12)
13	0	0	0	=AVERAGE(G13:K13)	=SUM(G13:K13)
14	0	0	0	=AVERAGE(G14:K14)	=SUM(G14:K14)
15	=SUM(I5:I6,I8:I14)	=SUM(J5:J6,J8:J14)	=SUM(K5:K6,K8:K14)	=SUM(L5:L6,L8:L14)	=SUM(M5:M6,M8:M14)
16					
17	=($B$11/$B$7)*I5	=($B$11/$B$7)*J5	=($B$11/$B$7)*K5	=AVERAGE(G17:K17)	=SUM(G17:K17)
18	=($B$12/$B$8)*I6	=($B$12/$B$8)*J6	=($B$12/$B$8)*K6	=AVERAGE(G18:K18)	=SUM(G18:K18)
19				=IF(SUM(G19:K19)=0, "n/a",AVERAGE(G19: K19))	=SUM(G19:K19)
20				=IF(SUM(G20:K20)=0, "n/a",AVERAGE(G20: K20))	=SUM(G20:K20)
21				=IF(SUM(G21:K21)=0, "n/a",AVERAGE(G21: K21))	=SUM(G21:K21)
22	=SUM(I17:I21)	=SUM(J17:J21)	=SUM(K17:K21)	=SUM(L17:L21)	=SUM(M17:M21)
23	=SUM(I15,I22)	=SUM(J15,J22)	=SUM(K15,K22)	=SUM(L15,L22)	=SUM(M15,M22)
24					
25					
26	=I$9*'FEE SPLIT'!$F4	=J$9*'FEE SPLIT'!$F4	=K$9*'FEE SPLIT'!$F4	=AVERAGE(G26:K26)	=SUM(G26:K26)
27	=I$9*'FEE SPLIT'!$F5	=J$9*'FEE SPLIT'!$F5	=K$9*'FEE SPLIT'!$F5	=AVERAGE(G27:K27)	=SUM(G27:K27)
28	=I$9*'FEE SPLIT'!$F6	=J$9*'FEE SPLIT'!$F6	=K$9*'FEE SPLIT'!$F6	=AVERAGE(G28:K28)	=SUM(G28:K28)
29	=I$9*'FEE SPLIT'!$F7	=J$9*'FEE SPLIT'!$F7	=K$9*'FEE SPLIT'!$F7	=AVERAGE(G29:K29)	=SUM(G29:K29)
30	=I$9*'FEE SPLIT'!$F8	=J$9*'FEE SPLIT'!$F8	=K$9*'FEE SPLIT'!$F8	=AVERAGE(G30:K30)	=SUM(G30:K30)
31					
32					
33	='FEE SPLIT'!$D25*I$11	='FEE SPLIT'!$D25*J$11	='FEE SPLIT'!$D25*K$11	=AVERAGE(G33:K33)	=SUM(G33:K33)
34	='FEE SPLIT'!$D26*I$11	='FEE SPLIT'!$D26*J$11	='FEE SPLIT'!$D26*K$11	=AVERAGE(G34:K34)	=SUM(G34:K34)
35					

REV_IN

	I	J	K	L	M
36					
37	=IF(I19=0,('FED FEES'!$F36*('FED FEES'!$G36^('REV IN'!I$3-AVERAGE('FED FEES'!$B$35:$E$35)))),I19)	=IF(J19=0,('FED FEES'!$F36*('FED FEES'!$G36^('REV IN'!J$3-AVERAGE('FED FEES'!$B$35:$E$35)))),J19)	=IF(K19=0,('FED FEES'!$F36*('FED FEES'!$G36^('REV IN'!K$3-AVERAGE('FED FEES'!$B$35:$E$35)))),K19)	=AVERAGE(G37:K37)	=SUM(G37:K37)
38	=IF(I20=0,('FED FEES'!$F37*('FED FEES'!$G37^('REV IN'!I$3-AVERAGE('FED FEES'!$B$35:$E$35)))),I20)	=IF(J20=0,('FED FEES'!$F37*('FED FEES'!$G37^('REV IN'!J$3-AVERAGE('FED FEES'!$B$35:$E$35)))),J20)	=IF(K20=0,('FED FEES'!$F37*('FED FEES'!$G37^('REV IN'!K$3-AVERAGE('FED FEES'!$B$35:$E$35)))),K20)	=AVERAGE(G38:K38)	=SUM(G38:K38)
39	=IF(I21=0,('FED FEES'!$F38*('FED FEES'!$G38^('REV IN'!I$3-AVERAGE('FED FEES'!$B$35:$E$35)))),I21)	=IF(J21=0,('FED FEES'!$F38*('FED FEES'!$G38^('REV IN'!J$3-AVERAGE('FED FEES'!$B$35:$E$35)))),J21)	=IF(K21=0,('FED FEES'!$F38*('FED FEES'!$G38^('REV IN'!K$3-AVERAGE('FED FEES'!$B$35:$E$35)))),K21)	=AVERAGE(G39:K39)	=SUM(G39:K39)

HPMS_IN

	A	B	C	D	E	F	G	H
1	Base Period DVMT (000)							
2								
3	Rural	1987	1992	1995	1996	1997	1998	1999
4	Interstate	12692	13963	14909	15928	16320	17563	18534
5	OPA	3865	4635	6299	6332	6514	6574	6869
6	Minor Arterial	4802	6034	4570	5006	5132	5139	5519
7	Major Collector	5636	7926	7417	4702	8264	8626	8717
8	Minor Collector	1002	720	862	1252	1356	1426	1491
9	Local	4217	4395	4435	4547	4649	4489	4687
10	Total Rural	=SUM(B4:B9)	=SUM(C4:C9)	=SUM(D4:D9)	=SUM(E4:E9)	=SUM(F4:F9)	=SUM(G4:G9)	=SUM(H4:H9)
11								
12	Urban	=B3	=C3	=D3	=E3	=F3	=G3	=H3
13	Interstate	5745	8206	10113	10743	11008	11353	11899
14	OFE	1177	3671	5004	6403	6807	7928	9575
15	OPA	24320	22288	24670	25756	26189	26708	26908
16	Minor Arterial	9259	10686	14683	15910	15591	16044	16459
17	Collector	4062	4840	7733	8010	8174	8101	8096
18	Local	10151	8396	7942	8100	9149	9408	9535
19	Total Urban	=SUM(B13:B18)	=SUM(C13:C18)	=SUM(D13:D18)	=SUM(E13:E18)	=SUM(F13:F18)	=SUM(G13:G18)	=SUM(H13:H18)
20								
21								
22	Percent of Travel by Vehicle Type			=H3				
23	Rural					SU		
24		MC	AUTO	LT	BUS	2A 6T	3A	4A
25	INT	0.005	0.492	0.223	0.005	0.027	0.006	0
26	OPA	0.016	0.564	0.27	0.008	0.016	0.01	0
27	MA	0.008	0.649	0.268	0.008	0.019	0.007	0
28	MaC	0.009	0.627	0.3	0.007	0.015	0.007	0
29	MiC	0.011	0.568	0.303	0.005	0.01	0.016	0.002
30	LO	0.004	0.525	0.343	0.003	0.035	0.005	0
31	Total Rural	=($H$4*B$25+$H$5*B$26+$H$6*B$27+$H$7*B$28+$H$8*B$29+$H$9*B$30)/$H$10	=($H$4*C$25+$H$5*C$26+$H$6*C$27+$H$7*C$28+$H$8*C$29+$H$9*C$30)/$H$10	=($H$4*D$25+$H$5*D$26+$H$6*D$27+$H$7*D$28+$H$8*D$29+$H$9*D$30)/$H$10	=($H$4*E$25+$H$5*E$26+$H$6*E$27+$H$7*E$28+$H$8*E$29+$H$9*E$30)/$H$10	=($H$4*F$25+$H$5*F$26+$H$6*F$27+$H$7*F$28+$H$8*F$29+$H$9*F$30)/$H$10	=($H$4*G$25+$H$5*G$26+$H$6*G$27+$H$7*G$28+$H$8*G$29+$H$9*G$30)/$H$10	=($H$4*H$25+$H$5*H$26+$H$6*H$27+$H$7*H$28+$H$8*H$29+$H$9*H$30)/$H$10
32	Urban					SU		
33		MC	AUTO	LT	BUS	2A 6T	3A	4A
34	INT	0.004	0.467	0.271	0.004	0.029	0.009	0
35	OFE	0.003	0.548	0.304	0.003	0.04	0.013	0
36	OPA	0.004	0.609	0.274	0.005	0.023	0.006	0
37	MA	0.005	0.588	0.324	0.004	0.023	0.012	0
38	CO	0.005	0.548	0.328	0.006	0.037	0.014	0
39	LO	0.007	0.651	0.278	0.003	0.029	0.005	0.002
40	Total Urban	=($H$13*B34+$H$14*B35+$H$15*B36+$H$16*B37+$H$17*B38+$H$18*B39)/$H$19	=($H$13*C34+$H$14*C35+$H$15*C36+$H$16*C37+$H$17*C38+$H$18*C39)/$H$19	=($H$13*D34+$H$14*D35+$H$15*D36+$H$16*D37+$H$17*D38+$H$18*D39)/$H$19	=($H$13*E34+$H$14*E35+$H$15*E36+$H$16*E37+$H$17*E38+$H$18*E39)/$H$19	=($H$13*F34+$H$14*F35+$H$15*F36+$H$16*F37+$H$17*F38+$H$18*F39)/$H$19	=($H$13*G34+$H$14*G35+$H$15*G36+$H$16*G37+$H$17*G38+$H$18*G39)/$H$19	=($H$13*H34+$H$14*H35+$H$15*H36+$H$16*H37+$H$17*H38+$H$18*H39)/$H$19

HPMS_IN

	I	J	K	L	M	N	O
1				Annual VMT Forecasts (millions)			
2				Year	All Hwys	State Syst	
3				1987	31728.72	13254.387	
4				1988	34153.05	13502.824	
5				1989	34815.525	14716.663	
6				1990	35455.735	14691.833	
7				1991	34927.215	14939.882	
8				1992	34952.4	15433.66	
9				1993	37653.765	16335.21	
10				1994	38775.775	16976.515	
11				1995	39652.505	17726.225	
12				1996	42010.77	19162.5	
13				1997	43490.845	19789.935	
14				2010	55959.245	=((($M$14/$M$13)^(1/14))^($L14-$L13))*N13	
15							
16							
17							
18				Program Year Est.	Year	=MEDIAN('EXP IN'!B2:B3)	
19					Ann. VMT	=IF(ISERROR(VLOOKUP(N18,L3:M14,2,FALSE)),(((M14/M13)^(1/(L14-L13)))^(N18-L13))*M13,VLOOKUP(N18,L3:M14,2,FALSE))	
20							
21							
22							
23	CMB Single Trailer			CMB Multi-trailer			Total
24	CS 4A	CS 5A	CS 6A	CM 5A	CM 6A	CM 7A	
25	0.036	0.183	0.006	0.013	0.003	0.001	=SUM(B25:N25)
26	0.024	0.077	0.003	0.009	0.002	0.001	=SUM(B26:N26)
27	0.017	0.02	0.001	0.002	0	0.001	=SUM(B27:N27)
28	0.012	0.02	0.001	0.002	0	0	=SUM(B28:N28)
29	0.006	0.072	0.001	0.004	0.001	0.001	=SUM(B29:N29)
30	0.003	0.076	0.001	0.005	0	0	=SUM(B30:N30)
31	=($H$4*I$25+$H$5*I$26+$H$6*I$27+$H$7*I$28+$H$8*I$29+$H$9*I$30)/$H$10	=($H$4*J$25+$H$5*J$26+$H$6*J$27+$H$7*J$28+$H$8*J$29+$H$9*J$30)/$H$10	=($H$4*K$25+$H$5*K$26+$H$6*K$27+$H$7*K$28+$H$8*K$29+$H$9*K$30)/$H$10	=($H$4*L$25+$H$5*L$26+$H$6*L$27+$H$7*L$28+$H$8*L$29+$H$9*L$30)/$H$10	=($H$4*M$25+$H$5*M$26+$H$6*M$27+$H$7*M$28+$H$8*M$29+$H$9*M$30)/$H$10	=($H$4*N$25+$H$5*N$26+$H$6*N$27+$H$7*N$28+$H$8*N$29+$H$9*N$30)/$H$10	=SUM(B31:N31)
32	CMB Single Trailer			CMB Multi-trailer			Total
33	CS 4A	CS 5A	CS 6A	CM 5A	CM 6A	CM 7A	
34	0.029	0.161	0.006	0.014	0.005	0.001	=SUM(B34:N34)
35	0.028	0.034	0.012	0.009	0.006	0	=SUM(B35:N35)
36	0.016	0.055	0.002	0.004	0.001	0.001	=SUM(B36:N36)
37	0.019	0.018	0.002	0.004	0.001	0	=SUM(B37:N37)
38	0.026	0.021	0.005	0.008	0.002	0	=SUM(B38:N38)
39	0	0.021	0.001	0.002	0.001	0	=SUM(B39:N39)
40	=($H$13*I$34+$H$14*I$35+$H$15*I$36+$H$16*I$37+$H$17*I$38+$H$18*I$39)/$H$19	=($H$13*J$34+$H$14*J$35+$H$15*J$36+$H$16*J$37+$H$17*J$38+$H$18*J$39)/$H$19	=($H$13*K$34+$H$14*K$35+$H$15*K$36+$H$16*K$37+$H$17*K$38+$H$18*K$39)/$H$19	=($H$13*L$34+$H$14*L$35+$H$15*L$36+$H$16*L$37+$H$17*L$38+$H$18*L$39)/$H$19	=($H$13*M$34+$H$14*M$35+$H$15*M$36+$H$16*M$37+$H$17*M$38+$H$18*M$39)/$H$19	=($H$13*N$34+$H$14*N$35+$H$15*N$36+$H$16*N$37+$H$17*N$38+$H$18*N$39)/$H$19	=SUM(B40:N40)

VLT_ADJ

	A	B	C	D	E	F	G
1	Historical VLT Collections						
2	(Thousands of Dollars)						
3	Vehicle Class	1992	1993	1994	1995	1996	1997
4	Autos	232758.09077	247668.93601	n/a	305154.29336	349248.50864	347781.51332
5	Light Trucks	31636.79758	33026.39649	n/a	50447.28592	59113.57036	60379.36853
6	Buses	176.39929	187.016	n/a	143.11667	123.68472	102.71754
7	Commercial Trucks	46537.80783	48885.83539	n/a	55752.74634	62204.0269	58941.75972
8	Truck	43913.24366	46499.83666	n/a	52679.11761	58371.9642	54940.90172
9	Trailer	2624.56417	2385.99873	n/a	3073.62873	3832.0627	4000.858
10	Government	-1.29638	-0.50154	n/a	-0.43462	2.15096	-1.33458
11							
12	Total Collections	314930.90814	333757.86985	n/a	426044.97818	480330.9173	474496.66811
13							
14	Adjusted Share of VLT						
15	Vehicle Class	=B3	=C3	=D3	=E3	=F3	=G3
16	Autos	=B4/SUM(B$4:B$7,B$10)	=C4/SUM(C$4:C$7,C$10)	n/a	=E4/SUM(E$4:E$7,E$10)	=F4/SUM(F$4:F$7,F$10)	=G4/SUM(G$4:G$7,G$10)
17	Light Trucks	=B5/SUM(B$4:B$7,B$10)	=C5/SUM(C$4:C$7,C$10)	n/a	=E5/SUM(E$4:E$7,E$10)	=F5/SUM(F$4:F$7,F$10)	=G5/SUM(G$4:G$7,G$10)
18	Buses	=B6/SUM(B$4:B$7,B$10)	=C6/SUM(C$4:C$7,C$10)	n/a	=E6/SUM(E$4:E$7,E$10)	=F6/SUM(F$4:F$7,F$10)	=G6/SUM(G$4:G$7,G$10)
19	Comm. Trucks	=B7/SUM(B$4:B$7,B$10)	=C7/SUM(C$4:C$7,C$10)	n/a	=E7/SUM(E$4:E$7,E$10)	=F7/SUM(F$4:F$7,F$10)	=G7/SUM(G$4:G$7,G$10)
20	Truck	=B8/SUM(B$4:B$7,B$10)	=C8/SUM(C$4:C$7,C$10)	n/a	=E8/SUM(E$4:E$7,E$10)	=F8/SUM(F$4:F$7,F$10)	=G8/SUM(G$4:G$7,G$10)
21	Trailer	=B9/SUM(B$4:B$7,B$10)	=C9/SUM(C$4:C$7,C$10)	n/a	=E9/SUM(E$4:E$7,E$10)	=F9/SUM(F$4:F$7,F$10)	=G9/SUM(G$4:G$7,G$10)
22	Government	=B10/SUM(B$4:B$7,B$10)	=C10/SUM(C$4:C$7,C$10)	n/a	=E10/SUM(E$4:E$7,E$10)	=F10/SUM(F$4:F$7,F$10)	=G10/SUM(G$4:G$7,G$10)
23							
24	Breakdown of Commercial Shares						
25		=B3	=C3	=D3	=E3	=F3	=G3
26	Truck	=B8/B7	=C8/C7	n/a	=E8/E7	=F8/F7	=G8/G7
27	Trailer	=B9/B7	=C9/C7	n/a	=E9/E7	=F9/F7	=G9/G7
28							
29	Projected Share of VLT Revenues by Vehicle Class						
30	Vehicle Class	5 Year Historical Average	Program Year Projection	Adjusted Share			
31	Autos	=M16	=B31*(N16^('EXP IN'!$B$4/AVERAGE(H$3:J$3)))	=C31/SUM($C$31:$C$33,$C$35:$C$37)			
32	Light trucks	=M17	=B32*(N17^('EXP IN'!$B$4/AVERAGE(H$3:J$3)))	=C32/SUM($C$31:$C$33,$C$35:$C$37)			
33	Buses	=M18	=B33*(N18^('EXP IN'!$B$4/AVERAGE(H$3:J$3)))	=C33/SUM($C$31:$C$33,$C$35:$C$37)			
34	Comm. Trucks	=M19	=B34*(N19^('EXP IN'!$B$4/AVERAGE(H$3:J$3)))	=C34/SUM($C$31:$C$33,$C$35:$C$37)			
35	Truck	=M20	=B35*(N20^('EXP IN'!$B$4/AVERAGE(H$3:J$3)))	=C35/SUM($C$31:$C$33,$C$35:$C$37)			
36	Trailer	=M21	=B36*(N21^('EXP IN'!$B$4/AVERAGE(H$3:J$3)))	=C36/SUM($C$31:$C$33,$C$35:$C$37)			
37	Government	=M22	=B37*(N22^('EXP IN'!$B$4/AVERAGE(H$3:J$3)))	=C37/SUM($C$31:$C$34,$C$37)			
38	Total	=SUM(B31:B34,B37)	=SUM(C31:C34,C37)	=SUM(D31:D34,D37)			

VLT_ADJ

	H	I	J	K	L	M	N
1							
2							
3	1998	1999	2000	2001		Average	Annualized Change
4	456447.76485	=410472.74914+5735.16283+2.25872	=399431.2773+5736.73308+1.0882			=AVERAGE(B4:K4)	=(AVERAGE(H4:J4)/AVERAGE(E4:G4))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
5	78185.75694	=75439.44049+667.05975+111.90398	=73766.34712+344.28906+56.40857			=AVERAGE(B5:K5)	=(AVERAGE(H5:J5)/AVERAGE(E5:G5))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
6	205.0113	193.35737	192.72483			=AVERAGE(B6:K6)	=(AVERAGE(H6:J6)/AVERAGE(E6:G6))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
7	67998.01406	=SUM(I8:I9)	=SUM(J8:J9)	=SUM(K8:K9)		=AVERAGE(B7:K7)	=(AVERAGE(H7:J7)/AVERAGE(E7:G7))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
8	*63902.01353*	*59816.0079*	*54513.77321*			=AVERAGE(B8:K8)	=(AVERAGE(H8:J8)/AVERAGE(E8:G8))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
9	*4096.00053*	*4564.66493*	*3644.77391*			=AVERAGE(B9:K9)	=(AVERAGE(H9:J9)/AVERAGE(E9:G9))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
10	-0.90364	=-0.24796-2.32791	=-0.77751			=AVERAGE(B10:K10)	0
11							
12	610287.70954					=AVERAGE(B12:K12)	=(H12/B12)^(1/($H$3-$B$3))
13							
14							
15	=H3	=I3	=J3	=K3		5 Year Average	Annualized Change
16	=H4/SUM(H$4:H$7,H$10)	=I4/SUM(I$4:I$7,I$10)	=J4/SUM(J$4:J$7,J$10)			=AVERAGE(F16:J16)	=(AVERAGE(H16:J16)/AVERAGE(E16:G16))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
17	=H5/SUM(H$4:H$7,H$10)	=I5/SUM(I$4:I$7,I$10)	=J5/SUM(J$4:J$7,J$10)			=AVERAGE(F17:J17)	=(AVERAGE(H17:J17)/AVERAGE(E17:G17))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
18	=H6/SUM(H$4:H$7,H$10)	=I6/SUM(I$4:I$7,I$10)	=J6/SUM(J$4:J$7,J$10)			=AVERAGE(F18:J18)	=(AVERAGE(H18:J18)/AVERAGE(E18:G18))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
19	=H7/SUM(H$4:H$7,H$10)	=I7/SUM(I$4:I$7,I$10)	=J7/SUM(J$4:J$7,J$10)			=AVERAGE(F19:J19)	=(AVERAGE(H19:J19)/AVERAGE(E19:G19))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
20	*=H8/SUM(H$4:H$7,H$10)*	*=I8/SUM(I$4:I$7,I$10)*	*=J8/SUM(J$4:J$7,J$10)*			=AVERAGE(F20:J20)	=(AVERAGE(H20:J20)/AVERAGE(E20:G20))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
21	*=H9/SUM(H$4:H$7,H$10)*	*=I9/SUM(I$4:I$7,I$10)*	*=J9/SUM(J$4:J$7,J$10)*			=AVERAGE(F21:J21)	=(AVERAGE(H21:J21)/AVERAGE(E21:G21))^(1/(AVERAGE(H$3:J$3)/AVERAGE(E$3:G$3)))
22	=H10/SUM(H$4:H$7,H$10)	=I10/SUM(I$4:I$7,I$10)	=J10/SUM(J$4:J$7,J$10)			=AVERAGE(F22:J22)	0
23							
24							
25	=H3	=I3	=J3	=K3		Average	Annualized Change
26	=H8/H7	=I8/I7	=J8/J7			=AVERAGE(B26:H26)	=(H26/B26)^(1/($H$3-$B$3))
27	=H9/H7	=I9/I7	=J9/J7			=AVERAGE(B27:H27)	=(H27/B27)^(1/($H$3-$B$3))
28							

FEE_SPLIT

	A	B	C	D	E	F	G
1	**Registration Fee Breakdown, 1999**				**Forecast**	**ADJ Forecast**	
2	**Fees**		**1999 Est.**	**Prop.**			
3	Motor Carrier Fee		38300000	n/a	n/a	n/a	
4	Reg. & Weight		57100000	=C4/SUM($C$4,$C$7:$C$8)	=D4	=E4	
5	Registration			=G17*D4	=(L17*(M17^('EXP IN'!$B$4-$G$11)))*E4	=E5*(E$4/SUM($E$5:$E$6))	
6	Weight			=G18*D4	=(L18*(M18^('EXP IN'!$B$4-$G$11)))*E4	=E6*(E$4/SUM($E$5:$E$6))	
7	Apportioned		65000000	=C7/SUM($C$4:$C$8)	=D7	=E7	
8	Reg. Permit and Penalties		10700000	=C8/SUM($C$4:$C$8)	=D8	=E8	
9							
10	**Split of Registration and Weight Fees**						
11	**Fees**	**1992**	**1993**	**1995**	**1996**	**1997**	**1998**
12	REG Fees	28180225.33	28706239.13	31828474.56	34146482.01	31003945.2	33295305.67
13	WGT Fees	15005528.65	15384873.04	16674122.89	18255896.94	21314280.2	22856374.01
14	**Total**	**=SUM(B12:B13)**	**=SUM(C12:C13)**	**=SUM(D12:D13)**	**=SUM(E12:E13)**	**=SUM(F12:F13)**	**=SUM(G12:G13)**
15							
16	**% of Total**	**=B11**	**=C11**	**=D11**	**=E11**	**=F11**	**=G11**
17	REG	=B12/B14	=C12/C14	=D12/D14	=E12/E14	=F12/F14	=G12/G14
18	WGT	=B13/B14	=C13/C14	=D13/D14	=E13/E14	=F13/F14	=G13/G14
19							
20	**Other Fees Breakdown**						
21	**Fees**		**1999 Est.**	**Prop.**			
22	Oversize Permits and Penalties		3200000	=C22/SUM(C$25:C$26)			
23	Use Fuel Permits and Penalties		1200000	=C23/SUM(C$25:C$26)			
24	All Other Misc. Fees		34100000	=C24/SUM(C$25:C$26)			
25	**Other Fees, Common**		**=C24**	**=D24**			
26	**Other Fees, Truck**		**=SUM(C22:C23)**	**=SUM(D22:D23)**			

FEE_SPLIT

	H	I	J	K	L	M
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11	**1999**	**2000**	**2001**		**Average**	**Annual Change**
12	35266546.05	33485474.49	0		=AVERAGE(B12:I12)	=(AVERAGE(G12:I12)/AVERAGE(D12:F12))^(1/(AVERAGE($G$11:$I$11)-AVERAGE($D$11:$F$11)))
13	25113525.26	24451767.34	0		=AVERAGE(B13:I13)	=(AVERAGE(G13:I13)/AVERAGE(D13:F13))^(1/(AVERAGE($G$11:$I$11)-AVERAGE($D$11:$F$11)))
14	**=SUM(H12:H13)**	**=SUM(I12:I13)**	**=SUM(J12:J13)**		**=AVERAGE(B14:J14)**	=(AVERAGE(G14:I14)/AVERAGE(D14:F14))^(1/(AVERAGE($G$11:$I$11)-AVERAGE($D$11:$F$11)))
15						
16	**=H11**	**=I11**	**=J11**		**Average**	**Annual Change**
17	=H12/H14	=I12/I14	=J12/J14		=AVERAGE(B17:I17)	=(AVERAGE(G17:I17)/AVERAGE(D17:F17))^(1/(AVERAGE($G$11:$I$11)-AVERAGE($D$11:$F$11)))
18	=H13/H14	=I13/I14	=J13/J14		=AVERAGE(B18:I18)	=(AVERAGE(G18:I18)/AVERAGE(D18:F18))^(1/(AVERAGE($G$11:$I$11)-AVERAGE($D$11:$F$11)))
19						
20						
21						
22						
23						
24						
25						
26						

LOCAL_ADJ

	A	B	C	D	E	F	G	H
1	**Allocation Factors for Distribution of Local Government Expenditures**							
2	**Local Highway Disbursements**	**Proportion of Alloc Exp**		**Allocation Category**	**Allocation by VMT**		**Allocation by ESALs**	
3		Counties	Cities & Towns		Counties	Cities & Towns	Counties	Cities & Towns
4	Capital outlay	=COUNTIES!K39	=CITIES!K39	Split	0	=C4	=B4	0
5	Maintenance	=COUNTIES!K40	=CITIES!K40	Split	=B5*$B22	=C5*$B22	=B5*$B21	=C5*$B21
6	Road and street svcs	=COUNTIES!K45	=CITIES!K45	Common	=B6	=C6	0	0
7	General admin/misc	=COUNTIES!K46	=CITIES!K46	Common	=B7	=C7	0	0
8	Highway law enfcmt & safety	=COUNTIES!K47	=CITIES!K47	Common	=B8	=C8	0	0
9	Interest on local obligations	=SUM(COUNTIES!K51,COUNTIES!K55)	=SUM(CITIES!K51,CITIES!K55)	Common	=B9	=C9	0	0
10	Total	=SUM(B4:B9)	=SUM(C4:C9)		**=SUM(E4:E9)**	**=SUM(F4:F9)**	**=SUM(G4:G9)**	**=SUM(H4:H9)**
11								
12	**Conversion of Local Maintenance Costs**			**Alloc. of Local Expenditures**				
13	(State estimates provided by Lonnie Hendrix)				**Cities/Towns**	**Counties**		
14	Maintenance Budget (est.)	80000000		**UVMT**	=$F$4/SUM($F$10,$H$10)	=E4/SUM($E$10,$G10)		
15	Pavement (direct state)			**Axle Miles**	=$F$5/SUM($F$10,$H$10)	=$E$5/SUM($E$10,$G$10)		
16	FY 1997	9740000		**RVMT (ESAL)**	=$H$5/SUM($F$10,$H$10)	=($G$4+$G$5)/SUM($E$10,$G$10)		
17	FY 1998	7610000		**VMT**	=SUM($F$6:$F$9)/SUM($F$10,$H$10)	=SUM($E$6:$E$9)/SUM($E$10,$G$10)		
18	Average	=AVERAGE(B16:B17)						
19	Pavement (contractor)	1200000						
20	Total pavement (avg)	=SUM(B18:B19)						
21	**Pavement Ratio**	**=B20/B14**						
22	**Non-Pavement Ratio**	**=1-B21**						
23								
24	**Consolidated Adj. Factors for Local Expenditures**			**Split of Unspecified Federal Aid**				
25								
26	**Expenditure Category**	**ADJ Factor**			**Avg Alloc**	**Avg Share**		

LOCAL_ADJ

	A	B	C	D	E	F	G	H
27	**Cities & Towns**			**Cities**	=CITIES!J33	=E27/SUM(E27:E28)		
28	State estimate	=(CITIES!J76+2*G50)/3		**Counties**	=COUNTIES!J33	=E28/SUM(E27:E28)		
29	Federal estimate	=CITIES!J80						
30	Local estimate	=CITIES!J87						
31	**Counties**							
32	State estimate	=(COUNTIES!J76+2*G50)/3						
33	Federal estimate	=COUNTIES!J80						
34	Local estimate	=COUNTIES!J87						
35								
36								
37	**Local Highway Expenditures**	**1992**	**1993**	**1994**	**1995**	**1996**	**Average**	**Share**
38	Capital Outlay	179606	171676	125566	179359	216346	=AVERAGE(B38:F38)	=G38/SUM(G$38:G$41)
39	Maintenance & Traffic Svcs	84516	110915	137315	179046	183593	=AVERAGE(B39:F39)	=G39/SUM(G$38:G$41)
40	Admin & Safety	52358	54141	55924	77435	89363	=AVERAGE(B40:F40)	=G40/SUM(G$38:G$41)
41	Bond Interest	44977	43705	42433	35408	30371	=AVERAGE(B41:F41)	=G41/SUM(G$38:G$41)
42	**Local Receipts**							
43	State Government							
44	HURF	320463	333448	362807	377374	392999	=AVERAGE(B44:F44)	
45	Other	0	1224	1337	15619	8429	=AVERAGE(B45:F45)	
46	Federal Government							
47	FHWA	0	0	0	0	0	=AVERAGE(B47:F47)	
48	Other	8793	22254	5836	6553	1657	=AVERAGE(B48:F48)	
49	**Net Local Responsibility**	=SUM(B38:B41)-SUM(B44:B45,B47:B48)	=SUM(C38:C41)-SUM(C44:C45,C47:C48)	=SUM(D38:D41)-SUM(D44:D45,D47:D48)	=SUM(E38:E41)-SUM(E44:E45,E47:E48)	=SUM(F38:F41)-SUM(F44:F45,F47:F48)	=AVERAGE(B49:F49)	
50	**State Forecast**	**=1/(B44/SUM(B44:B45))**	**=1/(C44/SUM(C44:C45))**	**=1/(D44/SUM(D44:D45))**	**=1/(E44/SUM(E44:E45))**	**=1/(F44/SUM(F44:F45))**	**=1/(G44/SUM(G44:G45))**	
51	**Federal Forecast**	**=1/(B47/SUM(B47:B48))**	**=1/(C47/SUM(C47:C48))**	**=1/(D47/SUM(D47:D48))**	**=1/(E47/SUM(E47:E48))**	**=1/(F47/SUM(F47:F48))**	*1*	
52	**Local Forecast**	**=B49/B44**	**=C49/C44**	**=D49/D44**	**=E49/E44**	**=F49/F44**	**=G49/G44**	

CITIES

	A	B	C	D	E	F	G	H	I	J	K
1	**Local Highway Finance Report (FHWA-536): CITIES AND TOWNS**										
2											
3	**I. Disposition of Highway User Revenues Available**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**		**Average**	
4	**5. Amount used for highway purposes**										
5	c. Receipts from State Highway User Taxes	254979407	=446074576-COUNTIES!C5							**=AVERAGE(B5:H5)**	
6	d. Receipts from FHWA	7739224	=11692024-COUNTIES!C6							**=AVERAGE(B6:H6)**	
7											
8	**II. Receipts for Road and Street Purposes**	**=B3**	**=C3**	**=D3**	**=E3**	**=F3**	**=G3**	**=H3**		**Average**	**Avg Share**
9											
10	**A. Receipts from local sources**										
11	**1. Local highway user taxes**										
12	a. Motor fuel	-52913	4335669							**=AVERAGE(B12:H12)**	=J12/$J$34
13	b. Motor vehicle	1076552	260380							**=AVERAGE(B13:H13)**	=J13/$J$34
14	c. Totals (a+b)	**=SUM(B12:B13)**	**=SUM(C12:C13)**							**=AVERAGE(B14:H14)**	=J14/$J$34
15	**2. General fund appropriations**	38012224	77020886							**=AVERAGE(B15:H15)**	=J15/$J$34
16	**3. Other local imposts**	37762063	48470890							**=AVERAGE(B16:H16)**	=J16/$J$34
17	**4. Miscellaneous local receipts**	23662279	38828780							**=AVERAGE(B17:H17)**	=J17/$J$34
18	**5. Transfers from toll facilities**	0	0							**=AVERAGE(B18:H18)**	=J18/$J$34
19	**6. Proceeds from sale of bonds and notes**										
20	a. Bonds -- original issue	22088184	29447095							**=AVERAGE(B20:H20)**	=J20/$J$34
21	b. Bonds -- refund issue	5280000	12623530							**=AVERAGE(B21:H21)**	=J21/$J$34
22	c. Notes	98282	7189355							**=AVERAGE(B22:H22)**	=J22/$J$34
23	d. Total (a+b+c)	**=SUM(B20:B22)**	**=SUM(C20:C22)**							**=AVERAGE(B23:H23)**	=J23/$J$34
24	**7. Total (1 through 6)**	**=SUM(B14:B18,B23)**	**=SUM(C14:C18,C23)**							**=AVERAGE(B24:H24)**	=J24/$J$34
25	**B. Private contributions**	33276663	25073665							**=AVERAGE(B25:H25)**	=J25/$J$34
26	**C. Receipts from State government**										
27	**1. Highway user taxes**	260470043	=480088393-COUNTIES!C27							**=AVERAGE(B27:H27)**	=J27/$J$34
28	**2. All other state funds**	=31845911+16443922	=3771398+22515384-COUNTIES!C28							**=AVERAGE(B28:H28)**	=J28/$J$34
29	**3. Total receipts from state government**	=SUM(B27:B28)	=SUM(C27:C28)							**=AVERAGE(B29:H29)**	=J29/$J$34
30	**D. Receipts from Federal government**										
31	**1. FHWA**	6827317	=11692024-COUNTIES!C31							**=AVERAGE(B31:H31)**	=J31/$J$34
32	**2. Other federal agencies**	6138097	=3532048-COUNTIES!C32							**=AVERAGE(B32:H32)**	=J32/$J$34
33	**3. Total receipts from federal government**	=SUM(B31:B32)	=SUM(C31:C32)							**=AVERAGE(B33:H33)**	=J33/$J$34
34	**E. Total Receipts**	**=SUM(B24,B25,B29,B33)**	**=SUM(C24,C25,C29,C33)**							**=AVERAGE(B34:H34)**	=J34/$J$34
35											
36	**III. Disbursements for Road and Street Purposes**	**=B8**	**=C8**	**=D8**	**=E8**	**=F8**	**=G8**	**=H8**			

CITIES

	A	B	C	D	E	F	G	H	I	J	K
37											
38	**A. Local highway disbursements**										
39	**1. Capital outlay**	170621932	217801982							**=AVERAGE(B39:H39)**	=J39/SUM(J$48,J$51,J$55)
40	**2. Maintenance**	99413442	106664307							**=AVERAGE(B40:H40)**	=J40/SUM(J$48,J$51,J$55)
41	**3. Road and street services**										
42	a. Traffic control operations	12508067	27534397							**=AVERAGE(B42:H42)**	=J42/SUM(J$48,J$51,J$55)
43	b. Snow and ice removal	689115	617532							**=AVERAGE(B43:H43)**	=J43/SUM(J$48,J$51,J$55)
44	c. Other	22697305	10899880							**=AVERAGE(B44:H44)**	=J44/SUM(J$48,J$51,J$55)
45	d. Total (a+b+c)	**=SUM(B42:B44)**	**=SUM(C42:C44)**							**=AVERAGE(B45:H45)**	=J45/SUM(J$48,J$51,J$55)
46	**4. General administration and misc.**	21661725	20221667							**=AVERAGE(B46:H46)**	=J46/SUM(J$48,J$51,J$55)
47	**5. Highway law enforcement and safety**	28251948	34621474							**=AVERAGE(B47:H47)**	=J47/SUM(J$48,J$51,J$55)
48	**6. Total (1 through 5)**	**=SUM(B45:B47,B39:B40)**	**=SUM(C45:C47,C39:C40)**							**=AVERAGE(B48:H48)**	=J48/SUM(J$48,J$51,J$55)
49	**B. Debt service on local obligations**										
50	**1. Bonds**										
51	a. Interest	46206726	48677203							**=AVERAGE(B51:H51)**	=J51/SUM(J$48,J$51,J$55)
52	b. Redemption	49154864	59356731							**=AVERAGE(B52:H52)**	
53	c. Total (a+b)	**=SUM(B51:B52)**	**=SUM(C51:C52)**							**=AVERAGE(B53:H53)**	
54	**2. Notes**										
55	a. Interest	27247	660176							**=AVERAGE(B55:H55)**	=J55/SUM(J$48,J$51,J$55)
56	b. Redemption	389926	1021048							**=AVERAGE(B56:H56)**	
57	c. Total (a+b)	**=SUM(B55:B56)**	**=SUM(C55:C56)**							**=AVERAGE(B57:H57)**	
58	**3. Total (1c + 2c)**	**=SUM(B57,B53)**	**=SUM(C57,C53)**							**=AVERAGE(B58:H58)**	
59	**C. Payments to State for highways**	70277	249124							**=AVERAGE(B59:H59)**	
60	**D. Payments to toll facilities**	0	0							**=AVERAGE(B60:H60)**	
61	**E. Total disbursements**	**=SUM(B58:B60,B48,B53)**	**=SUM(C58:C60,C48,C53)**							**=AVERAGE(B61:H61)**	
62											
63											
64											
65											
66											
67											
68											
69											

CITIES

	A	B	C	D	E	F	G	H	I	J	K
70	Disbursements for Highway Purposes	=B55+B51+B48	=C55+C51+C48	=D55+D51+D48	=E55+E51+E48	=F55+F51+F48	=G55+G51+G48	=H55+H51+H48		=J55+J51+J48	
71	Highway/Total Disbursements	=B70/B61	=C70/C61	=D70/D61	=E70/E61	=F70/F61	=G70/G61	=H70/H61		=J70/J61	
72	Net local highway responsibility	=B70-(B74*B76+B78*B80)	=C70-(C74*C76+C78*C80)	=D70-(D74*D76+D78*D80)	=E70-(E74*E76+E78*E80)	=F70-(F74*F76+F78*F80)	=G70-(G74*G76+G78*G80)	=H70-(H74*H76+H78*H80)	=I70-(I74*I76+I78*I80)	=J70-(J74*J76+J78*J80)	
73											
74	State Hwy User Rev for Hwy Purposes	=B5	=C5	=D5	=E5	=F5	=G5	=H5	=I5	=J5	
75	Highway/Total State Rev	=B74/B29	=C74/C29	=D74/D29	=E74/E29	=F74/F29	=G74/G29	=H74/H29	=I74/I29	=J74/J29	
76	State Forecast	=1/B75	=1/C75	=1/D75	=1/E75	=1/F75	=1/G75	=1/H75	=1/I75	=1/J75	
77											
78	FHWA Receipts	=B6	=C6	=D6	=E6	=F6	=G6	=H6	=I6	=J6	
79	FHWA/Total Federal	=B78/B33	=C78/C33	=D78/D33	=E78/E33	=F78/F33	=G78/G33	=H78/H33	=I78/I33	=J78/J33	
80	Federal forecast	=1/B79	=1/C79	=1/D79	=1/E79	=1/F79	=1/G79	=1/H79	=1/I79	=1/J79	
81											
82	State Share	=(B76*B74)/B70	=(C76*C74)/C70	=(D76*D74)/D70	=(E76*E74)/E70	=(F76*F74)/F70	=(G76*G74)/G70	=(H76*H74)/H70	=(I76*I74)/I70	=(J76*J74)/J70	
83	Federal Share	=(B80*B78)/B70	=(C80*C78)/C70	=(D80*D78)/D70	=(E80*E78)/E70	=(F80*F78)/F70	=(G80*G78)/G70	=(H80*H78)/H70	=(I80*I78)/I70	=(J80*J78)/J70	
84	Local Share	=1-SUM(B82:B83)	=1-SUM(C82:C83)	=1-SUM(D82:D83)	=1-SUM(E82:E83)	=1-SUM(F82:F83)	=1-SUM(G82:G83)	=1-SUM(H82:H83)	=1-SUM(I82:I83)	=1-SUM(J82:J83)	
85											
86	Highway Disbursements/ State+Federal Funds	=B70/(B74*B76+B78*B80)	=C70/(C74*C76+C78*C80)	=D70/(D74*D76+D78*D80)	=E70/(E74*E76+E78*E80)	=F70/(F74*F76+F78*F80)	=G70/(G74*G76+G78*G80)	=H70/(H74*H76+H78*H80)	=I70/(I74*I76+I78*I80)	=J70/(J74*J76+J78*J80)	
87	Local forecast / State Hwy User Rev	=B72/B74	=C72/C74	=D72/D74	=E72/E74	=F72/F74	=G72/G74	=H72/H74	=I72/I74	=J72/J74	

COUNTIES

	A	B	C	D	E	F	G	H	I	J	K
1	Local Highway Finance Report (FHWA-536): COUNTIES										
2											
3	I. Disposition of Highway User Revenues Available	1997	1999	2001	2003	2005	2007	2009		Average	
4	5. Amount used for highway purposes										
5	c. Receipts from State Highway User Taxes	159412706	=0+8461635+9758264+0+2318735+859334+3098991.57+72525793+8657996+6499391+39239989+9111768+2479671+8388496+8571462							=AVERAGE(B5:H5)	
6	d. Receipts from FHWA	9196340	=0+0+0+0+0+0+5921440+0+0+3087173+0+0+0+678981							=AVERAGE(B6:H6)	
7											
8	II. Receipts for Road and Street Purposes	=B3	=C3	=D3	=E3	=F3	=G3	=H3		Average	Avg Share
9											
10	A. Receipts from local sources										
11	1. Local highway user taxes										
12	a. Motor fuel	0	0							=AVERAGE(B12:H12)	=J12/$J$34
13	b. Motor vehicle	0	2967541							=AVERAGE(B13:H13)	=J13/$J$34
14	c. Totals (a+b)	=SUM(B12:B13)	=SUM(C12:C13)							=AVERAGE(B14:H14)	=J14/$J$34
15	2. General fund appropriations	10	0							=AVERAGE(B15:H15)	=J15/$J$34
16	3. Other local imposts	11813842	12784798							=AVERAGE(B16:H16)	=J16/$J$34
17	4. Miscellaneous local receipts	6784734	18284520							=AVERAGE(B17:H17)	=J17/$J$34
18	5. Transfers from toll facilities	0	0							=AVERAGE(B18:H18)	=J18/$J$34
19	6. Proceeds from sale of bonds and notes										
20	a. Bonds -- original issue	0	0							=AVERAGE(B20:H20)	=J20/$J$34
21	b. Bonds -- refund issue	0	0							=AVERAGE(B21:H21)	=J21/$J$34
22	c. Notes	0	0							=AVERAGE(B22:H22)	=J22/$J$34
23	d. Total (a+b+c)	=SUM(B20:B22)	=SUM(C20:C22)							=AVERAGE(B23:H23)	=J23/$J$34
24	7. Total (1 through 6)	=SUM(B14:B18,B23)	=SUM(C14:C18,C23)							=AVERAGE(B24:H24)	=J24/$J$34
25	B. Private contributions	1382558	185866							=AVERAGE(B25:H25)	=J25/$J$34
26	C. Receipts from State government										
27	1. Highway user taxes	159674598	=5205871+8461635+9758264+3240684+2318735+859334+3098991+72525793+8657996+6499391+39239989+9111768+2479671+8388496+8571462							=AVERAGE(B27:H27)	=J27/$J$34
28	2. All other state funds	3591769	=0+998931+142760+588060+23810+0+2505+0+3446142+555266+92277+5863730+127924+21129+212020+0							=AVERAGE(B28:H28)	=J28/$J$34
29	3. Total receipts from state government	=SUM(B27:B28)	=SUM(C27:C28)							=AVERAGE(B29:H29)	=J29/$J$34

COUNTIES

	A	B	C	D	E	F	G	H	I	J	K
30	D. Receipts from Federal government										
31	1. FHWA	6827317	=5921440+3087173							=AVERAGE(B31:H31)	=J31/$J$34
32	2. Other federal agencies	6138097	=251560+26235+371850+20630+42405+38639+295729+0+0+82912+194590+127548+0+187126+0							=AVERAGE(B32:H32)	=J32/$J$34
33	3. Total receipts from federal government	=SUM(B31:B32)	=SUM(C31:C32)							=AVERAGE(B33:H33)	=J33/$J$34
34	E. Total Receipts	=SUM(B24,B25,B29,B33)	=SUM(C24:C30)							=AVERAGE(B34:H34)	=J34/$J$34
35											
36	III. Disbursements for Road and Street Purposes	=B8	=C8	=D8	=E8	=F8	=G8	=H8			
37											
38	A. Local highway disbursements										
39	1. Capital outlay	66265978	107778935							=AVERAGE(B39:H39)	=J39/SUM(J$48,J$51,J$55)
40	2. Maintenance	71866497	82770936							=AVERAGE(B40:H40)	=J40/SUM(J$48,J$51,J$55)
41	3. Road and street services										
42	a. Traffic control operations	6137786	6233943							=AVERAGE(B42:H42)	=J42/SUM(J$48,J$51,J$55)
43	b. Snow and ice removal	1404077	963314							=AVERAGE(B43:H43)	=J43/SUM(J$48,J$51,J$55)
44	c. Other	14717586	5192083							=AVERAGE(B44:H44)	=J44/SUM(J$48,J$51,J$55)
45	d. Total (a+b+c)	=SUM(B42:B44)	=SUM(C42:C44)							=AVERAGE(B45:H45)	=J45/SUM(J$48,J$51,J$55)
46	4. General administration and misc.	21756249	20549964							=AVERAGE(B46:H46)	=J46/SUM(J$48,J$51,J$55)
47	5. Highway law enforcement and safety	449349	383627							=AVERAGE(B47:H47)	=J47/SUM(J$48,J$51,J$55)
48	6. Total (1 through 5)	=SUM(B45:B47,B39:B40)	=SUM(C45:C47,C39:C40)							=AVERAGE(B48:H48)	=J48/SUM(J$48,J$51,J$55)
49	B. Debt service on local obligations										
50	1. Bonds										
51	a. Interest	803105	347209							=AVERAGE(B51:H51)	=J51/SUM(J$48,J$51,J$55)
52	b. Redemption	155000	103200							=AVERAGE(B52:H52)	
53	c. Total (a+b)	=SUM(B51:B52)	=SUM(C51:C52)							=AVERAGE(B53:H53)	
54	2. Notes										
55	a. Interest	13204	0							=AVERAGE(B55:H55)	=J55/SUM(J$48,J$51,J$55)
56	b. Redemption	0	0							=AVERAGE(B56:H56)	
57	c. Total (a+b)	=SUM(B55:B56)	=SUM(C55:C56)							=AVERAGE(B57:H57)	
58	3. Total (1c + 2c)	=SUM(B57,B53)	=SUM(C57,C53)							=AVERAGE(B58:H58)	
59	C. Payments to State for highways	0	0							=AVERAGE(B59:H59)	
60	D. Payments to toll facilities	0	0							=AVERAGE(B60:H60)	
61	E. Total disbursements	=SUM(B58:B60,B48,B53)	=SUM(C58:C60,C48,C53)							=AVERAGE(B61:H61)	
62											
63	(OMIT LINES 64 – 69)										

COUNTIES

	A	B	C	D	E	F	G	H	I	J	K
70	Disbursements for Highway Purposes	=B55+B51+B48	=C55+C51+C48	=D55+D51+D48	=E55+E51+E48	=F55+F51+F48	=G55+G51+G48	=H55+H51+H48		=J55+J51+J48	
71	Highway/Total Disbursements	=B70/B61	=C70/C61	=D70/D61	=E70/E61	=F70/F61	=G70/G61	=H70/H61		=J70/J61	
72	Net local highway responsibility	=B70-(B74*B76+B78*B80)	=C70-(C74*C76+C78*C80)	=D70-(D74*D76+D78*D80)	=E70-(E74*E76+E78*E80)	=F70-(F74*F76+F78*F80)	=G70-(G74*G76+G78*G80)	=H70-(H74*H76+H78*H80)	=I70-(I74*I76+I78*I80)	=J70-(J74*J76+J78*J80)	
73											
74	State Hwy User Rev for Hwy Purposes	=B5	=C5	=D5	=E5	=F5	=G5	=H5	=I5	=J5	
75	Highway/Total State Rev	=B74/B29	=C74/C29	=D74/D29	=E74/E29	=F74/F29	=G74/G29	=H74/H29	=I74/I29	=J74/J29	
76	State Forecast	=1/B75	=1/C75	=1/D75	=1/E75	=1/F75	=1/G75	=1/H75	=1/I75	=1/J75	
77											
78	FHWA Receipts	=B6	=C6	=D6	=E6	=F6	=G6	=H6	=I6	=J6	
79	FHWA/Total Federal	=B78/B33	=C78/C33	=D78/D33	=E78/E33	=F78/F33	=G78/G33	=H78/H33	=I78/I33	=J78/J33	
80	Federal forecast	=1/B79	=1/C79	=1/D79	=1/E79	=1/F79	=1/G79	=1/H79	=1/I79	=1/J79	
81											
82	State Share	=(B76*B74)/B70	=(C76*C74)/C70	=(D76*D74)/D70	=(E76*E74)/E70	=(F76*F74)/F70	=(G76*G74)/G70	=(H76*H74)/H70	=(I76*I74)/I70	=(J76*J74)/J70	
83	Federal Share	=(B80*B78)/B70	=(C80*C78)/C70	=(D80*D78)/D70	=(E80*E78)/E70	=(F80*F78)/F70	=(G80*G78)/G70	=(H80*H78)/H70	=(I80*I78)/I70	=(J80*J78)/J70	
84	Local Share	=1-SUM(B82:B83)	=1-SUM(C82:C83)	=1-SUM(D82:D83)	=1-SUM(E82:E83)	=1-SUM(F82:F83)	=1-SUM(G82:G83)	=1-SUM(H82:H83)	=1-SUM(I82:I83)	=1-SUM(J82:J83)	
85											
86	Highway Disbursements/ State+Federal Funds	=B70/(B74*B76+B78*B80)	=C70/(C74*C76+C78*C80)	=D70/(D74*D76+D78*D80)	=E70/(E74*E76+E78*E80)	=F70/(F74*F76+F78*F80)	=G70/(G74*G76+G78*G80)	=H70/(H74*H76+H78*H80)	=I70/(I74*I76+I78*I80)	=J70/(J74*J76+J78*J80)	
87	Local forecast / State Hwy User Rev	=B72/B74	=C72/C74	=D72/D74	=E72/E74	=F72/F74	=G72/G74	=H72/H74	=I72/I74	=J72/J74	

EXP_ARRAY

	A	B	C	D	E	F	G	H	I	J
1	**Array of Program-Period Expenditures**									
2	(Thousands of Dollars)									
3	**Program Year**	**State**				**Federal**				**Local: Cities & Towns**
4		**Overhead & Admin**	**Common Obligation**	**Urban Obligation**	**Rural Obligation**	**Common Obligation**	**Urban Obligation**	**Rural Obligation**	**Other Common**	**State Aid**
5	='EXP IN'!B2	=(HLOOKUP(A5,'EXP IN'!$H$3:$L$28,3,FALSE)+HLOOKUP(A5,'EXP IN'!$H$3:$L$28,4,FALSE))+(HLOOKUP(A5,'EXP IN'!$H$3:$L$28,5,FALSE))							='EXP IN'!H$10	=HLOOKUP($A5,'EXP IN'!$H$3:$L$28,24,FALSE)+(HLOOKUP($A5,'EXP IN'!$H$3:$L$28,25,FALSE)*'LOCAL ADJ'!$B$28)
6	=A5+1	=(HLOOKUP(A6,'EXP IN'!$H$3:$L$28,3,FALSE)+HLOOKUP(A6,'EXP IN'!$H$3:$L$28,4,FALSE))+(HLOOKUP(A6,'EXP IN'!$H$3:$L$28,5,FALSE))							='EXP IN'!I$10	=HLOOKUP($A6,'EXP IN'!$H$3:$L$28,24,FALSE)+(HLOOKUP($A6,'EXP IN'!$H$3:$L$28,25,FALSE)*'LOCAL ADJ'!$B$28)
7	=A6+1	=(HLOOKUP(A7,'EXP IN'!$H$3:$L$28,3,FALSE)+HLOOKUP(A7,'EXP IN'!$H$3:$L$28,4,FALSE))+(HLOOKUP(A7,'EXP IN'!$H$3:$L$28,5,FALSE))							='EXP IN'!J$10	=HLOOKUP($A7,'EXP IN'!$H$3:$L$28,24,FALSE)+(HLOOKUP($A7,'EXP IN'!$H$3:$L$28,25,FALSE)*'LOCAL ADJ'!$B$28)
8	=A7+1	=(HLOOKUP(A8,'EXP IN'!$H$3:$L$28,3,FALSE)+HLOOKUP(A8,'EXP IN'!$H$3:$L$28,4,FALSE))+(HLOOKUP(A8,'EXP IN'!$H$3:$L$28,5,FALSE))							='EXP IN'!K$10	=HLOOKUP($A8,'EXP IN'!$H$3:$L$28,24,FALSE)+(HLOOKUP($A8,'EXP IN'!$H$3:$L$28,25,FALSE)*'LOCAL ADJ'!$B$28)
9	=A8+1	=(HLOOKUP(A9,'EXP IN'!$H$3:$L$28,3,FALSE)+HLOOKUP(A9,'EXP IN'!$H$3:$L$28,4,FALSE))+(HLOOKUP(A9,'EXP IN'!$H$3:$L$28,5,FALSE))							='EXP IN'!L$10	=HLOOKUP($A9,'EXP IN'!$H$3:$L$28,24,FALSE)+(HLOOKUP($A9,'EXP IN'!$H$3:$L$28,25,FALSE)*'LOCAL ADJ'!$B$28)
10										
11	**Total**	=SUM(B5:B9)	='EXP IN'!B21+'EXP IN'!D21	='EXP IN'!B19+'EXP IN'!D19	='EXP IN'!B20+'EXP IN'!D20	='EXP IN'!C21	='EXP IN'!C19	='EXP IN'!C20	=SUM(I5:I9)	=SUM(J5:J9)
12	**Average**	=B11/5	=C11/5	=D11/5	=E11/5	=F11/5	=G11/5	=H11/5	=I11/5	=J11/5

EXP_ARRAY

	K	L	M	N	O	P
1						
2						
3			Local: Counties			TOTAL
4	Federal Aid	Direct Local	State Aid	Federal Aid	Direct Local	
5	=(HLOOKUP($A5,'EXP IN'!$H$3:$L$35,15,FALSE)+HLOOKUP($A5,'EXP IN'!$H$3:$L$35,16,FALSE))+('LOCAL ADJ'!$B$29*'LOCAL ADJ'!$F$27*HLOOKUP($A5,'EXP IN'!$H$3:$L$35,17,FALSE))	=('LOCAL ADJ'!$B$30*HLOOKUP($A5,'EXP IN'!$H$3:$L$35,25,FALSE))	=HLOOKUP($A5,'EXP IN'!$H$3:$L$35,26,FALSE)*'LOCAL ADJ'!$B$32	='LOCAL ADJ'!$B$33*'LOCAL ADJ'!$F$28*HLOOKUP($A5,'EXP IN'!$H$3:$L$35,17,FALSE)	='LOCAL ADJ'!$B$34*M5	
6	=(HLOOKUP($A6,'EXP IN'!$H$3:$L$35,15,FALSE)+HLOOKUP($A6,'EXP IN'!$H$3:$L$35,16,FALSE))+('LOCAL ADJ'!$B$29*'LOCAL ADJ'!$F$27*HLOOKUP($A6,'EXP IN'!$H$3:$L$35,17,FALSE))	=('LOCAL ADJ'!$B$30*HLOOKUP($A6,'EXP IN'!$H$3:$L$35,25,FALSE))	=HLOOKUP($A6,'EXP IN'!$H$3:$L$35,26,FALSE)	='LOCAL ADJ'!$B$33*'LOCAL ADJ'!$F$28*HLOOKUP($A6,'EXP IN'!$H$3:$L$35,17,FALSE)	='LOCAL ADJ'!$B$34*M6	
7	=(HLOOKUP($A7,'EXP IN'!$H$3:$L$35,15,FALSE)+HLOOKUP($A7,'EXP IN'!$H$3:$L$35,16,FALSE))+('LOCAL ADJ'!$B$29*'LOCAL ADJ'!$F$27*HLOOKUP($A7,'EXP IN'!$H$3:$L$35,17,FALSE))	=('LOCAL ADJ'!$B$30*HLOOKUP($A7,'EXP IN'!$H$3:$L$35,25,FALSE))	=HLOOKUP($A7,'EXP IN'!$H$3:$L$35,26,FALSE)	='LOCAL ADJ'!$B$33*'LOCAL ADJ'!$F$28*HLOOKUP($A7,'EXP IN'!$H$3:$L$35,17,FALSE)	='LOCAL ADJ'!$B$34*M7	
8	=(HLOOKUP($A8,'EXP IN'!$H$3:$L$35,15,FALSE)+HLOOKUP($A8,'EXP IN'!$H$3:$L$35,16,FALSE))+('LOCAL ADJ'!$B$29*'LOCAL ADJ'!$F$27*HLOOKUP($A8,'EXP IN'!$H$3:$L$35,17,FALSE))	=('LOCAL ADJ'!$B$30*HLOOKUP($A8,'EXP IN'!$H$3:$L$35,25,FALSE))	=HLOOKUP($A8,'EXP IN'!$H$3:$L$35,26,FALSE)	='LOCAL ADJ'!$B$33*'LOCAL ADJ'!$F$28*HLOOKUP($A8,'EXP IN'!$H$3:$L$35,17,FALSE)	='LOCAL ADJ'!$B$34*M8	
9	=(HLOOKUP($A9,'EXP IN'!$H$3:$L$35,15,FALSE)+HLOOKUP($A9,'EXP IN'!$H$3:$L$35,16,FALSE))+('LOCAL ADJ'!$B$29*'LOCAL ADJ'!$F$27*HLOOKUP($A9,'EXP IN'!$H$3:$L$35,17,FALSE))	=('LOCAL ADJ'!$B$30*HLOOKUP($A9,'EXP IN'!$H$3:$L$35,25,FALSE))	=HLOOKUP($A9,'EXP IN'!$H$3:$L$35,26,FALSE)	='LOCAL ADJ'!$B$33*'LOCAL ADJ'!$F$28*HLOOKUP($A9,'EXP IN'!$H$3:$L$35,17,FALSE)	='LOCAL ADJ'!$B$34*M9	
10						
11	=SUM(K5:K9)	=SUM(L5:L9)	=SUM(M5:M9)	=SUM(N5:N9)	=SUM(O5:O9)	=SUM(B11:O11)
12	=K11/5	=L11/5	=M11/5	=N11/5	=O11/5	=SUM(B12:O12)

VMT

	A	B	C	D	E	F	G	H	I	J
1	Forecast Percentage of Total VMT									
2	Forecast Year:	='EXP IN'!B4								
3	Projected Percentage of VMT by Vehicle Class									
4										
5						SU			CMB Single Trailer	
6		MC	AUTO	LT	BUS	2A 6T	3A	4A	CS 4A	CS 5A
7	Share	=$L$11*RVMT!B24+$L$12*UVMT!B24	=$L$11*RVMT!C24+$L$12*UVMT!C24	=$L$11*RVMT!D24+$L$12*UVMT!D24	=$L$11*RVMT!E24+$L$12*UVMT!E24	=$L$11*RVMT!F24+$L$12*UVMT!F24	=$L$11*RVMT!G24+$L$12*UVMT!G24	=$L$11*RVMT!H24+$L$12*UVMT!H24	=$L$11*RVMT!I24+$L$12*UVMT!I24	=$L$11*RVMT!J24+$L$12*UVMT!J24
8	Adjusted Share	=B7/$O$7	=C7/$O$7	=D7/$O$7	=E7/$O$7	=F7/$O$7	=G7/$O$7	=H7/$O$7	=I7/$O$7	=J7/$O$7
9										
10		='HPMS IN'!B3	='HPMS IN'!C3	='HPMS IN'!D3	='HPMS IN'!E3	='HPMS IN'!F3	='HPMS IN'!G3	='HPMS IN'!H3		Average
11	Rural Share	='HPMS IN'!B$10/SUM('HPMS IN'!B$10,'HPMS IN'!B$19)	='HPMS IN'!C$10/SUM('HPMS IN'!C$10,'HPMS IN'!C$19)	='HPMS IN'!D$10/SUM('HPMS IN'!D$10,'HPMS IN'!D$19)	='HPMS IN'!E$10/SUM('HPMS IN'!E$10,'HPMS IN'!E$19)	='HPMS IN'!F$10/SUM('HPMS IN'!F$10,'HPMS IN'!F$19)	='HPMS IN'!G$10/SUM('HPMS IN'!G$10,'HPMS IN'!G$19)	='HPMS IN'!H$10/SUM('HPMS IN'!H$10,'HPMS IN'!H$19)		=AVERAGE(B11:H11)
12	Urban Share	='HPMS IN'!B$19/SUM('HPMS IN'!B$10,'HPMS IN'!B$19)	='HPMS IN'!C$19/SUM('HPMS IN'!C$10,'HPMS IN'!C$19)	='HPMS IN'!D$19/SUM('HPMS IN'!D$10,'HPMS IN'!D$19)	='HPMS IN'!E$19/SUM('HPMS IN'!E$10,'HPMS IN'!E$19)	='HPMS IN'!F$19/SUM('HPMS IN'!F$10,'HPMS IN'!F$19)	='HPMS IN'!G$19/SUM('HPMS IN'!G$10,'HPMS IN'!G$19)	='HPMS IN'!H$19/SUM('HPMS IN'!H$10,'HPMS IN'!H$19)		=AVERAGE(B12:H12)
13										
14	Rural									
15	Earliest Per Gro	=((AVERAGE(E$11:G$11)/AVERAGE(B$11:D$11))^(1/(AVERAGE(E$10:G$10)-AVERAGE(B$10:D$10))))								

VMT

	A	B	C	D	E	F	G	H	I	J
16	Latest Per Gro	=((AVERAGE(F$11:H$11)/AVERAGE(C$11:E$11))^(1/(AVERAGE(F$10:H$10)-AVERAGE(C$10:E$10))))								
17	Urban									
18	Earliest Per Gro	=((AVERAGE(E$12:G$12)/AVERAGE(B$12:D$12))^(1/(AVERAGE(E$10:G$10)-AVERAGE(B$10:D$10))))								
19	Latest Per Gro	=((AVERAGE(F$12:H$12)/AVERAGE(C$12:E$12))^(1/(AVERAGE(F$10:H$10)-AVERAGE(C$10:E$10))))								
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										

VMT

	K	L	M	N	O	P	Q	R	S	T
1							Aggregated Model Input Tables			Forecast Average Annual VMT
2							Share of VMT Category by Class			(millions)
3							Vehicle Class	Projected Share		VMT Estimate
4										
5		CMB Multi-trailer			Total		Autos	=SUM(B8:C8)		=R5*'HPMS IN'!$N$19
6	CS 6A	CM 5A	CM 6A	CM 7A			Pick-ups and SUVs	=SUM(D8)		=R6*'HPMS IN'!$N$19
7	=$L$11*RVMT!K24 +$L$12*UVMT!K24	=$L$11*RVMT!L24 +$L$12*UVMT!L24	=$L$11*RVMT!M24 +$L$12*UVMT!M24	=$L$11*RVMT!N24 +$L$12*UVMT!N24	=SUM(B7:N7)		Buses	=SUM(E8)		=R7*'HPMS IN'!$N$19
8	=K7/$O$7	=L7/$O$7	=M7/$O$7	=N7/$O$7	=SUM(B8:N8)		Single Unit trucks	=SUM(F8:H8)		=R8*'HPMS IN'!$N$19
9							Combination trucks	=SUM(I8:N8)		=R9*'HPMS IN'!$N$19
10	Average Gro	Adj Average								
11	=AVERAGE(B15:B16)	=J11*(K11^($B$2-$H$10))								
12	=AVERAGE(B18:B19)	=J12*(K12^($B$2-$H$10))								

VMT

	K	L	M	N	O	P	Q	R	S	T
13							Weight Class	Proj Share		VMT Estimate (mill)
14										
15										
16							0 - 8,000 lb.	=$R$5*REG!I3+$R$6*REG!J3+$R$7*REG!K3+$R$8*REG!L3+$R$9*REG!M3		=R16*'HPMS IN'!$N$19
17							8,000-10,000 lb.	=$R$5*REG!I4+$R$6*REG!J4+$R$7*REG!K4+$R$8*REG!L4+$R$9*REG!M4		=R17*'HPMS IN'!$N$19
18							10,000-12,000 lb.	=$R$5*REG!I5+$R$6*REG!J5+$R$7*REG!K5+$R$8*REG!L5+$R$9*REG!M5		=R18*'HPMS IN'!$N$19
19							12,000-14,000 lb.	=$R$5*REG!I6+$R$6*REG!J6+$R$7*REG!K6+$R$8*REG!L6+$R$9*REG!M6		=R19*'HPMS IN'!$N$19
20							14,000-16,000 lb.	=$R$5*REG!I7+$R$6*REG!J7+$R$7*REG!K7+$R$8*REG!L7+$R$9*REG!M7		=R20*'HPMS IN'!$N$19
21							16,000-18,000 lb.	=$R$5*REG!I8+$R$6*REG!J8+$R$7*REG!K8+$R$8*REG!L8+$R$9*REG!M8		=R21*'HPMS IN'!$N$19
22							18,000-20,000 lb.	=$R$5*REG!I9+$R$6*REG!J9+$R$7*REG!K9+$R$8*REG!L9+$R$9*REG!M9		=R22*'HPMS IN'!$N$19
23							20,000-22,000 lb.	=$R$5*REG!I10+$R$6*REG!J10+$R$7*REG!K10+$R$8*REG!L10+$R$9*REG!M10		=R23*'HPMS IN'!$N$19
24							22,000-24,000 lb.	=$R$5*REG!I11+$R$6*REG!J11+$R$7*REG!K11+$R$8*REG!L11+$R$9*REG!M11		=R24*'HPMS IN'!$N$19
25							24,000-26,000 lb.	=$R$5*REG!I12+$R$6*REG!J12+$R$7*REG!K12+$R$8*REG!L12+$R$9*REG!M12		=R25*'HPMS IN'!$N$19
26							26,000-28,000 lb.	=$R$5*REG!I13+$R$6*REG!J13+$R$7*REG!K13+$R$8*REG!L13+$R$9*REG!M13		=R26*'HPMS IN'!$N$19
27							28,000-30,000 lb.	=$R$5*REG!I14+$R$6*REG!J14+$R$7*REG!K14+$R$8*REG!L14+$R$9*REG!M14		=R27*'HPMS IN'!$N$19
28							30,000-32,000 lb.	=$R$5*REG!I15+$R$6*REG!J15+$R$7*REG!K15+$R$8*REG!L15+$R$9*REG!M15		=R28*'HPMS IN'!$N$19
29							32,000-36,000 lb.	=$R$5*REG!I16+$R$6*REG!J16+$R$7*REG!K16+$R$8*REG!L16+$R$9*REG!M16		=R29*'HPMS IN'!$N$19
30							36,000-40,000 lb.	=$R$5*REG!I17+$R$6*REG!J17+$R$7*REG!K17+$R$8*REG!L17+$R$9*REG!M17		=R30*'HPMS IN'!$N$19
31							40,000-45,000 lb.	=$R$5*REG!I18+$R$6*REG!J18+$R$7*REG!K18+$R$8*REG!L18+$R$9*REG!M18		=R31*'HPMS IN'!$N$19
32							45,000-50,000 lb.	=$R$5*REG!I19+$R$6*REG!J19+$R$7*REG!K19+$R$8*REG!L19+$R$9*REG!M19		=R32*'HPMS IN'!$N$19
33							50,000-55,000 lb.	=$R$5*REG!I20+$R$6*REG!J20+$R$7*REG!K20+$R$8*REG!L20+$R$9*REG!M20		=R33*'HPMS IN'!$N$19
34							55,000-60,000 lb.	=$R$5*REG!I21+$R$6*REG!J21+$R$7*REG!K21+$R$8*REG!L21+$R$9*REG!M21		=R34*'HPMS IN'!$N$19
35							60,000-65,000 lb.	=$R$5*REG!I22+$R$6*REG!J22+$R$7*REG!K22+$R$8*REG!L22+$R$9*REG!M22		=R35*'HPMS IN'!$N$19
36							65,000-70,000 lb.	=$R$5*REG!I23+$R$6*REG!J23+$R$7*REG!K23+$R$8*REG!L23+$R$9*REG!M23		=R36*'HPMS IN'!$N$19
37							70,000-75,000 lb.	=$R$5*REG!I24+$R$6*REG!J24+$R$7*REG!K24+$R$8*REG!L24+$R$9*REG!M24		=R37*'HPMS IN'!$N$19
38							75,000-80,000 lb.	=$R$5*REG!I25+$R$6*REG!J25+$R$7*REG!K25+$R$8*REG!L25+$R$9*REG!M25		=R38*'HPMS IN'!$N$19
39							Total	=SUM(R16:R38)		=SUM(T16:T38)

UVMT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	**Base Period Percentage of Urban VMT**														
2															
3						SU			CMB Single Trailer			CMB Multi-trailer			Total
4	Year	MC	AUTO	LT	BUS	2A 6T	3A	4A	CS 4A	CS 5A	CS 6A	CM 5A	CM 6A	CM 7A	
5	='HPMS IN'!B$3	=HLOOKUP(B$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(M$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$159:$N$166,8,FALSE)	=SUM(B5:N5)
6	='HPMS IN'!C$3	=HLOOKUP(B$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(M$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$138:$N$145,8,FALSE)	=SUM(B6:N6)
7	='HPMS IN'!D$3	=HLOOKUP(B$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(M$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$117:$N$124,8,FALSE)	=SUM(B7:N7)
8	='HPMS IN'!E$3	=HLOOKUP(B$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(M$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$96:$N$103,8,FALSE)	=SUM(B8:N8)
9	='HPMS IN'!F$3	=HLOOKUP(B$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(M$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$75:$N$82,8,FALSE)	=SUM(B9:N9)
10	='HPMS IN'!G$3	=HLOOKUP(B$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(M$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$54:$N$61,8,FALSE)	=SUM(B10:N10)
11	='HPMS IN'!H$3	=HLOOKUP(B$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(M$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$33:$N$40,8,FALSE)	=SUM(B11:N11)
12															

UVMT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
13	Average Share	=AVERAGE(B5:B11)	=AVERAGE(C5:C11)	=AVERAGE(D5:D11)	=AVERAGE(E5:E11)	=AVERAGE(F5:F11)	=AVERAGE(G5:G11)	=AVERAGE(H5:H11)	=AVERAGE(I5:I11)	=AVERAGE(J5:J11)	=AVERAGE(K5:K11)	=AVERAGE(L5:L11)	=AVERAGE(M5:M11)	=AVERAGE(N5:N11)	
14															
15	Earliest Per Gro	=((AVERAGE(B8:B10)/AVERAGE(B5:B7))^(1/(AVERAGE(A8:A10)-AVERAGE(A5:A7)+1)))	=((AVERAGE(C8:C10)/AVERAGE(C5:C7))^(1/(AVERAGE(B8:B10)-AVERAGE(B5:B7)+1)))	=((AVERAGE(D8:D10)/AVERAGE(D5:D7))^(1/(AVERAGE(C8:C10)-AVERAGE(C5:C7)+1)))	=((AVERAGE(E8:E10)/AVERAGE(E5:E7))^(1/(AVERAGE(D8:D10)-AVERAGE(D5:D7)+1)))	=((AVERAGE(F8:F10)/AVERAGE(F5:F7))^(1/(AVERAGE(E8:E10)-AVERAGE(E5:E7)+1)))	=((AVERAGE(G8:G10)/AVERAGE(G5:G7))^(1/(AVERAGE(F8:F10)-AVERAGE(G5:G7)+1)))	=((AVERAGE(H8:H10)/AVERAGE(H5:H7))^(1/(AVERAGE(G8:G10)-AVERAGE(H5:H7)+1)))	=((AVERAGE(I8:I10)/AVERAGE(I5:I7))^(1/(AVERAGE(H8:H10)-AVERAGE(I5:I7)+1)))	=((AVERAGE(J8:J10)/AVERAGE(J5:J7))^(1/(AVERAGE(I8:I10)-AVERAGE(J5:J7)+1)))	=((AVERAGE(K8:K10)/AVERAGE(K5:K7))^(1/(AVERAGE(J8:J10)-AVERAGE(K5:K7)+1)))	=((AVERAGE(L8:L10)/AVERAGE(L5:L7))^(1/(AVERAGE(K8:K10)-AVERAGE(L5:L7)+1)))	=((AVERAGE(M8:M10)/AVERAGE(M5:M7))^(1/(AVERAGE(M8:M10)-AVERAGE(M5:M7)+1)))	=((AVERAGE(N8:N10)/AVERAGE(N5:N7))^(1/(AVERAGE(M8:M10)-AVERAGE(M5:M7)+1)))	
16	Latest Per Gro	=((AVERAGE(B9:B11)/AVERAGE(B6:B8))^(1/(AVERAGE(A9:A11)-AVERAGE(A6:A8)+1)))	=((AVERAGE(C9:C11)/AVERAGE(C6:C8))^(1/(AVERAGE(B9:B11)-AVERAGE(B6:B8)+1)))	=((AVERAGE(D9:D11)/AVERAGE(D6:D8))^(1/(AVERAGE(C9:C11)-AVERAGE(C6:C8)+1)))	=((AVERAGE(E9:E11)/AVERAGE(E6:E8))^(1/(AVERAGE(D9:D11)-AVERAGE(D6:D8)+1)))	=((AVERAGE(F9:F11)/AVERAGE(F6:F8))^(1/(AVERAGE(E9:E11)-AVERAGE(E6:E8)+1)))	=((AVERAGE(G9:G11)/AVERAGE(G6:G8))^(1/(AVERAGE(F9:F11)-AVERAGE(F6:F8)+1)))	=((AVERAGE(H9:H11)/AVERAGE(H6:H8))^(1/(AVERAGE(G9:G11)-AVERAGE(G6:G8)+1)))	=((AVERAGE(I9:I11)/AVERAGE(I6:I8))^(1/(AVERAGE(H9:H11)-AVERAGE(H6:H8)+1)))	=((AVERAGE(J9:J11)/AVERAGE(J6:J8))^(1/(AVERAGE(I9:I11)-AVERAGE(I6:I8)+1)))	=((AVERAGE(K9:K11)/AVERAGE(K6:K8))^(1/(AVERAGE(J9:J11)-AVERAGE(K6:K8)+1)))	=((AVERAGE(L9:L11)/AVERAGE(L6:L8))^(1/(AVERAGE(L6:L8)-AVERAGE(K6:K8)+1)))	=((AVERAGE(M9:M11)/AVERAGE(M6:M8))^(1/(AVERAGE(L9:L11)-AVERAGE(M6:M8)+1)))	=((AVERAGE(N9:N11)/AVERAGE(N6:N8))^(1/(AVERAGE(M9:M11)-AVERAGE(M6:M8)+1)))	
17	Average Growth	=AVERAGE(B15:B16)	=AVERAGE(C15:C16)	=AVERAGE(D15:D16)	=AVERAGE(E15:E16)	=AVERAGE(F15:F16)	=AVERAGE(G15:G16)	=AVERAGE(H15:H16)	=AVERAGE(I15:I16)	=AVERAGE(J15:J16)	=AVERAGE(K15:K16)	=AVERAGE(L15:L16)	=AVERAGE(M15:M16)	=AVERAGE(N15:N16)	
18	Adjusted Average	=IF(ISERROR(B17),1,IF(B17>1.2,2-(1/(B17^(1/10))),IF(B17<1,(MAX(B15:B16,1)^(1/4)),B17)))	=IF(ISERROR(C17),1,IF(C17>1.2,2-(1/(C17^(1/10))),IF(C17<1,(MAX(C15:C16,1)^(1/4)),C17)))	=IF(ISERROR(D17),1,IF(D17>1.2,2-(1/(D17^(1/10))),IF(D17<1,(MAX(D15:D16,1)^(1/4)),D17)))	=IF(ISERROR(E17),1,IF(E17>1.2,2-(1/(E17^(1/10))),IF(E17<1,(MAX(E15:E16,1)^(1/4)),E17)))	=IF(ISERROR(F17),1,IF(F17>1.2,2-(1/(F17^(1/10))),IF(F17<1,(MAX(F15:F16,1)^(1/4)),F17)))	=IF(ISERROR(G17),1,IF(G17>1.2,2-(1/(G17^(1/10))),IF(G17<1,(MAX(G15:G16,1)^(1/4)),G17)))	=IF(ISERROR(H17),1,IF(H17>1.2,2-(1/(H17^(1/10))),IF(H17<1,(MAX(H15:H16,1)^(1/4)),H17)))	=IF(ISERROR(I17),1,IF(I17>1.2,2-(1/(I17^(1/10))),IF(I17<1,(MAX(I15:I16,1)^(1/4)),I17)))	=IF(ISERROR(J17),1,IF(J17>1.2,2-(1/(J17^(1/10))),IF(J17<1,(MAX(J15:J16,1)^(1/4)),J17)))	=IF(ISERROR(K17),1,IF(K17>1.2,2-(1/(K17^(1/10))),IF(K17<1,(MAX(K15:K16,1)^(1/4)),K17)))	=IF(ISERROR(L17),1,IF(L17>1.2,2-(1/(L17^(1/10))),IF(L17<1,(MAX(L15:L16,1)^(1/4)),L17)))	=IF(ISERROR(M17),1,IF(M17>1.2,2-(1/(M17^(1/10))),IF(M17<1,(MAX(M15:M16,1)^(1/4)),M17)))	=IF(ISERROR(N17),1,IF(N17>1.2,2-(1/(N17^(1/10))),IF(N17<1,(MAX(N15:N16,1)^(1/4)),N17)))	
19															
20	Projected Percentage of VMT by Vehicle Class														
21	Forecast Year:	='EXPIN'!B4													
22						SU			CMB Single Trailer			CMB Multi-trailer			Total
23		MC	AUTO	LT	BUS	2A 6T	3A	4A	CS 4A	CS 5A	CS 6A	CM 5A	CM 6A	CM 7A	
24	Share	=B13*(B18^($B$21-AVERAGE($A$7:$A$11)))	=C13*(C18^($B$21-AVERAGE($A$7:$A$11)))	=D13*(D18^($B$21-AVERAGE($A$7:$A$11)))	=E13*(E18^($B$21-AVERAGE($A$7:$A$11)))	=F13*(F18^($B$21-AVERAGE($A$7:$A$11)))	=G13*(G18^($B$21-AVERAGE($A$7:$A$11)))	=H13*(H18^($B$21-AVERAGE($A$7:$A$11)))	=I13*(I18^($B$21-AVERAGE($A$7:$A$11)))	=J13*(J18^($B$21-AVERAGE($A$7:$A$11)))	=K13*(K18^($B$21-AVERAGE($A$7:$A$11)))	=L13*(L18^($B$21-AVERAGE($A$7:$A$11)))	=M13*(M18^($B$21-AVERAGE($A$7:$A$11)))	=N13*(N18^($B$21-AVERAGE($A$7:$A$11)))	=SUM(B24:N24)
25	Adjusted Share	=B24/$O$24	=C24/$O$24	=D24/$O$24	=E24/$O$24	=F24/$O$24	=G24/$O$24	=H24/$O$24	=I24/$O$24	=J24/$O$24	=K24/$O$24	=L24/$O$24	=M24/$O$24	=N24/$O$24	=SUM(B25:N25)

UVMT

	Q	R	S	...	Z	AA	AB	AC	...	AE	AF	AG	AH	AI
1	**Aggregated Model Input Tables**													
2	**Share of VMT Category by Vehicle Class**					**PCE Conversion Factors**								
3	**Vehicle Class**	**Projected Share**	**Alloc Factor**		**Vehicle Class**		2							
4						**Avg Urban**	**Weight**	**Alloc**						
5	Autos	=SUM(B25:C25)	=IF($AB$3=1,R5,AC5)		Autos	=AE39	=AA5*R5	=AB5/SUM(AB$5:AB$9)						
6	Pick-ups and SUVs	=SUM(D25)	=IF($AB$3=1,R6,AC6)		Pick-ups and SUVs	=AF39	=AA6*R6	=AB6/SUM(AB$5:AB$9)						
7	Buses	=SUM(E25)	=IF($AB$3=1,R7,AC7)		Buses	=AG39	=AA7*R7	=AB7/SUM(AB$5:AB$9)						
8	Single Unit trucks	=SUM(F25:H25)	=IF($AB$3=1,R8,AC8)		Single Unit trucks	=AH39	=AA8*R8	=AB8/SUM(AB$5:AB$9)						
9	Combination trucks	=SUM(I25:N25)	=IF($AB$3=1,R9,AC9)		Combination trucks	=AI39	=AA9*R9	=AB9/SUM(AB$5:AB$9)						
10		**=SUM(R5:R9)**	**=SUM(S5:S9)**											
11														
12														
13	**Weight Class**	**Proj Share**	**Alloc Factor**		**Weight Class**	**PCE Conversion Factors**				**Vehicle Class Adjustment**				
14														
15						**Avg Urban**	**Weight**	**Alloc**		**Auto**	**LT**	**Bus**	**SU**	**CMB**
16	0 - 8,000 lb.	=$R$5*REG!I3+$R$6*REG!J3+$R$7*REG!K3+$R$8*REG!L3+$R$9*REG!M3	=IF($AB$3=1,R16,AC16)		0 - 8,000 lb.	1.08506122529958	=AA16*R16	=AB16/SUM($AB$16:$AB$38)		=$AA16*REG!I3	=$AA16*REG!J3	=$AA16*REG!K3	=$AA16*REG!L3	=$AA16*REG!M3
17	8,000-10,000 lb.	=$R$5*REG!I4+$R$6*REG!J4+$R$7*REG!K4+$R$8*REG!L4+$R$9*REG!M4	=IF($AB$3=1,R17,AC17)		8,000-10,000 lb.	1.42530612649791	=AA17*R17	=AB17/SUM($AB$16:$AB$38)		=$AA17*REG!I4	=$AA17*REG!J4	=$AA17*REG!K4	=$AA17*REG!L4	=$AA17*REG!M4
18	10,000-12,000 lb.	=$R$5*REG!I5+$R$6*REG!J5+$R$7*REG!K5+$R$8*REG!L5+$R$9*REG!M5	=IF($AB$3=1,R18,AC18)		10,000-12,000 lb.	1.59542857709708	=AA18*R18	=AB18/SUM($AB$16:$AB$38)		=$AA18*REG!I5	=$AA18*REG!J5	=$AA18*REG!K5	=$AA18*REG!L5	=$AA18*REG!M5
19	12,000-14,000 lb.	=$R$5*REG!I6+$R$6*REG!J6+$R$7*REG!K6+$R$8*REG!L6+$R$9*REG!M6	=IF($AB$3=1,R19,AC19)		12,000-14,000 lb.	1.68048980239666	=AA19*R19	=AB19/SUM($AB$16:$AB$38)		=$AA19*REG!I6	=$AA19*REG!J6	=$AA19*REG!K6	=$AA19*REG!L6	=$AA19*REG!M6
20	14,000-16,000 lb.	=$R$5*REG!I7+$R$6*REG!J7+$R$7*REG!K7+$R$8*REG!L7+$R$9*REG!M7	=IF($AB$3=1,R20,AC20)		14,000-16,000 lb.	1.76555102769625	=AA20*R20	=AB20/SUM($AB$16:$AB$38)		=$AA20*REG!I7	=$AA20*REG!J7	=$AA20*REG!K7	=$AA20*REG!L7	=$AA20*REG!M7
21	16,000-18,000 lb.	=$R$5*REG!I8+$R$6*REG!J8+$R$7*REG!K8+$R$8*REG!L8+$R$9*REG!M8	=IF($AB$3=1,R21,AC21)		16,000-18,000 lb.	1.85061225299583	=AA21*R21	=AB21/SUM($AB$16:$AB$38)		=$AA21*REG!I8	=$AA21*REG!J8	=$AA21*REG!K8	=$AA21*REG!L8	=$AA21*REG!M8
22	18,000-20,000 lb.	=$R$5*REG!I9+$R$6*REG!J9+$R$7*REG!K9+$R$8*REG!L9+$R$9*REG!M9	=IF($AB$3=1,R22,AC22)		18,000-20,000 lb.	1.93567347829541	=AA22*R22	=AB22/SUM($AB$16:$AB$38)		=$AA22*REG!I9	=$AA22*REG!J9	=$AA22*REG!K9	=$AA22*REG!L9	=$AA22*REG!M9

UVMT

	Q	R	S	...	Z	AA	AB	AC	...	AE	AF	AG	AH	AI
23	20,000-22,000 lb.	=$R$5*REG!I10+$R$6*REG!J10+$R$7*REG!K10+$R$8*REG!L10+$R$9*REG!M10	=IF($AB$3=1,R23,AC23)		20,000-22,000 lb.	1.93567347829541	=AA23*R23	=AB23/SUM($AB$16:$AB$38)		=$AA23*REG!I10	=$AA23*REG!J10	=$AA23*REG!K10	=$AA23*REG!L10	=$AA23*REG!M10
24	22,000-24,000 lb.	=$R$5*REG!I11+$R$6*REG!J11+$R$7*REG!K11+$R$8*REG!L11+$R$9*REG!M11	=IF($AB$3=1,R24,AC24)		22,000-24,000 lb.	2.10579592889458	=AA24*R24	=AB24/SUM($AB$16:$AB$38)		=$AA24*REG!I11	=$AA24*REG!J11	=$AA24*REG!K11	=$AA24*REG!L11	=$AA24*REG!M11
25	24,000-26,000 lb.	=$R$5*REG!I12+$R$6*REG!J12+$R$7*REG!K12+$R$8*REG!L12+$R$9*REG!M12	=IF($AB$3=1,R25,AC25)		24,000-26,000 lb.	2.10579592889458	=AA25*R25	=AB25/SUM($AB$16:$AB$38)		=$AA25*REG!I12	=$AA25*REG!J12	=$AA25*REG!K12	=$AA25*REG!L12	=$AA25*REG!M12
26	26,000-28,000 lb.	=$R$5*REG!I13+$R$6*REG!J13+$R$7*REG!K13+$R$8*REG!L13+$R$9*REG!M13	=IF($AB$3=1,R26,AC26)		26,000-28,000 lb.	2.19085715419416	=AA26*R26	=AB26/SUM($AB$16:$AB$38)		=$AA26*REG!I13	=$AA26*REG!J13	=$AA26*REG!K13	=$AA26*REG!L13	=$AA26*REG!M13
27	28,000-30,000 lb.	=$R$5*REG!I14+$R$6*REG!J14+$R$7*REG!K14+$R$8*REG!L14+$R$9*REG!M14	=IF($AB$3=1,R27,AC27)		28,000-30,000 lb.	2.27591837949374	=AA27*R27	=AB27/SUM($AB$16:$AB$38)		=$AA27*REG!I14	=$AA27*REG!J14	=$AA27*REG!K14	=$AA27*REG!L14	=$AA27*REG!M14
28	30,000-32,000 lb.	=$R$5*REG!I15+$R$6*REG!J15+$R$7*REG!K15+$R$8*REG!L15+$R$9*REG!M15	=IF($AB$3=1,R28,AC28)		30,000-32,000 lb.	2.27591837949374	=AA28*R28	=AB28/SUM($AB$16:$AB$38)		=$AA28*REG!I15	=$AA28*REG!J15	=$AA28*REG!K15	=$AA28*REG!L15	=$AA28*REG!M15
29	32,000-36,000 lb.	=$R$5*REG!I16+$R$6*REG!J16+$R$7*REG!K16+$R$8*REG!L16+$R$9*REG!M16	=IF($AB$3=1,R29,AC29)		32,000-36,000 lb.	2.44604083009291	=AA29*R29	=AB29/SUM($AB$16:$AB$38)		=$AA29*REG!I16	=$AA29*REG!J16	=$AA29*REG!K16	=$AA29*REG!L16	=$AA29*REG!M16
30	36,000-40,000 lb.	=$R$5*REG!I17+$R$6*REG!J17+$R$7*REG!K17+$R$8*REG!L17+$R$9*REG!M17	=IF($AB$3=1,R30,AC30)		36,000-40,000 lb.	2.53110205539249	=AA30*R30	=AB30/SUM($AB$16:$AB$38)		=$AA30*REG!I17	=$AA30*REG!J17	=$AA30*REG!K17	=$AA30*REG!L17	=$AA30*REG!M17
31	40,000-45,000 lb.	=$R$5*REG!I18+$R$6*REG!J18+$R$7*REG!K18+$R$8*REG!L18+$R$9*REG!M18	=IF($AB$3=1,R31,AC31)		40,000-45,000 lb.	2.70122450599166	=AA31*R31	=AB31/SUM($AB$16:$AB$38)		=$AA31*REG!I18	=$AA31*REG!J18	=$AA31*REG!K18	=$AA31*REG!L18	=$AA31*REG!M18
32	45,000-50,000 lb.	=$R$5*REG!I19+$R$6*REG!J19+$R$7*REG!K19+$R$8*REG!L19+$R$9*REG!M19	=IF($AB$3=1,R32,AC32)		45,000-50,000 lb.	2.83298452033427	=AA32*R32	=AB32/SUM($AB$16:$AB$38)		=$AA32*REG!I19	=$AA32*REG!J19	=$AA32*REG!K19	=$AA32*REG!L19	=$AA32*REG!M19
33	50,000-55,000 lb.	=$R$5*REG!I20+$R$6*REG!J20+$R$7*REG!K20+$R$8*REG!L20+$R$9*REG!M20	=IF($AB$3=1,R33,AC33)		50,000-55,000 lb.	2.94462617946255	=AA33*R33	=AB33/SUM($AB$16:$AB$38)		=$AA33*REG!I20	=$AA33*REG!J20	=$AA33*REG!K20	=$AA33*REG!L20	=$AA33*REG!M20
34	55,000-60,000 lb.	=$R$5*REG!I21+$R$6*REG!J21+$R$7*REG!K21+$R$8*REG!L21+$R$9*REG!M21	=IF($AB$3=1,R34,AC34)		55,000-60,000 lb.	3.05626783859083	=AA34*R34	=AB34/SUM($AB$16:$AB$38)		=$AA34*REG!I21	=$AA34*REG!J21	=$AA34*REG!K21	=$AA34*REG!L21	=$AA34*REG!M21
35	60,000-65,000 lb.	=$R$5*REG!I22+$R$6*REG!J22+$R$7*REG!K22+$R$8*REG!L22+$R$9*REG!M22	=IF($AB$3=1,R35,AC35)		60,000-65,000 lb.	3.16790949771912	=AA35*R35	=AB35/SUM($AB$16:$AB$38)		=$AA35*REG!I22	=$AA35*REG!J22	=$AA35*REG!K22	=$AA35*REG!L22	=$AA35*REG!M22
36	65,000-70,000 lb.	=$R$5*REG!I23+$R$6*REG!J23+$R$7*REG!K23+$R$8*REG!L23+$R$9*REG!M23	=IF($AB$3=1,R36,AC36)		65,000-70,000 lb.	3.2795511568474	=AA36*R36	=AB36/SUM($AB$16:$AB$38)		=$AA36*REG!I23	=$AA36*REG!J23	=$AA36*REG!K23	=$AA36*REG!L23	=$AA36*REG!M23
37	70,000-75,000 lb.	=$R$5*REG!I24+$R$6*REG!J24+$R$7*REG!K24+$R$8*REG!L24+$R$9*REG!M24	=IF($AB$3=1,R37,AC37)		70,000-75,000 lb.	3.39119281597568	=AA37*R37	=AB37/SUM($AB$16:$AB$38)		=$AA37*REG!I24	=$AA37*REG!J24	=$AA37*REG!K24	=$AA37*REG!L24	=$AA37*REG!M24
38	75,000-80,000 lb.	=$R$5*REG!I25+$R$6*REG!J25+$R$7*REG!K25+$R$8*REG!L25+$R$9*REG!M25	=IF($AB$3=1,R38,AC38)		75,000-80,000 lb.	3.61447613423224	=AA38*R38	=AB38/SUM($AB$16:$AB$38)		=$AA38*REG!I25	=$AA38*REG!J25	=$AA38*REG!K25	=$AA38*REG!L25	=$AA38*REG!M25
39	Total	=SUM(R16:R38)	=SUM(S16:S38)							=SUM(AE16:AE38)*1.13/1.17	=SUM(AF16:AF38)	=SUM(AG16:AG38)	=SUM(AH16:AH38)	=SUM(AI16:AI38)

RVMT

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Base Period Percentage of Rural VMT**											
2												
3						SU			CMB Single Trailer			CMB Multi-trailer
4	Year	MC	AUTO	LT	BUS	2A 6T	3A	4A	CS 4A	CS 5A	CS 6A	CM 5A
5	='HPMS IN'!B$3	=HLOOKUP(B$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$150:$N$157,8,FALSE)
6	='HPMS IN'!C$3	=HLOOKUP(B$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$129:$N$136,8,FALSE)
7	='HPMS IN'!D$3	=HLOOKUP(B$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$108:$N$115,8,FALSE)
8	='HPMS IN'!E$3	=HLOOKUP(B$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$87:$N$94,8,FALSE)
9	='HPMS IN'!F$3	=HLOOKUP(B$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$66:$N$73,8,FALSE)
10	='HPMS IN'!G$3	=HLOOKUP(B$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$45:$N$52,8,FALSE)
11	='HPMS IN'!H$3	=HLOOKUP(B$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(C$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(D$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(E$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(F$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(G$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(H$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(I$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(J$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(K$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(L$4,'HPMS IN'!$B$24:$N$31,8,FALSE)
12													

RVMT

	A	B	C	D	E	F	G	H	I	J	K	L
13	Average Share	=AVERAGE(B5:B11)	=AVERAGE(C5:C11)	=AVERAGE(D5:D11)	=AVERAGE(E5:E11)	=AVERAGE(F5:F11)	=AVERAGE(G5:G11)	=AVERAGE(H5:H11)	=AVERAGE(I5:I11)	=AVERAGE(J5:J11)	=AVERAGE(K5:K11)	=AVERAGE(L5:L11)
14												
15	Earliest Per Gro	=((AVERAGE(B8:B10)/AVERAGE(B5:B7))^(1/(AVERAGE(A8:A10)-AVERAGE(A5:A7)+1)))	=((AVERAGE(C8:C10)/AVERAGE(C5:C7))^(1/(AVERAGE(B8:B10)-AVERAGE(B5:B7)+1)))	=((AVERAGE(D8:D10)/AVERAGE(D5:D7))^(1/(AVERAGE(C8:C10)-AVERAGE(C5:C7)+1)))	=((AVERAGE(E8:E10)/AVERAGE(E5:E7))^(1/(AVERAGE(D8:D10)-AVERAGE(D5:D7)+1)))	=((AVERAGE(F8:F10)/AVERAGE(F5:F7))^(1/(AVERAGE(E8:E10)-AVERAGE(E5:E7)+1)))	=((AVERAGE(G8:G10)/AVERAGE(G5:G7))^(1/(AVERAGE(F8:F10)-AVERAGE(F5:F7)+1)))	=((AVERAGE(H8:H10)/AVERAGE(H5:H7))^(1/(AVERAGE(G8:G10)-AVERAGE(G5:G7)+1)))	=((AVERAGE(I8:I10)/AVERAGE(I5:I7))^(1/(AVERAGE(H8:H10)-AVERAGE(H5:H7)+1)))	=((AVERAGE(J8:J10)/AVERAGE(J5:J7))^(1/(AVERAGE(I8:I10)-AVERAGE(I5:I7)+1)))	=((AVERAGE(K8:K10)/AVERAGE(K5:K7))^(1/(AVERAGE(J8:J10)-AVERAGE(J5:J7)+1)))	=((AVERAGE(L8:L10)/AVERAGE(L5:L7))^(1/(AVERAGE(K8:K10)-AVERAGE(K5:K7)+1)))
16	Latest Per Gro	=((AVERAGE(B9:B11)/AVERAGE(B6:B8))^(1/(AVERAGE(A9:A11)-AVERAGE(A6:A8)+1)))	=((AVERAGE(C9:C11)/AVERAGE(C6:C8))^(1/(AVERAGE(B9:B11)-AVERAGE(B6:B8)+1)))	=((AVERAGE(D9:D11)/AVERAGE(D6:D8))^(1/(AVERAGE(C9:C11)-AVERAGE(C6:C8)+1)))	=((AVERAGE(E9:E11)/AVERAGE(E6:E8))^(1/(AVERAGE(D9:D11)-AVERAGE(D6:D8)+1)))	=((AVERAGE(F9:F11)/AVERAGE(F6:F8))^(1/(AVERAGE(E9:E11)-AVERAGE(E6:E8)+1)))	=((AVERAGE(G9:G11)/AVERAGE(G6:G8))^(1/(AVERAGE(F9:F11)-AVERAGE(F6:F8)+1)))	=((AVERAGE(H9:H11)/AVERAGE(H6:H8))^(1/(AVERAGE(G9:G11)-AVERAGE(G6:G8)+1)))	=((AVERAGE(I9:I11)/AVERAGE(I6:I8))^(1/(AVERAGE(H9:H11)-AVERAGE(H6:H8)+1)))	=((AVERAGE(J9:J11)/AVERAGE(J6:J8))^(1/(AVERAGE(I9:I11)-AVERAGE(I6:I8)+1)))	=((AVERAGE(K9:K11)/AVERAGE(K6:K8))^(1/(AVERAGE(J9:J11)-AVERAGE(J6:J8)+1)))	=((AVERAGE(L9:L11)/AVERAGE(L6:L8))^(1/(AVERAGE(K9:K11)-AVERAGE(K6:K8)+1)))
17	Average Growth	=AVERAGE(B15:B16)	=AVERAGE(C15:C16)	=AVERAGE(D15:D16)	=AVERAGE(E15:E16)	=AVERAGE(F15:F16)	=AVERAGE(G15:G16)	=AVERAGE(H15:H16)	=AVERAGE(I15:I16)	=AVERAGE(J15:J16)	=AVERAGE(K15:K16)	=AVERAGE(L15:L16)
18	Adjusted Average	=IF(ISERROR(B17),1,IF(B17>1.2,2-(1/(B17^(1/10))),IF(B17<1,(MAX(B15:B16,1)^(1/4)),B17)))	=IF(ISERROR(C17),1,IF(C17>1.2,2-(1/(C17^(1/10))),IF(C17<1,(MAX(C15:C16,1)^(1/4)),C17)))	=IF(ISERROR(D17),1,IF(D17>1.2,2-(1/(D17^(1/10))),IF(D17<1,(MAX(D15:D16,1)^(1/4)),D17)))	=IF(ISERROR(E17),1,IF(E17>1.2,2-(1/(E17^(1/10))),IF(E17<1,(MAX(E15:E16,1)^(1/4)),E17)))	=IF(ISERROR(F17),1,IF(F17>1.2,2-(1/(F17^(1/10))),IF(F17<1,(MAX(F15:F16,1)^(1/4)),F17)))	=IF(ISERROR(G17),1,IF(G17>1.2,2-(1/(G17^(1/10))),IF(G17<1,(MAX(G15:G16,1)^(1/4)),G17)))	=IF(ISERROR(H17),1,IF(H17>1.2,2-(1/(H17^(1/10))),IF(H17<1,(MAX(H15:H16,1)^(1/4)),H17)))	=IF(ISERROR(I17),1,IF(I17>1.2,2-(1/(I17^(1/10))),IF(I17<1,(MAX(I15:I16,1)^(1/4)),I17)))	=IF(ISERROR(J17),1,IF(J17>1.2,2-(1/(J17^(1/10))),IF(J17<1,(MAX(J15:J16,1)^(1/4)),J17)))	=IF(ISERROR(K17),1,IF(K17>1.2,2-(1/(K17^(1/10))),IF(K17<1,(MAX(K15:K16,1)^(1/4)),K17)))	=IF(ISERROR(L17),1,IF(L17>1.2,2-(1/(L17^(1/10))),IF(L17<1,(MAX(L15:L16,1)^(1/4)),L17)))
19												
20	Projected Percentage of VMT by Vehicle Class											
21	Forecast Year:	='EXP IN'!B4										
22						SU			CMB Single Trailer			CMB Multi-trailer
23		MC	AUTO	LT	BUS	2A 6T	3A	4A	CS 4A	CS 5A	CS 6A	CM 5A
24	Share	=B13*(B18^($B$21-AVERAGE($A$7:$A$11)))	=C13*(C18^($B$21-AVERAGE($A$7:$A$11)))	=D13*(D18^($B$21-AVERAGE($A$7:$A$11)))	=E13*(E18^($B$21-AVERAGE($A$7:$A$11)))	=F13*(F18^($B$21-AVERAGE($A$7:$A$11)))	=G13*(G18^($B$21-AVERAGE($A$7:$A$11)))	=H13*(H18^($B$21-AVERAGE($A$7:$A$11)))	=I13*(I18^($B$21-AVERAGE($A$7:$A$11)))	=J13*(J18^($B$21-AVERAGE($A$7:$A$11)))	=K13*(K18^($B$21-AVERAGE($A$7:$A$11)))	=L13*(L18^($B$21-AVERAGE($A$7:$A$11)))
25	Adjusted Share	=B24/$O$24	=C24/$O$24	=D24/$O$24	=E24/$O$24	=F24/$O$24	=G24/$O$24	=H24/$O$24	=I24/$O$24	=J24/$O$24	=K24/$O$24	=L24/$O$24

RVMT

	M	N	O	P	Q	R
1					**Aggregated Model Input Tables**	
2					**Share of VMT Category by Vehicle Class**	
3			**Total**		**Vehicle Class**	**Projected Share**
4	**CM 6A**	**CM 7A**				
5	=HLOOKUP(M$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$150:$N$157,8,FALSE)	=SUM(B5:N5)		Autos	=SUM(B25:C25)
6	=HLOOKUP(M$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$129:$N$136,8,FALSE)	=SUM(B6:N6)		Pick-ups and SUVs	=SUM(D25)
7	=HLOOKUP(M$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$108:$N$115,8,FALSE)	=SUM(B7:N7)		Buses	=SUM(E25)
8	=HLOOKUP(M$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$87:$N$94,8,FALSE)	=SUM(B8:N8)		Single Unit trucks	=SUM(F25:H25)
9	=HLOOKUP(M$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$66:$N$73,8,FALSE)	=SUM(B9:N9)		Combination trucks	=SUM(I25:N25)
10	=HLOOKUP(M$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$45:$N$52,8,FALSE)	=SUM(B10:N10)			
11	=HLOOKUP(M$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=HLOOKUP(N$4,'HPMS IN'!$B$24:$N$31,8,FALSE)	=SUM(B11:N11)			
12						
13	=AVERAGE(M5:M11)	=AVERAGE(N5:N11)			**Weight Class**	**Proj Share**
14						
15	=((AVERAGE(M8:M10)/AVERAGE(M5:M7))^(1/(AVERAGE(L8:L10)-AVERAGE(L5:L7)+1)))	=((AVERAGE(N8:N10)/AVERAGE(N5:N7))^(1/(AVERAGE(M8:M10)-AVERAGE(M5:M7)+1)))				
16	=((AVERAGE(M9:M11)/AVERAGE(M6:M8))^(1/(AVERAGE(L9:L11)-AVERAGE(L6:L8)+1)))	=((AVERAGE(N9:N11)/AVERAGE(N6:N8))^(1/(AVERAGE(M9:M11)-AVERAGE(M6:M8)+1)))			0 - 8,000 lb.	=$R$5*REG!I3+$R$6*REG!J3+$R$7*REG!K3+$R$8*REG!L3+$R$9*REG!M3
17	=AVERAGE(M15:M16)	=AVERAGE(N15:N16)			8,000-10,000 lb.	=$R$5*REG!I4+$R$6*REG!J4+$R$7*REG!K4+$R$8*REG!L4+$R$9*REG!M4
18	=IF(ISERROR(M17),1,IF(M17>1.2,2-(1/(M17^(1/10))),IF(M17<1,(MAX(M15:M16,1)^(1/4)),M17)))	=IF(ISERROR(N17),1,IF(N17>1.2,2-(1/(N17^(1/10))),IF(N17<1,(MAX(N15:N16,1)^(1/4)),N17)))			10,000-12,000 lb.	=$R$5*REG!I5+$R$6*REG!J5+$R$7*REG!K5+$R$8*REG!L5+$R$9*REG!M5
19					12,000-14,000 lb.	=$R$5*REG!I6+$R$6*REG!J6+$R$7*REG!K6+$R$8*REG!L6+$R$9*REG!M6
20					14,000-16,000 lb.	=$R$5*REG!I7+$R$6*REG!J7+$R$7*REG!K7+$R$8*REG!L7+$R$9*REG!M7
21					16,000-18,000 lb.	=$R$5*REG!I8+$R$6*REG!J8+$R$7*REG!K8+$R$8*REG!L8+$R$9*REG!M8
22			**Total**		18,000-20,000 lb.	=$R$5*REG!I9+$R$6*REG!J9+$R$7*REG!K9+$R$8*REG!L9+$R$9*REG!M9
23	**CM 6A**	**CM 7A**			20,000-22,000 lb.	=$R$5*REG!I10+$R$6*REG!J10+$R$7*REG!K10+$R$8*REG!L10+$R$9*REG!M10
24	=M13*(M18^($B$21-AVERAGE($A$7:$A$11)))	=N13*(N18^($B$21-AVERAGE($A$7:$A$11)))	=SUM(B24:N24)		22,000-24,000 lb.	=$R$5*REG!I11+$R$6*REG!J11+$R$7*REG!K11+$R$8*REG!L11+$R$9*REG!M11
25	=M24/$O$24	=N24/$O$24	=SUM(B25:N25)		24,000-26,000 lb.	=$R$5*REG!I12+$R$6*REG!J12+$R$7*REG!K12+$R$8*REG!L12+$R$9*REG!M12

RVMT

	M	N	O	P	Q	R
26					26,000-28,000 lb.	=$R$5*REG!I13+$R$6*REG!J13+$R$7*REG!K13+$R$8*REG!L13+$R$9*REG!M13
27					28,000-30,000 lb.	=$R$5*REG!I14+$R$6*REG!J14+$R$7*REG!K14+$R$8*REG!L14+$R$9*REG!M14
28					30,000-32,000 lb.	=$R$5*REG!I15+$R$6*REG!J15+$R$7*REG!K15+$R$8*REG!L15+$R$9*REG!M15
29					32,000-36,000 lb.	=$R$5*REG!I16+$R$6*REG!J16+$R$7*REG!K16+$R$8*REG!L16+$R$9*REG!M16
30					36,000-40,000 lb.	=$R$5*REG!I17+$R$6*REG!J17+$R$7*REG!K17+$R$8*REG!L17+$R$9*REG!M17
31					40,000-45,000 lb.	=$R$5*REG!I18+$R$6*REG!J18+$R$7*REG!K18+$R$8*REG!L18+$R$9*REG!M18
32					45,000-50,000 lb.	=$R$5*REG!I19+$R$6*REG!J19+$R$7*REG!K19+$R$8*REG!L19+$R$9*REG!M19
33					50,000-55,000 lb.	=$R$5*REG!I20+$R$6*REG!J20+$R$7*REG!K20+$R$8*REG!L20+$R$9*REG!M20
34					55,000-60,000 lb.	=$R$5*REG!I21+$R$6*REG!J21+$R$7*REG!K21+$R$8*REG!L21+$R$9*REG!M21
35					60,000-65,000 lb.	=$R$5*REG!I22+$R$6*REG!J22+$R$7*REG!K22+$R$8*REG!L22+$R$9*REG!M22
36					65,000-70,000 lb.	=$R$5*REG!I23+$R$6*REG!J23+$R$7*REG!K23+$R$8*REG!L23+$R$9*REG!M23
37					70,000-75,000 lb.	=$R$5*REG!I24+$R$6*REG!J24+$R$7*REG!K24+$R$8*REG!L24+$R$9*REG!M24
38					75,000-80,000 lb.	=$R$5*REG!I25+$R$6*REG!J25+$R$7*REG!K25+$R$8*REG!L25+$R$9*REG!M25
39					Total	=SUM(R16:R38)

EXP_OUT

	A	B	C	D	E	F	G
1	**Average Annual Expenditures,**	='EXP IN'!B2		to	='EXP IN'!B3		
2	(Thousands of Dollars)						
3	**Vehicle Class**	**State**			**Local**		
4		**Urban**	**Rural**	**Common & Overhead**	**State Aid**	**Federal Aid**	**Other Local**
5	Autos	='EXP ARRAY'!$D$12*UVMT!$S5	='EXP ARRAY'!$E$12*'ESAL ADJ'!$P5	=('EXP ARRAY'!$B$12*VMT!$R5)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P62)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S5)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P62)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P5)+('LOCAL ADJ'!$E$17*VMT!$R5)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S5)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P62)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P5)+('LOCAL ADJ'!$F$17*VMT!$R5)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S5)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P62)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P5)+('LOCAL ADJ'!$E$17*VMT!$R5)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S5)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P62)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P5)+('LOCAL ADJ'!$F$17*VMT!$R5)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S5)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P62)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P5)+('LOCAL ADJ'!$E$17*VMT!$R5)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S5)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P62)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P5)+('LOCAL ADJ'!$F$17*VMT!$R5)))
6	Pick-ups and SUVs	='EXP ARRAY'!$D$12*UVMT!$S6	='EXP ARRAY'!$E$12*'ESAL ADJ'!$P6	=('EXP ARRAY'!$B$12*VMT!$R6)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P63)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S6)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P63)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P6)+('LOCAL ADJ'!$E$17*VMT!$R6)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S6)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P63)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P6)+('LOCAL ADJ'!$F$17*VMT!$R6)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S6)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P63)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P6)+('LOCAL ADJ'!$E$17*VMT!$R6)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S6)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P63)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P6)+('LOCAL ADJ'!$F$17*VMT!$R6)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S6)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P63)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P6)+('LOCAL ADJ'!$E$17*VMT!$R6)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S6)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P63)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P6)+('LOCAL ADJ'!$F$17*VMT!$R6)))
7	Buses	='EXP ARRAY'!$D$12*UVMT!$S7	='EXP ARRAY'!$E$12*'ESAL ADJ'!$P7	=('EXP ARRAY'!$B$12*VMT!$R7)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P64)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S7)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P64)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P7)+('LOCAL ADJ'!$E$17*VMT!$R7)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S7)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P64)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P7)+('LOCAL ADJ'!$F$17*VMT!$R7)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S7)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P64)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P7)+('LOCAL ADJ'!$E$17*VMT!$R7)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S7)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P64)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P7)+('LOCAL ADJ'!$F$17*VMT!$R7)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S7)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P64)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P7)+('LOCAL ADJ'!$E$17*VMT!$R7)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S7)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P64)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P7)+('LOCAL ADJ'!$F$17*VMT!$R7)))
8	Single Unit trucks	='EXP ARRAY'!$D$12*UVMT!$S8	='EXP ARRAY'!$E$12*'ESAL ADJ'!$P8	=('EXP ARRAY'!$B$12*VMT!$R8)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P65)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S8)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P65)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P8)+('LOCAL ADJ'!$E$17*VMT!$R8)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S8)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P65)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P8)+('LOCAL ADJ'!$F$17*VMT!$R8)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S8)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P65)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P8)+('LOCAL ADJ'!$E$17*VMT!$R8)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S8)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P65)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P8)+('LOCAL ADJ'!$F$17*VMT!$R8)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S8)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P65)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P8)+('LOCAL ADJ'!$E$17*VMT!$R8)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S8)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P65)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P8)+('LOCAL ADJ'!$F$17*VMT!$R8)))
9	Combination trucks	='EXP ARRAY'!$D$12*UVMT!$S9	='EXP ARRAY'!$E$12*'ESAL ADJ'!$P9	=('EXP ARRAY'!$B$12*VMT!$R9)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P66)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S9)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P66)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P9)+('LOCAL ADJ'!$E$17*VMT!$R9)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S9)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P66)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P9)+('LOCAL ADJ'!$F$17*VMT!$R9)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S9)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P66)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P9)+('LOCAL ADJ'!$E$17*VMT!$R9)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S9)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P66)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P9)+('LOCAL ADJ'!$F$17*VMT!$R9)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S9)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P66)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P9)+('LOCAL ADJ'!$E$17*VMT!$R9)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S9)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P66)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P9)+('LOCAL ADJ'!$F$17*VMT!$R9)))
10	Total	=SUM(B5:B9)	=SUM(C5:C9)	=SUM(D5:D9)	=SUM(E5:E9)	=SUM(F5:F9)	=SUM(G5:G9)
11							

EXP_OUT

	A	B	C	D	E	F	G
12	Weight Class	State			Local		
13		Urban	Rural	Common & Overhead	State Aid	Federal Aid	Other Local
14	0 - 8,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S16	='EXP ARRAY'!$E$12*ESAL ADJ'!$P14	=('EXP ARRAY'!$B$12*VMT!$R16)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P71)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S16)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P71)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P14)+('LOCAL ADJ'!$E$17*VMT!$R16)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S16)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P71)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P14)+('LOCAL ADJ'!$F$17*VMT!$R16)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S16)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P71)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P14)+('LOCAL ADJ'!$E$17*VMT!$R16)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S16)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P71)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P14)+('LOCAL ADJ'!$F$17*VMT!$R16)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S16)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P71)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P14)+('LOCAL ADJ'!$E$17*VMT!$R16)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S16)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P71)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P14)+('LOCAL ADJ'!$F$17*VMT!$R16)))
15	8,000-10,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S17	='EXP ARRAY'!$E$12*ESAL ADJ'!$P15	=('EXP ARRAY'!$B$12*VMT!$R17)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P72)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S17)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P72)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P15)+('LOCAL ADJ'!$E$17*VMT!$R17)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S17)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P72)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P15)+('LOCAL ADJ'!$F$17*VMT!$R17)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S17)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P72)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P15)+('LOCAL ADJ'!$E$17*VMT!$R17)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S17)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P72)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P15)+('LOCAL ADJ'!$F$17*VMT!$R17)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S17)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P72)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P15)+('LOCAL ADJ'!$E$17*VMT!$R17)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S17)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P72)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P15)+('LOCAL ADJ'!$F$17*VMT!$R17)))
16	10,000-12,000 lb	='EXP ARRAY'!$D$12*UVMT!$S18	='EXP ARRAY'!$E$12*ESAL ADJ'!$P16	=('EXP ARRAY'!$B$12*VMT!$R18)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P73)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S18)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P73)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P16)+('LOCAL ADJ'!$E$17*VMT!$R18)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S18)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P73)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P16)+('LOCAL ADJ'!$F$17*VMT!$R18)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S18)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P73)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P16)+('LOCAL ADJ'!$E$17*VMT!$R18)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S18)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P73)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P16)+('LOCAL ADJ'!$F$17*VMT!$R18)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S18)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P73)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P16)+('LOCAL ADJ'!$E$17*VMT!$R18)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S18)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P73)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P16)+('LOCAL ADJ'!$F$17*VMT!$R18)))
17	12,000-14,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S19	='EXP ARRAY'!$E$12*ESAL ADJ'!$P17	=('EXP ARRAY'!$B$12*VMT!$R19)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P74)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S19)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P74)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P17)+('LOCAL ADJ'!$E$17*VMT!$R19)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S19)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P74)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P17)+('LOCAL ADJ'!$F$17*VMT!$R19)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S19)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P74)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P17)+('LOCAL ADJ'!$E$17*VMT!$R19)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S19)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P74)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P17)+('LOCAL ADJ'!$F$17*VMT!$R19)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S19)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P74)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P17)+('LOCAL ADJ'!$E$17*VMT!$R19)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S19)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P74)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P17)+('LOCAL ADJ'!$F$17*VMT!$R19)))
18	14,000-16,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S20	='EXP ARRAY'!$E$12*ESAL ADJ'!$P18	=('EXP ARRAY'!$B$12*VMT!$R20)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P75)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S20)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P75)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P18)+('LOCAL ADJ'!$E$17*VMT!$R20)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S20)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P75)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P18)+('LOCAL ADJ'!$F$17*VMT!$R20)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S20)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P75)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P18)+('LOCAL ADJ'!$E$17*VMT!$R20)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S20)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P75)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P18)+('LOCAL ADJ'!$F$17*VMT!$R20)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S20)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P75)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P18)+('LOCAL ADJ'!$E$17*VMT!$R20)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S20)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P75)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P18)+('LOCAL ADJ'!$F$17*VMT!$R20)))
19	16,000-18,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S21	='EXP ARRAY'!$E$12*ESAL ADJ'!$P19	=('EXP ARRAY'!$B$12*VMT!$R21)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P76)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S21)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P76)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P19)+('LOCAL ADJ'!$E$17*VMT!$R21)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S21)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P76)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P19)+('LOCAL ADJ'!$F$17*VMT!$R21)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S21)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P76)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P19)+('LOCAL ADJ'!$E$17*VMT!$R21)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S21)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P76)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P19)+('LOCAL ADJ'!$F$17*VMT!$R21)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S21)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P76)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P19)+('LOCAL ADJ'!$E$17*VMT!$R21)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S21)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P76)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P19)+('LOCAL ADJ'!$F$17*VMT!$R21)))
20	18,000-20,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S22	='EXP ARRAY'!$E$12*ESAL ADJ'!$P20	=('EXP ARRAY'!$B$12*VMT!$R22)+('EXP ARRAY'!$C$12*'TRAF WGT'!$P77)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S22)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P77)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P20)+('LOCAL ADJ'!$E$17*VMT!$R22)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S22)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P77)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P20)+('LOCAL ADJ'!$F$17*VMT!$R22)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S22)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P77)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P20)+('LOCAL ADJ'!$E$17*VMT!$R22)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S22)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P77)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P20)+('LOCAL ADJ'!$F$17*VMT!$R22)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S22)+('LOCAL ADJ'!$E$15*'TRAF WGT'!$P77)+('LOCAL ADJ'!$E$16*'ESAL ADJ'!$P20)+('LOCAL ADJ'!$E$17*VMT!$R22)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S22)+('LOCAL ADJ'!$F$15*'TRAF WGT'!$P77)+('LOCAL ADJ'!$F$16*'ESAL ADJ'!$P20)+('LOCAL ADJ'!$F$17*VMT!$R22)))

EXP_OUT

	A	B	C	D	E	F	G
21	20,000-22,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S23	='EXP ARRAY'!$E$12*ESAL ADJ'!$P21	=('EXP ARRAY'!$B$12*VMT!$R23)+('EXP ARRAY'!$C$12*TRAF WGT'!$P78)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S23)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P78)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P21)+('LOCAL ADJ'!$E$17*VMT!$R23)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S23)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P78)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P21)+('LOCAL ADJ'!$F$17*VMT!$R23)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S23)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P78)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P21)+('LOCAL ADJ'!$E$17*VMT!$R23)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S23)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P78)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P21)+('LOCAL ADJ'!$F$17*VMT!$R23)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S23)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P78)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P21)+('LOCAL ADJ'!$E$17*VMT!$R23)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S23)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P78)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P21)+('LOCAL ADJ'!$F$17*VMT!$R23)))
22	22,000-24,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S24	='EXP ARRAY'!$E$12*ESAL ADJ'!$P22	=('EXP ARRAY'!$B$12*VMT!$R24)+('EXP ARRAY'!$C$12*TRAF WGT'!$P79)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S24)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P79)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P22)+('LOCAL ADJ'!$E$17*VMT!$R24)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S24)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P79)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P22)+('LOCAL ADJ'!$F$17*VMT!$R24)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S24)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P79)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P22)+('LOCAL ADJ'!$E$17*VMT!$R24)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S24)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P79)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P22)+('LOCAL ADJ'!$F$17*VMT!$R24)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S24)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P79)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P22)+('LOCAL ADJ'!$E$17*VMT!$R24)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S24)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P79)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P22)+('LOCAL ADJ'!$F$17*VMT!$R24)))
23	24,000-26,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S25	='EXP ARRAY'!$E$12*ESAL ADJ'!$P23	=('EXP ARRAY'!$B$12*VMT!$R25)+('EXP ARRAY'!$C$12*TRAF WGT'!$P80)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S25)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P80)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P23)+('LOCAL ADJ'!$E$17*VMT!$R25)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S25)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P80)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P23)+('LOCAL ADJ'!$F$17*VMT!$R25)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S25)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P80)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P23)+('LOCAL ADJ'!$E$17*VMT!$R25)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S25)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P80)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P23)+('LOCAL ADJ'!$F$17*VMT!$R25)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S25)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P80)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P23)+('LOCAL ADJ'!$E$17*VMT!$R25)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S25)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P80)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P23)+('LOCAL ADJ'!$F$17*VMT!$R25)))
24	26,000-28,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S26	='EXP ARRAY'!$E$12*ESAL ADJ'!$P24	=('EXP ARRAY'!$B$12*VMT!$R26)+('EXP ARRAY'!$C$12*TRAF WGT'!$P81)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S26)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P81)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P24)+('LOCAL ADJ'!$E$17*VMT!$R26)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S26)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P81)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P24)+('LOCAL ADJ'!$F$17*VMT!$R26)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S26)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P81)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P24)+('LOCAL ADJ'!$E$17*VMT!$R26)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S26)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P81)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P24)+('LOCAL ADJ'!$F$17*VMT!$R26)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S26)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P81)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P24)+('LOCAL ADJ'!$E$17*VMT!$R26)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S26)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P81)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P24)+('LOCAL ADJ'!$F$17*VMT!$R26)))
25	28,000-30,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S27	='EXP ARRAY'!$E$12*ESAL ADJ'!$P25	=('EXP ARRAY'!$B$12*VMT!$R27)+('EXP ARRAY'!$C$12*TRAF WGT'!$P82)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S27)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P82)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P25)+('LOCAL ADJ'!$E$17*VMT!$R27)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S27)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P82)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P25)+('LOCAL ADJ'!$F$17*VMT!$R27)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S27)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P82)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P25)+('LOCAL ADJ'!$E$17*VMT!$R27)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S27)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P82)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P25)+('LOCAL ADJ'!$F$17*VMT!$R27)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S27)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P82)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P25)+('LOCAL ADJ'!$E$17*VMT!$R27)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S27)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P82)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P25)+('LOCAL ADJ'!$F$17*VMT!$R27)))
26	30,000-32,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S28	='EXP ARRAY'!$E$12*ESAL ADJ'!$P26	=('EXP ARRAY'!$B$12*VMT!$R28)+('EXP ARRAY'!$C$12*TRAF WGT'!$P83)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S28)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P83)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P26)+('LOCAL ADJ'!$E$17*VMT!$R28)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S28)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P83)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P26)+('LOCAL ADJ'!$F$17*VMT!$R28)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S28)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P83)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P26)+('LOCAL ADJ'!$E$17*VMT!$R28)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S28)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P83)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P26)+('LOCAL ADJ'!$F$17*VMT!$R28)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S28)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P83)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P26)+('LOCAL ADJ'!$E$17*VMT!$R28)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S28)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P83)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P26)+('LOCAL ADJ'!$F$17*VMT!$R28)))
27	32,000-36,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S29	='EXP ARRAY'!$E$12*ESAL ADJ'!$P27	=('EXP ARRAY'!$B$12*VMT!$R29)+('EXP ARRAY'!$C$12*TRAF WGT'!$P84)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S29)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P84)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P27)+('LOCAL ADJ'!$E$17*VMT!$R29)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S29)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P84)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P27)+('LOCAL ADJ'!$F$17*VMT!$R29)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S29)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P84)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P27)+('LOCAL ADJ'!$E$17*VMT!$R29)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S29)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P84)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P27)+('LOCAL ADJ'!$F$17*VMT!$R29)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S29)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P84)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P27)+('LOCAL ADJ'!$E$17*VMT!$R29)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S29)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P84)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P27)+('LOCAL ADJ'!$F$17*VMT!$R29)))
28	36,000-40,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S30	='EXP ARRAY'!$E$12*ESAL ADJ'!$P28	=('EXP ARRAY'!$B$12*VMT!$R30)+('EXP ARRAY'!$C$12*TRAF WGT'!$P85)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S30)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P85)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P28)+('LOCAL ADJ'!$E$17*VMT!$R30)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S30)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P85)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P28)+('LOCAL ADJ'!$F$17*VMT!$R30)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S30)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P85)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P28)+('LOCAL ADJ'!$E$17*VMT!$R30)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S30)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P85)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P28)+('LOCAL ADJ'!$F$17*VMT!$R30)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S30)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P85)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P28)+('LOCAL ADJ'!$E$17*VMT!$R30)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S30)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P85)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P28)+('LOCAL ADJ'!$F$17*VMT!$R30)))

EXP_OUT

	A	B	C	D	E	F	G
29	40,000-45,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S31	='EXP ARRAY'!$E$12*ESAL ADJ'!$P29	=('EXP ARRAY'!$B$12*VMT!$R31)+('EXP ARRAY'!$C$12*TRAF WGT'!$P86)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S31)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P86)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P29)+('LOCAL ADJ'!$E$17*VMT!$R31)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S31)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P86)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P29)+('LOCAL ADJ'!$F$17*VMT!$R31)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S31)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P86)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P29)+('LOCAL ADJ'!$E$17*VMT!$R31)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S31)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P86)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P29)+('LOCAL ADJ'!$F$17*VMT!$R31)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S31)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P86)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P29)+('LOCAL ADJ'!$E$17*VMT!$R31)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S31)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P86)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P29)+('LOCAL ADJ'!$F$17*VMT!$R31)))
30	45,000-50,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S32	='EXP ARRAY'!$E$12*ESAL ADJ'!$P30	=('EXP ARRAY'!$B$12*VMT!$R32)+('EXP ARRAY'!$C$12*TRAF WGT'!$P87)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S32)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P87)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P30)+('LOCAL ADJ'!$E$17*VMT!$R32)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S32)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P87)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P30)+('LOCAL ADJ'!$F$17*VMT!$R32)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S32)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P87)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P30)+('LOCAL ADJ'!$E$17*VMT!$R32)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S32)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P87)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P30)+('LOCAL ADJ'!$F$17*VMT!$R32)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S32)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P87)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P30)+('LOCAL ADJ'!$E$17*VMT!$R32)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S32)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P87)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P30)+('LOCAL ADJ'!$F$17*VMT!$R32)))
31	50,000-55,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S33	='EXP ARRAY'!$E$12*ESAL ADJ'!$P31	=('EXP ARRAY'!$B$12*VMT!$R33)+('EXP ARRAY'!$C$12*TRAF WGT'!$P88)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S33)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P88)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P31)+('LOCAL ADJ'!$E$17*VMT!$R33)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S33)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P88)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P31)+('LOCAL ADJ'!$F$17*VMT!$R33)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S33)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P88)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P31)+('LOCAL ADJ'!$E$17*VMT!$R33)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S33)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P88)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P31)+('LOCAL ADJ'!$F$17*VMT!$R33)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S33)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P88)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P31)+('LOCAL ADJ'!$E$17*VMT!$R33)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S33)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P88)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P31)+('LOCAL ADJ'!$F$17*VMT!$R33)))
32	55,000-60,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S34	='EXP ARRAY'!$E$12*ESAL ADJ'!$P32	=('EXP ARRAY'!$B$12*VMT!$R34)+('EXP ARRAY'!$C$12*TRAF WGT'!$P89)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S34)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P89)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P32)+('LOCAL ADJ'!$E$17*VMT!$R34)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S34)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P89)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P32)+('LOCAL ADJ'!$F$17*VMT!$R34)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S34)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P89)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P32)+('LOCAL ADJ'!$E$17*VMT!$R34)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S34)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P89)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P32)+('LOCAL ADJ'!$F$17*VMT!$R34)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S34)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P89)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P32)+('LOCAL ADJ'!$E$17*VMT!$R34)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S34)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P89)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P32)+('LOCAL ADJ'!$F$17*VMT!$R34)))
33	60,000-65,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S35	='EXP ARRAY'!$E$12*ESAL ADJ'!$P33	=('EXP ARRAY'!$B$12*VMT!$R35)+('EXP ARRAY'!$C$12*TRAF WGT'!$P90)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S35)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P90)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P33)+('LOCAL ADJ'!$E$17*VMT!$R35)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S35)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P90)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P33)+('LOCAL ADJ'!$F$17*VMT!$R35)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S35)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P90)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P33)+('LOCAL ADJ'!$E$17*VMT!$R35)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S35)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P90)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P33)+('LOCAL ADJ'!$F$17*VMT!$R35)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S35)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P90)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P33)+('LOCAL ADJ'!$E$17*VMT!$R35)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S35)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P90)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P33)+('LOCAL ADJ'!$F$17*VMT!$R35)))
34	65,000-70,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S36	='EXP ARRAY'!$E$12*ESAL ADJ'!$P34	=('EXP ARRAY'!$B$12*VMT!$R36)+('EXP ARRAY'!$C$12*TRAF WGT'!$P91)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S36)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P91)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P34)+('LOCAL ADJ'!$E$17*VMT!$R36)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S36)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P91)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P34)+('LOCAL ADJ'!$F$17*VMT!$R36)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S36)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P91)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P34)+('LOCAL ADJ'!$E$17*VMT!$R36)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S36)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P91)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P34)+('LOCAL ADJ'!$F$17*VMT!$R36)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S36)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P91)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P34)+('LOCAL ADJ'!$E$17*VMT!$R36)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S36)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P91)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P34)+('LOCAL ADJ'!$F$17*VMT!$R36)))
35	70,000-75,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S37	='EXP ARRAY'!$E$12*ESAL ADJ'!$P35	=('EXP ARRAY'!$B$12*VMT!$R37)+('EXP ARRAY'!$C$12*TRAF WGT'!$P92)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S37)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P92)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P35)+('LOCAL ADJ'!$E$17*VMT!$R37)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S37)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P92)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P35)+('LOCAL ADJ'!$F$17*VMT!$R37)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S37)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P92)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P35)+('LOCAL ADJ'!$E$17*VMT!$R37)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S37)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P92)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P35)+('LOCAL ADJ'!$F$17*VMT!$R37)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S37)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P92)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P35)+('LOCAL ADJ'!$E$17*VMT!$R37)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S37)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P92)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P35)+('LOCAL ADJ'!$F$17*VMT!$R37)))
36	75,000-80,000 lb.	='EXP ARRAY'!$D$12*UVMT!$S38	='EXP ARRAY'!$E$12*ESAL ADJ'!$P36	=('EXP ARRAY'!$B$12*VMT!$R38)+('EXP ARRAY'!$C$12*TRAF WGT'!$P93)	=('EXP ARRAY'!$J$12*(('LOCAL ADJ'!$E$14*UVMT!$S38)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P93)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P36)+('LOCAL ADJ'!$E$17*VMT!$R38)))+('EXP ARRAY'!$M$12*(('LOCAL ADJ'!$F$14*UVMT!$S38)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P93)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P36)+('LOCAL ADJ'!$F$17*VMT!$R38)))	=('EXP ARRAY'!$K$12*(('LOCAL ADJ'!$E$14*UVMT!$S38)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P93)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P36)+('LOCAL ADJ'!$E$17*VMT!$R38)))+('EXP ARRAY'!$N$12*(('LOCAL ADJ'!$F$14*UVMT!$S38)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P93)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P36)+('LOCAL ADJ'!$F$17*VMT!$R38)))	=('EXP ARRAY'!$L$12*(('LOCAL ADJ'!$E$14*UVMT!$S38)+('LOCAL ADJ'!$E$15*TRAF WGT'!$P93)+('LOCAL ADJ'!$E$16*ESAL ADJ'!$P36)+('LOCAL ADJ'!$E$17*VMT!$R38)))+('EXP ARRAY'!$O$12*(('LOCAL ADJ'!$F$14*UVMT!$S38)+('LOCAL ADJ'!$F$15*TRAF WGT'!$P93)+('LOCAL ADJ'!$F$16*ESAL ADJ'!$P36)+('LOCAL ADJ'!$F$17*VMT!$R38)))
37	Total	=SUM(B14:B36)	=SUM(C14:C36)	=SUM(D14:D36)	=SUM(E14:E36)	=SUM(F14:F36)	=SUM(G14:G36)

EXP_OUT

	A	B	C	D	E	F	G
38							
39	0-10,000 lb.	=SUM(B14:B15)	=SUM(C14:C15)	=SUM(D14:D15)	=SUM(E14:E15)	=SUM(F14:F15)	=SUM(G14:G15)
40	10-20,000 lb.	=SUM(B16:B20)	=SUM(C16:C20)	=SUM(D16:D20)	=SUM(E16:E20)	=SUM(F16:F20)	=SUM(G16:G20)
41	20-40,000 lb.	=SUM(B21:B28)	=SUM(C21:C28)	=SUM(D21:D28)	=SUM(E21:E28)	=SUM(F21:F28)	=SUM(G21:G28)
42	40-60,000 lb.	=SUM(B29:B32)	=SUM(C29:C32)	=SUM(D29:D32)	=SUM(E29:E32)	=SUM(F29:F32)	=SUM(G29:G32)
43	60-75,000 lb.	=SUM(B33:B35)	=SUM(C33:C35)	=SUM(D33:D35)	=SUM(E33:E35)	=SUM(F33:F35)	=SUM(G33:G35)
44	75,000 lb. +	=SUM(B36)	=SUM(C36)	=SUM(D36)	=SUM(E36)	=SUM(F36)	=SUM(G36)
45	Total	**=SUM(B39:B44)**	**=SUM(C39:C44)**	**=SUM(D39:D44)**	**=SUM(E39:E44)**	**=SUM(F39:F44)**	**=SUM(G39:G44)**

EXP_OUT

	H	I	J	K	L	M	N
1							
2							
3	Federal			Totals			
4	Urban	Rural	Other	State	Local	Federal	All
5	='EXP ARRAY'!$G$12*UVMT!$S5	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P5	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P62)+('EXP ARRAY'!$I$12*VMT!$R5)	=SUM(B5:D5)	=SUM(E5:G5)	=SUM(H5:J5)	=SUM(K5:M5)
6	='EXP ARRAY'!$G$12*UVMT!$S6	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P6	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P63)+('EXP ARRAY'!$I$12*VMT!$R6)	=SUM(B6:D6)	=SUM(E6:G6)	=SUM(H6:J6)	=SUM(K6:M6)
7	='EXP ARRAY'!$G$12*UVMT!$S7	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P7	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P64)+('EXP ARRAY'!$I$12*VMT!$R7)	=SUM(B7:D7)	=SUM(E7:G7)	=SUM(H7:J7)	=SUM(K7:M7)
8	='EXP ARRAY'!$G$12*UVMT!$S8	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P8	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P65)+('EXP ARRAY'!$I$12*VMT!$R8)	=SUM(B8:D8)	=SUM(E8:G8)	=SUM(H8:J8)	=SUM(K8:M8)
9	='EXP ARRAY'!$G$12*UVMT!$S9	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P9	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P66)+('EXP ARRAY'!$I$12*VMT!$R9)	=SUM(B9:D9)	=SUM(E9:G9)	=SUM(H9:J9)	=SUM(K9:M9)
10	=SUM(H5:H9)	=SUM(I5:I9)	=SUM(J5:J9)	=SUM(K5:K9)	=SUM(L5:L9)	=SUM(M5:M9)	=SUM(N5:N9)
11							
12	Federal			Totals			
13	Urban	Rural	Other	State	Local	Federal	All
14	='EXP ARRAY'!$G$12*UVMT!$S16	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P14	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P71)+('EXP ARRAY'!$I$12*VMT!$R16)	=SUM(B14:D14)	=SUM(E14:G14)	=SUM(H14:J14)	=SUM(K14:M14)
15	='EXP ARRAY'!$G$12*UVMT!$S17	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P15	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P72)+('EXP ARRAY'!$I$12*VMT!$R17)	=SUM(B15:D15)	=SUM(E15:G15)	=SUM(H15:J15)	=SUM(K15:M15)
16	='EXP ARRAY'!$G$12*UVMT!$S18	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P16	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P73)+('EXP ARRAY'!$I$12*VMT!$R18)	=SUM(B16:D16)	=SUM(E16:G16)	=SUM(H16:J16)	=SUM(K16:M16)
17	='EXP ARRAY'!$G$12*UVMT!$S19	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P17	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P74)+('EXP ARRAY'!$I$12*VMT!$R19)	=SUM(B17:D17)	=SUM(E17:G17)	=SUM(H17:J17)	=SUM(K17:M17)
18	='EXP ARRAY'!$G$12*UVMT!$S20	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P18	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P75)+('EXP ARRAY'!$I$12*VMT!$R20)	=SUM(B18:D18)	=SUM(E18:G18)	=SUM(H18:J18)	=SUM(K18:M18)

EXP_OUT

	H	I	J	K	L	M	N
19	='EXP ARRAY'!$G$12*UVMT!$S21	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P19	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P76)+('EXP ARRAY'!$I$12*VMT!$R21)	=SUM(B19:D19)	=SUM(E19:G19)	=SUM(H19:J19)	=SUM(K19:M19)
20	='EXP ARRAY'!$G$12*UVMT!$S22	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P20	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P77)+('EXP ARRAY'!$I$12*VMT!$R22)	=SUM(B20:D20)	=SUM(E20:G20)	=SUM(H20:J20)	=SUM(K20:M20)
21	='EXP ARRAY'!$G$12*UVMT!$S23	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P21	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P78)+('EXP ARRAY'!$I$12*VMT!$R23)	=SUM(B21:D21)	=SUM(E21:G21)	=SUM(H21:J21)	=SUM(K21:M21)
22	='EXP ARRAY'!$G$12*UVMT!$S24	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P22	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P79)+('EXP ARRAY'!$I$12*VMT!$R24)	=SUM(B22:D22)	=SUM(E22:G22)	=SUM(H22:J22)	=SUM(K22:M22)
23	='EXP ARRAY'!$G$12*UVMT!$S25	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P23	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P80)+('EXP ARRAY'!$I$12*VMT!$R25)	=SUM(B23:D23)	=SUM(E23:G23)	=SUM(H23:J23)	=SUM(K23:M23)
24	='EXP ARRAY'!$G$12*UVMT!$S26	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P24	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P81)+('EXP ARRAY'!$I$12*VMT!$R26)	=SUM(B24:D24)	=SUM(E24:G24)	=SUM(H24:J24)	=SUM(K24:M24)
25	='EXP ARRAY'!$G$12*UVMT!$S27	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P25	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P82)+('EXP ARRAY'!$I$12*VMT!$R27)	=SUM(B25:D25)	=SUM(E25:G25)	=SUM(H25:J25)	=SUM(K25:M25)
26	='EXP ARRAY'!$G$12*UVMT!$S28	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P26	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P83)+('EXP ARRAY'!$I$12*VMT!$R28)	=SUM(B26:D26)	=SUM(E26:G26)	=SUM(H26:J26)	=SUM(K26:M26)
27	='EXP ARRAY'!$G$12*UVMT!$S29	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P27	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P84)+('EXP ARRAY'!$I$12*VMT!$R29)	=SUM(B27:D27)	=SUM(E27:G27)	=SUM(H27:J27)	=SUM(K27:M27)
28	='EXP ARRAY'!$G$12*UVMT!$S30	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P28	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P85)+('EXP ARRAY'!$I$12*VMT!$R30)	=SUM(B28:D28)	=SUM(E28:G28)	=SUM(H28:J28)	=SUM(K28:M28)
29	='EXP ARRAY'!$G$12*UVMT!$S31	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P29	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P86)+('EXP ARRAY'!$I$12*VMT!$R31)	=SUM(B29:D29)	=SUM(E29:G29)	=SUM(H29:J29)	=SUM(K29:M29)
30	='EXP ARRAY'!$G$12*UVMT!$S32	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P30	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P87)+('EXP ARRAY'!$I$12*VMT!$R32)	=SUM(B30:D30)	=SUM(E30:G30)	=SUM(H30:J30)	=SUM(K30:M30)
31	='EXP ARRAY'!$G$12*UVMT!$S33	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P31	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P88)+('EXP ARRAY'!$I$12*VMT!$R33)	=SUM(B31:D31)	=SUM(E31:G31)	=SUM(H31:J31)	=SUM(K31:M31)
32	='EXP ARRAY'!$G$12*UVMT!$S34	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P32	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P89)+('EXP ARRAY'!$I$12*VMT!$R34)	=SUM(B32:D32)	=SUM(E32:G32)	=SUM(H32:J32)	=SUM(K32:M32)
33	='EXP ARRAY'!$G$12*UVMT!$S35	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P33	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P90)+('EXP ARRAY'!$I$12*VMT!$R35)	=SUM(B33:D33)	=SUM(E33:G33)	=SUM(H33:J33)	=SUM(K33:M33)
34	='EXP ARRAY'!$G$12*UVMT!$S36	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P34	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P91)+('EXP ARRAY'!$I$12*VMT!$R36)	=SUM(B34:D34)	=SUM(E34:G34)	=SUM(H34:J34)	=SUM(K34:M34)
35	='EXP ARRAY'!$G$12*UVMT!$S37	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P35	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P92)+('EXP ARRAY'!$I$12*VMT!$R37)	=SUM(B35:D35)	=SUM(E35:G35)	=SUM(H35:J35)	=SUM(K35:M35)
36	='EXP ARRAY'!$G$12*UVMT!$S38	='EXP ARRAY'!$H$12*'ESAL ADJ'!$P36	=('EXP ARRAY'!$F$12*'TRAF WGT'!$P93)+('EXP ARRAY'!$I$12*VMT!$R38)	=SUM(B36:D36)	=SUM(E36:G36)	=SUM(H36:J36)	=SUM(K36:M36)
37	=SUM(H14:H36)	=SUM(I14:I36)	=SUM(J14:J36)	=SUM(K14:K36)	=SUM(L14:L36)	=SUM(M14:M36)	=SUM(N14:N36)

EXP_OUT

	H	I	J	K	L	M	N
38							
39	=SUM(H14:H15)	=SUM(I14:I15)	=SUM(J14:J15)	=SUM(K14:K15)	=SUM(L14:L15)	=SUM(M14:M15)	=SUM(N14:N15)
40	=SUM(H16:H20)	=SUM(I16:I20)	=SUM(J16:J20)	=SUM(K16:K20)	=SUM(L16:L20)	=SUM(M16:M20)	=SUM(N16:N20)
41	=SUM(H21:H28)	=SUM(I21:I28)	=SUM(J21:J28)	=SUM(K21:K28)	=SUM(L21:L28)	=SUM(M21:M28)	=SUM(N21:N28)
42	=SUM(H29:H32)	=SUM(I29:I32)	=SUM(J29:J32)	=SUM(K29:K32)	=SUM(L29:L32)	=SUM(M29:M32)	=SUM(N29:N32)
43	=SUM(H33:H35)	=SUM(I33:I35)	=SUM(J33:J35)	=SUM(K33:K35)	=SUM(L33:L35)	=SUM(M33:M35)	=SUM(N33:N35)
44	=SUM(H36)	=SUM(I36)	=SUM(J36)	=SUM(K36)	=SUM(L36)	=SUM(M36)	=SUM(N36)
45	**=SUM(H39:H44)**	**=SUM(I39:I44)**	**=SUM(J39:J44)**	**=SUM(K39:K44)**	**=SUM(L39:L44)**	**=SUM(M39:M44)**	**=SUM(N39:N44)**

REV_OUT

	A	B	C	D	E	F	G	H	I
1	**Average Annual Revenues,**	**='REV IN'!B2**	to		**='REV IN'!B3**				
2	(Thousands of Dollars)								
3	**Vehicle Class**	**State Revenue**							
4		**Gas Tax**	**Diesel Tax**	**Vehicle License Tax**	**Regist. & Weight Fees**	**Motor Carrier Fee**	**Other (Common)**	**Other (Truck)**	**Other Flat Fees**
5	Autos	='REV IN'!$L$5*'FUEL ADJ'!J2	0	='REV IN'!$L$8*(SUM('VLT ADJ'!$D$31:$D$32)*(REG!V26/SUM(REG!$V$26:$W$26)))	=('REV IN'!$L$27*('FEE ADJ'!M$25/'FEE ADJ'!$V$25))+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*('FEE ADJ'!M$51/'FEE ADJ'!V$51))	='REV IN'!$L$10*('FEE ADJ'!M$77/'FEE ADJ'!$V$77)	='REV IN'!$L$33*REG!V$26	='REV IN'!$L$34*REG!O$54	='REV IN'!$L$12*REG!V$26
6	Pick-ups and SUVs	='REV IN'!$L$5*'FUEL ADJ'!J3	0	='REV IN'!$L$8*(SUM('VLT ADJ'!$D$31:$D$32)*(REG!W26/SUM(REG!$V$26:$W$26)))	=('REV IN'!$L$27*('FEE ADJ'!N$25/'FEE ADJ'!$V$25))+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*('FEE ADJ'!N$51/'FEE ADJ'!V$51))	='REV IN'!$L$10*('FEE ADJ'!N$77/'FEE ADJ'!$V$77)	='REV IN'!$L$33*REG!W$26	='REV IN'!$L$34*REG!P$54	='REV IN'!$L$12*REG!W$26
7	Buses	0	='REV IN'!$L$6*'FUEL ADJ'!J4	='REV IN'!$L$8*'VLT ADJ'!$D$33	=('REV IN'!$L$27*('FEE ADJ'!S$25/'FEE ADJ'!$V$25))+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*('FEE ADJ'!S$51/'FEE ADJ'!V$51))	='REV IN'!$L$10*('FEE ADJ'!S$77/'FEE ADJ'!$V$77)	='REV IN'!$L$33*REG!X$26	='REV IN'!$L$34*REG!Q$54	='REV IN'!$L$12*REG!X$26
8	Single Unit trucks	0	='REV IN'!$L$6*'FUEL ADJ'!J5	='REV IN'!$L$8*('VLT ADJ'!$D$35*'TRK VAL'!Z26)	=('REV IN'!$L$27*('FEE ADJ'!T$25/'FEE ADJ'!$V$25))+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*('FEE ADJ'!T$51/'FEE ADJ'!V$51))	='REV IN'!$L$10*('FEE ADJ'!T$77/'FEE ADJ'!$V$77)	='REV IN'!$L$33*REG!Y$26	='REV IN'!$L$34*REG!R$54	='REV IN'!$L$12*REG!Y$26
9	Combination trucks	0	='REV IN'!$L$6*'FUEL ADJ'!J6	=('REV IN'!$L$8*('VLT ADJ'!$D$35*'TRK VAL'!AA26))+('REV IN'!$L$8*'VLT ADJ'!$D$36)	=('REV IN'!$L$27*('FEE ADJ'!U$25/'FEE ADJ'!$V$25))+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*('FEE ADJ'!U$51/'FEE ADJ'!V$51))+'REV IN'!L29	='REV IN'!$L$10*('FEE ADJ'!U$77/'FEE ADJ'!$V$77)	='REV IN'!$L$33*REG!Z$26	='REV IN'!$L$34*REG!S$54	='REV IN'!$L$12*REG!Z$26
10	**Total**	=SUM(B5:B9)	=SUM(C5:C9)	=SUM(D5:D9)	=SUM(E5:E9)	=SUM(F5:F9)	=SUM(G5:G9)	=SUM(H5:H9)	=SUM(I5:I9)
11									
12	**Weight Class**	**State Revenue**							
13		**Gas Tax**	**Diesel Tax**	**Vehicle License Tax**	**Regist. & Weight Fees**	**Motor Carr Fee**	**Other (Common)**	**Other (Truck)**	**Other Flat Fees**
14	0 - 8,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J10	='REV IN'!$L$6*'FUEL ADJ'!J36	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I3)+('VLT ADJ'!$D$32*REG!J3)+('VLT ADJ'!$D$33*REG!K3)+('VLT ADJ'!$D$35*(SUM(REG!$Y$3:$Z3)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z3/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W2)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W28)+('REV IN'!$L$29*('FEE ADJ'!U54/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W54	='REV IN'!$L$33*REG!AA3	='REV IN'!$L$34*REG!T31	='REV IN'!$L$12*REG!AA3
15	8,000-10,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J11	='REV IN'!$L$6*'FUEL ADJ'!J37	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I4)+('VLT ADJ'!$D$32*REG!J4)+('VLT ADJ'!$D$33*REG!K4)+('VLT ADJ'!$D$35*(SUM(REG!$Y$4:$Z4)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z4/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W3)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W29)+('REV IN'!$L$29*('FEE ADJ'!U55/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W55	='REV IN'!$L$33*REG!AA4	='REV IN'!$L$34*REG!T32	='REV IN'!$L$12*REG!AA4
16	10,000-12,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J12	='REV IN'!$L$6*'FUEL ADJ'!J38	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I5)+('VLT ADJ'!$D$32*REG!J5)+('VLT ADJ'!$D$33*REG!K5)+('VLT ADJ'!$D$35*(SUM(REG!$Y$5:$Z5)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z5/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W4)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W30)+('REV IN'!$L$29*('FEE ADJ'!U56/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W56	='REV IN'!$L$33*REG!AA5	='REV IN'!$L$34*REG!T33	='REV IN'!$L$12*REG!AA5

REV_OUT

	A	B	C	D	E	F	G	H	I
17	12,000-14,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J13	='REV IN'!$L$6*'FUEL ADJ'!J39	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I6)+('VLT ADJ'!$D$32*REG!J6)+('VLT ADJ'!$D$33*REG!K6)+('VLT ADJ'!$D$35*(SUM(REG!$Y6:$Z6)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z6/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W5)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W31)+('REV IN'!$L$29*('FEE ADJ'!U57/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W57	='REV IN'!$L$33*REG!AA6	='REV IN'!$L$34*REG!T34	='REV IN'!$L$12*REG!AA6
18	14,000-16,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J14	='REV IN'!$L$6*'FUEL ADJ'!J40	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I7)+('VLT ADJ'!$D$32*REG!J7)+('VLT ADJ'!$D$33*REG!K7)+('VLT ADJ'!$D$35*(SUM(REG!$Y7:$Z7)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z7/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W6)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W32)+('REV IN'!$L$29*('FEE ADJ'!U58/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W58	='REV IN'!$L$33*REG!AA7	='REV IN'!$L$34*REG!T35	='REV IN'!$L$12*REG!AA7
19	16,000-18,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J15	='REV IN'!$L$6*'FUEL ADJ'!J41	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I8)+('VLT ADJ'!$D$32*REG!J8)+('VLT ADJ'!$D$33*REG!K8)+('VLT ADJ'!$D$35*(SUM(REG!$Y8:$Z8)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z8/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W7)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W33)+('REV IN'!$L$29*('FEE ADJ'!U59/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W59	='REV IN'!$L$33*REG!AA8	='REV IN'!$L$34*REG!T36	='REV IN'!$L$12*REG!AA8
20	18,000-20,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J16	='REV IN'!$L$6*'FUEL ADJ'!J42	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I9)+('VLT ADJ'!$D$32*REG!J9)+('VLT ADJ'!$D$33*REG!K9)+('VLT ADJ'!$D$35*(SUM(REG!$Y9:$Z9)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z9/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W8)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W34)+('REV IN'!$L$29*('FEE ADJ'!U60/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W60	='REV IN'!$L$33*REG!AA9	='REV IN'!$L$34*REG!T37	='REV IN'!$L$12*REG!AA9
21	20,000-22,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J17	='REV IN'!$L$6*'FUEL ADJ'!J43	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I10)+('VLT ADJ'!$D$32*REG!J10)+('VLT ADJ'!$D$33*REG!K10)+('VLT ADJ'!$D$35*(SUM(REG!$Y10:$Z10)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z10/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W9)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W35)+('REV IN'!$L$29*('FEE ADJ'!U61/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W61	='REV IN'!$L$33*REG!AA10	='REV IN'!$L$34*REG!T38	='REV IN'!$L$12*REG!AA10
22	22,000-24,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J18	='REV IN'!$L$6*'FUEL ADJ'!J44	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I11)+('VLT ADJ'!$D$32*REG!J11)+('VLT ADJ'!$D$33*REG!K11)+('VLT ADJ'!$D$35*(SUM(REG!$Y11:$Z11)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z11/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W10)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W36)+('REV IN'!$L$29*('FEE ADJ'!U62/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W62	='REV IN'!$L$33*REG!AA11	='REV IN'!$L$34*REG!T39	='REV IN'!$L$12*REG!AA11
23	24,000-26,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J19	='REV IN'!$L$6*'FUEL ADJ'!J45	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I12)+('VLT ADJ'!$D$32*REG!J12)+('VLT ADJ'!$D$33*REG!K12)+('VLT ADJ'!$D$35*(SUM(REG!$Y12:$Z12)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z12/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W11)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W37)+('REV IN'!$L$29*('FEE ADJ'!U63/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W63	='REV IN'!$L$33*REG!AA12	='REV IN'!$L$34*REG!T40	='REV IN'!$L$12*REG!AA12
24	26,000-28,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J20	='REV IN'!$L$6*'FUEL ADJ'!J46	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I13)+('VLT ADJ'!$D$32*REG!J13)+('VLT ADJ'!$D$33*REG!K13)+('VLT ADJ'!$D$35*(SUM(REG!$Y13:$Z13)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z13/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W12)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W38)+('REV IN'!$L$29*('FEE ADJ'!U64/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W64	='REV IN'!$L$33*REG!AA13	='REV IN'!$L$34*REG!T41	='REV IN'!$L$12*REG!AA13
25	28,000-30,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J21	='REV IN'!$L$6*'FUEL ADJ'!J47	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I14)+('VLT ADJ'!$D$32*REG!J14)+('VLT ADJ'!$D$33*REG!K14)+('VLT ADJ'!$D$35*(SUM(REG!$Y14:$Z14)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z14/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W13)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W39)+('REV IN'!$L$29*('FEE ADJ'!U65/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W65	='REV IN'!$L$33*REG!AA14	='REV IN'!$L$34*REG!T42	='REV IN'!$L$12*REG!AA14
26	30,000-32,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J22	='REV IN'!$L$6*'FUEL ADJ'!J48	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I15)+('VLT ADJ'!$D$32*REG!J15)+('VLT ADJ'!$D$33*REG!K15)+('VLT ADJ'!$D$35*(SUM(REG!$Y15:$Z15)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z15/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W14)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W40)+('REV IN'!$L$29*('FEE ADJ'!U66/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W66	='REV IN'!$L$33*REG!AA15	='REV IN'!$L$34*REG!T43	='REV IN'!$L$12*REG!AA15
27	32,000-36,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J23	='REV IN'!$L$6*'FUEL ADJ'!J49	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I16)+('VLT ADJ'!$D$32*REG!J16)+('VLT ADJ'!$D$33*REG!K16)+('VLT ADJ'!$D$35*(SUM(REG!$Y16:$Z16)/SUM(REG!$Y26:$Z26))+('VLT ADJ'!$D$36*(REG!Z16/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W15)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W41)+('REV IN'!$L$29*('FEE ADJ'!U67/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W67	='REV IN'!$L$33*REG!AA16	='REV IN'!$L$34*REG!T44	='REV IN'!$L$12*REG!AA16

REV_OUT

	A	B	C	D	E	F	G	H	I
28	36,000-40,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J24	='REV IN'!$L$6*'FUEL ADJ'!J50	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I17)+('VLT ADJ'!$D$32*REG!J17)+('VLT ADJ'!$D$33*REG!K17)+('VLT ADJ'!$D$35*(SUM(REG!$Y17:$Z17)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z17/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W16)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W42)+('REV IN'!$L$29*('FEE ADJ'!U68/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W68	='REV IN'!$L$33*REG!AA17	='REV IN'!$L$34*REG!T45	='REV IN'!$L$12*REG!AA17
29	40,000-45,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J25	='REV IN'!$L$6*'FUEL ADJ'!J51	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I18)+('VLT ADJ'!$D$32*REG!J18)+('VLT ADJ'!$D$33*REG!K18)+('VLT ADJ'!$D$35*(SUM(REG!$Y18:$Z18)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z18/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W17)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W43)+('REV IN'!$L$29*('FEE ADJ'!U69/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W69	='REV IN'!$L$33*REG!AA18	='REV IN'!$L$34*REG!T46	='REV IN'!$L$12*REG!AA18
30	45,000-50,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J26	='REV IN'!$L$6*'FUEL ADJ'!J52	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I19)+('VLT ADJ'!$D$32*REG!J19)+('VLT ADJ'!$D$33*REG!K19)+('VLT ADJ'!$D$35*(SUM(REG!$Y19:$Z19)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z19/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W18)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W44)+('REV IN'!$L$29*('FEE ADJ'!U70/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W70	='REV IN'!$L$33*REG!AA19	='REV IN'!$L$34*REG!T47	='REV IN'!$L$12*REG!AA19
31	50,000-55,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J27	='REV IN'!$L$6*'FUEL ADJ'!J53	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I20)+('VLT ADJ'!$D$32*REG!J20)+('VLT ADJ'!$D$33*REG!K20)+('VLT ADJ'!$D$35*(SUM(REG!$Y20:$Z20)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z20/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W19)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W45)+('REV IN'!$L$29*('FEE ADJ'!U71/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W71	='REV IN'!$L$33*REG!AA20	='REV IN'!$L$34*REG!T48	='REV IN'!$L$12*REG!AA20
32	55,000-60,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J28	='REV IN'!$L$6*'FUEL ADJ'!J54	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I21)+('VLT ADJ'!$D$32*REG!J21)+('VLT ADJ'!$D$33*REG!K21)+('VLT ADJ'!$D$35*(SUM(REG!$Y21:$Z21)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z21/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W20)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W46)+('REV IN'!$L$29*('FEE ADJ'!U72/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W72	='REV IN'!$L$33*REG!AA21	='REV IN'!$L$34*REG!T49	='REV IN'!$L$12*REG!AA21
33	60,000-65,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J29	='REV IN'!$L$6*'FUEL ADJ'!J55	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I22)+('VLT ADJ'!$D$32*REG!J22)+('VLT ADJ'!$D$33*REG!K22)+('VLT ADJ'!$D$35*(SUM(REG!$Y22:$Z22)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z22/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W21)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W47)+('REV IN'!$L$29*('FEE ADJ'!U73/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W73	='REV IN'!$L$33*REG!AA22	='REV IN'!$L$34*REG!T50	='REV IN'!$L$12*REG!AA22
34	65,000-70,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J30	='REV IN'!$L$6*'FUEL ADJ'!J56	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I23)+('VLT ADJ'!$D$32*REG!J23)+('VLT ADJ'!$D$33*REG!K23)+('VLT ADJ'!$D$35*(SUM(REG!$Y23:$Z23)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z23/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W22)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W48)+('REV IN'!$L$29*('FEE ADJ'!U74/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W74	='REV IN'!$L$33*REG!AA23	='REV IN'!$L$34*REG!T51	='REV IN'!$L$12*REG!AA23
35	70,000-75,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J31	='REV IN'!$L$6*'FUEL ADJ'!J57	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I24)+('VLT ADJ'!$D$32*REG!J24)+('VLT ADJ'!$D$33*REG!K24)+('VLT ADJ'!$D$35*(SUM(REG!$Y24:$Z24)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z24/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W23)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W49)+('REV IN'!$L$29*('FEE ADJ'!U75/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W75	='REV IN'!$L$33*REG!AA24	='REV IN'!$L$34*REG!T52	='REV IN'!$L$12*REG!AA24
36	75,000-80,000 lb.	='REV IN'!$L$5*'FUEL ADJ'!J32	='REV IN'!$L$6*'FUEL ADJ'!J58	=('REV IN'!$L$8*(('VLT ADJ'!$D$31*REG!I25)+('VLT ADJ'!$D$32*REG!J25)+('VLT ADJ'!$D$33*REG!K25)+('VLT ADJ'!$D$35*(SUM(REG!$Y25:$Z25)/SUM(REG!$Y$26:$Z$26))+('VLT ADJ'!$D$36*(REG!Z25/SUM(REG!$Z$3:$Z$25))))))	=('REV IN'!$L$27*'FEE ADJ'!W24)+(SUM('REV IN'!$L$28,'REV IN'!$L$30)*'FEE ADJ'!W50)+('REV IN'!$L$29*('FEE ADJ'!U76/'FEE ADJ'!$U$77))	='REV IN'!$L$10*'FEE ADJ'!W76	='REV IN'!$L$33*REG!AA25	='REV IN'!$L$34*REG!T53	='REV IN'!$L$12*REG!AA25
37	Total	=SUM(B14:B36)	=SUM(C14:C36)	=SUM(D14:D36)	=SUM(E14:E36)	=SUM(F14:F36)	=SUM(G14:G36)	=SUM(H14:H36)	=SUM(I14:I36)
38									

REV_OUT

	A	B	C	D	E	F	G	H	I
39	0-10,000 lb.	=SUM(B14:B15)	=SUM(C14:C15)	=SUM(D14:D15)	=SUM(E14:E15)	=SUM(F14:F15)	=SUM(G14:G15)	=SUM(H14:H15)	=SUM(I14:I15)
40	10-20,000 lb.	=SUM(B16:B20)	=SUM(C16:C20)	=SUM(D16:D20)	=SUM(E16:E20)	=SUM(F16:F20)	=SUM(G16:G20)	=SUM(H16:H20)	=SUM(I16:I20)
41	20-40,000 lb.	=SUM(B21:B28)	=SUM(C21:C28)	=SUM(D21:D28)	=SUM(E21:E28)	=SUM(F21:F28)	=SUM(G21:G28)	=SUM(H21:H28)	=SUM(I21:I28)
42	40-60,000 lb.	=SUM(B29:B32)	=SUM(C29:C32)	=SUM(D29:D32)	=SUM(E29:E32)	=SUM(F29:F32)	=SUM(G29:G32)	=SUM(H29:H32)	=SUM(I29:I32)
43	60-75,000 lb.	=SUM(B33:B35)	=SUM(C33:C35)	=SUM(D33:D35)	=SUM(E33:E35)	=SUM(F33:F35)	=SUM(G33:G35)	=SUM(H33:H35)	=SUM(I33:I35)
44	75,000 lb. +	=SUM(B36)	=SUM(C36)	=SUM(D36)	=SUM(E36)	=SUM(F36)	=SUM(G36)	=SUM(H36)	=SUM(I36)
45	**Total**	**=SUM(B39:B44)**	**=SUM(C39:C44)**	**=SUM(D39:D44)**	**=SUM(E39:E44)**	**=SUM(F39:F44)**	**=SUM(G39:G44)**	**=SUM(H39:H44)**	**=SUM(I39:I44)**

REV_OUT

	J	K	L	M	N	O	P	Q	R	S
1										
2										
3			State Subtotal	Federal Revenues					Federal Subtotal	Total Revenues
4	**Other Weight Fees**	**Other Travel Fees**		**Gas Tax**	**Diesel Tax**	**Use Tax**	**Sales Tax**	**Tire Tax**		
5	='REV IN'!$L$13*'FEE ADJ'!M$103/'FEE ADJ'!$V$103	='REV IN'!$L$14*VMT'!R5	=SUM(B5:K5)	=B5*('REV IN'!$B$11/'REV IN'!$B$7)	=C5*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*0	='REV IN'!$L$39*0	=SUM(M5:Q5)	=SUM(L5,R5)
6	='REV IN'!$L$13*'FEE ADJ'!N$103/'FEE ADJ'!$V$103	='REV IN'!$L$14*VMT'!R6	=SUM(B6:K6)	=B6*('REV IN'!$B$11/'REV IN'!$B$7)	=C6*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*0	='REV IN'!$L$39*0	=SUM(M6:Q6)	=SUM(L6,R6)
7	='REV IN'!$L$13*'FEE ADJ'!S$103/'FEE ADJ'!$V$103	='REV IN'!$L$14*VMT'!R7	=SUM(B7:K7)	=B7*('REV IN'!$B$11/'REV IN'!$B$7)	=C7*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*0	='REV IN'!$L$39*0	=SUM(M7:Q7)	=SUM(L7,R7)
8	='REV IN'!$L$13*'FEE ADJ'!T$103/'FEE ADJ'!$V$103	='REV IN'!$L$14*VMT'!R8	=SUM(B8:K8)	=B8*('REV IN'!$B$11/'REV IN'!$B$7)	=C8*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*'FED FEES'!AB9	='REV IN'!$L$37*'FED FEES'!$Q$28	='REV IN'!$L$39*SUM('FED FEES'!$B$28:$D$28)	=SUM(M8:Q8)	=SUM(L8,R8)
9	='REV IN'!$L$13*'FEE ADJ'!U$103/'FEE ADJ'!$V$103	='REV IN'!$L$14*VMT'!R9	=SUM(B9:K9)	=B9*('REV IN'!$B$11/'REV IN'!$B$7)	=C9*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*'FED FEES'!AC9	='REV IN'!$L$37*'FED FEES'!$R$28	='REV IN'!$L$39*SUM('FED FEES'!$E$28:$J$28)	=SUM(M9:Q9)	=SUM(L9,R9)
10	**=SUM(J5:J9)**	**=SUM(K5:K9)**	**=SUM(L5:L9)**	**=SUM(M5:M9)**	**=SUM(N5:N9)**	**=SUM(O5:O9)**	**=SUM(P5:P9)**	**=SUM(Q5:Q9)**	**=SUM(R5:R9)**	**=SUM(S5:S9)**
11										
12			State Subtotal	Federal Revenues					Federal Subtotal	Total Revenues
13	**Other Weight Fees**	**Other Travel Fees**		**Gas Tax**	**Diesel Tax**	**Use Tax**	**Sales Tax**	**Tire Tax**		
14	='REV IN'!$L$13*'FEE ADJ'!W80	='REV IN'!$L$14*VMT'!R16	=SUM(B14:K14)	=B14*('REV IN'!$B$11/'REV IN'!$B$7)	=C14*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S$4	='REV IN'!$L$39*'FED FEES'!$L4	=SUM(M14:Q14)	=SUM(L14,R14)
15	='REV IN'!$L$13*'FEE ADJ'!W81	='REV IN'!$L$14*VMT'!R17	=SUM(B15:K15)	=B15*('REV IN'!$B$11/'REV IN'!$B$7)	=C15*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S$5	='REV IN'!$L$39*'FED FEES'!$L5	=SUM(M15:Q15)	=SUM(L15,R15)

REV_OUT

	J	K	L	M	N	O	P	Q	R	S
16	='REV IN'!$L$13*'FEE ADJ'!W82	='REV IN'!$L$14*VMT!R18	=SUM(B16:K16)	=B16*('REV IN'!$B$11/'REV IN'!$B$7)	=C16*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S6	='REV IN'!$L$39*'FED FEES'!$L6	=SUM(M16:Q16)	=SUM(L16,R16)
17	='REV IN'!$L$13*'FEE ADJ'!W83	='REV IN'!$L$14*VMT!R19	=SUM(B17:K17)	=B17*('REV IN'!$B$11/'REV IN'!$B$7)	=C17*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S7	='REV IN'!$L$39*'FED FEES'!$L7	=SUM(M17:Q17)	=SUM(L17,R17)
18	='REV IN'!$L$13*'FEE ADJ'!W84	='REV IN'!$L$14*VMT!R20	=SUM(B18:K18)	=B18*('REV IN'!$B$11/'REV IN'!$B$7)	=C18*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S8	='REV IN'!$L$39*'FED FEES'!$L8	=SUM(M18:Q18)	=SUM(L18,R18)
19	='REV IN'!$L$13*'FEE ADJ'!W85	='REV IN'!$L$14*VMT!R21	=SUM(B19:K19)	=B19*('REV IN'!$B$11/'REV IN'!$B$7)	=C19*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S9	='REV IN'!$L$39*'FED FEES'!$L9	=SUM(M19:Q19)	=SUM(L19,R19)
20	='REV IN'!$L$13*'FEE ADJ'!W86	='REV IN'!$L$14*VMT!R22	=SUM(B20:K20)	=B20*('REV IN'!$B$11/'REV IN'!$B$7)	=C20*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S10	='REV IN'!$L$39*'FED FEES'!$L10	=SUM(M20:Q20)	=SUM(L20,R20)
21	='REV IN'!$L$13*'FEE ADJ'!W87	='REV IN'!$L$14*VMT!R23	=SUM(B21:K21)	=B21*('REV IN'!$B$11/'REV IN'!$B$7)	=C21*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S11	='REV IN'!$L$39*'FED FEES'!$L11	=SUM(M21:Q21)	=SUM(L21,R21)
22	='REV IN'!$L$13*'FEE ADJ'!W88	='REV IN'!$L$14*VMT!R24	=SUM(B22:K22)	=B22*('REV IN'!$B$11/'REV IN'!$B$7)	=C22*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S12	='REV IN'!$L$39*'FED FEES'!$L12	=SUM(M22:Q22)	=SUM(L22,R22)
23	='REV IN'!$L$13*'FEE ADJ'!W89	='REV IN'!$L$14*VMT!R25	=SUM(B23:K23)	=B23*('REV IN'!$B$11/'REV IN'!$B$7)	=C23*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S13	='REV IN'!$L$39*'FED FEES'!$L13	=SUM(M23:Q23)	=SUM(L23,R23)
24	='REV IN'!$L$13*'FEE ADJ'!W90	='REV IN'!$L$14*VMT!R26	=SUM(B24:K24)	=B24*('REV IN'!$B$11/'REV IN'!$B$7)	=C24*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S14	='REV IN'!$L$39*'FED FEES'!$L14	=SUM(M24:Q24)	=SUM(L24,R24)
25	='REV IN'!$L$13*'FEE ADJ'!W91	='REV IN'!$L$14*VMT!R27	=SUM(B25:K25)	=B25*('REV IN'!$B$11/'REV IN'!$B$7)	=C25*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S15	='REV IN'!$L$39*'FED FEES'!$L15	=SUM(M25:Q25)	=SUM(L25,R25)
26	='REV IN'!$L$13*'FEE ADJ'!W92	='REV IN'!$L$14*VMT!R28	=SUM(B26:K26)	=B26*('REV IN'!$B$11/'REV IN'!$B$7)	=C26*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S16	='REV IN'!$L$39*'FED FEES'!$L16	=SUM(M26:Q26)	=SUM(L26,R26)
27	='REV IN'!$L$13*'FEE ADJ'!W93	='REV IN'!$L$14*VMT!R29	=SUM(B27:K27)	=B27*('REV IN'!$B$11/'REV IN'!$B$7)	=C27*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S17	='REV IN'!$L$39*'FED FEES'!$L17	=SUM(M27:Q27)	=SUM(L27,R27)
28	='REV IN'!$L$13*'FEE ADJ'!W94	='REV IN'!$L$14*VMT!R30	=SUM(B28:K28)	=B28*('REV IN'!$B$11/'REV IN'!$B$7)	=C28*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S18	='REV IN'!$L$39*'FED FEES'!$L18	=SUM(M28:Q28)	=SUM(L28,R28)
29	='REV IN'!$L$13*'FEE ADJ'!W95	='REV IN'!$L$14*VMT!R31	=SUM(B29:K29)	=B29*('REV IN'!$B$11/'REV IN'!$B$7)	=C29*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S19	='REV IN'!$L$39*'FED FEES'!$L19	=SUM(M29:Q29)	=SUM(L29,R29)
30	='REV IN'!$L$13*'FEE ADJ'!W96	='REV IN'!$L$14*VMT!R32	=SUM(B30:K30)	=B30*('REV IN'!$B$11/'REV IN'!$B$7)	=C30*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!$L$38*0	='REV IN'!$L$37*'FED FEES'!$S20	='REV IN'!$L$39*'FED FEES'!$L20	=SUM(M30:Q30)	=SUM(L30,R30)

	J	K	L	M	N	O	P	Q	R	S
31	='REV IN'!$L$13*'FEE ADJ'!W97	='REV IN'!$L$14*VMT!R33	=SUM(B31:K31)	=B31*('REV IN'!$B$11/'REV IN'!$B$7)	=C31*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!L$38*0	='REV IN'!$L$37*'FED FEES'!$S21	='REV IN'!$L$39*'FED FEES'!L21	=SUM(M31:Q31)	=SUM(L31,R31)
32	='REV IN'!$L$13*'FEE ADJ'!W98	='REV IN'!$L$14*VMT!R34	=SUM(B32:K32)	=B32*('REV IN'!$B$11/'REV IN'!$B$7)	=C32*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!L$38*SUM('FED FEES'!AB4:AC4)	='REV IN'!$L$37*'FED FEES'!$S22	='REV IN'!$L$39*'FED FEES'!$L22	=SUM(M32:Q32)	=SUM(L32,R32)
33	='REV IN'!$L$13*'FEE ADJ'!W99	='REV IN'!$L$14*VMT!R35	=SUM(B33:K33)	=B33*('REV IN'!$B$11/'REV IN'!$B$7)	=C33*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!L$38*SUM('FED FEES'!AB5:AC5)	='REV IN'!$L$37*'FED FEES'!$S23	='REV IN'!$L$39*'FED FEES'!$L23	=SUM(M33:Q33)	=SUM(L33,R33)
34	='REV IN'!$L$13*'FEE ADJ'!W100	='REV IN'!$L$14*VMT!R36	=SUM(B34:K34)	=B34*('REV IN'!$B$11/'REV IN'!$B$7)	=C34*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!L$38*SUM('FED FEES'!AB6:AC6)	='REV IN'!$L$37*'FED FEES'!$S24	='REV IN'!$L$39*'FED FEES'!$L24	=SUM(M34:Q34)	=SUM(L34,R34)
35	='REV IN'!$L$13*'FEE ADJ'!W101	='REV IN'!$L$14*VMT!R37	=SUM(B35:K35)	=B35*('REV IN'!$B$11/'REV IN'!$B$7)	=C35*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!L$38*SUM('FED FEES'!AB7:AC7)	='REV IN'!$L$37*'FED FEES'!$S25	='REV IN'!$L$39*'FED FEES'!$L25	=SUM(M35:Q35)	=SUM(L35,R35)
36	='REV IN'!$L$13*'FEE ADJ'!W102	='REV IN'!$L$14*VMT!R38	=SUM(B36:K36)	=B36*('REV IN'!$B$11/'REV IN'!$B$7)	=C36*('REV IN'!$B$12/'REV IN'!$B$8)	='REV IN'!L$38*SUM('FED FEES'!AB8:AC8)	='REV IN'!$L$37*'FED FEES'!$S26	='REV IN'!$L$39*'FED FEES'!$L26	=SUM(M36:Q36)	=SUM(L36,R36)
37	**=SUM(J14:J36)**	**=SUM(K14:K36)**	**=SUM(L14:L36)**	**=SUM(M14:M36)**	**=SUM(N14:N36)**	**=SUM(O14:O36)**	**=SUM(P14:P36)**	**=SUM(Q14:Q36)**	**=SUM(R14:R36)**	**=SUM(S14:S36)**
38										
39	=SUM(J14:J15)	=SUM(K14:K15)	=SUM(L14:L15)	=SUM(M14:M15)	=SUM(N14:N15)	=SUM(O14:O15)	=SUM(P14:P15)	=SUM(Q14:Q15)	=SUM(R14:R15)	=SUM(S14:S15)
40	=SUM(J16:J20)	=SUM(K16:K20)	=SUM(L16:L20)	=SUM(M16:M20)	=SUM(N16:N20)	=SUM(O16:O20)	=SUM(P16:P20)	=SUM(Q16:Q20)	=SUM(R16:R20)	=SUM(S16:S20)
41	=SUM(J21:J28)	=SUM(K21:K28)	=SUM(L21:L28)	=SUM(M21:M28)	=SUM(N21:N28)	=SUM(O21:O28)	=SUM(P21:P28)	=SUM(Q21:Q28)	=SUM(R21:R28)	=SUM(S21:S28)
42	=SUM(J29:J32)	=SUM(K29:K32)	=SUM(L29:L32)	=SUM(M29:M32)	=SUM(N29:N32)	=SUM(O29:O32)	=SUM(P29:P32)	=SUM(Q29:Q32)	=SUM(R29:R32)	=SUM(S29:S32)
43	=SUM(J33:J35)	=SUM(K33:K35)	=SUM(L33:L35)	=SUM(M33:M35)	=SUM(N33:N35)	=SUM(O33:O35)	=SUM(P33:P35)	=SUM(Q33:Q35)	=SUM(R33:R35)	=SUM(S33:S35)
44	=SUM(J36)	=SUM(K36)	=SUM(L36)	=SUM(M36)	=SUM(N36)	=SUM(O36)	=SUM(P36)	=SUM(Q36)	=SUM(R36)	=SUM(S36)
45	**=SUM(J39:J44)**	**=SUM(K39:K44)**	**=SUM(L39:L44)**	**=SUM(M39:M44)**	**=SUM(N39:N44)**	**=SUM(O39:O44)**	**=SUM(P39:P44)**	**=SUM(Q39:Q44)**	**=SUM(R39:R44)**	**=SUM(S39:S44)**

RATIOS_OUT

|	A	B	C	D	E	F	G	H	I	J
1	**Average Annual Highway User Revenues, Costs and Equity Ratios**									
2	(Thousands of Dollars)									
3	**Vehicle Class**	**User Revenues**			**Cost Responsibility**			**Ratios**		
4		**State**	**Federal**	**Total**	**State**	**Federal**	**Total**	**State**	**Federal**	**Total**
5	Autos	='REV OUT'!L5	='REV OUT'!R5	=SUM(B5:C5)	=SUM('EXP OUT'!B5:E5,'EXP OUT'!G5)	=SUM('EXP OUT'!F5,'EXP OUT'!H5:J5)	=SUM(E5:F5)	=B5/E5	=C5/F5	=D5/G5
6	Pick-ups and SUVs	='REV OUT'!L6	='REV OUT'!R6	=SUM(B6:C6)	=SUM('EXP OUT'!B6:E6,'EXP OUT'!G6)	=SUM('EXP OUT'!F6,'EXP OUT'!H6:J6)	=SUM(E6:F6)	=B6/E6	=C6/F6	=D6/G6
7	Buses	='REV OUT'!L7	='REV OUT'!R7	=SUM(B7:C7)	=SUM('EXP OUT'!B7:E7,'EXP OUT'!G7)	=SUM('EXP OUT'!F7,'EXP OUT'!H7:J7)	=SUM(E7:F7)	=B7/E7	=C7/F7	=D7/G7
8	Single Unit trucks	='REV OUT'!L8	='REV OUT'!R8	=SUM(B8:C8)	=SUM('EXP OUT'!B8:E8,'EXP OUT'!G8)	=SUM('EXP OUT'!F8,'EXP OUT'!H8:J8)	=SUM(E8:F8)	=B8/E8	=C8/F8	=D8/G8
9	Combination trucks	='REV OUT'!L9	='REV OUT'!R9	=SUM(B9:C9)	=SUM('EXP OUT'!B9:E9,'EXP OUT'!G9)	=SUM('EXP OUT'!F9,'EXP OUT'!H9:J9)	=SUM(E9:F9)	=B9/E9	=C9/F9	=D9/G9
10	Total	=SUM(B5:B9)	=SUM(C5:C9)	=SUM(D5:D9)	=SUM(E5:E9)	=SUM(F5:F9)	=SUM(G5:G9)	=B10/E10	=C10/F10	=D10/G10
11										
12	**Weight Class**	**User Revenues**			**Cost Responsibility**			**Ratios**		
13		**State**	**Federal**	**Total**	**State**	**Federal**	**Total**	**State**	**Federal**	**Total**
14	0 - 8,000 lb.	='REV OUT'!L14	='REV OUT'!R14	=SUM(B14:C14)	=SUM('EXP OUT'!B14:E14,'EXP OUT'!G14)	=SUM('EXP OUT'!F14,'EXP OUT'!H14:J14)	=SUM(E14:F14)	=B14/E14	=C14/F14	=D14/G14
15	8,000-10,000 lb.	='REV OUT'!L15	='REV OUT'!R15	=SUM(B15:C15)	=SUM('EXP OUT'!B15:E15,'EXP OUT'!G15)	=SUM('EXP OUT'!F15,'EXP OUT'!H15:J15)	=SUM(E15:F15)	=B15/E15	=C15/F15	=D15/G15
16	10,000-12,000 lb.	='REV OUT'!L16	='REV OUT'!R16	=SUM(B16:C16)	=SUM('EXP OUT'!B16:E16,'EXP OUT'!G16)	=SUM('EXP OUT'!F16,'EXP OUT'!H16:J16)	=SUM(E16:F16)	=B16/E16	=C16/F16	=D16/G16
17	12,000-14,000 lb.	='REV OUT'!L17	='REV OUT'!R17	=SUM(B17:C17)	=SUM('EXP OUT'!B17:E17,'EXP OUT'!G17)	=SUM('EXP OUT'!F17,'EXP OUT'!H17:J17)	=SUM(E17:F17)	=B17/E17	=C17/F17	=D17/G17
18	14,000-16,000 lb.	='REV OUT'!L18	='REV OUT'!R18	=SUM(B18:C18)	=SUM('EXP OUT'!B18:E18,'EXP OUT'!G18)	=SUM('EXP OUT'!F18,'EXP OUT'!H18:J18)	=SUM(E18:F18)	=B18/E18	=C18/F18	=D18/G18
19	16,000-18,000 lb.	='REV OUT'!L19	='REV OUT'!R19	=SUM(B19:C19)	=SUM('EXP OUT'!B19:E19,'EXP OUT'!G19)	=SUM('EXP OUT'!F19,'EXP OUT'!H19:J19)	=SUM(E19:F19)	=B19/E19	=C19/F19	=D19/G19
20	18,000-20,000 lb.	='REV OUT'!L20	='REV OUT'!R20	=SUM(B20:C20)	=SUM('EXP OUT'!B20:E20,'EXP OUT'!G20)	=SUM('EXP OUT'!F20,'EXP OUT'!H20:J20)	=SUM(E20:F20)	=B20/E20	=C20/F20	=D20/G20
21	20,000-22,000 lb.	='REV OUT'!L21	='REV OUT'!R21	=SUM(B21:C21)	=SUM('EXP OUT'!B21:E21,'EXP OUT'!G21)	=SUM('EXP OUT'!F21,'EXP OUT'!H21:J21)	=SUM(E21:F21)	=B21/E21	=C21/F21	=D21/G21
22	22,000-24,000 lb.	='REV OUT'!L22	='REV OUT'!R22	=SUM(B22:C22)	=SUM('EXP OUT'!B22:E22,'EXP OUT'!G22)	=SUM('EXP OUT'!F22,'EXP OUT'!H22:J22)	=SUM(E22:F22)	=B22/E22	=C22/F22	=D22/G22
23	24,000-26,000 lb.	='REV OUT'!L23	='REV OUT'!R23	=SUM(B23:C23)	=SUM('EXP OUT'!B23:E23,'EXP OUT'!G23)	=SUM('EXP OUT'!F23,'EXP OUT'!H23:J23)	=SUM(E23:F23)	=B23/E23	=C23/F23	=D23/G23
24	26,000-28,000 lb.	='REV OUT'!L24	='REV OUT'!R24	=SUM(B24:C24)	=SUM('EXP OUT'!B24:E24,'EXP OUT'!G24)	=SUM('EXP OUT'!F24,'EXP OUT'!H24:J24)	=SUM(E24:F24)	=B24/E24	=C24/F24	=D24/G24
25	28,000-30,000 lb.	='REV OUT'!L25	='REV OUT'!R25	=SUM(B25:C25)	=SUM('EXP OUT'!B25:E25,'EXP OUT'!G25)	=SUM('EXP OUT'!F25,'EXP OUT'!H25:J25)	=SUM(E25:F25)	=B25/E25	=C25/F25	=D25/G25

RATIOS_OUT

	A	B	C	D	E	F	G	H	I	J
26	30,000-32,000 lb.	='REV OUT'!L26	='REV OUT'!R26	=SUM(B26:C26)	=SUM('EXP OUT'!B26:E26,'EXP OUT'!G26)	=SUM('EXP OUT'!F26,'EXP OUT'!H26:J26)	=SUM(E26:F26)	=B26/E26	=C26/F26	=D26/G26
27	32,000-36,000 lb.	='REV OUT'!L27	='REV OUT'!R27	=SUM(B27:C27)	=SUM('EXP OUT'!B27:E27,'EXP OUT'!G27)	=SUM('EXP OUT'!F27,'EXP OUT'!H27:J27)	=SUM(E27:F27)	=B27/E27	=C27/F27	=D27/G27
28	36,000-40,000 lb.	='REV OUT'!L28	='REV OUT'!R28	=SUM(B28:C28)	=SUM('EXP OUT'!B28:E28,'EXP OUT'!G28)	=SUM('EXP OUT'!F28,'EXP OUT'!H28:J28)	=SUM(E28:F28)	=B28/E28	=C28/F28	=D28/G28
29	40,000-45,000 lb.	='REV OUT'!L29	='REV OUT'!R29	=SUM(B29:C29)	=SUM('EXP OUT'!B29:E29,'EXP OUT'!G29)	=SUM('EXP OUT'!F29,'EXP OUT'!H29:J29)	=SUM(E29:F29)	=B29/E29	=C29/F29	=D29/G29
30	45,000-50,000 lb.	='REV OUT'!L30	='REV OUT'!R30	=SUM(B30:C30)	=SUM('EXP OUT'!B30:E30,'EXP OUT'!G30)	=SUM('EXP OUT'!F30,'EXP OUT'!H30:J30)	=SUM(E30:F30)	=B30/E30	=C30/F30	=D30/G30
31	50,000-55,000 lb.	='REV OUT'!L31	='REV OUT'!R31	=SUM(B31:C31)	=SUM('EXP OUT'!B31:E31,'EXP OUT'!G31)	=SUM('EXP OUT'!F31,'EXP OUT'!H31:J31)	=SUM(E31:F31)	=B31/E31	=C31/F31	=D31/G31
32	55,000-60,000 lb.	='REV OUT'!L32	='REV OUT'!R32	=SUM(B32:C32)	=SUM('EXP OUT'!B32:E32,'EXP OUT'!G32)	=SUM('EXP OUT'!F32,'EXP OUT'!H32:J32)	=SUM(E32:F32)	=B32/E32	=C32/F32	=D32/G32
33	60,000-65,000 lb.	='REV OUT'!L33	='REV OUT'!R33	=SUM(B33:C33)	=SUM('EXP OUT'!B33:E33,'EXP OUT'!G33)	=SUM('EXP OUT'!F33,'EXP OUT'!H33:J33)	=SUM(E33:F33)	=B33/E33	=C33/F33	=D33/G33
34	65,000-70,000 lb.	='REV OUT'!L34	='REV OUT'!R34	=SUM(B34:C34)	=SUM('EXP OUT'!B34:E34,'EXP OUT'!G34)	=SUM('EXP OUT'!F34,'EXP OUT'!H34:J34)	=SUM(E34:F34)	=B34/E34	=C34/F34	=D34/G34
35	70,000-75,000 lb.	='REV OUT'!L35	='REV OUT'!R35	=SUM(B35:C35)	=SUM('EXP OUT'!B35:E35,'EXP OUT'!G35)	=SUM('EXP OUT'!F35,'EXP OUT'!H35:J35)	=SUM(E35:F35)	=B35/E35	=C35/F35	=D35/G35
36	75,000-80,000 lb.	='REV OUT'!L36	='REV OUT'!R36	=SUM(B36:C36)	=SUM('EXP OUT'!B36:E36,'EXP OUT'!G36)	=SUM('EXP OUT'!F36,'EXP OUT'!H36:J36)	=SUM(E36:F36)	=B36/E36	=C36/F36	=D36/G36
37	Total	=SUM(B14:B36)	=SUM(C14:C36)	=SUM(D14:D36)	=SUM(E14:E36)	=SUM(F14:F36)	=SUM(G14:G36)	=B37/E37	=C37/F37	=D37/G37
38										
39	0-10,000 lb.	='REV OUT'!L39	='REV OUT'!R39	=SUM(B39:C39)	=SUM('EXP OUT'!B39:E39,'EXP OUT'!G39)	=SUM('EXP OUT'!F39,'EXP OUT'!H39:J39)	=SUM(E39:F39)	=B39/E39	=C39/F39	=D39/G39
40	10-20,000 lb.	='REV OUT'!L40	='REV OUT'!R40	=SUM(B40:C40)	=SUM('EXP OUT'!B40:E40,'EXP OUT'!G40)	=SUM('EXP OUT'!F40,'EXP OUT'!H40:J40)	=SUM(E40:F40)	=B40/E40	=C40/F40	=D40/G40
41	20-40,000 lb.	='REV OUT'!L41	='REV OUT'!R41	=SUM(B41:C41)	=SUM('EXP OUT'!B41:E41,'EXP OUT'!G41)	=SUM('EXP OUT'!F41,'EXP OUT'!H41:J41)	=SUM(E41:F41)	=B41/E41	=C41/F41	=D41/G41
42	40-60,000 lb.	='REV OUT'!L42	='REV OUT'!R42	=SUM(B42:C42)	=SUM('EXP OUT'!B42:E42,'EXP OUT'!G42)	=SUM('EXP OUT'!F42,'EXP OUT'!H42:J42)	=SUM(E42:F42)	=B42/E42	=C42/F42	=D42/G42
43	60-75,000 lb.	='REV OUT'!L43	='REV OUT'!R43	=SUM(B43:C43)	=SUM('EXP OUT'!B43:E43,'EXP OUT'!G43)	=SUM('EXP OUT'!F43,'EXP OUT'!H43:J43)	=SUM(E43:F43)	=B43/E43	=C43/F43	=D43/G43
44	75,000 lb. +	='REV OUT'!L44	='REV OUT'!R44	=SUM(B44:C44)	=SUM('EXP OUT'!B44:E44,'EXP OUT'!G44)	=SUM('EXP OUT'!F44,'EXP OUT'!H44:J44)	=SUM(E44:F44)	=B44/E44	=C44/F44	=D44/G44
45	**Total**	=SUM(B39:B44)	=SUM(C39:C44)	=SUM(D39:D44)	=SUM(E39:E44)	=SUM(F39:F44)	=SUM(G39:G44)	=B45/E45	=C45/F45	=D45/G45

# Appendix C: Revised Instructions for Spending Program Classification

This information was originally distributed as part of the training session handouts. The relevant section of the Meeting 3 Follow-up Handout is replicated here in its entirety.

Steps for Formatting and Sorting the Five-Year Spending Program

1. Download the Spending Program to EXCEL from: http://map.azfms.com/index.html

2. Add several worksheets to the download workbook. These will facilitate the next few steps. Suggested names for added worksheets (referred to in the remainder of this document): '**Common**'; '**Urban**'; '**XX-YY**' where XX refers to the start year of the program and YY refers to the end year; and '**Query**' for the results of the ACCESS query (see below). The most recent version of the Spending Program downloads as worksheet '**cp**' and will be referred to as such in the next few steps.

3. Select the header row(s) of the 'cp' worksheet. If the header(s) contain any merged cells, these will need to be split via the "Split Cells" function located in "Table>Split Cells." After separating any merged cells, select the entire cell range of the Spending Program, including only one header row. Copy these cells to worksheet '**XX-YY**'.

4. Working with the copied cell range in '**XX-YY**', make the following changes to headers and columns:

    (a.) Change header titles "Route" to "**RTE**" and "Cost $000" to "**EXP**".

    (b.) Select the entire range of cells , including the header row. On the EXCEL toolbar, select "Data > Sort" and sort the table by **RTE** in *ascending* order.

    (c.) Insert a column *after* the RTE column and title the new column "**RTE.ID**". Cells in this column will contain all of the business/loop/other route identifiers shown in the RTE column. To make this change, first identify all cells in the RTE column with non-numeric characters (e.g. A, B, and L). These should be at the bottom of the table, after RTE 999, due to the numeric sort in step (b.). For all of these routes, type the appropriate letter in the "RTE.ID" column. For example, if cell D500 contains route 101L, type the letter L in cell E500. Do this for all routes showing non-numeric characters. Then select the entire RTE column and press "Edit > Replace" on the EXCEL toolbar. The dialog box shown below will appear. Type a letter from the non-numeric cells (e.g. B for business route) in the "Find what" box. *Leave the "Replace with" box BLANK.* Then press "Replace All". Repeat this procedure for all of the letters that were copied from RTE to RTE.ID. ***Important* Repeat the ascending order sort from step (b.).**
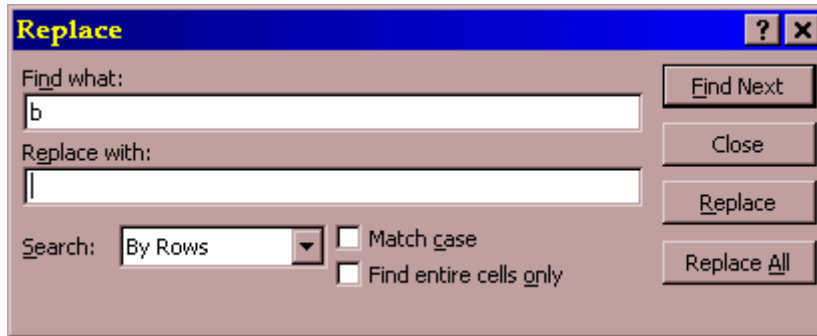
(d.) Insert a column *before* column A (Item #). Title the new column "**IDENT**" and number each cell sequentially in this column from 1 to n, where n = the total number of line items in worksheet **'XX-YY'**.

(e.) Insert a column *after* the BMP column. Title this column "**EMP**". The cell values in this column should equal BMP+Length. Using the figure below as an example, cell F2 should contain the formula: **=E2+M2** This formula should be copied down through all cells in the EMP column.

(f.) Select the entire BMP column. On the EXCEL toolbar, select "Edit>Replace" and replace **n/a** with **0** (zero, not the letter o) in the dialog box. Then select "Replace All". See the sample dialog box below.

(g.) Repeat step (d.) in the "Length" column, again replacing n/a with 0.
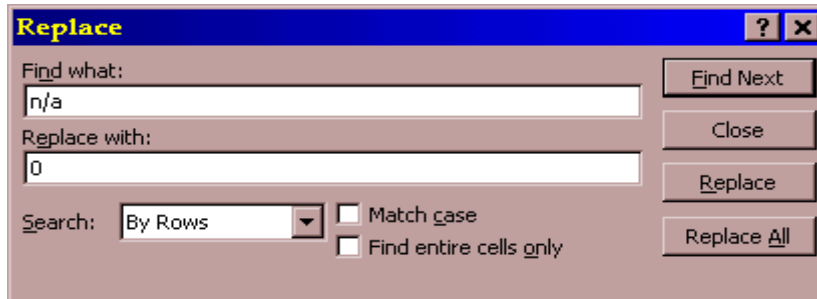
(h.) Select the entire range of cells again, including the header row. Then select "Data > Filter > Autofilter" to install drop-down filter arrows for each column. The **'XX-YY'** worksheet should then look like the figure below.

125

Microsoft Excel - 2001-05 Program.xls

	A	B	C	D	E RTE.I	F	G	H	I	J	K	L	M	N	O Type Of	P
1	IDEI	Iten	Ci	RT	I	BM	EI	C	TRACS	Fed Aid	Funding	E	Location	Leng	Work	EXI
2	2	10004	2004	8		4		YU	H468101C	8-1()	IM	Y	AVE 3E TI	0.1	Reconstruct TI.	8000
3	3	10003	2003	8		4		YU	H468101R		STATE	Y	AVE 3E TI	0	R/W Acquisition.	1000
4	4	22401	2001	8		11.5		YU	H458101C	8-1 ()	STP	Y	B 8 @ I-8 TI	1.2	Intermediate TI improvemen t.	3000
5	5	12002	2002	8		12		YU	H479801C	8-1(107)	IM	Y	FORTUNA ROAD-DOME VALLEY ROAD	14.5	Remove & replace travel & passing lane, AC + FC.	6784
6	6	28501	2001	8		16.4		YU	H554701C	8-1 ()	BR	Y	DRY WASH BRIDGE, EB # 2740	0.2	Bridge Replacemen t. The proposed project is eligible for HBRRP funds.	848

cp / Notes / **01-05** / Urban / Common / Presort / SRT RES 1 / SRT 1 ADJ

5. COPY the header row from **'XX-YY'** to '**Common**' and '**Urban**'. Using the filter arrow in the RTE column (column D above), make the following changes:

> **(a.)** Select "999" from the drop-down menu. This will cause only "common" or system-wide expenditures to be shown. Select *all* of these rows and CUT and PASTE them to the '**Common**' worksheet created in step 2. ***Important* Do not leave any of these items on the 'XX-YY' worksheet.**

> **(b.)** Follow the same procedure for RTE "888" expenditures, this time cutting and pasting to the '**Urban**' worksheet. Again, do not leave any of these items on worksheet **'XX-YY'**.

> **(c.)** Check the RTE filter for any additional non-route-specific items (e.g. "900", "Blank"). These should also be CUT and pasted to the appropriate worksheet ('**Common**' or '**Urban**'). For example, the 2001-05 Spending Program contains segment 900 expenditures for a memorial monument. These are most accurately described as "common" expenditures, so this line would be cut from the '01-05' worksheet and pasted to the 'Common' worksheet.

> Once these steps are complete, the only data left in worksheet 'XX-YY' should be line items with identifiable highway routes. These will be transferred to the ACCESS program to be sorted by class of roadway.

6. Save the EXCEL workbook using an appropriate name (e.g. 2001-05 Program.XLS). Open the ACCESS file **ObProQuery.MDB** and select the "Tables" tab on the database dialog shown below. From the "Tables" tab, select "New" and at the

prompt, "Import Table." Search for the Spending Program EXCEL file (be sure to search for "Files of Type" = Microsoft Excel) and press "Import" when located.
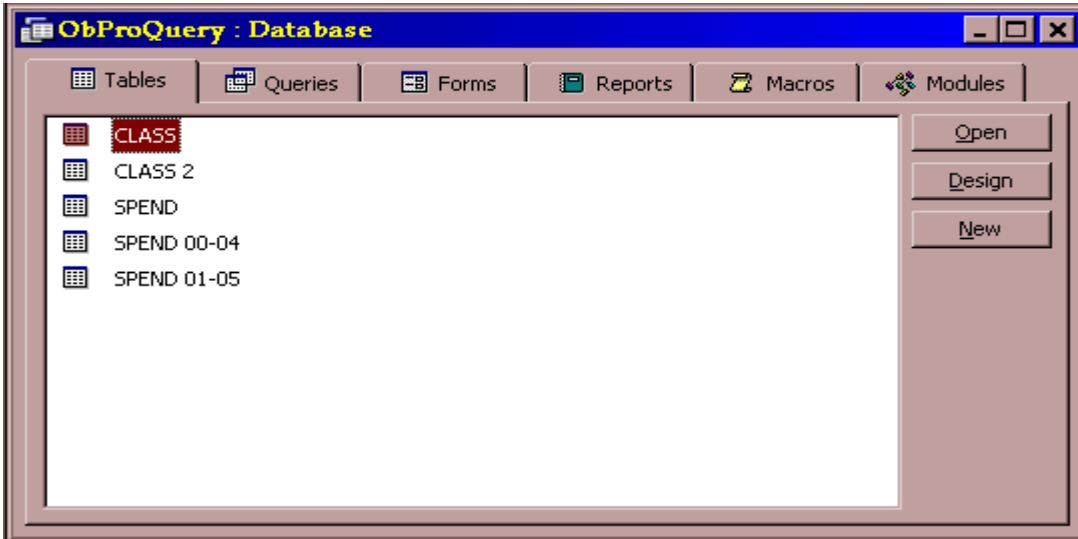
You will be prompted for the appropriate worksheet to import from the Spending Program file. As shown in the following dialog box, be sure to select the 'XX-YY' worksheet. Pressing the "Finish" button will import the worksheet as a table of the same name in ACCESS.
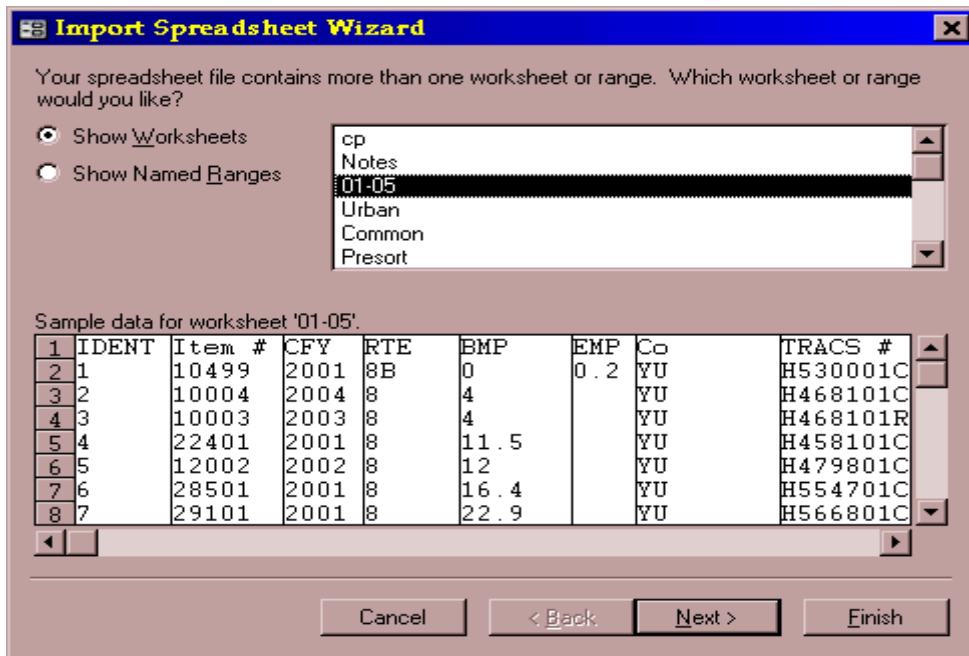

7. After successfully importing the Spending Program table, switch to the "Queries" tab and select "New" to design a new query. At the prompt, select "Design View." However, when the "Show Table" dialog box appears, do not select any tables. Just press the "Close" button. The display should then resemble the following:
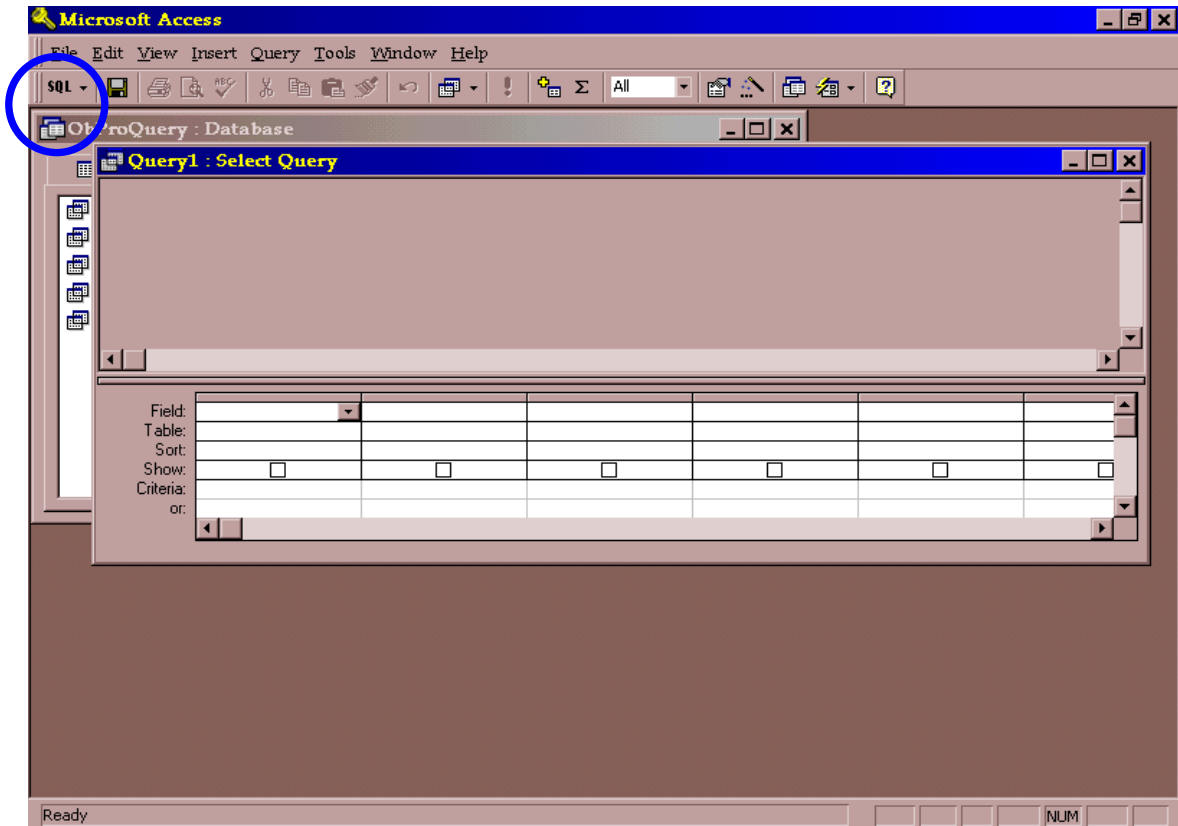
Note the "SQL" button directly under the "File" menu on the ACCESS toolbar. This button is circled in blue in the figure above. Press the down arrow next to this button and select "SQL View". A text box will appear. If there is any text already in the box, delete it. Cut and paste the following into the SQL View text box, *replacing XX-YY with the name of the table that was copied from the Spending Program*:

SELECT [XX-YY].ID, [XX-YY].RTE, [XX-YY].EXP, [CLASS 2].CLASS, [XX-YY].Funding, [XX-YY].BMP, [XX-YY].EMP
FROM [CLASS 2] INNER JOIN [XX-YY] ON [CLASS 2].RTE = [XX-YY].RTE
WHERE (((([XX-YY]![BMP]) Between [CLASS 2]![BMP] And [CLASS 2]![EMP]) AND (([XX-YY]![EMP]) Between [CLASS 2]![BMP] And [CLASS 2]![EMP]))
**ORDER BY [XX-YY].ID;**

```
Microsoft Access
File  Edit  View  Insert  Query  Tools  Window  Help

ObProQuery : Database
Query1 : Select Query
SELECT [XX-YY].ID, [XX-YY].RTE, [XX-YY].EXP, [CLASS 2].CLASS, [XX-YY].Funding, [XX-YY].BMP, [XX-
YY].EMP
FROM [CLASS 2] INNER JOIN [XX-YY] ON [CLASS 2].RTE = [XX-YY].RTE
WHERE ((([XX-YY]![BMP]) Between [CLASS 2]![BMP] And [CLASS 2]![EMP]) AND (([XX-YY]![EMP]) Between
[CLASS 2]![BMP] And [CLASS 2]![EMP]))
ORDER BY [XX-YY].ID;

Ready                                                                    NUM
```
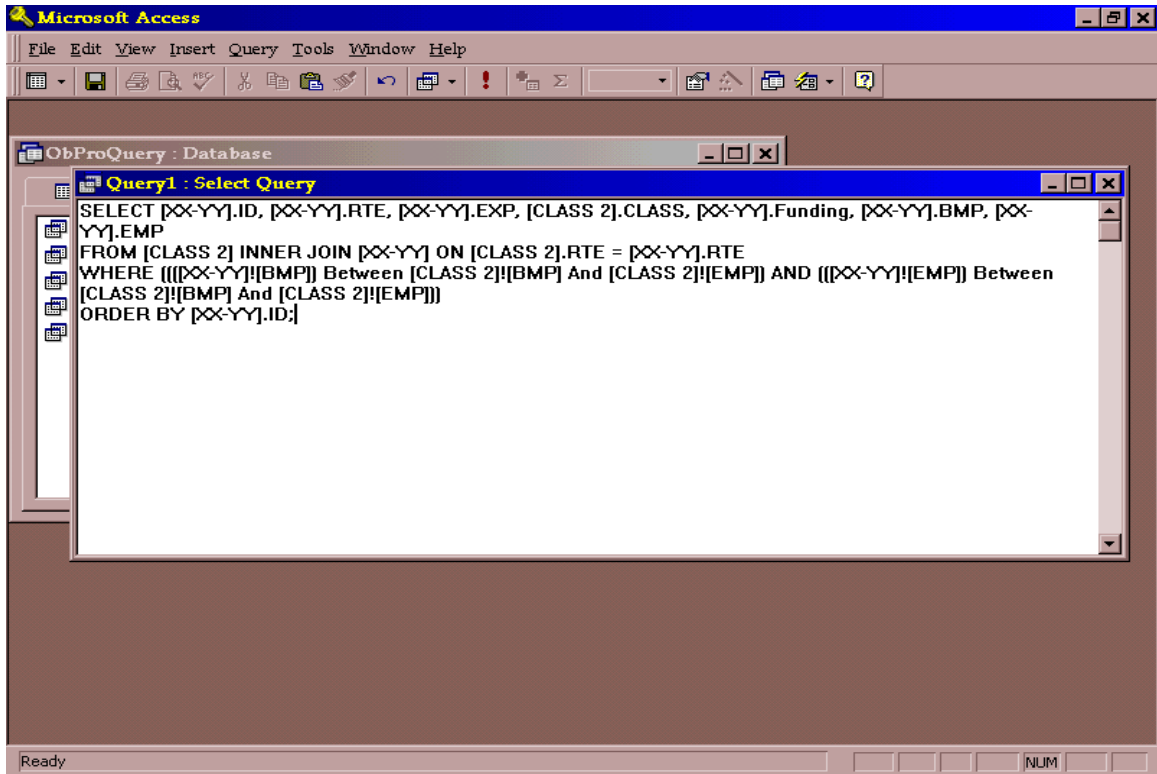
The new query should be closed and named when prompted. Previous versions have been titled "XX-YY CLASS 2" in reference to the aggregated functional class table used for the SMHCAS. Note that the SQL text shown above can also be copied and pasted from previous spending program queries (e.g. 01-05 CLASS 2).

Once the new query has been saved, it can be re-opened from the "Queries" tab by double-clicking the query title. The results of the new query will be displayed in tabular format. Select the entire table and copy it back to the EXCEL file, worksheet '**Query**'.

8. The query results ('**Query**' worksheet) will be used to assign Rural and Urban class of roadway to the expenditures in worksheet '**XX-YY**'. Note that some segments will need to be classified by hand. This occurs when a segment in the Spending Program encompasses multiple segments from the CLASS 2 table. The '**XX-YY**' worksheet items will be classified using a "vertical lookup" function that combines data from '**Query**' with the '**XX-YY**' details. Follow the steps below to perform the vertical lookup:

    (a.) Insert a new column at the end of the '**XX-YY**' data (column Q in the "2001-05 Program" example). Title this column "**CLASS**".

    (b.) The "**IDENT**" field in '**XX-YY**' should correspond to the "**ID**" assigned by ACCESS in the '**Query**' table. Using each value in "IDENT" as the qualifier, the VLOOKUP function will select the corresponding class of roadway from the '**Query**' array. To perform this calculation, select the first cell below the "CLASS" header (cell Q2 in the sample). On the EXCEL toolbar select

"Insert > Function" and choose "Vertical Lookup" from the "Lookup and Reference" options. The dialog box shown below will appear.
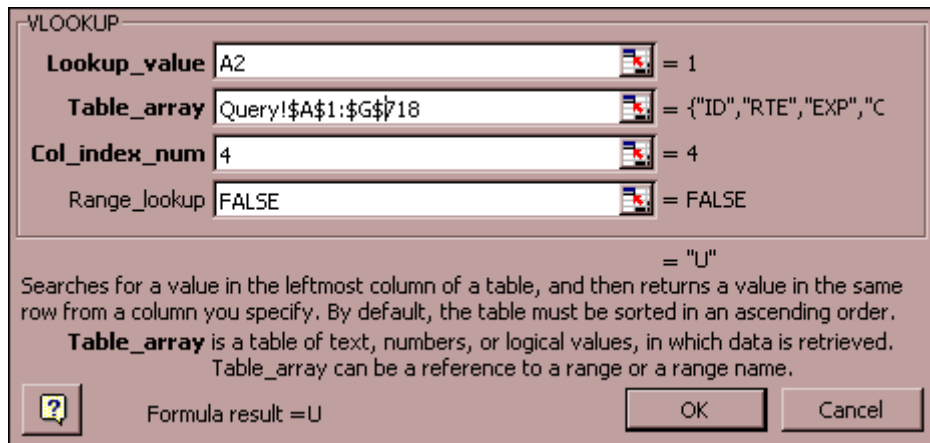
- **Lookup_value** refers to the IDENT cell for each row (i.e. A2 in row 2, etc.)
- **Table_array** refers to the entire range of cells in the '**Query**' worksheet. Note that the $ symbols in the above formula lock the cell references so that they do not change when the formula is copied to new cells. These symbols must be entered, or the formula will return false results.
- **Col_index_num** refers to the number of columns in '**Query**', counting from the left, up to and including the value desired. For example, in the '**Query**' results for the 2001-05 sample, the CLASS values are located in column D, which is the fourth column from the beginning of the array. Therefore, "4" has been entered in the dialog box.
- Range_lookup specifies whether or not an exact match is required. "False" is entered to ensure that only those line items for which the query has returned results will be classified.

The entire formula may also be typed into the "CLASS" cells as:

=VLOOKUP(A2,Query!$A$1:$G$718,4,FALSE)

9. The vertical lookup results will return the error message **#N/A** for all segments not classified by the ACCESS query. The simplest means of isolating these segments is to re-sort the '**XX-YY**' data by the "CLASS" column. All of the #N/A results will have to be classified manually using the table CLASS 2 in the ACCESS file. In previous iterations of this process, these segments were simply assigned percentages of Rural and Urban length based on the overlapping segments in CLASS 2. These percentages were ten used to distribute the expenditures.

For example, IDENT 5 of the sorted 2001-05 Spending Program is an unclassified lane replacement on Interstate 8, from milepost 12 to 26.5 (total length of 14.5 miles). According to the CLASS 2 table, the ending milepost for the urban section of I-8 is 19.48, with the following section classified as rural. The total expenditure of $6,784,000 for this project would be allocated as follows:

$$\text{Urban portion} = \frac{(19.48 - 12)}{14.5} \times \$6{,}784{,}000 = \$3{,}499{,}608$$

$$\text{Rural portion} = \$6{,}784{,}000 - \$3{,}499{,}608 = \$3{,}284{,}392$$

Note that the formulaic approach may be applied to whichever section (urban or rural) is easier to calculate based on the available data. Previous updates have used additional columns for the "split" expenditures, which have been summed once classified and added to the Rural and Urban subtotals from the classified segments.

10. Once all unclassified segments have been split and assigned portions of rural and urban spending, the totals for urban and rural on **'XX-YY'**, and for the '**Common**' and '**Urban**' worksheet items will need to be grouped according to source of funding. This is the last step required prior to input in the SMHCAS model. The data may be filtered, cut and pasted to new worksheets, or any other methods that the user prefers. However, it is recommended that the items from **'Query'**, **'Common'** and **'Urban'** be summed to verify that these amounts add up to the total of **'cp'**. The following funding codes have been grouped by SMHCAS input reference:

SMHCAS Reference	Spending Program Funding Codes
State	STATE, SPR, n/a[b]
Federal	BR, CBI, CM, DP, FLH, GVT, HES, IM, MAG/CM[a], MAG/STP[a], NH, PLH, SB, STATE/FA, STP, T/PDE, TEA
Other	PRVT, RARF
Notes: (a.) Denotes federal aid funds to MAG controlled access system. (b.) Unfunded obligations are assigned as state-level spending.	

All three types of expenditures (Rural, Urban and Common) must be sorted according to funding level (State, Federal, Other) prior to input in the Arizona SMHCAS. This step concludes the sorting and classification procedures for the Five-Year Spending Program.