PHH

Reimbursement for Business Use of Personal Vehicles

A Study prepared exclusively for

The National Joint Council of the Public Service of Canada

by PHH Information Consulting Services

January 1999

Final Report

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Executive Summary

PHH is pleased to present this study on behalf of the National Joint Council of the Public Service of Canada.

This study comprised three principal tasks:

- Review current NJC Business Use Reimbursement Policy;
- Survey companies to identify common methods for business use reimbursement;
- Recommendation for basis reimbursement for use by NJC member organizations.

The report that follows contains recommendations addressing these goals, as well as proposals to address specific issues identified in our analysis of current conditions.

Methodology and Recommendations

We recommend that the Joint Council adopt a reimbursement policy that recognizes the fixed and variable nature of the costs that individuals incur in owning and operating a motor vehicle. We propose a policy that has a fixed component which would reimburse drivers for each day they use their personal vehicle on organizational travel, and a variable component that would provide reimbursement for each kilometer traveled.

Our recommended policy is developed by deriving costs for three classes of vehicles: compact, mid-size, and minivans, and over ownership terms of both four and five years. Costs were developed assuming an annual driving distance of 20,000 kilometers. Fixed costs were determined that account for: depreciation, taxes, financing, insurance, licensing and registration, and miscellaneous items. Variable costs covered fuel, oil, tires, and maintenance. It is recognized that some of these categories vary from one Province to the next. Where it is appropriate, we account for these Provincial variations, including operating cost adjustments that recognize the more severe weather conditions in the Territories. Thus, the recommended reimbursement rates reflect the averages of these factors within each Province.

On an average basis, our recommended rates are $14.45 per day plus 11.5 cents per kilometer. Recognizing that this is a departure from the typical simple cents per kilometer policy, we have developed a reimbursement schedule, by Province, that would reflect the operating cost findings developed in this report. On an average basis, that rate is 38 cents per kilometer.

The initial section of this report is an evaluation of the present policy and its derivation – as inferred from the "Assessment of Government Kilometric Allowance," prepared by the Vehicle and Petroleum Products Directorate in February, 1995 for the Treasury Board Secretariat. It is our understanding that the Joint Council's current policy is based on this report.

Our principal finding in this evaluation is that the tiered levels of reimbursement utilized in the current policy is not reflective of actual operating costs in the major cost categories of depreciation and maintenance. It is based on an overly low assumption of annual driving and a too rapid vehicle replacement pattern. While costs categories are correctly identified and classified, and in most cases are correctly evaluated, we suggest in our expense development section what we believe to be more appropriate approaches to these issues.

As part of this report, we surveyed four organizations on the nature and details of their own business use reimbursement policies. These Canadian organizations have make-ups that we believe are similar to those in the Joint Council. While our findings did not serve to inform the methodology of developing operating costs, they do provide some Provincial benchmarks of current reimbursement rates (30 to 38 cents per kilometer) and policies. These findings are presented in the Policy Benchmarking Survey chapter.

Finally, we provide some discussion of topics that relate to business use reimbursement, and the factors involved that are perhaps not often considered. These issues are discussed in the last chapter on Related Topics and Considerations.

Introduction to Study

This study takes a three-step approach to evaluating personal vehicle reimbursement for the National Joint Council:

- Current Policy Evaluation involving the review of current NJC reimbursement policy and an analysis of the methodology utilized.

- Benchmarking Survey that seeks to find common methodologies for business use reimbursement in other Canadian organizations similar to those that are members of the NJC Board.

- Recommendation and Findings, based on our methodology review, the survey results, and current practice in determining vehicle operating costs.

Through each step, we have used information provided by the National Joint Council, other outside organizations, and internal PHH data, expertise and procedures.

Current Policy Evaluation

The current reimbursement policy used by NJC member organizations is included in Appendix B to the National Joint Council Bulletin #193, April 1998. (NJC Rates) This policy has kilometric reimbursement rates established for travel in the various Provinces and Territories. There are rate schedules that apply when the employee is requested to use their own vehicle, which vary based on the cumulative distance traveled in any fiscal year. There is also a rate schedule for use when personal vehicles are used at the employee's request. These rate tables are summarized below:

Kilometric Reimbursement Rate (cents per kilometer)

	Traveler Requested		Employer Requested	
Province/Territory		**first 6,500 km**	**6,500 to 12,900 km**	**> 12,900 km**
Alberta	9.5	34.5	29.5	25.5
British Columbia	9.5	37.0	31.5	27.0
Manitoba	9.5	34.5	29.5	25.5
New Brunswick	9.5	36.5	31.5	27.0
Newfoundland	10.5	38.0	33.0	28.5
North West Territories	13.0	42.0	36.0	30.5
Nova Scotia	9.5	36.5	31.5	27.0
Ontario	10.5	37.0	31.5	27.0
Prince Edward Island	10.5	36.5	31.5	27.0
Quebec	10.5	38.0	32.0	27.5
Saskatchewan	10.5	34.5	29.5	25.5
Yukon	13.0	42.0	36.0	30.5

In addition to the NJC Rate Policy, we were provided with a document entitled *"Assessment of Government Kilometric Allowance,"* February, 1995 prepared by the Vehicle and Petroleum Products Directorate, Public Works & Government Services Canada (VPPD Assessment). It is our understanding that the current NJC Rate structure is based on the methodology and findings presented in the VPPD Assessment.

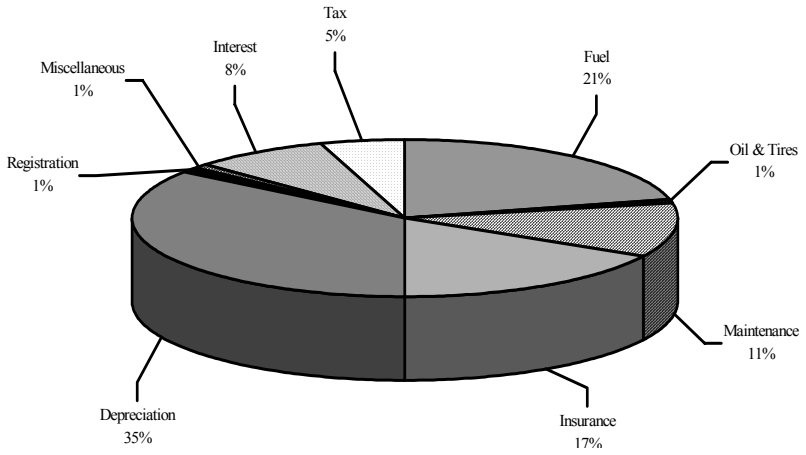
The Assessment compares Federal and Provincial Government reimbursement policies with operating costs developed in the report for different vehicle types under various sets of assumptions.

The Assessment develops costs for representative compact vehicles for a range of trade in periods and annual kilometers driven. The report correctly classifies certain costs as "running" or "standing" depending on whether they are incurred because the vehicle is being driven or simply because the vehicle is owned. Running Costs include fuel, oil, tires and maintenance. These are the same categories that PHH has long used in classifying running costs. Standing costs in the Assessment include depreciation, taxes, financing costs, insurance, licensing and registration fees, and other miscellaneous costs. Again, with one exception, these are the same basic categories that are used in the fleet industry to characterize these costs.

The exception category is costs for accidents. However, in developing business use operating costs, accidents are generally not considered for the following reasons:

- accidents are not a normal cost of operating a single vehicle
- accident costs are covered by insurance
- accidents are not reimbursable on a cents per kilometer basis

We believe the Assessment correctly identifies the appropriate expense categories in determining vehicle operating costs. In general, the categories and their relative contribution to the overall vehicle operating expense are as illustrated in the accompanying graph.



In developing an operating expense analysis, variable or running expenses are typically calculated on a cents per kilometer basis, reflecting the activity base driving this cost. Standing expenses are appropriately measured as a monthly or annual expense, since these are fixed costs. As can be seen from the graph, standing expenses are approximately two-thirds of the total operating cost.

The Assessment derives both fixed annual and per kilometer costs for both running and standing expenses. Results are reported for both categories on a cents per kilometer basis, assuming various annual driving distances. While this is a common approach, the true standing expense costs are distorted if the actual distance driven varies significantly above or below the assumd levels.

Assumptions

Assumptions are listed in the Assessment for vehicle type, cost, and financing, geographic and Provincial location, and other items. These are discussed in detail below.

The Assessment bases most of its evaluation on compact vehicles. Some comparative data on light truck (SUV) is included in the VPPD Assessment, but does not appear to affect the recommended levels of reimbursement. The vehicles used to develop the cost data were:

General Motors	Ford	Chrysler
Tempo L	Cavalier	Sundance

The Assessment assumes that these vehicles are purchased at the manufacturer's suggested retail price (MSRP), less manufacturer's discounts and incentives. The report states that it is assumed that vehicles are traded in

every four years. The assessment further assumes that employees finance 100 percent of the difference between the purchase price and the trade-in value of the vehicle being replaced.

Geographic areas are defined by Provincial and Territorial boundaries. Costs developed for specific cities are assumed to be representative of the entire geographic area.

In addition to the stated assumptions, the Assessment lists some metric conversion factors for changing values to miles and/or gallons. We note that the gallon/liter conversion given is for liters to *imperial* gallons. This is an incorrect conversion for standard U.S. gallons. This would only have had an effect on fuel efficiency calculations and costs if the base calculations were made from published miles per gallon figures. If this were the case, actual fuel expenses would be overstated by 17 percent. We do not believe this has a material affect on the Assessment results.

Over and above the stated assumptions and conversions, there are several assumptions that can be inferred from studying the report. Among these, a key assumption, is that the vehicle traded at 72,000 km and driven 11,500 km (±500 km) each year in non-business related use. We believe that both the trade in and annual odometer assumptions are overly low.

Despite these listed and apparent assumptions, we note that the methodology, as we believe it to be employed, uses different assumptions in some key areas that affect the results. These principally relate to the mileage and years of ownership assumed in determining standing expenses, particularly depreciation. Details are noted and discussed below.

Methodology

The basic construct of the Assessment that drives much of the methodology and many of the assumptions is the stepwise levels of reimbursement as a function of annual reimbursable travel. There are four categories, the first of which covers driver-requested vehicle use. In these cases, the level of reimbursement is established to cover running expenses only. We believe that, if the cost of maintaining and administering this category is not significant, this is an appropriate approach.

The remaining reimbursement categories establish varying levels of reimbursement on the basis of cumulative annual distance driven. For discussion purposes, the following table shows these categories, the current average reimbursement level and range, and the assumptions used in developing the costs:

VPPD Assessment Methodology

Kilometric Range	**0 – 6,500 km**	**6,500 – 12,900 km**	**over 12,900 km**
Average Reimbursement (cents per kilometer)	37.5	32.0	27.5
Reimbursement Range (cents per kilometer)	34.5 – 42.0	29.5 – 36.0	25.5 – 30.5
Vehicle Traded at	4 years	3 years	2 years

There are two related traits of this table that are important to note. The first is that, contrary to the stated assumption of a 4-year trade-in period, the reimbursement rates for the various ranges are computed for scenarios where vehicles are traded in at 4, 3, and then 2 years. The fact that the reimbursement rates are lower when vehicles are assumed to be replaced more frequently does not correlate with our experience, nor does it make sense when considered in light of the nature of depreciation.

The second trait to note is the trend for reimbursement rates to decrease with increasing mileage. This has some logic in that given fixed expenses are distributed over a greater number of kilometers, resulting in lower per-

kilometer costs. However, as annual driving is increased, the replacement life tends to shorten. This generally serves to *increase* the standing expenses. We discuss this issue more fully in the section on Depreciation.

Another key aspect of the current methodology is the Provincial basis for the levels of reimbursement. Owing to varying costs of fuel, insurance, registration, and tax rates, etc., the cost of operating vehicles does vary by geographic location. Thus, this is an appropriate approach to establishing reimbursement levels.

Finally, we note that the Assessment takes care to compute accurate operating costs in each of the expense categories. It is important to keep in mind that the various assumptions involved introduces (or limits) variability into certain of the categories that may be greater than the total value of other of the categories. Principally we refer here to depreciation. This is such a large portion of the overall operating costs, and is affected so greatly by the assumptions that are (and for a process such as this, must be) made, that the affect of a change in assumption for depreciation may be greater than the total of many of the other cost categories. Thus, to some extent, great levels of precision in determining oil, or maintenance costs, for instance, is not especially warranted, as the variability in depreciation (and to a lesser extent, insurance) may be greater that the total of these lessor categories.

Following is a review of each cost category evaluated in the Assessment, detailing the methodology and assumptions employed. Our evaluation and critique is included as well.

Running Costs

Running costs include fuel, oil, tires, and maintenance. These cost categories vary as a function of distance driven, and thus are compiled on a cents per kilometer basis. The Assessment generally uses constant per km costs for each of the kilometric ranges that are evaluated. However, the cost behaviors of some of these items vary with the life of a vehicle, so these constant-cost assumptions need to be revisited. We note especially, that the maintenance and tire costs are not treated in a manner consistent with actual experience.

Fuel

Fuel costs are estimated by dividing the unit price by the consumption rate or, more simply, by dividing the amount spent by the distance driven. In general, fuel costs are constant throughout the life of a vehicle, assuming constant fuel pricing. The Assessment assumes a combined fuel efficiency of 9.20 liters per hundred kilometers, or 10.87 km per liter.

Fuel prices vary by location, and the Assessment reports different fuel costs by Province. We concur with this approach, as fuel prices typically do vary with geographic location depending on tax rates, delivery costs, and the local competitive situation.

Based on the fuel costs shown in the Assessment, it appears that fuel costs are correctly compiled for compact vehicles.

Oil, Filter, Lubrication

This expense category is based on the representative cost of an oil, lube, filter service at 5,000 km intervals. This interval is more frequent than that generally recommended by vehicle manufacturers.

The Assessment makes no distinction in costs by Province for this item. This is an appropriate approach, given the relative magnitude of the costs involved. Variations in this item would be less than half a cent per kilometer, and would not affect final reimbursement rates.

Tires

The Assessment establishes tire expense by assuming that a single set of replacement tires is required over the 72,000 km assumed life of the vehicle. This is in line with our experience and expectations for tire replacement.

We do note that in practice, it would be unlikely that tires would be replaced at, say 70,000 km, if the expectation were that the vehicle would be traded in 2,000 km later.

A uniform price is used for all Provinces based on a surveyed average price from several manufacturers. Variations due to geography and pricing in this category would not have a material affect on the final level of reimbursement.

Maintenance

Maintenance and repair costs were established on the basis of "representative averages" from the Canadian Federal Government's Fleet Management Information System for compact sedans. There was no adjustment made to maintenance costs for either the geographic location or the age of the vehicle.

Again, we would expect the variation in maintenance costs by Province to be less than half a cent per kilometer. Thus, the Assessment's approach of a single location-independent maintenance cost is appropriate.

We would expect to see a variation in maintenance costs with vehicle age. Given that the Assessment is looking at costs for vehicles at 2, 3, and 4 years, we would expect to see increasing maintenance costs per kilometer for these groupings. The rationale here is that some maintenance is related to age rather than mileage, and that warrantees would cover less work on the older vehicles. The Assessment uses a constant maintenance cost for all vehicle ages. We believe this is an error in the Assessment methodology.

Standing Costs

Standing costs include depreciation, taxes, financing costs, insurance, registration and licensing, and miscellaneous costs. These cost categories vary primarily as a function of the length of time a vehicle is owned. The Assessment looks at different time intervals for each kilometric range for which reimbursement is recommended. We believe that:

- the kilometric step ranges are not appropriate and build in a large administrative burden in the reimbursement program;
- the ownership time periods evaluated in the Assessment are too short;
- the assumed kilometric distances driven annually and over the vehicle life are less than typical experience; and
- the affect of these assumptions is to incorrectly calculate the cents per kilometer value of vehicle standing expenses.

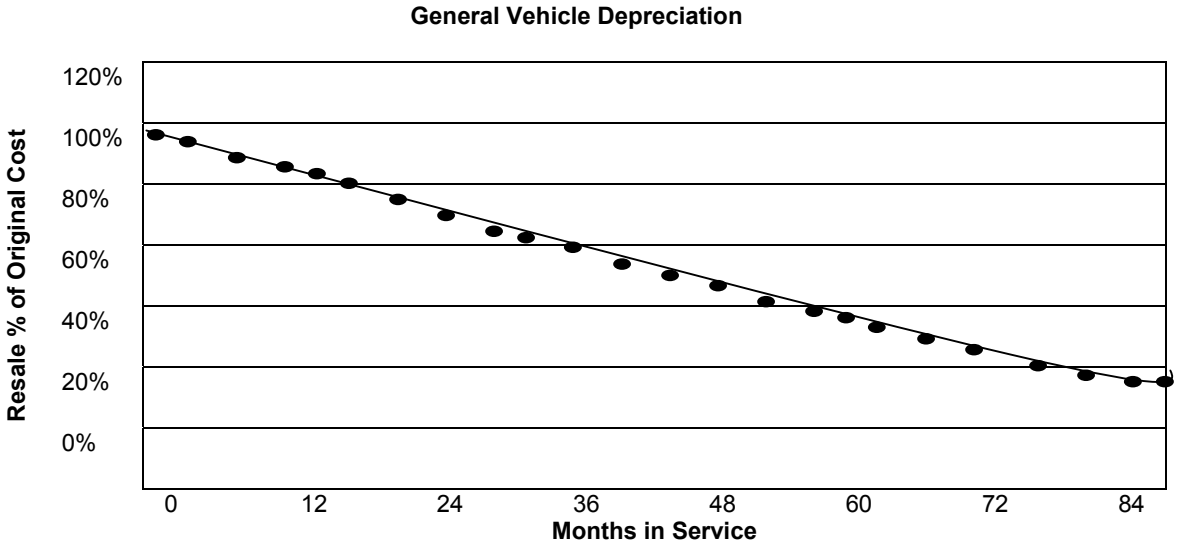
Depreciation

The manner in which depreciation expense is derived in the Assessment is not consistent with our recommended approach, and results in rates for the three kilometric levels that trend to lower levels of reimbursement with increasing annual distance driven.

The Assessment indicates that the amount to be "depreciated" is the difference between the price of the new vehicle and the present trade-in value of the replaced vehicle. This establishes the "depreciation amount" as the amount that is financed over the (4-year) life of the new vehicle.

Depreciation is ordinarily the considered the amount that the new vehicle will lose in value over the time it is owned. This is determined at the time of purchase by estimating the length of ownership and making an end-oflife valuation based on several factors. The primary factor is historic resale pattern.

In general, vehicle depreciation occurs in a non-linear fashion, as illustrated on the accompanying graph. Actual depreciation is very rapid in the first year, with the rate decreasing with vehicle age. Thus, we would expect higher depreciation costs for shorter ownership periods. Taken alone, this would cause the reimbursement rate to increase with increasing kilometric ranges.



The graph shows the percentage of original price that a typical automobile might return in resale as it ages. The shape of the curve is generically applicable to most automobiles, but will vary with make, model, and even depending on options selected. For the given graph, the vehicle would be expected to return 55% of original purchase price after 4 years in service, 45% after 5 years, and so on.

Sales Tax

This is a significant category as it is applied to the purchase amount and is amortized over the assumed life of the vehicle. The Assessment accounts for sales taxes (both the GST and Provincial taxes) at the prevailing rate based on the net price of the new vehicle. The tax amount is then amortized over the life of the vehicle to get an annual expense. This approach properly reflects the tax amounts and is a rational approach to establishing an annual cost.

Financing

Purchase price financing costs are based on borrowing the full net purchase price (new vehicle price less tradein allowance). It appears that the prevailing rate used to determine the annual costs was 7.825%, representing an average rate reported by eight lending institutions in December of 1994. The average annual interest costs do not appear to be for a 48-month loan, as the Assessment states. Rather, it appears that the finance costs are for a loan period that matches the assumed trade-in period; 2, 3, or 4 years.

Insurance

Insurance expenses are determined by averaging “pleasure” vehicle rates (as opposed to business vehicle rates) for model year vehicles over the assumed useful life. That is, where a four-year ownership period is assumed, the Assessment averages annual insurance rates for vehicles of each of the previous four model years. This seems a reasonable approach given the ownership terms that are assumed.

Registration and Licensing Fees

The Assessment compiles annual licensing fees as those currently prevailing for each Province. As this is a current year expense, it is appropriate to use current actual costs.

Miscellaneous

The Assessment includes an annual amount of $110 to cover miscellaneous expenses such as car washes, antifreeze, and tire rotation, balancing and repair. This is much higher than we would expect compared to our experience with fleet users. We attribute this in part to our classification of some of these items as maintenance.

Territorial Considerations

We note that the actual reimbursement levels established by Bulletin #193 for the North West and Yukon Territories are higher than the costs developed in the VPPD Study. These increased rates, shown in the following table, probably reflect higher operating costs associated with more severe climatic conditions in these locations. Our internal operating cost data bear out that running costs are indeed higher in these locations. We believe such an adjustment is warranted.

Kilometric Band	< 6,500 km	6,500 to 12,900 km	> 12,900 km
Bulletin #193 increased cents per kilometer over VPPD Study	7.0	5.5	4.0

Evaluation

Our summary evaluation of the NJC reimbursement policy, based on the VPPD Assessment, is as follows:

- the methodology covers all the principal factors affecting vehicle operating costs for individual owners;
- developing different rates for the different Provinces has merit, as costs for insurance, registration, fuel, taxes, and maintenance vary by geographic region;
- the different reimbursement rates for employee and employer requested use of the employee's automobile is logical in that standing and running costs are reimbursed for employer requested use, while only running costs are reimbursed for employee requested use;
- the assumed annual and trade-in kilometric levels are overly low;
- the three stepwise reimbursement levels are a function of the manner in which depreciation is determined, and this method does not correctly model the true nature of automobile depreciation; and
- the Territorial adjustments in operating costs noted are justified in light of the severe operating conditions encountered in these areas.

Policy Benchmarking Survey

In order to assess the appropriateness of both the current NJC policy, as well as any potential recommendations, PHH performed a limited survey to determine current practices across Canada. This entailed identifying four organizations with characteristics similar to those of the NJC member organizations and requesting them to participate in a limited, informal survey of their reimbursement practices, policies, and methodology. The survey development, organizations surveyed and our findings are presented below.

Survey Approach

The survey was organized to obtain some general demographic information about the company and use of vehicles in its operation. We asked about the number of employees, whether they were union-affiliated, Provinces they operated in, whether they had fleet vehicles available, and how they were managed. We then inquired about the number and type of in-house vehicles, primary use, level of use, costs and policies to get a sense of the framework within which employees were asked to use their own vehicles.

The bulk of the survey then concentrated on various aspects of the organization's reimbursement program. We inquired about the basis and rate of reimbursement, the number and rationale behind multiple policies, rules, philosophy, and assumptions. We sought to determine the methodological development of the policy, whether it is influenced by Revenue Canada limits, and the frequency that reimbursement is utilized in the organization. Where clarification of answers or additional inquiry was appropriate, we followed up with our contact at each organization.

Surveyed Organizations

The background information on the surveyed organizations provides a useful snapshot of the context within which the reimbursement policies are used and have been developed.

Organization	B	D	H	O
# employees/union	40,000 / 25,000	200 to 400 in sales & service function	21,000 / 15,000	60,000 / 52,000
primary operating locations	British Columbia	Ontario and Western Provinces	Quebec	Ontario
in-house fleet size	4,500	moving to full reimbursement	7,500	> 6,000
predominant vehicle type	>50% light trucks ~20 % full-size cars	n/a	minivans and small trucks	varies by function
proportion of driving done In personal vehicles	~40%	100%	no estimate	~33 %

Summary Findings

Three of the organizations had employee personal vehicle use reimbursement polices that are cents per kilometer based. The fourth, a sales and service organization, is moving to employ a monthly vehicle allowance

to those employees that are expected to provide their own vehicles. The survey results can be summarized in three categories: methodology, rates, and policy.

Methodology

The survey did not provide any significant insight or comparative information into how kilometric reimbursement rates are established. Each organization established their rates by surveying the (local) marketplace, "to see what other organizations are doing." None developed their rates from "first principals" where they used a specific methodology to evaluate the component drivers of operating costs.

Each organization did take care to update the rate on a regular basis, typically annually.

As to geographic considerations, there were several approaches. Two of the organizations had single rates for all travel. As they each do the vast majority of their travel within a single Province, there was no explicit recognition of Provincial variations in operating costs. This recognition was implicit, in that there were different rates prevailing in the Provinces where the surveyed organizations were based.

One organization does have two levels of reimbursement for different geographic areas. They do so in an attempt to recognize that operating costs (fuel, insurance, etc.) vary between these areas, within the Province of Ontario. The fourth organization did not make any geographic distinctions, as they found that while some costs might be higher in one area than another, they were typically offset by other costs that were lower.

Rates

For the organizations that use cents per kilometer policies, they ranged as shown on the following table:

Location	**Reimbursement Rate** (cents per kilometer)
Quebec	33
Northern Ontario	32
Southern Ontario	30
British Columbia	38

Policy

Each of the surveyed organizations that use a per-kilometer policy stated that they viewed their reimbursement rate to be an equitable compensation for the expense individuals incurred in using their personal vehicles for business purposes. They also each indicated that it was their intent to provide an equitable level of compensation through their reimbursement policy.

Two of the organizations volunteered estimates on the percentage of organization driving that was done in employee's personal vehicles. These were roughly consistent, in the 30 to 40 percent range. Each organization utilized internal fleet vehicles, rentals, and employee reimbursement as mechanisms for business-related travel. One organization encourages use of rental vehicles (when pool vehicles are not available) on trips over 250 km in length. They note, however, that employees see the higher levels of reimbursement they receive on longer trips as "compensation" for lower reimbursement received for shorter trips.

Summary

The survey did not provide any significant insight into methods used to develop operating costs from first principals. Most organizations used a "prevailing rate" approach in establishing their policies, and paid a fixed cents per kilometer amount. These policies were reviewed annually, and did show some variation by Province. Current rates ranged from 30 to 38 cents per kilometer. No organization used a stepped-rate approach.

Cost Component Determination

In this section, we present our methodology for determining the costs of the various expense components required to establish a rate of business use reimbursement. First is a discussion of the principal factors affecting the determination of the reimbursement rate, our assumptions and rationale. Next is a summary of our proposed methodology, focusing on the primary determinants that will ultimately establish the rate. Finally, we discuss each of the factors that come into play when evaluating fixed or standing expenses.

Our proposed methodology follows closely that used in the VPPD Assessment. Where our approach differs is in the assumptions made with respect to vehicle classes considered, ownership period, and annual distances driven. We also treat depreciation and maintenance expenses differently than is the case in the Assessment.

The general assumptions and methodology we employ in developing operating costs are discussed below, followed by specific expense derivation for each component expense. Our recommended reimbursement scheme is presented in the next chapter, and is based on the component cost development that follows.

Assumptions

The three key factors that will drive the ultimate rate of reimbursement are the:

- vehicle selection;
- replacement period; and,
- distance driven both annually and over the life of the vehicle.

These factors are the main independent drivers of depreciation, the largest component of total operating costs, and establish key driving components in each of the other expense categories. Essentially, vehicle selection determines the initial cost, while the replacement period and distance driven are the key factors in determining the resale value.

Vehicle Selection

The type of vehicle assumed as the basis for determining the reimbursement policy will ultimately drive the level of reimbursement more than any other factor. We have evaluated three product classes: compact, midsize, and minivan. This will serve to show how operating costs vary due to the choice of vehicle. As expenses are evaluated in each cost category, we take the average from the grouping of representative nameplates for each product class. Pricing for representative models was taken from either the Canadian Red Book or from Auto Hebdo, the Quebec Blue Book.

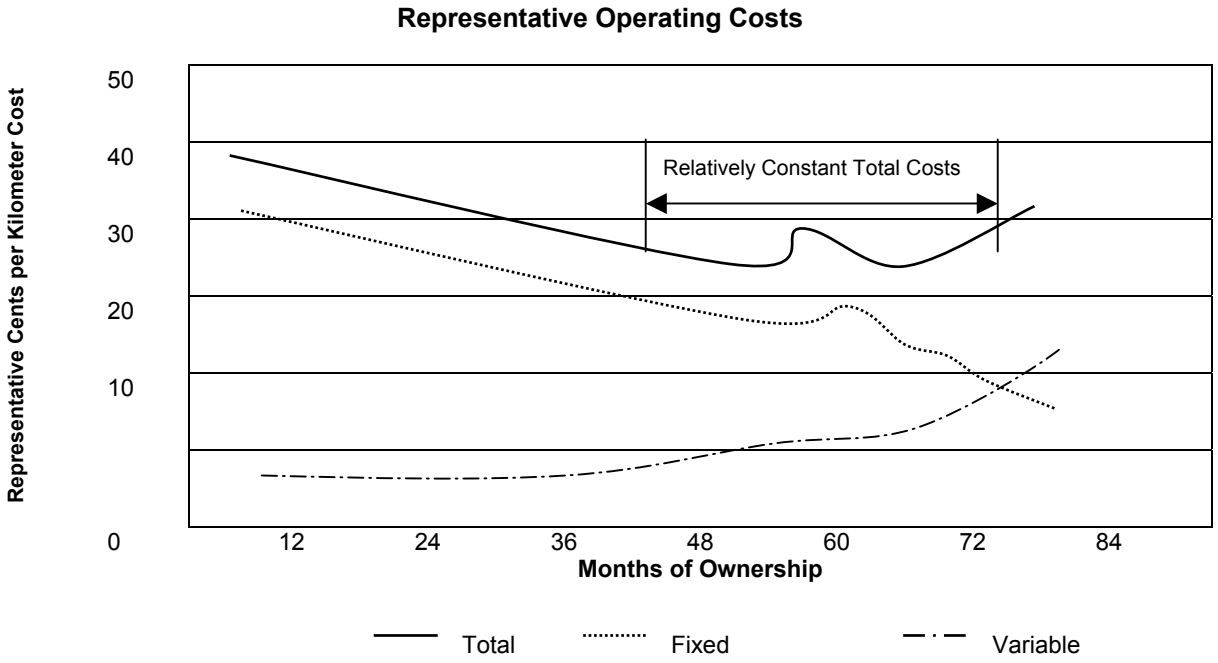
Product Class	Representative Nameplates	1999 Model Year Pricing
Compact	Ford Contour	$20,740
	Pontiac Grand Am	$21,795
	Dodge Stratus	$21,090
Mid Size	Ford Taurus	$24,716
	Chevrolet Lumina	$23,749
	Dodge Intrepid	$25,060
Mini-van	Dodge Caravan	$26,635
	Ford Windstar	$28,040
	Pontiac Trans Sport	$25,030
	Chevrolet Venture/Lumina	$24,564

Ownership Replacement Period

For purposes of this study, the timing of vehicle replacement is the second key driver of the rate of reimbursement. The replacement period that is selected will determine the basis of the vehicle's resale value. In addition, it establishes the time over which the vehicles depreciation, financing, and other costs are amortized.

We have evaluated expenses in each cost category for ownership periods of both four and five years. This selection is driven by two factors. First, new car loans have been showing an average maturity period of 54 months for several years now1. We believe this reflects a weighted average of the predominant 48- and 60-month loan periods.

The second factor is a recent study for a PHH client on how ownership costs for a compact nameplate vary over different ownership periods. This study showed that, once all expense trends are considered, the total operating costs had little variation over a relatively large range of ownership periods. The following summary graph illustrates the findings of that study:



This graph illustrates two key points. First is that as the per mile cost of fixed expenses declines with longer ownership periods, the variable expenses increase in such a manner that the total per mile costs are relatively constant from 36 to 63 months. (The "bump" at 54 months reflects the end of financing charges.) The second is that this ownership period represents the "optimal" or lowest cost ownership period. Thus, we would expect that total costs for 48- and 60-month ownership periods would be sufficiently comparable that a reimbursement rate could be established that does not hinge on which of the two are selected.

[1] "1998 Market Data Book," May 27,1998, Automotive News

Vehicle Utilization

The final key assumption in making operating cost determinations is the number of kilometers driven annually. We have assumed an annual vehicle usage of 20,000 kilometers. This equates to odometer readings at trade in of 80,000 km at four years and 100,000 km at five years. We make no distinction between personal travel and vehicle use for business purposes.

Methodology

Our proposed methodology is described in detail in the following sections. Essentially, it involves determining standing costs and running costs for several assumed parameters:

- Vehicles are driven 20,000 kilometers annually.
- Costs are evaluated for ownership periods of both four and five years, and for representative nameplates in each of three product classes: compacts, mid-size, and minivans.
- Depreciation is determined by estimating a residual value of a newly purchased vehicle, based on historic patterns for each vehicle class.
- Financing costs are based upon the net cost of a vehicle; the purchase price of the new vehicle less the resale value of the vehicle being sold.
- Taxes are determined at prevailing rates by Province on the net vehicle cost, and are amortized over the assumed ownership period.
- Licensing and registration expenses are determined on a Provincial basis and assume biannual renewals.
- Insurance expenses are based on current rates by Province.
- Running costs based on current costs for fuel, oil change service, tires, and maintenance.
- Operating cost adjustments are made for the North West and Yukon Territories, reflecting the severe operating conditions in those locations.

Our approach in the following sections is to describe how each costs component was determined, and what the principal variables are. In addition, we show a summary table with the all-Canada average per kilometer expense for each the three vehicle classes and the range over the geographic locations. Where it is significant to the final recommendation, we show the expenses for both four- and five-year ownership periods, otherwise, only the 4-year figures are tabulated. The detailed breakdown of expenses by class and location are presented with our recommendations in the next chapter.

Running Expense Analysis

Running expenses cover fuel, oil, tires, and maintenance. These expenses generally vary with the number of kilometers driven, and in the case of the Territories, the severity of the climate.

Fuel

Fuel generally represents the second largest expense of operating an automobile. Direct cost of fuel is determined by the cost per liter and the vehicle fuel efficiency.

In order to account for the severe operating conditions prevalent in the Territories, we have adjusted the vehicle fuel efficiency in computing fuel costs for these locations. Our computations reflect an eighty percent increase in the rate of fuel consumption on a liters per 100 kilometer basis.

For the selected product classes, representative fuel efficiencies are given as follows:

Fuel efficiency (liters per 100 km)	Product Class		
	Compact	Mid Size	Minivan
Provinces	9.14	10.38	11.54
Territories	16.45	18.68	20.77

Current representative fuel prices by Province are given, in cents per liter, in the following table:

Province/Territory	Fuel Price	Province/Territory	Fuel Price
Alberta	53.68	British Columbia	58.46
Manitoba	57.81	Newfoundland	69.87
New Brunswick	61.31	North West	73.86
Nova Scotia	61.54	Ontario	58.46
Prince Edward Is.	61.46	Quebec	62.72
Saskatchewan	60.84	Yukon	68.66

These values dictate the fuel costs per kilometer as summarized on the following table. The average for all product classes and locations is 6.28 cents per kilometer in the Provinces and 13.28 cents per kilometer in the Territories.

cents per kilometer	All Canada Average (4-yr ownership)			Range	
	Compact	Mid-Size	Minivan	high	low
Provinces	5.54	6.29	7.00	8.06	4.91
Territories	11.73	13.32	14.80	15.34	11.30

Oil

Oil expenses should be determined on the basis of the average cost of a simple preventative maintenance/oil change service at regular intervals as recommended by the vehicle manufacturer. The major manufacturers recommend oil change/preventive maintenance at varying intervals ranging from 8,000 to 12,000 kilometers. The recommended time interval between oil changes is more standard at six months. Our Canadian maintenance database reveals the average cost for this type of service to be between $27 and $30 for the vehicle classes being considered.

We have calculated this expense on the basis of two oil changes per year, or at intervals of 12,000 kilometers, whichever is greater, at a cost of $30 per service. Geographic price differences are not considered, as they would not have a material affect on the final recommended reimbursement rate. The per kilometer rate is determined to be 0.30 cents per kilometer for all vehicle classes.

Tires

Tire costs are determined by amortizing typical tire expenses over the ownership term of the vehicle. We have selected at tire replacement interval of 72,500 km, which, in practice, means that one set of replacement tires

will be purchased during both the 4- and 5-year ownership periods. Geographic pricing differences were not considered, as they would not have a material affect on the final recommendation.

Assumed tire replacement costs and calculated per kilometer expenses are shown on the accompanying table.

Tires	All Canada Average (4-yr ownership)		
	Compact	Mid Size	Minivan
$per set	$440	$480	$420
cents per km	0.55	0.60	0.53

Maintenance

While maintenance is not the largest expense, it is the most difficult to pin down a source for definitive cost information. We have utilized our in-house maintenance database to develop the cents per kilometer values used in the recommended model. This permits use to develop costs curves that show actual maintenance expenditures for the different vehicle classes, and to show how these expenses increase with ownership term. In addition, we are able to make an estimate of the geographic variance in maintenance costs on the basis of the Canadian experience of our fleet clients.

The following table shows our experiential costs by product type for four- and five-year ownership periods, as well as the range of per-kilometer costs across the Provinces. Ultimately, a key to our final recommendation is the relative costs for the two ownership periods.

Maitenance cents per kilometer	All Canada Average			Provincial Range	
	Compact	Mid-Size	Minivan	high	low
4-yr ownership	3.00	2.82	3.03	3.69	2.49
5-yr ownership	3.75	3.52	3.79	4.61	3.11

Standing Expense Analysis

The standing expense categories: depreciation, taxes, financing, insurance, registration, and miscellaneous, are calculated on the basis of dividing annual costs by 20,000 kilometers per year to get a cents per kilometer value.

Depreciation

Depreciation is a complicated subject, with several competing definitions and alternatives for cost derivation. The equation involves an initial value, a final value, and an associated time period. Our approach is summarized as follows:

- For each vehicle class, three or four representative nameplates are chosen.
- For each nameplate, prevailing price information is complied for each of the past five model years.
- For each nameplate, an estimated 4- and 5-year residual value percentage is developed from historic data.
- An average initial cost for each nameplate is calculated for the number of past model years in each ownership period.

- Total depreciation for each nameplate and ownership period is calculated by applying the residual percentage to the average initial cost.
- Depreciation expense in cents per kilometer is determined for each nameplate and ownership period, based on the assumed annual distance driven.
- Per kilometer costs for each vehicle class and ownership period are the average of the selected nameplates within the class.

Pricing information is taken from the October 1998 Canadian Red Book, or from the January 1999 Auto Hebdo. In all cases factory suggested retail pricing is used for comparable models year-to-year.

The principal variation in our approach over that employed in the Assessment concerns how depreciation is defined. Our approach defines depreciation as "the expected loss in value of a vehicle over its term of ownership." The approach implicit in the Assessment defines depreciation as "the net cost of a vehicle when it is purchased." This is a subtle difference, but an important one. We believe our approach best captures the actual financial affect of depreciation on the cost of ownership, and makes the appropriate distinction of depreciation from the vehicle financing issue.

Our summary costs for depreciation using this approach are given in the following table. We have made no distinction in geographic location. The thought here is that pricing differences that may exist between Provinces are normalized by focusing on the difference between the new and resale values.

Depreciation cents per kilometer	All Canada Average		
	Compact	Mid Size	Minivan
4-yr ownership	11.2	15.2	14.7
5-yr ownership	11.0	13.6	12.8

Sales Tax

The sales tax component of vehicle operating costs varies by Province/Territory, and depends on the net sale price, the assumed ownership period, and on how the tax rates are applied. While these taxes are often "paid" at time of purchase, they are generally rolled into the financing transaction. Our assumption is that the computed sales tax is amortized over the total ownership period, and that the tax is computed on the net purchase price.

Tax rates are different in the various localities, and are applied differently as well. The Federal sales tax (GST) is applied to the net price in all Provinces at the applicable rate. Most Provincial taxes are applied to the price alone; some are stated as individual rates, others as a higher GST rate. Quebec and Prince Edward Island apply their tax rate to the price including the GST. The effective tax rates range from 7.0 to 17.7 percent.

The computed cents per kilometer average is 1.95, with a breakdown as illustrated below.

cents per kilometer	All Canada Average (4-yr ownership)			Provincial Range	
	Compact	Mid-Size	Minivan	high	low
Sales Tax	1.89	2.24	2.42	3.30	1.02

Financing

Costs to finance are based on a finance amount, rate and term. As we are considering two ownership terms, the associated financing costs are based on loans of the same duration. Financing costs over the ownership term are summed and then spread evenly over that term. (Actual financing costs would decrease over the life of the

loan.) Based on a quick survey of several Canadian lending institutions, current new automobile financing rates average 8.98 percent.

For the amount to finance, we have assumed (as in the Assessment) that the purchaser finances the difference between the price of the new vehicle and the resale or trade-in value of the replaced vehicle. We assume an "inkind" replacement in terms of vehicle class, and do not consider geographical differences to be significant.

Summary per-kilometer costs are shown on the following table.

Financing cents per kilometer	All Canada Average		
	Compact	Mid Size	Minivan
4-yr ownership	2.82	3.34	3.62
5-yr ownership	3.63	3.88	4.01

Insurance

Of all the cost components of owning and operating a personal vehicle, insurance is perhaps the most variable. It is much more dependent on a wide variety of choices and individual circumstances of the vehicle owner than any other category. Factors affecting insurance include:

- vehicle type and age
- Province and specific location of residence
- personal and family driving record and history, age, etc.
- insurance brokerage and deductibles selected

Given this wide variability in factors, and thus rates, we have taken estimated insurance premiums for vehicles in the compact/mid size/minivan price range within each Province for a principal driver with a good driving record. On this basis, the by Province annual rates vary between $900 to $3000, often with an intra-Province variation of as much as 100 percent.

We have selected Provincial rates that reflect the variation between different locations, and that represent an increase of approximately 20 percent over the 1995 pleasure rates published in the VPPD Assessment. The resulting basic cents per kilometer costs are summarized below:

cents per kilometer	All Canada Average			Provincial Range	
	Compact	Mid-Size	Minivan	high	low
Insurance	6.87	7.23	7.23	10.00	4.75

Registration and Licensing Fees

Registration and licensing fees are established by each Province and are readily determined. Based upon the annual fees listed in the following table, we have calculated per-kilometer costs ranging from 0.26 to 1.76 cents, depending on the Province and model type. This table shows annual rates. Expenses are determined assuming biannual renewals at twice the listed annual rate.

Province/Territory	Registration Fees	Province/Territory	Registration Fees
Alberta	$ 52	British Columbia	$ 64
Manitoba	$ 55	Newfoundland	$ 140

Province/Territory	Registration Fees	Province/Territory	Registration Fees
New Brunswick	$ 81	North West	$ 60
Nova Scotia	$ 70	Ontario	$ 74
Prince Edward Is.	$ 68	Quebec	$ 293
Saskatchewan	$ 80	Yukon	$ 60

The average rate for all vehicle classes and locations is 0.50 cents per kilometer. The first level of detailed costs are presented below:

Registration cents per kilometer	All Canada Average		Provincial Range	
	4-yr ownership	5-yr ownership	high	low
All vehicle classes	0.46	0.55	1.76	0.26

Miscellaneous

Based on our internal expense reporting data for Canadian fleets, we would recommend a monthly allowance of $10 for miscellaneous vehicle expenses. This translates into a cost of 0.05 cents per kilometer for each vehicle class, Provincial location and ownership term.

Summary Findings

Our summary findings on operating costs are shown on the following table. Recommendations and discussion are presented in the following chapter.

Operating Costs (cents per kilometer)	All Canada Average			Provincial Range	
	Compact	Mid-Size	Minivan	high	low
4-yr ownership	33.73	39.68	40.63	45.63	30.34
5-yr ownership	35.06	39.13	39.63	44.88	31.57

It is apparent from these results that the variability in ownership term is quite small, and the variation in product classes is moderate. More significant is the cost differential between geographic locations.

Policy Recommendations

Based on the cost category components and our evaluation of the their variability, we recommend that the National Joint Council adopt a "Fixed and Variable" Reimbursement Schedule. This approach recognizes that there are fixed costs to operating a personal vehicle that are incurred regardless of the mileage, and variable costs that are tied to the number of kilometers a vehicle is driven over a given time period. The essence of this proposed schedule is:

- a fixed per diem rate to reimburse daily fixed costs of owning an automobile; and
- a variable per kilometer rate to reimburse for the cost of operating an automobile.

The details of this recommendation are presented below as our "Preferred Recommendation."

We believe that this recommendation most closely and equitably provides for the reimbursement of the actual costs of operating a vehicle. However, we do recognize that this is a departure from the current per-kilometer method of reimbursement. Indeed, the per-kilometer approach is commonly used by most organizations, as indicated by the results of our survey. Having compiled the expenses for each of the component cost categories, it is possible to develop several viable reimbursement schemes.

Recognizing that there may be a comfort level with the more common per-kilometer approach, we also offer an alternative recommendation on this basis. This is presented as our "Alternative Recommendation."

Prior to presenting our reimbursement rate recommendations, two issues warrant discussion. The first is the appropriate vehicle class to use as the basis for the recommendation. The second is the nature of the geographic variation.

Product Class Recommendation

As part of this study, we have determined vehicle ownership expenses for each of three classes of vehicles: compacts, mid-size, and minivans. The following table lists these per-kilometer expenses using Provincial averages for the various categories.

All Canada Averages (cents per kilometer) (4-yr ownership)	Compact	Mid Size	Minivan
Fuel	6.57	7.46	8.30
Oil	0.30	0.30	0.30
Tires	0.55	0.60	0.53
Maintenance	3.00	2.82	3.03
Running Sub-Total	10.42	11.18	12.16
Depreciation	11.22	15.19	14.70
Taxes	1.89	2.24	2.42
Financing	2.82	3.34	3.62
Insurance	6.87	7.23	7.23
Registration	0.46	0.46	0.46

All Canada Averages (cents per kilometer) (4-yr ownership)	Compact	Mid Size	Minivan
Miscellaneous	0.05	0.05	0.05
Standing Sub-Total	23.31	28.51	28.48
Total Operating Costs	33.73	39.69	40.64

We recommend using an average cost for these three product classes. This approach captures the costs of the most widely owned vehicle types. The average of the operating costs for the three classes is 38.02 cents per kilometer, which is within eleven percent of the high and low values.

Ownership Period

We also recommend that the Joint Council adopt a reimbursement policy based on the average of four- and five-year ownership periods. In general, five-year ownership is slightly less expensive, as illustrated by the following table. Using Provincial averages for the category expenses, the variation of the total per kilometer cost for each ownership term is within two percent of the average.

Average Operating Costs by Years of Ownership (cents per kilometer)

Vehicle Class	Compact		Mid-size		Minivan	
Years Ownership	4	5	4	5	4	5
Running Costs	10.42	11.06	11.18	11.76	12.15	12.81
Standing Costs	23.31	24.00	28.50	27.37	28.48	26.81
Total Costs	33.73	35.06	39.68	39.13	40.63	39.62
Class Average	34.5		39.5		40.0	
Term Average	4-yr: 38.0		5-yr: 38.0			
Overall Average	38.0					

The averages are rounded to the nearest 0.5 cent. The variation in per kilometer costs of the two ownership terms is less than 0.78 cents from the average for each class. The average operating cost of the three classes for each ownership term is the same, 38.0 cents per kilometer. This leads us to recommend using the average of the two.

Geographic Variation

We recommend that the Council continue to recognize that there are Provincial differences in the operating costs of vehicles. The costs by Province and Territory that we have developed are tabulated in the following sections. We believe these reflect sufficient variation to warrant separate treatment.

As the following summary table illustrates, the variation in each of the cost summaries of the high- and lowcost Provinces from the average ranges from 8% to 18% (except where Territorial adjustments have been made for fuel costs). These are more significant than the differences in ownership term and product classes. Our reimbursement recommendations reflect this approach.

Provincial Operating Cost Variation	Standing Costs ($ per day)	Running Costs (cents per km)	Running Costs (cents per km)
All Canada Average	14.44	11.50	38.0
High-cost Location	16.75	18.5	42.5
Low-cost Location	13.00	9.5	34.5

Preferred Recommendation

We recommend that the National Joint Council Adopt a fixed and variable rate of reimbursement policy. This entails establishing, for each Province and Territory, a daily per diem rate and a per kilometer rate. An individual who is requested to use their personal vehicle for company travel would receive the flat per diem reimbursement for each day that they are on travel status. It is the intent of the policy that this per diem rate would reimburse the driver for the fixed or standing costs of owning their automobile. In addition, the driver would receive reimbursement at the policy rate for each kilometer of travel that is business related. The intention of this portion of the reimbursement is to compensate for the true cost of operating the vehicle.

We recommend that these policy rates be based on:

- the average costs calculated for the compact, mid-size, and minivan product classes, as defined in this report;
- the average of costs calculated for both four- and five-year ownership periods; and
- recognizing the variations in cost from Province to Province, as discussed previously.

We have developed the following reimbursement rate table that shows our recommended per diem and per kilometer rate for each Province and Territory. The per diem rate is developed by dividing the annual standing expenses by 365. The per kilometer rate is that for the running expenses as developed for each Province. Per diem rates are rounded to the nearest $0.25 while the per kilometer rates are rounded to the nearest 0.5 cent.

Recommended Reimbursement Schedule

Location	Per Diem ($ per day)	Per Kilometer (cents per km)
Alberta	14.00	9.5
British Columbia	14.75	10.5
Manitoba	14.50	10.0
New Brunswick	14.75	10.0
Newfoundland	15.00	11.0
North West	13.00	18.5
Nova Scotia	14.50	10.0
Ontario	15.00	11.0
Prince Edward Island	14.25	10.0
Quebec	16.75	10.0
Saskatchewan	13.25	10.0
Yukon	13.50	17.5

In instances where employees request that they be allowed to use their own personal vehicles on organizational business, we recommend that the Joint Council continue their current practice of reimbursing for running expenses by using the per-kilometer rate, by Province, given in the above table. In the employee requested case, there would be no per diem reimbursement.

Alternative Recommendation

We do recognize that our fixed and variable recommendation is a departure from the norm of a fixed reimbursement rate. The advantage to developing expense data in the fashion presented here is that the same information can be employed to establish a fixed rate. The basis of the rates recommended below is an annual driving distance of 20,000 kilometers. The following table lists the per kilometer reimbursement rates, by Province, that result from our analysis.

As with the preferred recommendation, we suggest continuing the practice of reimbursing employee requested personal vehicle use on the basis of running expenses only.

Recommended Reimbursement Schedule (cents per kilometer)

Location	Employee Requested	Employer Requested
Alberta	9.5	35.0
British Columbia	10.5	37.5
Manitoba	10.0	37.0
New Brunswick	10.0	37.0
Newfoundland	11.0	38.5
North West	18.5	42.5
Nova Scotia	10.0	36.5
Ontario	11.0	38.0
Prince Edward Island	10.0	36.0
Quebec	10.0	41.0
Saskatchewan	10.0	34.5
Yukon	17.5	42.5

Related Topics and Considerations

There are several topics that relate to business use reimbursement, the cost determinants, and organizational considerations, which we offer for discussion purposes here.

Accidents

In assessing operating costs for fleets, the cost of accidents is normally included. We have omitted them from the costs evaluations here primarily because of the individual nature of business reimbursement, and the role that insurance plays.

Accidents are a cost of doing business for a company that operates a fleet. Over time, with a group of automobiles and drivers, a certain number of accidents can be expected. There is generally an accident rate that can be expected as a percentage of vehicles in the fleet. These costs are then distributed over the distance driven by the entire fleet.

However, for an individual, the rate is bimodal – that is, one either has an accident or they do not. There are not costs to distribute unless an accident happens. In the case of personal vehicles, three factors then come into play. First, accidents that do not take place on company business travel would not be considered part of the organization's responsibility to cover. Second, most of the cost of an accident would typically be covered by the driver's insurance (which is accounted for in the reimbursement calculations). A second, separate reimbursement for these costs would not then be appropriate. Finally, there is the at-fault issue. Organizations may or may not be expected to cover accident costs if their driver was at-fault.

The only aspect of accidents that merits discussion would be deductibles incurred in not-at-fault accidents that occur on company travel in personal vehicles. One of the organizations that took part in our business use survey does permit reimbursement for personal vehicles damaged in the course of organizational business. Their policy allowed for reimbursement of the minimum of the cost of repair or the insurance deductible, with a maximum of $500.

Leasing versus Reimbursement

Many companies ask the question, "At what point should I provide a vehicle for my employees' versus asking or requiring them to use their own vehicle?" There are several considerations to take into account when answering this question. The use of personal vehicles is often necessary in the course of organizational business, and generally can be classified as either regular or periodic in occurrence. In many cases, the organization provides a vehicle, either leased, organization-owned, or a short-term rental. The question of leasing or reimbursing has both quantitative and qualitative factors.

Quantitative Factors

Quantitatively, the cost to an organization of providing a leased vehicle versus reimbursing a driver can be calculated and compared at varying monthly kilometric amounts. Many factors come into play, but generally speaking, we have found that it is less expensive to an organization to provide a leased vehicle where the monthly driving distance is expected to be in excess of 1,600 kilometers. Thus, where an employee is expected to travel on a regular basis in excess of this amount, it is worth evaluating the viability of providing a company vehicle.

Qualitative factors

Qualitative factors used for evaluating a lease versus reimbursement decision concern such issues as company image, company control over vehicle age and condition, vehicle safety and employee productivity and morale.

Some discussion points of these factors are presented below. While many of these factors may be more applicable to the private sector, they may be worth considering here as well.

Listed below are some positive and negative attributes of company-provided business vehicle programs versus employee-provided programs.

Benefit to:	Positives	Negatives
Company	Vehicle acquisition, maintenance, repair and sales policy is prescribed by management Employee selection of vehicles and options is consistent with business objectives. Personal and business usage is consistent with fleet policy. Able to achieve high level of employee satisfaction and motivation if handled properly Expenses may be managed more effectively	Individual perceptions of vehicle suitability and safety can be highly variable Management control cannot be accomplished without in-house or outsourced expertise and resources. May prevent the organization from making alternative investments in other opportunities Employees may incorporate personal trips into business trips
Employee	Easier for the employee in terms of administrative burdens Financially more feasible in terms of maintenance, insurance, vehicle payments and used vehicle sales Reduced liability Saves wear and tear on personal vehicles	Limited vehicle selection Accountability for vehicle

Expense Reporting and Payment Processing

Another consideration in evaluating business use reimbursement policies is the time and effort required to administer the policy. Policies that are overly complex or require significant paperwork, documentation, or auditing add a cost burden to the organization that is often not considered when evaluating the cost of organizational travel. A streamlined, easy to administer policy may be less expensive than to the organization than a “complex” one that might pay out less in reimbursement, but costs more to administer.

Other Considerations

There are several other factors that would have some affect on the reimbursement rate determination which deserve some brief discussion. Essentially, these are realities of personal vehicle ownership that are not

captured by the methodology employed here. Attempting to model these variables would serve to make the model overly complicated and potentially less valid for what might be considered a "majority" of situations.

Used Vehicles

This methodology does not capture the expense characteristics of the purchase and operation of a used vehicle. The cost profile of a used vehicle depends heavily on when it is purchased on how long it is owned. There are several "market segments" that describe various used-vehicle scenarios.

In general, depreciation and insurance expenses are lower over the term of owning a used vehicle, while maintenance costs are often higher. On balance, we would expect per-kilometer operating costs for used vehicles to be lower than those recommended here.

Other Nameplates and Classes

This study was done on the basis of selected nameplates within each of three product classes: compacts, midsize, and minivans. In all cases, the nameplates were selected from North American based manufacturers: General Motors, Ford, and Chrysler. A brief, qualitative discussion of the impact other manufacturers and/or classes on the analyses is in order.

In general, the more popular vehicles of Asian and European manufacturers have higher resale values. All other variables being equal, this trend to higher resale results in a lower depreciation expense over the given ownership period. Were some of these nameplates to be included in the evaluation, we would expect the resulting reimbursement rates to be somewhat lower.

In recent years, the both trucks and the sport-utility vehicle class of automobiles have become more popular. In general, we see operating costs for mini pickups to be comparable to sub-compacts; ½-ton pickups to be comparable to compacts; and ¾-ton trucks to be comparable to mid-size and minivans. Operating costs for sport-utility vehicles are typically 25 percent higher than for mid-size vehicles.