

In the Matter of
Manitoba Public Insurance
2021 General Rate Application

Pre-Filed Testimony of
Jeff Crozier and
Patrick Bowman



Submitted to Manitoba Public Utilities Board on behalf of Duffy's Taxi Ltd., and Unicity
Taxi Ltd. (the "Taxi Coalition")

September 21, 2020

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1.0 INTRODUCTION

This testimony has been prepared for Unicity Taxi Ltd and Duffy's Taxi Ltd ("the Taxi Coalition") by or under the direction of Jeff Crozier of InterGroup Consultants, and Patrick Bowman of Bowman Economic Consulting Ltd., subcontracted through InterGroup Consultants Ltd. This report reviews the Manitoba Public Insurance ("MPI") 2021 General Rate Application ("GRA" or "Application") submitted to the Manitoba Public Utilities Board ("PUB" or "Board").

The following are noted:

- Mr. Crozier and Mr. Bowman are independent witness and their CVs are provided in Appendix 3.
- Mr. Bowman's evidence is provided in Appendix 1.
- Mr. Crozier's evidence is provided in Sections 2 and 3.
- Mr. Crozier's scope of work and instructions were to review, summarize and draw insight from the information contained within the application. The scope of review focuses particularly on matters of interest to the Taxi Coalition.
- Mr. Crozier acknowledges his role is to provide evidence to the Board that is fair, objective and non-partisan.
- Mr. Crozier has endeavoured to ensure all factual assumptions and specific information relied upon are expressly cited in the testimony that follows.

1.1 SOURCES OF INFORMATION

Information within this evidence has been sourced from the current and past general rate applications of MPI, as well the broad spectrum of regulatory principles applied by regulators of monopoly utility providers. Some evidence has been sourced from the Taxi Coalition directly.

1.2 OUTLINE OF EVIDENCE

Section 2 focuses on the issues surrounding Taxi VFH Rates. The facts of the application are summarized and organized as they relate to Taxi VFH risk:

- as measured by combined relativities;
- with respect to the issue of principle driver risk;
- with respect to the observable effects of the DSR on Taxi VFH; and
- with respect to the characteristics of the Fleet program.

Section 3 focuses on the issues surrounding Passenger VFH rates. The facts of the application are summarized and organized as they relate to Passenger VFH rates:

- being based on initial assumptions that have not been born out by the experience to date;
- not reflecting actuarial indicated break-even rates; and
- eventually reflecting indicated break even rates, under the existing methodology.

Section 3 also presents a sensitivity test of credibility weightings on Passenger VFH rates. The sensitivity test reflects one element of the overall ratemaking methodology, and is therefore not reflective of, or a substitute suitable for, MPI's comprehensive ratemaking methodology.

Appendix 1 presents the key regulatory principles as they relate to rate setting for Passenger VFH, given what is currently known (and unknown) about this new insurance use.

Appendix 2 presents schedules pertaining to the sensitivity test conducted in Section 3.

Appendix 3 includes resumes of Patrick Bowman and Jeff Crozier.

2.0 TAXI VFH RISK AND INCENTIVES

2.1 SUMMARY

Taxicab VFH represent an unusually high risk, relative to both the Public Major Class and the broader fleet of vehicles insured by MPI. Data that may assist in understanding the exact nature of the risk are not presently available.

Taxi VFH are subject to the same general issues with respect to principle driver risk, as households, and the recent introduction of DSR incentives does not appear to have impacted Taxi VFH risk, at least in a way that is easily distinguishable from pre-existing trends.

MPI’s fleet program offers prompt and effective incentives to reduce at fault collisions, and may provide incentives that ameliorate the principle driver risk issue faced by Taxi VFH.

Finally, MPI’s incentive programs have a gap, insofar as corporate customers with small fleets (less than 10) have no option to earn vehicle premium discounts, either through the DSR Program, or the Fleet Program.

The analysis presented in Section 2 will draw on current and historical data from RM Appendix 9, Tables 15 and 16.

2.2 PREVALENCE OF INSURED TAXI VFH UNITS IN TERRITORY 1

For context, Taxi VFH are predominantly insured to operate within the city of Winnipeg (Territory 1), with 76% of the of the 617 Taxi VFH vehicles insured there. Table 1 presents a summary of units by territory.

Table 1: Taxi VFH Units by Territory

Major Class	Insurance Use	Territory	Units	Percent
3	Taxicab Vehicle-for-Hire	1	467	76%
3	Taxicab Vehicle-for-Hire	2	97	16%
3	Taxicab Vehicle-for-Hire	3	44	7%
3	Taxicab Vehicle-for-Hire	4	9	1%
	Total		617	100%

Source: Rm Appendix 9, Table 16

The analysis below will focus substantially on the Territory 1 Taxi VFH, which have the most units, and where the issue of risk is most acute. However, the same issues apply generally to the Taxi VFH in other territories, and will also be presented.

2.3 TAXI VFH RELATIVITIES INDICATES UNUSUALLY HIGH RISK

MPI employs the relativity approach to determine required rates for vehicle groups. The characterization of Taxi VFH risk is presented in terms of relativities, sourced from current and past Applications.

In the *Part VI – RM Ratemaking*, MPI describes the relativity approach as:

Briefly, the relativity approach compares the risk of each vehicle group to all other vehicle groups within the major classification. This relative risk is then used to determine the required rate for the vehicle group.¹

And further as:

The concept of relativities is commonly used in the insurance industry. Simply put, if MPI chose a distinct group from an entire population, the relativity of the group is a measure of the risk of the group compared to the population. For example, a group, which on average costs twice as much to insure when compared to the population, will have a relativity of 2. The use of relativities promotes equitable rates since riskier groups can expect to pay more than groups with lower risk.²

Relativities are used here as a convenient means to compare the risk of the Taxi VFH against other insurance uses in the Public Major class (which is the baseline population against which the Taxi VFH relativities are established), and against the broader fleet of vehicles insured by MPI.

2.3.1 Taxi VFH Combined Relativities Compared to Public Major Class

Examining the combined relativities of the Taxi VFH by Territory, against all other insurance uses in the Public Major class shows that Taxi VFH, and in particular those in Territory 1, present a significantly higher risk than any other insurance use within the Public Major class.

Figure 1 plots the combined relativities of Public Major Class insurance uses, as reported in RM Appendix 9 Table 16. Table 2 presents the specific data for the twenty riskiest insurance uses in the Public Major class.

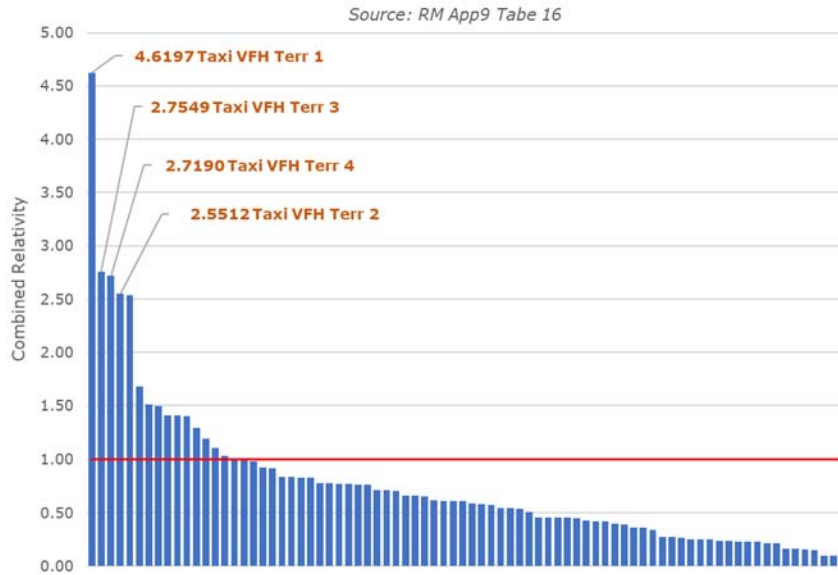
Figure 1 and Table 2 illustrate that Taxi VFH across all territories, are the four riskiest insurance uses in the Public Major Class. Taxi VFH in Territory 1 have a combined relativity of 4.62 and are almost 2.75 times as risky as the next most risky non-taxi insurance use³ Police/Emergency Passenger Vehicle, which have a relativity of 1.68.

¹ RM page 19, lines 7-9

² RM Page 46, lines 13-18

³ Note that UDrive Moped Territory 1 has a relativity of 2.5376, which is comparable to Taxi VFH in Territory 2, however there are no units for this use in the rate model. Accordingly, the comparison to Police/Emergency Passenger Vehicles was used.

Figure 1: Combined Relativities - Public Major Class



Taxi VFH in Territories 2, 3, and 4 present comparable risk to each other, between 2.75 and 2.55, and again are materially above the next most risky non-VFH insurance use.

Table 2: Top 20 Combined Relativity - Public Major Class

Rank	Major Class	Description	Territory	Combined Relativity
1	3	Taxicab Vehicle-for-Hire	1	4.6197
2	3	Taxicab Vehicle-for-Hire	3	2.7549
3	3	Taxicab Vehicle-for-Hire	4	2.7190
4	3	Taxicab Vehicle-for-Hire	2	2.5512
5	3	U Drive Moped	1	2.5376
6	3	Police/Emergency Passenger Vehicle	1	1.6770
7	3	U Drive Moped	3	1.5132
8	3	U Drive Moped	4	1.4935
9	3	Limousine Vehicle-for-Hire	1	1.4085
10	3	Transit Bus	1	1.4067
11	3	U Drive Moped	2	1.4014
12	3	U Drive Truck	1	1.2928
13	3	Accessible Vehicle-for-Hire	1	1.1968
14	3	U Drive Passenger Vehicle	1	1.1074
15	3	U Drive Bus	1	1.0330
16	3	Police/Emergency Passenger Vehicle	3	1.0000
17	3	Common Carrier Bus Within MB	1	0.9906
18	3	Police/Emergency Passenger Vehicle	4	0.9870
19	3	Police/Emergency Passenger Vehicle	2	0.9261
20	3	U Drive Motorhome	1	0.9156

Source: MPI 2021 GRA, Part VI - RM Appendix 9, Table 16

2.3.2 Taxi VFH Combined Relativities Compared to All Major Classes

Taxi VFH in Territory 1 also have the highest combined relativity when compared across all major classes. Figure 2 plots the combined relativities of all insurance uses, across all major classes.

Note that the relativities across major classes aren't directly comparable, given that each relativity is measuring the risk of an insurance use against the major class to which it belongs. It is therefore not meaningful to compare the values of the relativities.

However, it is still instructive to observe the rank order of the insurance uses, and note that across all other major classes, Taxi VFH in Territory 1 has the highest relativity across all insurance uses.

Figure 2: Combined Relativities - All Major Classes

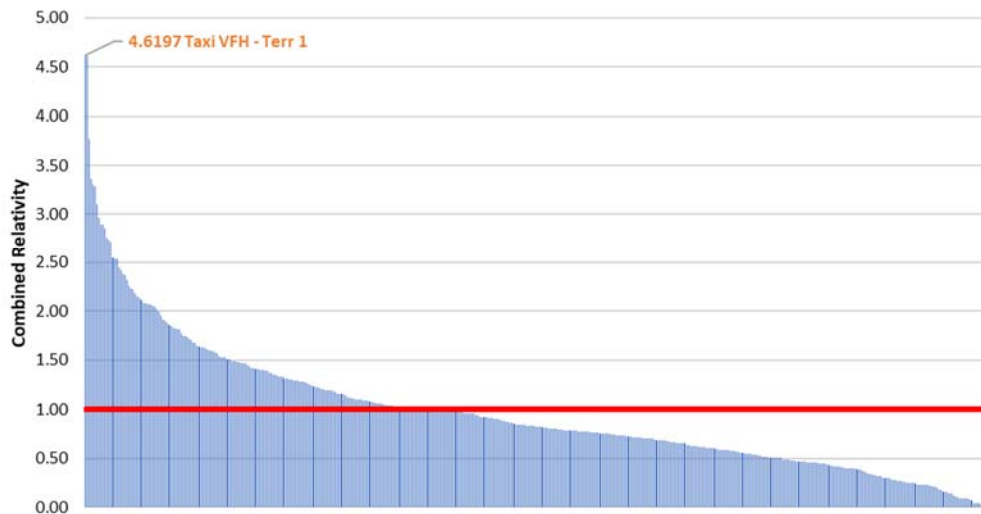


Table 3 provides details on the top twenty insurance uses appearing in Figure 2. Note that Taxi VFH in Territories 2, 3, and 4 are found in the top 15 relativities across all major classes, meaning all territories in the VFH insurance use are found in the top 3 percent of relativities.⁴

Only one other insurance use has a comparable relativity to Taxi VFH Territory 1, that being Common Carrier Passenger Vehicle Over 161K in MB, with a combined relativity of 4.61.⁵

Across all major classes, there are other (non-Taxi VFH) insurance uses that present significant risk, as measured by combined relativities. These insurance uses tend to be in the Commercial Major Class, which has a Major class average rate of \$827.38, as against the Public Major Class average of \$2038.52.

⁴ There are 482 insurance uses, meaning the top 15 ranked account for 3.1%=15/483.

⁵ This particular insurance use has only 4 vehicles in the rate model, per Appendix 9, Table 16.

To illustrate why care must be taken when comparing relativities across major classes, Table 3 also shows the combined relativity multiplied by the major class average to illustrate the risk on a dollar basis. While there are a number of high relativity insurance uses in the Commercial Major Class, when viewed on dollar basis, the spread between those commercial insurance uses and Taxi VFH in the Public Major Class remains significant.

Table 3: Top 20 Combined Relativities - All Major Classes

Source: RM App9, Table 16

Major Rank	Major Class	Description	Territory	Combined Relativity	Major Class Average Rate	Relativity x Major Class Average
1	3	Taxicab Vehicle-for-Hire	1	4.6197	\$2,038.52	\$9,417.38
2	2	Common Carrier Passenger Vehicle Over 161K in MB	1	4.6059	\$ 827.38	\$ 3,810.80
3	2	Common Carrier Truck Over 161K in MB	1	3.7668	\$ 827.38	\$ 3,116.61
4	4	All Purpose Motorcycle (Sport Body Style)	1	3.3662	\$ 867.46	\$ 2,920.04
5	2	Common Carrier Truck Over 161K in MB	1	3.3062	\$ 827.38	\$ 2,735.48
6	2	Common Carrier Truck Over 161K in MB with GVW > 16330kg	1	3.2866	\$ 827.38	\$ 2,719.29
7	2	Common Carrier Passenger Vehicle Over 161K in MB	2	3.1082	\$ 827.38	\$ 2,571.70
8	2	Common Carrier Passenger Vehicle Over 161K in MB	3	2.9615	\$ 827.38	\$ 2,450.27
9	2	Common Carrier Local Passenger Vehicle	1	2.8976	\$ 827.38	\$ 2,397.45
10	2	Common Carrier Passenger Vehicle Over 161K in MB	4	2.8930	\$ 827.38	\$ 2,393.65
11	4	All Purpose Motorcycle (Sport Body Style)	2	2.8609	\$ 867.46	\$ 2,481.71
12	3	Taxicab Vehicle-for-Hire	3	2.7549	\$2,038.52	\$5,615.83
13	4	All Purpose Motorcycle (Sport Body Style)	1	2.7356	\$ 867.46	\$ 2,373.06
14	3	Taxicab Vehicle-for-Hire	4	2.7190	\$2,038.52	\$5,542.72
15	3	Taxicab Vehicle-for-Hire	2	2.5512	\$2,038.52	\$5,200.72
16	2	Common Carrier Passenger Vehicle Within 161K in MB	1	2.5444	\$ 827.38	\$ 2,105.19
17	2	Common Carrier Truck Over 161K in MB	2	2.5420	\$ 827.38	\$ 2,103.23
18	3	U Drive Moped	1	2.5376	\$ 2,038.52	\$ 5,172.87
19	4	All Purpose Motorcycle (Sport Body Style)	5	2.4521	\$ 867.46	\$ 2,127.07
20	2	Common Carrier Truck Over 161K in MB	3	2.4220	\$ 827.38	\$ 2,003.92

By the measure of combined relativities, the Taxi VFH in Territory 1 represent an unusually high risk, as against the Public Major class, and that observation extends to Taxi VFH in the remaining territories, but not to such an acute degree.

2.3.3 Relevant Data to Assess Taxi VFH Risk

The analysis so far has been presented in the context of loss exposure, through combined relativities that are based on a combination of pure premiums, earned units, credibility weightings and average rates.

The riskiness of Taxi VFH have not been assessed in the context of time on road, or distance travelled, two factors which MPI acknowledges could be relevant in assessing risk.⁶

Taxi VFH are generally understood to operate in some cases on a near 24x7 basis,⁷ and in some cases may drive significantly more kilometers than other insurance uses. It may be the case that the Taxi VFH have comparable rates of collision per kilometer driven or time on road as the rest

⁶ See TC(MPI)1-8 c) and d)
⁷ See TC(MPI)1-4(b), TC(MP) 1-5(d)

of the population, but a high distance driven or time on road produce aggregate losses significantly higher than the rest of the population.

A gap in understanding the cause of Taxi VFH's significant loss exposure is the absence of any Manitoba-specific data related to the distance driven, or time on road. MPI does not have this data, and has not explored options to acquire this data to date.⁸

MPI has indicated that data regarding distance driven and time on road⁹ would allow it to better differentiate risk within the insurance use (e.g. if some taxis are on the road longer than other). MPI's current understanding¹⁰ that there are significant differences in exposure (kilometers driven) that are not properly captured under the current system, is based on MPI's understanding of VFH frameworks in other jurisdictions that employ kilometer-based rating.

2.3.4 Observations and Recommended Findings

Observation 1: Taxi VFH represent an unusually high risk relative to the public major class, and this high risk is most severe with Territory 1 Taxi VFH.

Observation 2: Data required to more fully understand the nature of the unusually high risk presented by Taxi VFH are not currently available.

Recommended Finding 1: The PUB should find that MPI must collect data relevant to better assessing and understanding the risk presented by Taxi VFH and VFH generally. This should include distance driven and time on road, and any other variables identified by MPI that would contribute to understanding the risks presented by Taxi VFH and VFH generally.

2.4 TAXI VFH FACE THE PRINCIPAL DRIVER RISK PROBLEM

In Order 130/17, the PUB addressed the issue of principal driver risk, and found that it should be reflected in vehicle premium discounts. Specifically, the PUB found:

*The evidence in this Application indicated that generally, vehicles are being registered within families by the individual with higher DSR merit ratings due to increasing vehicle premium discounts, such that the vehicle premium may not reflect the principal driver risk. At this time, MPI's rating structure does not allow it to address this issue. Accordingly, the Board has ordered that the issue of vehicle premium discounts based on principal driver rating rather than simply registered driver rating also be addressed at the DSR Technical Conference. **The Board has also ordered that by the 2021 GRA, the Corporation file proposed vehicle premium discounts that are actuarially indicated based on principal driver performance evaluation.**¹¹ [emphasis added]*

Taxi VFH operators in Winnipeg are generally independently owned, often with two or more taxicabs, and the multiple drivers to operate the taxicabs on a shiftwork basis.

⁸ TC(MPI)1-8 c) and d)

⁹ TC(MPI) 2-9(c)

¹⁰ TC(MPI)2-7(g),

¹¹ Order 130/17P.6

In this regard, Taxi VFH may face a similar problem as households with respect to principal driver risk – that the principal driver(s) of the vehicle may not reflect the risk priced into the insurance policy, based on the registered owner. In the household example, the registered owner is typically chosen by the household as the member with the best driving record, to maximize vehicle premium discount.

This not strictly the case with taxi operators, who would be unlikely to register their taxis with an employee, regardless of driving record. Further, Duffy’s and Unicity have internal policies where any driver with less than a -7 DSR rating is not permitted to drive, which unlikely to be the case with typical households. Nevertheless, the basic point holds, that those individuals driving the taxi may not present the same risk as the registered owner.

MPI indicates¹² that the driver of a taxi may be relevant data for assessing Taxi VFH risk, which is consistent with the PUB’s earlier findings that principle driver risk should be reflected in vehicle premium discounts.

With the inception of the VFH framework, DSR discounts became available to Taxi VFH, and taxi operators have benefitted from those discounts, enjoying a gross annual discount of just slightly more than 20%.

Table 4 reproduces TC(MPI)1-11 Figure 2, which provides the details.

Table 4: TC(MPI)1-11 Figure 2: Discount by VFH Subcategory

Line No.	VFH Group	As of Nov 1, 2019				As of Nov 1, 2018			
		Undisc Premium	Disc Premium	Discount	Percent Discount	Undisc Premium	Disc Premium	Discount	Percent Discount
1	Passenger VFH	1,855,250	1,582,399	272,851	14.71%	1,296,008	1,108,158	187,850	14.49%
2	Taxicab VFH	6,105,985	4,822,480	1,283,505	21.02%	6,449,849	5,114,961	1,334,888	20.70%
3	Accessible VFH	486,553	437,803	48,750	10.02%	349,075	321,753	27,322	7.83%
4	Limousine VFH	203,587	190,078	13,509	6.64%	255,642	238,911	16,731	6.54%
5	Total	8,651,375	7,032,760	1,618,615	18.71%	8,350,574	6,783,783	1,566,791	18.76%

2.4.1 The History of Taxi VFH Raw Relativities from Prior GRAs

While Taxi VFH have benefitted from the DSR based vehicle premium discounts, it is relevant to examine if the overall riskiness of Taxi VFH has responded to the incentives of the DSR system.

The following examination of balanced raw relativities reveals no detectable impact from Taxi VFH becoming eligible for DSR based vehicle premium discount.

¹² TC(MPI)1-8 c) and d).

Balanced raw relativities¹³, reflect claims experience, and are not influenced by the credibility weighting of the ‘current’ relativity (based on the current average rates¹⁴). MPI notes, these raw relativities reflect the actual experience, but may be more variable from year to year, and may not be statistically reliable for ratemaking purposes¹⁵. Hence, MPI credibility weights the balanced raw relativities for use in rate setting.

For the purposes of examining the impact of vehicle premium discount incentives, balanced raw relativities are unobstructed by credibility weighting procedures.

Table 5 presents the Balanced Raw relativities, sourced from RM Appendix 9, Table 15, in each of the prior 6 GRAs. Table 5 also presents the most recent loss year on which the Balanced Raw Relativity is based (sourced from the corresponding Tables 12-14 in RM Appendix 9).

The balanced raw relativities present a decreasing trend through time, that is almost strictly decreasing over the past 6 years. The only exception to the decreasing trend is in the 2020 GRA, the first year that includes Taxi VFH experience under the VFH framework, which has a slight increase in relativity.

Table 5: Taxi VFH Balanced Raw Relativities

GRA	Insurance Use	Most Recent Loss Year	Balanced Raw Relativity	Y-o-Y change
2021	Taxicab Vehicle-for-Hire*	2019	4.2280	-0.2139
2020	Taxicab Vehicle-for-Hire	2018	4.4419	0.0244
2019	Taxi/Livery Passenger Vehicle	2017	4.4175	-0.2634
2018	Taxi/Livery Passenger Vehicle	2016	4.6809	-0.0795
2017	Taxi/Livery Passenger Vehicle	2015	4.7604	-0.2057
2016	Taxi/Livery Passenger Vehicle	2014	4.9661	

* Before Product Changes

As DSR incentives became available to Taxi VFH in calendar Q1 of 2018, it might be expected that relativities would decline after the introduction of the DSR incentive, if the DSR incentive is effective. There was no reduction in raw relativity in the 2020 GRA. The reduction in raw relativity in the 2021 GRA may be attributable to the DSR incentives, however, decreases of similar magnitude are present in the 2017 and 2019 GRA’s raw relativities. Thus there is no obvious pattern or break-point in the data to suggest that Taxi VFH have responded to the DSR incentives.

¹³ Found in RM Appendix 9, Table 15, which are based on pure premiums and earned units from Appendix 9, Tables 13 and 14, respectively.

¹⁴ See RM page 47 lines 21-23 and page 48 lines 1-20.

¹⁵ RM page 48, lines 8-10

It is also possible that whatever factors have caused the modest declines in raw relativity prior to introducing the DSR incentive, have continued after. The data available in the application is inconclusive, and any effect of the DSR incentives cannot be distinguished from the trend in raw relativities.

2.4.2 Observations

Observation 3: There has been no response by Taxi VFH to DSR incentives (through vehicle premium discounts) that can be distinguished from the general trend in Taxi VFH raw relativities.

2.5 MPI'S FLEET PROGRAM OFFERS PROMPT AND EFFECTIVE INCENTIVES TO AVOID AT FAULT COLLISIONS

MPI's Fleet Program is mandatory for all fleets of 10 vehicles or more, and establishes rebates and surcharges based on retrospective loss ratios from the most recent insurance year. The Fleet program provides immediate incentives for owners of fleet vehicles to manage the risk of at fault collisions.¹⁶

Rebates and surcharges are calculated annually, and are unaffected by experience from years prior to the most recent year, meaning that a fleet owner could in theory receive a 50% surcharge in year 1, and a 33% discount the following year, depending on the performance (loss ratio) of the fleet.

MPI confirms¹⁷ that the fleet program provides more immediate incentives than the DSR, and that incentives, such as those offered under the fleet program may address the risk associated with multiple drivers.

MPI also confirms that the history of the Fleet Program's "off-balance", that pays out significantly more rebates than it brings in on surcharges, is evidence of the Fleet Program's effectiveness.¹⁸

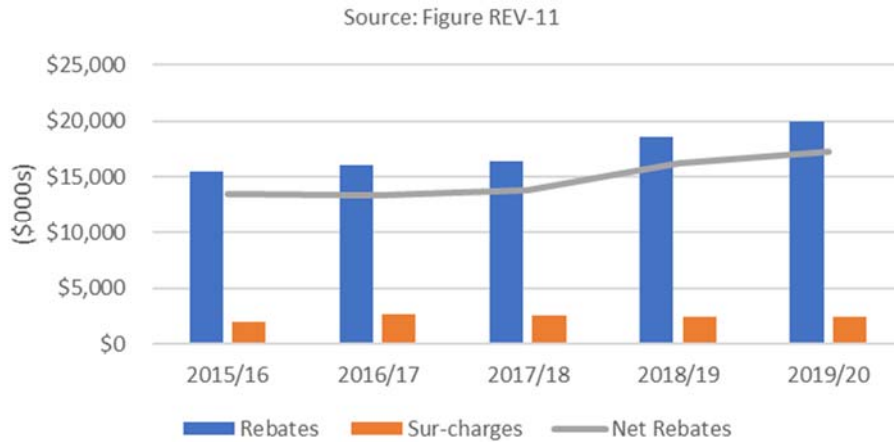
For illustrative purposes, data from *Figure REV-11, Net Fleet Rebates Attributed to Basic Only* has been plotted in Figure 3 below.

¹⁶ TC(MPI)1-15(b) and TC(MPI)2-9(a)

¹⁷ TC(MPI) 2-9 (a)

¹⁸ TC(MPI)1-15(b)

Figure 3: History of Fleet Rebates and Surcharges



The Fleet program provides the same overall ‘upside’ incentive as the DSR program (33%), but as noted above, the incentive is more immediate.

In terms of ‘downside’ incentive, the fleet program may provide a stronger incentive than the DSR, as the number of vehicles in a customer’s fleet increases.

2.5.1 Fleet Program is not Available to Corporate Customers Under 10 Vehicles

One notable gap in the incentive structure provided by MPI, is that corporately owned VFH, and corporate customers with small fleets (less than 10 vehicles) generally, are not eligible for any form of vehicle premium discount, either through the Fleet Program, or the DSR Program.¹⁹ MPI notes that under specific circumstances, single owner corporate customers may enter into a right of possession agreement to access DSR incentives. A right of possession agreement represents a hurdle not faced by larger corporate customers, and is not universal in its application.

Taxi VFH and any small corporate fleets²⁰ are unduly discriminated against based on legal status of ownership (whether sole proprietorship, single owner corporation, or multi-owner corporation).

2.5.2 Observations and Recommended Findings

Observation 4: The Fleet Program provides immediate ‘upside’ incentives for reducing at fault claims, and has been an effective incentive for reducing at-fault collisions for fleets overall.

Observation 5: Small corporate customers (less than 10 vehicles) are unduly discriminated against, as incentives through either the DSR Program or Fleet Program are unavailable to them.

¹⁹ TC(MPI) 2-13(b)

²⁰ Per TC(MPI) 1-11 Figure 1, 211 VFH are registered as Corporate, including 29 Taxi VFH.

Recommended Finding 2: The PUB should find that based on the unusually high risk presented by Taxi VFH, the uncertain response to DSR incentives, and having regard for Order 130/17, MPI must develop a framework for Taxi VFH rates, and VFH rates generally, that provides effective incentives, and addresses the principle driver risk issue facing Taxi VFH.

The PUB should also find that MPI's proposed solution must address the gap in incentives available to small corporate customers (with fewer than 10 vehicles).

3.0 APPROPRIATENESS OF PASSENGER VFH RATES

3.1 SUMMARY

The operating characteristics of Passenger VFH have not materialized as MPI expected at the time of establishing the VFH Framework. The initial pricing of Passenger VFH rates has resulted in rates that do not cover the costs of coverage.

MPI's ratemaking methodology strongly favours the initial assumptions over observed experience. A sensitivity test of credibility weighting shows that modest increases in credibility weighting above the minimum can move Passenger VFH rates toward actuarially indicated break-even rates in three to four years without exceeding existing experience adjustment rules.

Increasing the credibility weighting for Passenger VFH would not negatively impact the other insurance uses in the Private Passenger Major Class.

3.2 PASSENGER VFH OPERATIONS DO NOT CONFORM WITH INITIAL ASSUMPTIONS

Several aspects of the initial VFH framework, with respect to Passenger VFH operation and risk, have not materialized as expected.

3.2.1 Operating Characteristics of Passenger VFH are not as Expected

At the time of VFH inception, MPI expected Passenger VFH to operate in a manner quite distinct from Taxi VFH. In response to TC(MPI)1-2, MPI states:

When it created the insurance use, MPI understood that individuals would drive for a ridesharing company on a casual basis, and pick up passengers as part of their regular day-to-day driving from one place to another. The starting rates for this insurance use reflected this understanding (i.e. MPI assumed a moderately higher rate for Passenger VFH as compared to All Purpose to reflect the increased risk exposure).

MPI elaborated on its understanding of how Passenger and Taxi VFH operate in response to TC(MPI) 2-11(a):

MPI does not believe that Passenger VFH operates in the same capacity as Taxicab VFH. MPI appreciates that there are differences between Passenger VFH operators in terms of how long they drive in their capacity as a Passenger VFH. However, on average, Passenger VFH operators are on the road significantly less than Taxicab VFH operators.

It is not clear how MPI arrives at this conclusion, noting they do not collect Manitoba based data on these variables (time on road, or distance driven).²¹ MPI has indicated that it is aware of

²¹ TC(MPI) 1-8(a) and (b)

significant differences in exposure (kilometers driven), based on a review of VFH frameworks in other jurisdictions.²²

3.2.2 Initial Pricing of Passenger VFH may not Fully Reflect the Potential Loss Costs

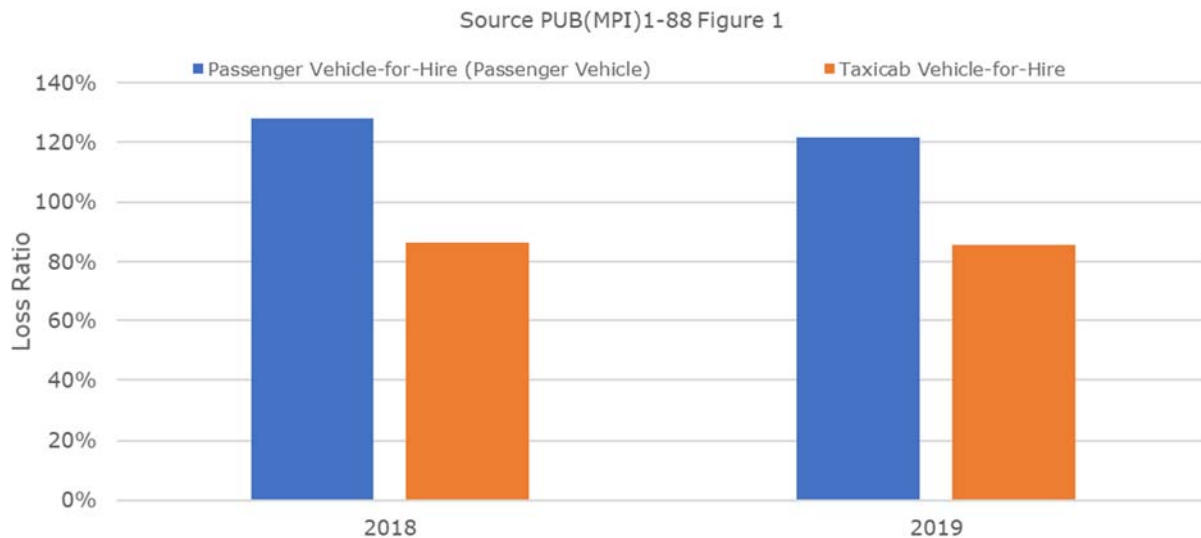
MPI has advised that initial Passenger VFH rates were not appropriate:

Based on the actual claims experience as of February 29, 2020 (per PUB (MPI) 1-88), Passenger VFH did not have an appropriate starting rate. However, this experience has very low credibility given the size of the Passenger VFH pool.²³

The actual claims experience referenced above is well summarized by the Loss Ratios for Passenger VFH reported in PUB(MPI)1-88. Passenger VFH (passenger vehicle) loss ratios have ranged between 128% and 122% in 2018 and 2019 respectively, whereas Taxi VFH loss ratios have been significantly lower at 85.5% and 86% in those same years.

The relevant loss ratios are presented in Figure 4 below:

Figure 4: Passenger VFH and Taxi VFH Loss Ratios



Evidence that Passenger VFH rates are not consistent with the indicated break-even actuarially required rate is also found in the comparison of raw and current relativities.

²² TC(MPI) 2-7 (g)

²³ TC(MPI) 2-2 (a)

Based on the comparison of Passenger VFH Raw Relativities to Current Relativities, Passenger VFH rates must increase by 56% to achieve the breakeven actuarial-required rate,²⁴ or by an amount equal to \$1,117.²⁵

By contrast, the applied for experience adjustment for Passenger VFH (Passenger Vehicles), is estimated at 0.67%.²⁶

3.2.3 Passenger VFH Rates will Eventually Reflect the Required Rate

MPI identified that while Passenger VFH rates “are not fully reflective of the potential loss costs”,²⁷ these rates will “eventually move toward the indicated break-even actuarial-required rate, as a result of the ratemaking methodology”.²⁸

MPI describes the ratemaking methodology processes in at pages 47-50 of the Ratemaking Chapter, and response to TC(MPI) 2-3. These processes are summarized as follows:

- Actual raw relativities may be highly variable from year to year, and may be drawn from too small a population to be statistically significant, or represent something other than the ‘true’ break-even required rate.
- To account for this, MPI assigns a credibility weighting to the raw relativities, and the inverse of the credibility weighting to the ‘current’ relativities. Current relativities which are calculated based on the current rates in the rate model, and should generally be reflective of cumulative historical experience.
- The credibility weighting is based on the number of units in the rate model, relative to a judgementally selected constant (60,000). Insurance uses with a small number of units, and very small credibility weightings (less than 0.1) are assigned a weighting of 0.1.
- The effect of this credibility weighting is that, for insurance uses with a small number of units, the actual recent experience is given a 10% weighting, and the ‘current relativities’ (generally reflecting cumulative historical experience) are given a 90% weighting.
- Applied-for rates will therefor move towards the most recently observed experience at a pace dictated by the credibility weighting.
- A constraining factor on the credibility based adjustments are the experience adjustment rules, which have the effect of limiting experience adjustments to a maximum of 15%, regardless of the credibility weighting²⁹.

²⁴ TC(MPI) 2-3 (a)

²⁵ TC(MPI) 2-3 (e)

²⁶ Based on a unit weighted average experience adjustment excluding capital release per TC(MPI)2-5(a). The unit average applied for adjustment per RM Appendix 4 is -4.41%, which includes a capital release. Both figures are for Passenger VFH (Passenger Vehicle) only.

²⁷ TC(MPI) 2-2(b)

²⁸ PUB(MPI) 1-88

²⁹ TC(MPI) 2-3 (a) and RM page 50.

Given the low count of Passenger VFH units, relative to the judgementally selected constant, recent actual Passenger VFH experience is unlikely to ever be weighted by more than 10% in under the existing ratemaking methodology.

3.2.4 Sensitivity Test on Passenger VFH Credibility

A sensitivity test is performed below, to:

1. illustrate MPI’s approach to credibility weighting raw and current relativities; and
2. investigate the impact of on Passenger VFH rates of accelerating the adjustment toward indicated break-even rates, without violating the experience adjustment rules.

The sensitivity test is limited to Passenger VFH (Passenger Vehicles), which represent most rideshare vehicles in operation, to simplify the analysis. It is based on the procedures conducted in RM Appendix 9, Tables 15 and 16, and does not represent the entirety of processes or considerations in MPI’s ratemaking methodology. Accordingly, the analysis and figures presented below should be taken as illustrative, and any final determinations must be confirmed by MPI through the full rate model.

Table 6 presents raw, current, and credibility weighted relativities for Passenger VFH from the 2020 and 2021 GRAs (before product changes).

Table 6: Credibility Weighted Relativities

<u>GRA</u>	<u>Insurance Use</u>	<u>Balanced Raw Relativity</u>	<u>Balanced Current Relativity</u>	<u>Credibility</u>	<u>Credibility Weighted Relativity</u>
2021	Passenger Vehicle-for-Hire (Passenger Vehicle)	2.9930	1.8083	0.10	1.9267
2020	Passenger Vehicle-for-Hire (Passenger Vehicle)	3.1160	1.6593	0.10	1.8049

Source: RM Appendix 9, Table 15

There is a material difference between the raw relativities, and the credibility weighted raw relativities, owing to:

- i. the low credibility weighting assigned to Passenger VFH raw relativity; and
- ii. the low current relativity based on current rates from the rate model.

There are two processes occurring to establish the credibility weighted relativity: establishing the credibility weighting, and determining the credibility weighted average.

Turning first to the credibility weighting, the equation below shows the formula for the credibility weighting factor,³⁰ the judgementally selected constant, and the Passenger VFH Historical Earned Units from RM Appendix 9, Table 15:

³⁰ As described at RM page 48.

$$\frac{N}{N+K} = \frac{\text{Historical Earned Units}}{\text{Historical Earned Units}+60,000} = \frac{1,199}{1,199+60,000} = 0.0195$$

Given the low historical earned units for Passenger VFH, relative the constant, the actual credibility weighting is 0.0195. Per MPI's ratemaking process, the minimum credibility of 0.10 is assigned in the event actual credibility is less than 0.10.

Turning next to the credibility weighted relativities, the balanced raw relativity is weighted by the credibility factor, and the balanced current relativity is weighted by one minus the credibility factor as follows:

$$\begin{aligned} \text{Balanced Raw Relativity} * (0.1) + \text{Balanced Current Relativity} * (0.9) &= \text{Credibility Weighted Relativity} \\ 2.993 * (0.1) + 1.8083 * (0.9) &= 1.9267 \end{aligned}$$

The low credibility factor applied to the raw relativity, allows the current relativity to heavily influence the credibility weighting.³¹ As it relates to Passenger VFH specifically, the initial rating assumptions (substantially reflected in the current relativity) overwhelm the actual experience (substantially reflected in the raw relativity) and generate a weighted relativity for ratemaking purposes that is well below the raw relativity value.

As a sensitivity test of credibility weighting, Table 7 presents the credibility weighted relativities to 0.1 increments of the credibility factor. The right-most column presents the 'new relativity' which has applied the credibility weighted relativity to the balancing procedure described in TC(MPI) 2-5 (b). A sample of the balancing procedures is provided in Appendix 1.

³¹ As an aside, note also that MPI's credibility assignment approach has the property of assigning low credibility based on the number of units, even if those units produce a substantially similar Balanced Raw Relativity each year.

Table 7: Credibility Weighting Sensitivity Test

Balanced Raw Relativity*	Balanced Current Relativity	Adjusted Credibility	Credibility Weighted Relativity*	New Relativity**
3.0156	1.8083	0.1000	1.9290	1.9324
3.0156	1.8083	0.2000	2.0497	2.0531
3.0156	1.8083	0.3000	2.1705	2.1737
3.0156	1.8083	0.4000	2.2912	2.2944
3.0156	1.8083	0.5000	2.4119	2.4150
3.0156	1.8083	0.6000	2.5327	2.5356
3.0156	1.8083	0.7000	2.6534	2.6562
3.0156	1.8083	0.8000	2.7741	2.7767
3.0156	1.8083	0.9000	2.8949	2.8972
3.0156	1.8083	1.0000	3.0156	3.0177

*After Product Change

** After Balancing Procedure

Next, to test the effect of the various credibility weightings on indicated rates, the New Relativities were combined (multiplicatively, per the process outlined in TC(MPI) 2-5), and Modified Indicated Rates for each Territory, at each credibility weighting were calculated, per the procedures outlined at Ratemaking page 49. The complete sensitivity test is presented in Appendix 1.

In order to further test the effect of credibility weightings, a 'goal seek' procedure was performed, whereby the percent increase from prior indicated rates of 15% was targeted, by goal seeking the credibility weighting. This process was performed for each Territory, and carried through the balancing process as reflected in Table 7.

Then the minimum credibility weighting across the Territories was identified. Results are shown in Table 8.

Table 8: Goal Seek Credibility Weights

Major Class	Description	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
		Terr	Major Class Average	Major Class Op. Exp.	New Relativity	Goal Seek Credibility Weighting	Modified New Relativity	Territory Relativity	Modified Combined Relativity	Modified Indicated Rate	2020 GRA Indicated Rates	Modified Rate Present Increase from Prior Rates	Dollar Increase from Prior
		(1)	(1)	(1)	(2)	(3)	(2)	=[F]*[G]	=(B-[C])*[H]+[C]	(3)	=(I-[J])/[J]	=[I]-[J]	
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	1	1,118.48	102.92	1.9316	0.4052	2.3007	1.0563	2.4301	\$ 2,570.89	\$ 2,235.60	15.00%	\$ 335.29
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	2	1,118.48	102.92	1.9316	0.4494	2.3540	0.9186	2.1624	\$ 2,298.99	\$ 1,999.12	15.00%	\$ 299.87
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	3	1,118.48	102.92	1.9316	0.4416	2.3446	0.9744	2.2845	\$ 2,422.97	\$ 2,106.93	15.00%	\$ 316.04
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	4	1,118.48	102.92	1.9316	0.4669	2.3751	0.9428	2.2392	\$ 2,376.97	\$ 2,066.93	15.00%	\$ 310.04
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	5	1,118.48	102.92	1.9316	0.4402	2.3429	1.0767	2.5226	\$ 2,664.81	\$ 2,317.23	15.00%	\$ 347.58
(1)	RM App 9 Table 16				Minimum	0.4052							
(2)	RM App 9 Table 15												
(3)	After Balancing Procedure												
(4)	2020 GRA RM App 9 Table 16												

Next the minimum credibility weighting was reapplied to all Territories, again including the balancing procedure, to ensure that the single 'New Relativity' formed the basis for modified relativities used to calculate indicated rates by Territory. These results are presented in Table 9.

Table 9: Minimum Credibility Weight applied across all Territories

Major Class	Description	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
		Terr	Major Class Average	Major Class Op. Exp.	New Relativity	Min Goal Seek Credibility Weighting	Minimum Modified New Relativity	Territory Relativity	Modified Combined Relativity	Modified Indicated Rate	2020 GRA Indicated Rates	Modified Rate Present Increase from Prior Rates	Dollar Increase from Prior
		(1)	(1)	(1)	(2)	(3)	(3)	(2)	=[F]*[G]	=(B-[C])*[H]+[C]	(3)	=(I-[J])/[J]	=[I]-[J]
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	1	1,118.48	102.92	1.9316	0.4052	2.3007	1.0563	2.4301	\$ 2,570.89	\$ 2,235.60	15.00%	\$ 335.29
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	2	1,118.48	102.92	1.9316	0.4052	2.3007	0.9186	2.1134	\$ 2,249.22	\$ 1,999.12	12.51%	\$ 250.10
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	3	1,118.48	102.92	1.9316	0.4052	2.3007	0.9744	2.2417	\$ 2,379.53	\$ 2,106.93	12.94%	\$ 272.60
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	4	1,118.48	102.92	1.9316	0.4052	2.3007	0.9428	2.1690	\$ 2,305.67	\$ 2,066.93	11.55%	\$ 238.74
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	5	1,118.48	102.92	1.9316	0.4052	2.3007	1.0767	2.4772	\$ 2,618.67	\$ 2,317.23	13.01%	\$ 301.44
(1)	RM App 9 Table 16				Minimum	0.4052							
(2)	RM App 9 Table 15												
(3)	TC Evidence Table 8												
(4)	2020 GRA RM App 9 Table 16												

The result is a credibility weighting of 0.4052 applied to Passenger VFH, resulting in a 15% increase in Territory 1 indicated rates, with slightly smaller increases applied across all other Territories. On dollar basis, the Passenger VFH in Territory 1 would see an increase of \$335.29 at the 15% adjustment limit.

Note that the increase of \$335.29 is just under one third of the total \$1,117 required to bring Passenger VFH rates to indicated break even.

Note also, that through the balancing procedure, as the credibility weighting for Passenger VFH is increased, the relativities of all other insurance uses in the Private Passenger Major class decrease, by a very small amount. The implication is that no other insurance use pays more as a result of modifying Passenger VFH credibility weightings.

Table 10 presents the balanced new relativities for Private Passenger Major Class, at each of credibility weighting increments tested.

Table 10: Private Passenger Major Class Balanced New Relativities

Use	Passenger VFH Credibility weighting									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
All Purpose Motorhome	0.749	0.749	0.748	0.748	0.748	0.748	0.748	0.748	0.748	0.748
All Purpose Passenger Vehicle	1.154	1.154	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153
All Purpose Truck 4540 kg or less	1.027	1.027	1.027	1.026	1.026	1.026	1.026	1.026	1.026	1.026
Antique Vehicle	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
Collector Passenger Vehicle	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
Collector Truck 4540 kg or less	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
Disabled Persons/Private/Business Bus	0.801	0.801	0.801	0.801	0.801	0.800	0.800	0.800	0.800	0.800
Farm Passenger Vehicle	0.824	0.824	0.824	0.824	0.824	0.824	0.824	0.823	0.823	0.823
Farming All Purpose Truck 4540 kg or less	0.752	0.752	0.751	0.751	0.751	0.751	0.751	0.751	0.751	0.751
Fishing All Purpose Truck 4540 kg or less	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.935	0.935	0.935
Passenger Vehicle-for-Hire (Passenger Vehicle)	1.932	2.053	2.174	2.294	2.415	2.536	2.656	2.777	2.897	3.018
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	1.508	1.508	1.508	1.508	1.508	1.508	1.507	1.507	1.507	1.507
Pleasure Motorhome	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.649	0.649	0.649
Pleasure Passenger Vehicle	0.868	0.867	0.867	0.867	0.867	0.867	0.867	0.867	0.867	0.867
Pleasure Truck	0.716	0.716	0.716	0.716	0.715	0.715	0.715	0.715	0.715	0.715

The results of this sensitivity analysis show that a modest credibility weighting adjustment, from 0.1000 to 0.4052, can adjust Passenger VFH rates in a manner consistent with established experience adjustment rules.

More or less aggressive adjustments can be made to credibility weightings to expedite or delay the achievement of break-even indicated rates for Passenger VFH.

3.2.5 Observations

Observation 6: Actual Passenger VFH operation has not conformed with initial expectations, at the time of VFH Framework inception.

Observation 7: The pricing of Passenger VFH rates does not reflect the potential loss costs, and is not consistent with break-even actuarially indicated rates.

Observation 8: Credibility weighting assumptions for Passenger VFH can be modified to accelerate the attainment actuarially indicate break-even rates. Increasing the credibility weighting to approximately 40%, would achieve the effective maximum experience adjustment permitted under current ratemaking rules.

Appendix 1: Principles for Pricing Passenger VFH

This attachment has been prepared by Patrick Bowman, as a supplement to the evidence of Jeff Crozier on behalf of the Taxi Coalition. The following are noted:

- Mr. Bowman is an independent witness and his CV is provided in Appendix 3.
- Mr. Bowman's scope of work and instructions were to review evidence in respect of ratemaking principles applied to the determination of rates for the Passenger Vehicle for Hire class, in light of normal regulatory fairness considerations for customers served by a monopoly service provider.
- Mr. Bowman acknowledges his role is to provide opinion evidence to the Board that is fair, objective and non-partisan.
- Mr. Bowman has endeavoured to ensure all factual assumptions and specific information relied upon are expressly cited in the testimony that follows.

The current situation in respect of Passenger Vehicle for Hire (VFH) is a relatively unique condition in the realm of regulated ratemaking. Under normal conditions, regulation of rates for essential services or monopolies is based on considerations of balancing such criteria as fairness and long-term stability. A proper rate design is often understood to encompass multiple competing criteria. One well-known example is the rate structure criteria enumerated by James Bonbright, as follows:³²

1. The related, "practical" attributes of simplicity, understandability, public acceptability, and feasibility of application.
2. Freedom from controversies as to proper interpretation.
3. Effectiveness in yielding total revenue requirements under the fair-return standard.
4. Revenue stability from year to year.
5. Stability of the rates themselves, with a minimum of unexpected changes seriously adverse to existing customers. (Compare "The best tax is an old tax").
6. Fairness of the specific rates in the apportionment of total costs of service among the different consumers.
7. Avoidance of "undue discrimination" in rate relationships.
8. Efficiency of the rate classes and rate blocks in discouraging wasteful use of service while promoting all justified types and amounts of use:
 - (a) in the control of the total amounts of service supplied by the company:
 - (b) in the control of the relative uses of alternative types of service (on-peak versus off-peak electricity, Pullman travel versus coach travel, single-party telephone service versus service from a multi-party line, etc.).

³² Bonbright, James C., Principles of Public Utility Rates. Columbia University Press. 1960. page 291.

Unlike the conditions that normally underpin rate regulation, the facts surrounding Passenger VFH are different. In practical terms, there is no “old tax” (as per criteria 5 above) as the entire category has only existed a relatively few years. Further questions of discouraging “wasteful use” while promoting all justified uses is a matter of key concern (criteria 8), as is avoidance of undue discrimination (criteria 7).

This attachment addresses these matters.

Background

In preparing this Attachment, the following key facts have been relied upon:

1. Passenger VFH is the category of users who participate in sale of ride-sharing as part of engagement with Transportation Network Companies (TNCs).
2. The Passenger VFH insurance framework has existed in Manitoba only since 2018.
3. Passenger VFH rates were set based on a brief interim application which relied upon no factual information about the performance of actual TNC drivers in Manitoba (as they did not exist at that time), and extremely limited information about costs charged to TNC drivers for insurance in Ontario, Alberta and Quebec at that time.³³
4. MPI noted at the time that there was no industry standard for how to insure TNC drivers.³⁴ There was no information on any jurisdiction who had a public insurer. [Current information appears to indicate there remains no industry standard in Canada, and to the extent there are some similarities (e.g., umbrella TNC insurance), these similarities are not shared by MPI].
5. MPI presumed in 2018 that TNC drivers would “would drive for a ridesharing company on a casual basis and pick up passengers as part of their regular day-today driving from one place to another”.³⁵ It appears this has proven to be inaccurate.
6. MPI proposed and was approved to set Passenger VFH rates under the Private Passenger Major Class, based on a premium to private vehicles All Purpose rates (5-20%). This percentage was selected even though MPI at the time already recognized that other jurisdictions charged rates at that time up to 25% above private passenger all-purpose rates.³⁶
7. Although over 2 years has passed since the first interim Passenger VFH rates were implemented, the only jurisdictional update provided by MPI relates to Saskatchewan, and not to the original 3 comparator jurisdictions (Ontario, Alberta and Quebec).
8. In respect of Saskatchewan, the update indicates that a TNC driver will face costs approaching 30% higher than equivalent passenger vehicles if the TNC driver only participates in 3500 km of ridesharing per year.³⁷ The rate is charged “per km” so the premium would go up significantly

³³ VFH Application pages 14-15.

³⁴ VFH Application, page 6.

³⁵ TC(MPI)-1-2

³⁶ VFH Application, pages 14-15.

³⁷ TC(MPI)-1-16

if the TNC drivers participate in more kilometers per year. MPI does not indicate that there is any known relevance to the 3500 km level.

9. MPI has not collected data on the typical or maximum kilometers driven by TNC drivers in Manitoba.
10. On the basis of experience to date (since 2018), the Passenger VFH rate that was set is dramatically too low. The rate would need to increase by 56% to reach full cost recovery. However, despite this appearing to be a very large percentage, this cost increase is only \$1,117 per year – the dramatic looking percentage arises because the original Passenger VFH rate was set so low.
11. Despite the apparent dramatic disconnect between actual experience and original hypothesis, MPI has not investigated whether Passenger VFH should be included in the Public Class (where vehicles intended for public use reside) rather than the Private Passenger class. This change may lead to a more rapid reflection of the realized Passenger VFH experience in rates, but the impact is uncertain and has not been studied.
12. MPI has relied upon its traditional Ratemaking approaches to determine the proposed Passenger VFH rates in this application. Under this proposal, the rates would increase an average of only 0.67%.³⁸ MPI's basic contention is that the actual experience to date may not be indicative of actual underlying long-term performance, and as a result should be only lightly considered while past ratemaking results should be more heavily weighted. MPI does not address the unfortunate fact that past ratemaking was based on no experience whatsoever.
13. Passenger VFH activities would be understood to be directly competitive with Taxicab VFH activities. However, Passenger VFH drive incurred expenses at 124% of premiums paid averaged over the last 2 years (130% and 120% in 2018 and 2019 respectively) while Taxicab VFH drive only 86% of incurred expenses per premiums paid (86% and 86% for 2018 and 2019 respectively).³⁹

In the event there are material factual misunderstandings in the above statements, it is possible the conclusions of this Attachment could change.

Observations

MPI's proposals represent a gross misapplication of traditional regulatory rate design principles. MPI has mistakenly relied upon principles that, under normal circumstances, would be relevant, but applied these principles to a situation where they are causing material market distortions and unfairness.

First, MPI has relied upon the fact that the Passenger VFH data set has limited experience and credibility to suggest that rate movements should be limited. The unstated complement to MPI's recommendation is that the original rate setting inputs should be more heavily weighted. This is not appropriate. The original inputs were from 2018 and were of extremely limited value and based

³⁸ See Footnote 26.

³⁹ PUB(MPI)-1-88, Figure 1.

on no data whatsoever. The concept that the original inputs are of more importance than actual observed data is erroneous. Further, the observed data, despite its limited quantity, does exhibit a relatively tight range of outcomes (120% and 130% of premiums for the 2 years in question) which suggests MPI is being overly cautious in assigning this data such a low weighting.

Second, and more importantly, MPI has relied, in effect, on the principle of rate stability. The concept of rate stability as a rate design criteria is ultimately rooted in a principle that the monopoly provider (or the regulator) has a duty owed to the customer being served, to provide them with a product at a stable long-term price. Such principle would not appear to be a high value in this case, for the following reasons:

1. The Passenger VFH operators have only made use of the service for 2-3 years. These TNC drivers have not yet established a long-term business based on any valid assumptions of input cost stability. This is not like the situation more typical to the Public Utilities Board of major power consumers, for example, who have committed millions in capital investment many years prior premised on stable cost power supplies – even the longest standing operators are still relatively new, and many are extremely new to the business.
2. Second, in the event the Passenger VFH data collected to date is robust and holds up, under MPI's proposal, the TNC operators will likely see material rate increases each and every year for many years. This could readily have the effect of luring MPI's customers (potential TNC drivers) into the TNC business, and making investments or choices, based on misleading cost data about what it will take to operate. Consider the case of the hypothetical 3500 km/year TNC driver cited by MPI at TC(MPI)-1-16. This driver would see a low insurance rate to start (2021), but large and compounding increases over the coming years that total over \$1100 – or over \$0.30/km driven. Such a large cost (equal to multiples of the cost of fuel) could be material to the decision to invest time and resources in ride sharing. Hiding this impending cost from drivers who are just starting out would not be transparent or fair. Fairness to MPI customers in this situation would be better served by rapidly providing them with a proper price signal about the insurance services they will need to acquire now and in the future.
3. MPI's actions also drive a material distortion in the market for transportation services, charging Taxicab VFH customers a rate that is representative of the costs to insure their service (incurred costs at 86% of premiums paid) while Passenger VFH is heavily subsidized from their Major Class of Private Passenger vehicles (while the operators incur costs at 124% of premiums paid).

Based on an appropriate application of the principles underlying monopoly service provision in a regulated environment, MPI should be directed to implement a far more notable price increase to Passenger VFH customers. A move to fully reflect the best available cost data (a 56% increase) should not be rejected. Alternatively, a minimum move on the order of 40% for 2021, which would permit MPI to then reach full cost recovery in one additional year with an increase on the order of approximately 15%, may also merit consideration, if some measure of gradualism is preferred.

Even in the case where future data suggests the current information was imperfect due to small sample sizes, it needs to be recognized that such variability could just as easily indicate even larger increases are needed in future, as to indicate smaller increases are needed. To avoid the unfair

and improper price signal of temporarily subsidized services at the very time many individuals may be making decisions about participating in the TNC market, and to ensure MPI is not distorting a vibrant commercial market, the normal MPI rate design principles regarding stability should be suspended.

Appendix 2: Sensitivity Test Schedules

Table 1: Overall Sensitivity Test Results

Major Class	Description	[A] Terr (1)	[B] Major Class Average (1)	[C] Major Class Op. Exp. (1)	[D] New Relativity (2)	[E] Credibility Weighting (3)	[G] Modified New Relativity (3)	[H] Territory (2)	[I] Modified Combined Relativity =[G]+[I]	[J] Modified Indicated Rate =[(B)-(C)]*[I]+[C]	[K] 2020 GRA Indicated Rates (3)	[L] Modified Rate Percent Increase from Prior Rates =[(J)-[K]}/[K]	[M] Dollar Increase from Prior Applied =[J]-[K]
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	1	1,118.48	102.92	1.932	0.1	1.932	1.056	2.041	\$ 2,175.81	\$ 2,235.60	-2.7%	\$ 59.79
					1.932	0.2	2.053	1.056	2.169	\$ 2,305.29	\$ 69.69		
					1.932	0.3	2.174	1.056	2.296	\$ 2,434.74	\$ 199.14		
					1.932	0.4	2.294	1.056	2.424	\$ 2,564.17	\$ 328.57		
					1.932	0.5	2.415	1.056	2.551	\$ 2,693.56	\$ 457.96		
					1.932	0.6	2.536	1.056	2.678	\$ 2,822.92	\$ 587.32		
					1.932	0.7	2.656	1.056	2.806	\$ 2,952.25	\$ 716.65		
					1.932	0.8	2.777	1.056	2.933	\$ 3,081.55	\$ 845.95		
					1.932	0.9	2.897	1.056	3.060	\$ 3,210.83	\$ 975.23		
					1.932	1.00	3.018	1.056	3.188	\$ 3,340.07	\$ 1,104.47		
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	2	1,118.48	102.92	1.932	0.1	1.932	0.919	1.775	\$ 1,905.64	\$ 1,999.12	-4.7%	\$ 93.48
					1.932	0.2	2.053	0.919	1.886	\$ 2,018.24	\$ 19.12		
					1.932	0.3	2.174	0.919	1.997	\$ 2,130.82	\$ 131.70		
					1.932	0.4	2.294	0.919	2.108	\$ 2,243.38	\$ 244.26		
					1.932	0.5	2.415	0.919	2.218	\$ 2,355.90	\$ 356.78		
					1.932	0.6	2.536	0.919	2.329	\$ 2,468.41	\$ 469.29		
					1.932	0.7	2.656	0.919	2.440	\$ 2,580.88	\$ 581.76		
					1.932	0.8	2.777	0.919	2.551	\$ 2,693.33	\$ 694.21		
					1.932	0.9	2.897	0.919	2.661	\$ 2,805.75	\$ 806.63		
					1.932	1.00	3.018	0.919	2.772	\$ 2,918.15	\$ 919.03		
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	3	1,118.48	102.92	1.932	0.1	1.932	0.974	1.883	\$ 2,015.08	\$ 2,106.93	-4.4%	\$ 91.85
					1.932	0.2	2.053	0.974	2.000	\$ 2,134.52	\$ 27.59		
					1.932	0.3	2.174	0.974	2.118	\$ 2,253.94	\$ 147.01		
					1.932	0.4	2.294	0.974	2.236	\$ 2,373.33	\$ 266.40		
					1.932	0.5	2.415	0.974	2.353	\$ 2,492.69	\$ 385.76		
					1.932	0.6	2.536	0.974	2.471	\$ 2,612.02	\$ 505.09		
					1.932	0.7	2.656	0.974	2.588	\$ 2,731.32	\$ 624.39		
					1.932	0.8	2.777	0.974	2.706	\$ 2,850.60	\$ 743.67		
					1.932	0.9	2.897	0.974	2.823	\$ 2,969.85	\$ 862.92		
					1.932	1.00	3.018	0.974	2.940	\$ 3,089.07	\$ 982.14		
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	4	1,118.48	102.92	1.932	0.1	1.932	0.943	1.822	\$ 1,953.05	\$ 2,066.93	-5.5%	\$ 113.88
					1.932	0.2	2.053	0.943	1.936	\$ 2,068.62	\$ 1.69		
					1.932	0.3	2.174	0.943	2.049	\$ 2,184.16	\$ 117.23		
					1.932	0.4	2.294	0.943	2.163	\$ 2,299.67	\$ 232.74		
					1.932	0.5	2.415	0.943	2.277	\$ 2,415.16	\$ 348.23		
					1.932	0.6	2.536	0.943	2.391	\$ 2,530.62	\$ 463.69		
					1.932	0.7	2.656	0.943	2.504	\$ 2,646.06	\$ 579.13		
					1.932	0.8	2.777	0.943	2.618	\$ 2,761.46	\$ 694.53		
					1.932	0.9	2.897	0.943	2.731	\$ 2,876.84	\$ 809.91		
					1.932	1.00	3.018	0.943	2.845	\$ 2,992.20	\$ 925.27		
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	5	1,118.48	102.92	1.932	0.1	1.932	1.077	2.081	\$ 2,215.94	\$ 2,317.23	-4.4%	\$ 101.29
					1.932	0.2	2.053	1.077	2.211	\$ 2,347.93	\$ 30.70		
					1.932	0.3	2.174	1.077	2.341	\$ 2,479.89	\$ 162.66		
					1.932	0.4	2.294	1.077	2.470	\$ 2,611.82	\$ 294.59		
					1.932	0.5	2.415	1.077	2.600	\$ 2,743.72	\$ 426.49		
					1.932	0.6	2.536	1.077	2.730	\$ 2,875.58	\$ 558.35		
					1.932	0.7	2.656	1.077	2.860	\$ 3,007.42	\$ 690.19		
					1.932	0.8	2.777	1.077	2.990	\$ 3,139.23	\$ 822.00		
					1.932	0.9	2.897	1.077	3.120	\$ 3,271.00	\$ 953.77		
					1.932	1.00	3.018	1.077	3.249	\$ 3,402.75	\$ 1,085.52		

(1) RM App 9 Table 16
 (2) RM App 9 Table 15
 (3) From TC Evidence Table 7
 (4) 2020 GRA RM App 9 Table 16

Table 2: 0.1 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity		Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity	
		After Prod Change	Change			After Prod Change	Change	After Prod Change	Change
All Purpose Motorhome	138	0.9078		0.7295	0.1000	0.7465	0.7473	0.7478	0.7486
All Purpose Passenger Vehicle	368,542	1.1518		1.1494	0.9679	1.1517	1.1517	1.1537	1.1537
All Purpose Truck 4540 kg or less	120,961	1.0232		1.0434	0.9092	1.0250	1.0250	1.0268	1.0268
Antique Vehicle	193	0.0009		0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303		0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684		0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901		0.7895	0.1000	0.7995	0.7995	0.8008	0.8009
Farm Passenger Vehicle	5,778	0.8250		0.8214	0.3475	0.8227	0.8227	0.8242	0.8241
Farming All Purpose Truck 4540 kg or less	30,234	0.7524		0.7450	0.7148	0.7503	0.7503	0.7516	0.7516
Fishing All Purpose Truck 4540 kg or less	304	0.8505		0.9439	0.1000	0.9345	0.9345	0.9361	0.9362
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.1000		1.9282	1.9290	1.9316	1.9324
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000		1.5060	1.5059	1.5086	1.5085
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975		0.6486	0.6489	0.6497	0.6500
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460		0.8660	0.8660	0.8675	0.8675
Pleasure Truck	61,265	0.7149	0.7130	0.8309		0.7146	0.7146	0.7158	0.7158
	812,577						0.9983		1.0000

Table 3: 0.2 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity		Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity
		After Prod Change	Change			After Prod Change	Change	
All Purpose Motorhome	138	0.9078		0.7295	0.1000	0.7473		0.7485
All Purpose Passenger Vehicle	368,542	1.1518		1.1494	0.9679	1.1517		1.1536
All Purpose Truck 4540 kg or less	120,961	1.0232		1.0434	0.9092	1.0250		1.0267
Antique Vehicle	193	0.0009		0.0197	0.1000	0.0178		0.0178
Collector Passenger Vehicle	4,015	0.1303		0.0939	0.1982	0.1011		0.1013
Collector Truck 4540 kg or less	746	0.0684		0.0388	0.1000	0.0417		0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901		0.7895	0.1000	0.7995		0.8008
Farm Passenger Vehicle	5,778	0.8250		0.8214	0.3475	0.8227		0.8240
Farming All Purpose Truck 4540 kg or less	30,234	0.7524		0.7450	0.7148	0.7503		0.7515
Fishing All Purpose Truck 4540 kg or less	304	0.8505		0.9439	0.1000	0.9345		0.9360
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.2000		2.0497		2.0531
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000		1.5059		1.5083
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975		0.6489		0.6499
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460		0.8660		0.8674
Pleasure Truck	61,265	0.7149	0.7130	0.8309		0.7146		0.7157
	812,577					0.9984		1.0000

Table 4: 0.3 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7485
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1535
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0266
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8007
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8239
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7514
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9359
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.3000	2.1705	2.1737
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5081
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6499
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8673
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7156
	812,577				0.9985	1.0000

Table 5: 0.4 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7484
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4000	2.2912	2.2944
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5080
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7156
	812,577				0.9986	1.0000

Table 6: 0.5 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1532
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0263
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8005
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8237
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9357
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.5000	2.4119	2.4150
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5078
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6497
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8671
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7155
	812,577				0.9987	1.0000

Table 7: 0.6 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7482
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1531
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0262
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8005
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8236
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7512
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9356
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.6000	2.5327	2.5356
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5076
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6496
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8670
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7154
	812,577				0.9988	1.0000

Table 8: 0.7 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7481
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1529
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0261
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8004
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8235
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7511
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9355
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.7000	2.6534	2.6562
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5074
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6496
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8669
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7153
	812,577				0.9990	1.0000

Table 9: 0.8 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7480
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1528
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0260
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8003
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8234
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7510
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9354
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.8000	2.7741	2.7767
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5073
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6495
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8668
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7152
	812,577				0.9991	1.0000

Table 10: 0.9 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7479
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1527
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0259
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8002
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8234
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7509
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9353
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.9000	2.8949	2.8972
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5071
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6494
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8667
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7151
	812,577				0.9992	1.0000

Table 11: 1.0 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7479
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1525
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0257
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8001
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8233
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7508
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9352
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	1.0000	3.0156	3.0177
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5069
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6493
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8666
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7151
	812,577				0.9993	1.0000

Table 12: Terr 1 Balancing with Goal Seek (Supporting Table 8)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity	
		After Prod Change			After Prod Change	After Prod Change	After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7484
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4052	1.9282	2.2975	1.9316	2.3007
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7156
	812,577					0.9986		1.0000

Table 13: Terr 2 Balancing with Goal Seek (Supporting Table 8)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity	
		After Prod Change			After Prod Change	After Prod Change	After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4494	1.9282	2.3509	1.9316	2.3540
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6497
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 14: Terr 3 Balancing with Goal Seek (Supporting Table 8)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity	
		After Prod Change			After Prod Change	After Prod Change	After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4416	1.9282	2.3414	1.9316	2.3446
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 15: Terr 4 Balancing with Goal Seek (Supporting Table 8)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity	
		After Prod Change			After Prod Change	After Prod Change	After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4669	1.9282	2.3720	1.9316	2.3751
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5078
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6497
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 16: Terr 5 Balancing with Goal Seek (Supporting Table 8)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity	
		After Prod Change			After Prod Change	After Prod Change	After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4402	1.9282	2.3397	1.9316	2.3429
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 17: Balancing with Goal Seek Minimum (Supporting Table 9)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity		New Relativity	
		After Prod Change			After Prod Change	After Prod Change	After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7484
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4052	1.9282	2.2975	1.9316	2.3007
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7156
	812,577					0.9986		1.0000

Goal Seek Minimum 0.405193

APPENDIX 3: Resumes



JEFF CROZIER

CONSULTANT

AREAS OF EXPERIENCE:

- Utility Rate Regulation
- Auto-insurance Rate Regulation
- Competitive Wholesale and Retail Electricity Markets

EDUCATION:

- Master of Arts - Economics, McGill University, 2005
- Bachelor of Commerce (Hons), University of Manitoba, 2003



PROFESSIONAL EXPERIENCE:

InterGroup Consultants Ltd., Winnipeg, Manitoba

2006 – 2008, Research Analyst; 2020 – Present, Consultant

Utility Regulation

- **For the Utilities Consumer Advocate (Alberta)**, as a member of the project team, actively contribute to intervention on ATCO Pipelines 2021-2023 General Rate Application, including developing information requests, case strategy and evidence if required. *(This project is ongoing)*
- **For Consumers Association of Canada (Manitoba)**, as a member of the project team, actively contribute to intervention on Manitoba Public Insurance's 2021 General Rate Application, including developing information requests, case strategy and evidence if required. *(This project is ongoing)*.
- **For Winnipeg Taxi Coalition**, as a member of the project team, lead the intervention on Manitoba Public Insurance's 2021 General Rate Application, including developing information requests, case strategy and evidence if required. *(This project is ongoing)*.
- **For the Utilities Consumer Advocate (Alberta)**, as a member of the project team, review and provide support to the evidentiary submission on the implications for Performance Based Ratemaking of the anticipated broad based adoption of Distributed Energy Resources.
- **For Manitoba Industrial Power Users Group**, conducted a survey of inverted stepped rates offered



my major electric utilities in North America, and a brief review of the literature on stepped rate design principles. Also conducted a survey of industrial power rate design in the Pacific Northwest, including a historical record of developments leading to the current methodology.

- **For Yukon Energy**, involved in the preparation of regulatory filing documents related to business planning and year end actual outcomes. Directly involved in the maintenance and operation of a financial regulatory model used to produce the regulated operations year end results and forecasts.
- **For Industrial Customers of Newfoundland and Labrador Hydro**, reviewed hydraulic forecasting methodology and assessed average annual hydraulic production estimates of Newfoundland Hydro. Also conducted research into the application of marginal cost price signals, through stepped rate design and time of use rates, for industrial customers in Newfoundland.
- **For Northwest Territories Power Corporation**, involved in preparing analysis and documentation for matters related to regulatory filings, cost of service, and rate design. Specific attention to areas concerning load forecasting. Researched and prepared directive response regarding best practices for design of stand-by rates for self-generating customers.
- **For the Town of Hay River**, prepare revenue requirement, cost of service and rate design for the town water and sanitary sewer system. *(This project is ongoing).*

Economic Valuations

- **For Manitoba Industrial Power Users Group**, conducted an economic impact assessment of Canexus operations on the Manitoba economy, assessing contributions to value added or GDP, employment, and labour income, including relevant multiplier analyses. Carried out a similar economic impact assessment for the proposed Keystone pipeline.
- **For Beverly and Qamanirjuaq Caribou Management Board**, conducted an economic valuation of the estimated harvest of the Beverly and Qamanirjuaq caribou herds.

Socio-Economic Impact Assessment and Mitigation

- **For Manitoba Hydro**, conducted a forecast of Pre-Project Training Outputs, and a supply and demand analysis of the work force for the Wuskwatim and Keeyask generating station construction projects. Forecasting involved the design and testing of a parameterized structural model, whose results fed into a supply and demand analysis to identify and quantify instances of oversupply and unmet demand. Produced a report of key findings, methodology and detailed results for internal review at Manitoba Hydro.
- **For Yukon Energy Corporation**, conducted an analysis of economic Valued Environmental Components (VEC) for the environmental impact statement of the Carmacks-Stewart Transmission Line regulatory submission.

Management Support

- **For Atoskiwin Training and Employment Center**, conducted an analysis of existing business model, designed and generated an updated business model to facilitate transition of business activities from a public funding model to private enterprise model.



Manitoba Public Insurance Corporation (MPI), Winnipeg, Manitoba

2016 – 2020, Director, Regulatory Affairs

- Accountable for the delivery, performance and outcomes of MPI before the Manitoba Public Utilities Board (PUB).
- Direct and oversee and the development of the annual General Rate Application (GRA), drawing on all divisions in the corporation to prepare a revenue requirement application in excess of \$1 billion, including:
 - Develop overall strategy and key messages for application;
 - Provide situation assessments and recommend approaches to executive;
 - Review, approve and prepare as necessary, application materials, procedural submissions, information requests/responses, and lines of cross examination;
 - Prepare CEO opening presentation, rebuttal evidence and closing arguments; and
 - Network with the PUB and intervener counsel to improve regulatory efficiency.
- Brief and provide recommendations to the MPI Board of Directors on regulatory process and strategy.
- Consult and advise government on the regulatory framework for MPI.
- Advocate alternative approaches to price regulation to reduce the regulatory burden on the corporation.
- Debrief with PUB, interveners, and internal staff to improve processes and outcomes.
- Prepare and manage the expense budget for the Regulatory Affairs division, and the regulatory process overall.

Utilities Consumer Advocate (UCA), Calgary, AB

2014 – 2016 Senior Analyst/Manager, Regulatory Operations

- Direct the operation of UCA regulatory interventions before the Alberta Utilities Commission and other authorities.
- Coordinate the efforts of staff, consultants and external counsel, including:
 - Review of applications to determine consumer impacts and the need for consumer intervention;
 - Assemble regulatory team for the intervention, and ensure appropriate resources are available;
 - Review and approve regulatory filings, including information requests, evidence and argument prepared by staff, consultants, and external counsel;
 - Review and approve procedural submissions, and guide activities on interlocutory matters;
 - Ensure consistency between UCA positions in regulatory proceedings across various utilities; and



- Coordinate efforts and manage relationships with other consumer groups and interveners in Alberta.
- Prepared evidence of the UCA on Regulated Rate Options and Performance Based Regulation
- Provide written and oral briefs to the UCA Advisory Board, and other Government of Alberta senior management.
- Represent the UCA interests on industry committees and through negotiated settlement processes.
- Guide strategic policy development to further small consumer interests through legislative, and government policy avenues.
- In conjunction with UCA counsel and expert witnesses, participate in UCA Regulatory interventions.
- Member of Alberta Treasury Board Macroeconomic Forecasting Committee.

Alberta Market Surveillance Administrator, Calgary, AB

2009 – 2011 Electricity Market Analyst

- As a member of the Market Monitoring Group, conducted real time and post hoc monitoring of the Alberta Interconnected Electric System Spot Market, to identify market events and anomalies in the functioning of the electricity market.
- Developed new and existing surveillance tools to monitor market participant pricing strategies, market supply and demand, and other price setting factors in the electricity market.
- Applied metrics to assess the market outcomes and the state of competition in the energy market. Methodologies and results were published to stakeholders in Market Surveillance Administrator quarterly reports.
- Presented findings of market events and outcomes to industry stakeholders, including the annual meeting of the international working group of electricity market monitors (EISG).

National Energy Board, Calgary Alberta

2008 – 2009, Electricity Market Analyst

- Review and process applications for electricity export permit applications
 - Provide assessment and recommendations for approval of export permit applications
 - Conduct general electricity market surveillance across Canada, including retail and wholesale price comparisons, compile import and export statistics, and prepare electricity market outlooks and forecasts
-

PATRICK BOWMAN
Principal Consultant
Bowman Economic Consulting Inc.

161 Rue Hebert
Winnipeg, Manitoba
R2H 0A5 CANADA

AREAS OF EXPERIENCE:

- Utility Regulation and Rates
- Project Development and Planning
- Utility Resource Planning

EDUCATION:

- MNRM (Master of Natural Resources Management), University of Manitoba, 1998
- Bachelor of Arts (Human Development and Outdoor Education), Prescott College (Arizona), 1994

PROFESSIONAL EXPERIENCE:

Bowman Economic Consulting Inc., Winnipeg, Manitoba

2020 – Principal Consultant

Conduct consulting assignments as Principal Consultant of new economic consulting firm, focused on utility regulation.

InterGroup Consultants Ltd., Winnipeg, Manitoba

1998 – 2020 – Research Analyst/Consultant/Principal/Senior Associate

Utility Regulation

Conducted research and analysis for regulatory and rate reviews of electric, gas and water utilities in eight Canadian provinces and territories and international. Prepared evidence and expert testimony for regulatory hearings. Assisted in utility capital and operations planning to assess impact on rates and long-term rate stability. Major clients included the following:

- **For Manitoba Industrial Power Users Group (1998 – 2020):** Prepare analysis and evidence for regulatory proceedings before Manitoba Public Utilities Board representing large industrial energy users. Appear before PUB as expert in General Rate Application and revenue requirement reviews, the Needs For and Alternatives To (NFAT) resource planning hearing, depreciation, cost of service, and rate design matters. Assist in regulatory analysis of the purchase of local gas distributor (Centra Gas) by Manitoba Hydro. Assist industrial power users with respect to assessing alternative rate structures, surplus energy rates and demand side management initiatives including curtailable rates and load displacement.
- **For Northwest Territories Power Corporation (2000 - 2020):** Provide technical analysis and support regarding General Rate Applications and related Public Utilities Board filings, major capital developments and utility acquisition and valuation topics. Assist in preparation of evidence and providing overall guidance to subject specialists in such topics as depreciation and return. Appear before PUB as expert in revenue requirement, cost of service and rate design matters, and on system planning reviews (Required Firm Capacity).
- **For Industrial Customers of Newfoundland and Labrador Hydro (2001 – 2020):** Prepare analysis and evidence for Newfoundland Hydro GRA hearings before Newfoundland Board of Commissioners of Public Utilities representing large industrial energy users. Provide advice on interventions in respect of major new transmission facilities, depreciation, rate mitigation for major new capital spending. Appear before PUB as expert in cost of service and rate design matters.

- **For Nelson Hydro (2013 - 2020):** Development and updating of a Cost of Service model and filings before the BCUC.
- **For City of Chestermere (2015 – 2020):** Analysis of rate proposals from Chestermere Utilities Inc. and review of strategic options for utility.
- **For the Office of the Utilities Consumer Advocate of Alberta (2016 – 2020):** Provide expert witness and strategic support of multiple depreciation and revenue requirement proceedings. This includes ongoing participation in depreciation working group discussions on behalf of the UCA.
- **For the Association of Major Power Consumers of British Columbia (2015 – 2020):** Provide expert advice in the current 2020-2021 Revenue Requirement Application with a focus on general service large and transmission service customers. Provide consulting support regarding transmission service customer and rate design issues in the 2015 Rate Design Application.
- **Vancouver Airport Fuel Facilities Corporation (2019 – 2020):** Review pipeline tolling application on revenue requirement and depreciation, prepare interrogatories and draft issues for evidence.
- **Jamaica Public Service (2019):** Assist in preparation of regulatory documents, Executive Summary, review of strategic issues for General Rate Application.
- **For Hualapai Tribal Utility Authority (2017 - 2018):** Provided strategic advice to the HTUA Board, and completion of a feasibility study and Cost of Service analysis for the acquisition of assets and development of a tribally-owned distribution utility, including power purchase and transmission, asset purchase (acquisition value) and replacement costs, and ongoing operation and maintenance costs. The assignment included a review of comparable jurisdiction cost and rate structures, building a financial model with input cost variables, reporting and presenting in HTUA Board meetings.
- **For Yukon Energy Corporation (1998 - 2014):** Provided analysis and support of regulatory proceedings and normal regulatory filings before the Yukon Utilities Board. Appeared before YUB as expert on revenue requirement matters, depreciation, cost of service, rate design, and resource planning. Prepared analysis of major capital projects, financing mechanisms to reduce rate impacts on ratepayers. Analysis and support regarding utility asset transfer and system rationalization among various utilities.
- **For City of Swift Current (2013 - 2014):** Utility system valuation for acquisition and disposition alternatives assessment.
- **For Municipal Customers of City of Calgary Water Utility (2012 - 2017):** Analysis of proposed new development charges and reasonableness of water and wastewater rates (City of Chestermere, City of Airdrie, Town of Cochrane, and Town of Strathmore).
- **For Yukon Development Corporation (1998 - 2012):** Prepared analysis and submission on energy matters to Government. Participated in development of options for government rate subsidy programs. Assisted with review of debt purchase, potential First Nations investment in utility projects, and corporate governance.
- **For NorthWest Company Ltd. (2004 - 2006):** Reviewed rate and rider applications by Nunavut Power Corporation (Qulliq Energy). Provided analysis and submission to rate reviews before the Utility Rates Review Council.

Project Development, Socio-Economic Impact Assessment and Mitigation

Provide support in project development, local investment opportunities or socio-economic impact mitigation programs for energy projects, including northern Manitoba, Yukon, and NWT. Support to local communities in resolution of outstanding compensation claims related to hydro projects.

- **For Yukon Energy Corporation (2005 - 2014):** Participated in preparation of resource plans, including Yukon Energy's 20-Year Resource Plan Submission to the Yukon Utilities Board in 2005 (including providing expert testimony before the YUB), advisor on 2010 update. Project Manager for all planning phases of the Mayo B hydroelectric project (\$120 million project) including environmental assessment and licencing, preliminary project design, preparation of materials for Yukon Utilities Board hearing, joint YEC/First Nation working group on all technical matters related to project including fisheries, managing planning phase financing and budgets. Assistance in preparation of assessment documentation for Whitehorse LNG generation project.
- **For Northwest Territories Power Corporation (2010 - 2012):** Participated in planning stages of \$37 million dam replacement project; appear before Mackenzie Valley Land and Water Board (MVLWB) regarding environmental licence conditions; participate in contractor negotiations, economic assessments, and ongoing joint company/contractor project Management Committee. Provided economic and rate analysis of potential major transmission build-out to interconnect to southern jurisdictions.
- **For Northwest Territories Energy Corporation (2003 - 2005):** Provided analysis and support to joint company/local community working groups in development of business case and communication plans related to potential new major hydro and transmission projects.
- **For Kwadacha First Nation and Tsay Keh Dene (2002 - 2004):** Supported and analysed potential compensation claims related to past and ongoing impacts from major northern BC hydroelectric development. Reviewed options related to energy supply, including change in management contract for diesel facilities, potential interconnection to BC grid, or development of local hydro.
- **For Manitoba Hydro Power Major Projects Planning Department (1999 - 2002):** Initial review and analysis of socio-economic impacts of proposed new northern generation stations and associated transmission. Participation in joint working group with client and northern First Nation on project alternatives (such as location of project infrastructure).
- **For Manitoba Hydro Mitigation Department (1999 - 2002):** Provided analysis and process support to implementation of mitigation programs related to past northern generation projects, debris management program.
- **For International Joint Commission (1998):** Analysis of current floodplain management policies in the Red River basin, and assessment of the suitability of alternative floodplain management policies.
- **For Nelson River Sturgeon Co-Management Board (1998 and 2005):** An assessment of the performance of the Management Board over five years of operation and strategic planning for next five years.

Government of Northwest Territories, Yellowknife, Northwest Territories

1996 – 1998 Land Use Policy Analyst

Conducted research into protected area legislation in Canada and potential for application in the NWT. Primary focus was on balancing multiple use issues, particularly mining and mineral exploration, with principles and goals of protection.

Patrick Bowman - Experience in Utility Regulatory Proceedings

Utility	Proceeding	Work Performed	Before	Client	Year	Oral Testimony
Yukon Energy Corporation	Final 1997 and Interim 1998 Rate Application	Analysis and Case Preparation	Yukon Utilities Board (YUB)	Yukon Energy	1998	No
Manitoba Hydro	Curtailable Service Program Application	Analysis, Preparation of Intervenor Evidence and Case Preparation	Manitoba Public Utilities Board (MPUB)	Manitoba Industrial Power Users Group (MIPUG)	1998	No
Yukon Energy	Final 1998 Rates Application	Analysis and Case Preparation	YUB	Yukon Energy	1999	No
Westcoast Energy	Sale of Shares of Centra Gas Manitoba, Inc. to Manitoba Hydro	Analysis and Case Preparation	MPUB	MIPUG	1999	No
Manitoba Hydro	Surplus Energy Program and Limited Use Billing Demand Program	Analysis and Case Preparation	MPUB	MIPUG	2000	No
West Kootenay Power	Certificate of Public Convenience and Necessity - Kootenay 230 kV Transmission System Development	Analysis of Alternative Ownership Options and Impact on Revenue Requirement and Rates	British Columbia Utilities Commission (BCUC)	Columbia Power Corporation/Columbia Basin Trust	2000	No
Northwest Territories Power Corporation (NTPC)	Interim Refundable Rate Application	Analysis and Case Preparation	Northwest Territories Public Utilities Board (NWTPUB)	Northwest Territories Power Corporation (NTPC)	2001	No
NTPC	2001/03 Phase I General Rate Application	Analysis and Case Preparation	NWTPUB	NTPC	2000 - 2002	No - Negotiated Settlement
Newfoundland Hydro	2002 General Rate Application	Analysis, Preparation of Intervenor Evidence and Case Preparation	Board of Commissioners of Public Utilities of Newfoundland and Labrador (NLPUB)	Newfoundland Industrial Customers	2001 - 2002	No
NTPC	2001/02 Phase II General Rate Application	Analysis, Preparation of Company Evidence and Expert Testimony	NWTPUB	NTPC	2002	Yes
Manitoba Hydro/Centra Gas	Integration Hearing	Analysis and Case Preparation	MPUB	MIPUG	2002	No
Manitoba Hydro	2002 Status Update Application/GRA	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2002	Yes
Yukon Energy	Application to Reduce Rider J	Analysis and Case Preparation	YUB	Yukon Energy	2002 - 2003	No
Yukon Energy	Application to Revise Rider F Fuel Adjustment	Analysis and Case Preparation	YUB	Yukon Energy	2002 - 2003	No
Newfoundland Hydro	2004 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	NLPUB	Newfoundland Industrial Customers	2003	Yes
Manitoba Hydro	2004 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2004	Yes
NTPC	Required Firm Capacity/System Planning hearing	Analysis, Preparation of Company Evidence and Expert Testimony	NWTPUB	NTPC	2004	Yes
Nunavut Power (Quilliq Energy)	2004 General Rate Application	Analysis, Preparation of Intervenor Submission	Nunavut Utility Rate Review Commission (URRC)	NorthWest Company (commercial customer intervenor)	2004	No
Quilliq Energy	Capital Stabilization Fund Application	Analysis, Preparation of Intervenor Submission	URRC	NorthWest Company	2005	No
Yukon Energy	2005 Required Revenues and Related Matters Application	Analysis, Preparation of Company Evidence and Expert Testimony	YUB	Yukon Energy	2005	Yes
Manitoba Hydro	Cost of Service Methodology	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2006	Yes
Yukon Energy	2006-2025 Resource Plan Review	Analysis, Preparation of Company Evidence and Expert Testimony	YUB	Yukon Energy	2006	Yes
Newfoundland Hydro	2006 General Rate Application	Analysis, Preparation of Intervenor Evidence	NLPUB	Newfoundland Industrial Customers	2006	No - Negotiated Settlement
NTPC	2006/08 General Rate Application Phase I	Analysis, Preparation of Company Evidence and Expert Testimony	NWTPUB	NTPC	2006 - 2008	Yes
Manitoba Hydro	2008 General Rate Application	Analysis, Preparation of Company Evidence and Expert Testimony	MPUB	MIPUG	2008	Yes
Manitoba Hydro	2008 Energy Intensive Industrial Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2008	Yes
Yukon Energy	2008/2009 General Rate Application	Analysis, Preparation of Company Evidence and Expert Testimony	YUB	Yukon Energy	2008 - 2009	Yes
FortisBC	2009 Rate Design and Cost of Service	Analysis and Case Preparation	BCUC	BC Municipal Electrical Utilities	2009 - 2010	No
Yukon Energy	Mayo B Part III Application	Analysis, Preparation of Company Evidence	YUB	Yukon Energy	2010	No
Yukon Energy	2009 Phase II Rate Application	Analysis, Preparation of Company Evidence and Expert Testimony	YUB	Yukon Energy	2009 - 2010	Yes
Newfoundland Hydro	Rate Stabilization Plan (RSP) Finalization of Rates for Industrial Customers	Analysis, Preparation of Intervenor Evidence	NLPUB	Newfoundland Industrial Customers	2010	No
Manitoba Hydro	2010/11 and 2011/12 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2010 - 2011	Yes
NTPC	Bluefish Dam Replacement Project	Analysis, Preparation of Company Evidence and Expert Testimony	Mackenzie Valley Land and Water Board	NTPC	2011	Yes
NTPC	2012/14 General Rate Application	Analysis, Preparation of Company Evidence and Expert Testimony	NWTPUB	NTPC	2012	Yes

Patrick Bowman - Experience in Utility Regulatory Proceedings

Utility	Proceeding	Work Performed	Before	Client	Year	Oral Testimony
Manitoba Hydro	2012/13 and 2013/14 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2013	Yes
Manitoba Hydro	Needs For and Alternatives To Investigation	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2014	Yes
Manitoba Hydro	2015/16 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2015	Yes
Newfoundland Hydro	Amended 2013 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	NLPUB	Newfoundland Industrial Customers	2015	No - merged into 2015 General Rate Application
Newfoundland Hydro	2015 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	NLPUB	Newfoundland Industrial Customers	2015	Yes
Manitoba Hydro	2016 Cost of Service review	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2016	Yes
Chestermere Utilities Inc.	2017 Rate Increase Request	Analysis, Preparation of Rate Review	City of Chestermere City Council	City of Chestermere City Council	2016	Presentation to Council
Newfoundland Hydro	2017 General Rate Application	Pre-Filed Evidence and Negotiated Settlement	NLPUB	Newfoundland Industrial Customers	2017 - 2018	No - Negotiated Settlement
Altalink Management Limited	2017-18 General Tariff Application	Analysis, Support of Consumer Advocate during Negotiated Settlement Process on depreciation matters	Alberta Utilities Commission (AUC)	Alberta Utilities Consumer Advocate (UCA)	2016 - 2017	No - Negotiated Settlement
ATCO Pipelines	2017-18 General Rate Application	Analysis, Preparation of Intervenor Evidence on depreciation matters	AUC	UCA	2016 - 2017	No - Written Process only
Manitoba Hydro	2017/18 and 2018/19 General Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2017 - 2018	Yes
ATCO Pipelines	2017-18 GRA Review and Vary	Analysis and Case Preparation	AUC	UCA	2017 - 2018	No
ATCO Pipelines	2019-20 General Rate Application	Analysis, Preparation of Intervenor Evidence	AUC	UCA	2018 - present	No - Written Process only
Altalink Management Limited	2019-20 General Tariff Application	Analysis, Support of Consumer Advocate during Negotiated Settlement Process on depreciation matters, Preparation of Intervenor Evidence and Expert Testimony	AUC	UCA	2018 - present	Yes
ATCO Pipelines	Keephills Transmission Facilities Assessment	Analysis, Preparation of Intervenor Evidence	AUC	UCA	2018 - 2019	No - Written Process only
Manitoba Hydro	2019/20 Electric Rate Application	Analysis, Preparation of Intervenor Evidence and Expert Testimony	MPUB	MIPUG	2019	Yes
ATCO Electric Distribution	Distribution Depreciation	Analysis and Case Preparation	AUC	UCA	2019	No
AltaGas	Distribution Depreciation	Analysis, Preparation of Intervenor Evidence	AUC	UCA	2019	No - Written Process only
ATCO Gas	Distribution Depreciation	Analysis, Preparation of Intervenor Evidence	AUC	UCA	2019	No - Written Process only
Nalcor Energy, Newfoundland and Labrador Hydro	Muskkrat Falls Rate Mitigation Hearing	Analysis, Preparation of Intervenor Evidence and Expert Testimony	NLPUB	Newfoundland Industrial Customers	2019	Yes
Kinder Morgan Canada (Jet Fuel) Inc.	2019 Tariff Filing Application	Review pipeline tolling application on revenue requirement and depreciation, prepare interrogatories and draft issues for evidence	BCUC	Vancouver Airport Fuel Facilities Corporation (VAFFC)	2019 - 2020	No



InterGroup

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