Sustainability Projects Fund

OVER $5,000 APPLICATION FORM

COVER PAGE

PROJECT INFORMATION

Please complete the fields below with information regarding your project.

Project Title Sustainable Alternatives for Vehicle Replacement (SAVR) Subsidy Fund

Brief Description Support transition of unit fleet vehicles to sustainable alternatives by subsidizing vehicle purchase costs while decarbonizing our fleet by reducing fuel consumption & GHG emissions.

Total Estimated Project Budget $252,250 **Amount Requested from SPF** $252,250

Campus(es) Impacted ☒ Downtown ☒ Macdonald ☒ Gault Nature Reserve ☐ Other

CONTACT INFORMATION

Project Leader

This person must be a current McGill University student, administrative staff, or academic staff.

Name	Ali Rivers	Affiliation	Administrative Staff
Phone	514-398-8826	Faculty/Unit/Organization	Office of Sustainability
Email	aileen.rivers@mcgill.ca	Campus	Downtown

Project Team Members

The SPF encourages you to be inclusive, collaborative (especially between staff and students), diverse, and interdisciplinary when possible. To list more members, please complete a second cover page. You may e-mail it to SPF Staff to include with your application.

Name	Francois Miller	Affiliation	Administrative Staff
Email	francois.miller@mcgill.ca	Faculty/Unit/Organization	Office of Sustainability
Name		Affiliation	Choose one.
Email		Faculty/Unit/Organization	
Name		Affiliation	Choose one.
Email		Faculty/Unit/Organization	
Name		Affiliation	Choose one.
Email		Faculty/Unit/Organization	
Name		Affiliation	Choose one.
Email		Faculty/Unit/Organization	

SUBMISSION INFORMATION

In line with the SPF Eligibility Criteria, our team certifies that this project takes place at McGill University, is sustainability focused, is requesting seed funding, and is action oriented. ☒ Yes ☐ No

Our team has read the SPF Terms & Conditions and agrees to respect them. ☒ Yes ☐ No

Our team understands that this application is not confidential and consents to have its contents shared with relevant stakeholders during the review process and, if approved, on the SPF website. ☒ Yes ☐ No

Our team agrees to have their contact information included in the complete and shared application. ☒ Yes ☐ No

Sustainability Projects Fund

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PROJECT OVERVIEW

Instructions: *Please answer the questions below as clearly and concisely as possible. You will be able to detail your project further in Part 2 of the Over $5,000 application process, the Project Plan, as well as submit relevant appendices. Once you have completed this Project Overview, save it and submit it online. SPF Staff will respond with feedback on your application within 2 weeks and send you Part 2. Once all sections are complete, the combined application will be provided to the SPF Governance Council for their review and decision. As a reminder, all SPF applications are assessed using the SPF Eligibility & Evaluation Criteria:*

ELIGIBILITY CRITERIA		EVALUATION CRITERIA		
AT MCGILL	**SUSTAINABILITY FOCUSED**	**ANALYSIS**	**IMPACT**	**FEASIBILITY**
SEED FUNDING	**ACTION ORIENTED**	**COLLABORATION**	**SUPPORT**	**CAPACITY BUILDING**

Before starting, you may find it helpful to consult the SPF Sustainability Brief and Vision 2020 Climate & Sustainability Action Plan.

CONTEXT

Criteria assessed in this section: **SUSTAINABILITY FOCUSED, ANALYSIS**

1. **What specific sustainability-related need/issue have you identified at McGill and aim to address through your project? In your response, please describe clearly how the need/issue is related to sustainability.**
   Note: Please wait to detail your project idea in response to Question 5. Limit ~100 Words

McGill University has committed to achieving carbon neutrality (CN) by 2040 as a key long-term target in its "Vision 2020: Climate & Sustainability Action Plan". Our vehicle fleet is included in our inventory scope and CN target, and requires reductions. The Plan also includes a short-term priority action (Operations: 1) to address GHG emissions from McGill's fleet by developing a Sustainable Vehicle Management Program (SVMP). Fleet emissions accounted for 584 tCO2e in 2017 and currently there are very few sustainable alternatives in our fleet. To reduce emissions we need to decarbonize the fleet by decreasing the share of conventional fuel vehicles & increasing overall vehicle fuel efficiency.

2. **How do you know this is a need/issue? What research have you done (e.g. consultation, observation, survey)?**
   Limit ~100 Words

Procurement, Campus Public Safety & MOOS are finalizing SVMP, which will introduce vehicle life-cycle policies & Minimum Standard Requirements (MSRs). Consultations w/ McGill fleet operators & managers - as well as Unit Level Action Plan discussions - reveal cost is frequent concern; units cannot easily budget for sustainable alternatives on short term (1-5 yrs). Two previous SPF applications - Athletics(e-Gators) + Grounds(Might-E truck) - sought funding for sustainable vehicle upgrades, while feedback for the Eco-Driving project application indicated interest in a holistic project e.g. the SVMP. This demonstrates need, as well as an issue: the financial gap that often exists between strategic sustainability goals & operational realities

3. **What relevant information and/or best practices have you found that relate to this need/issue? In addition to information from external sources, detail any relevant related initiatives (past or current) that you are aware of at McGill.** *Limit ~100 Words*

1) The SVMP will require McGill units to prioritize sustainable fleet vehicles where possible: hybrid, e-vehicle or top-5-in-class fuel efficiency.
2) The QC government committed to increasing # of sustainable vehicles through plans (e.g. PEQ 2030) & subsidy programs including the current Roulez Vert program; e-vehicle charging infrastructure is also increasingly prevalent. The province & city recognize the immediate need to decarbonize the provincial fleet to meet provincial & global climate change targets.
3) Life cycle impact studies show that e-vehicles have fewer impacts than conventional fuel vehicles after ~43,000km (ecosystem quality), ~32,000km (GHGs) and ~29,000km (depletion of fossil resources) (CIRAIG). Higher lifetime mileage is preferred.

4. **What expertise or qualifications does your team have regarding this need/issue, if any?** *Limit ~100 Words*

As McGill's Climate Officer, I was hired to develop and support initiatives to reduce McGill's GHG emissions - including those from our vehicle fleet. I collect data from fleet managers to calculate, report and track mileage, fuel consumption & annual GHG emissions. I am familiar with vehicle life cycle assessments (LCAs), and have conducted over a hundred organizational GHG assessments & a dozen LCAs. As a member of the SVMP team, I have spent time over the past year analyzing the fleet composition and age, reviewing feedback from units with vehicles, and helping to create a Regulation and supporting processes to institutionalize sustainable management throughout the vehicle life cycle.

PROJECT IDEA

Criteria assessed in this section: **ALL ELIGIBILITY & EVALUATION CRITERIA**

5. **In context of the sustainability-related need/issue that you previously identified, what is your project idea? Please describe the idea thoroughly and concisely. In your response, share how your project is new or how it is complementary to existing initiatives.** *Limit ~400 Words*

Objective: Create a Sustainable Alternatives for Vehicle Replacement (SAVR) Subsidy Fund to act as an internal subsidy & make sustainable vehicle purchase options financially accessible to units during first 5 years of McGill's SVMP.

Fund Lifespan: 2019-2023 (next SPF referendum year). While SPF project timelines are typically 1 year, a 1-year fund could incentivize units to replace vehicles before the end of their useful lifetime; this is counter to sustainable life cycle goals. We would also miss opportunities for replacements on the 2-5 year horizon. Per ARI Insights (the fleet management tool), the average McGill vehicle lifespan is long (77% of vehicles are 6 years or older); therefore, units would become locked in to fuel-intensive technologies for many years, increasing our legacy footprint & limiting chances for incremental fuel + emissions savings. A five-year fund addresses these concerns. Since I calculate & report GHG emissions annually, I would provide the SPF GC with annual + cumulative progress updates on success indicators (#8) and the amount spent from the SAVR Fund. The SPF GC could re-evaluate the fund's performance & continuation each year.

Scope: Open to all units at McGill's Quebec campuses who agree to the conditions. The Fund will subsidize the purchase of hybrid, plug-in hybrid & e-vehicles. Presently, 100% electrification of the fleet is constrained for a few reasons:
1) E-vehicles are not available for certain categories (e.g. farm, trucks/vans), unsuitable (e.g. luxury) or not aligned with unit needs (e.g. Security: must be able to respond immediately; farm: requires more power)
2) From a LCA perspective, the conversion of vehicles to electric that do not achieve a minimum of 43,000km over the vehicle's lifetime is not sustainable (CIRAIG)
3) The campus charging capacity is currently insufficient to support a 100% conversion to e-vehicles. Additional capacity is planned on short to medium term with UEM and Parking.

For these reasons, plug-in hybrids & hybrid vehicles are important sustainable alternatives.

Funding Conditions: There are 3 key conditions that must be met for units to use SAVR funding. Aside from #3, these are fairly "business-as-usual". Conditions 1 and 3 will be assessed as part of a new SVMP process using an internal total cost of ownership (TCO) tool (see appendix).
1) The unit must cover the "typical replacement" cost, i.e. the cost if the vehicle was replaced with a new, equivalent, fuel-efficient model;
2) The unit applies for or covers out-of-pocket the rebate amount currently available from QC government's Roulez Vert program, i.e. SAVR will not subsidize cost of existing rebates.
3) The vehicle lifetime mileage must be >=43,000km (assumes good working order) in order to balance LCA impacts.
If these are met, SAVR will fund the difference between "typical replacement + rebate" and "sustainable replacement" costs, estimated at $7,500 - $12,500/vehicle. Roulez Vert ends Dec 31, 2020 after which SAVR will fund the "typical replacement" to "sustainable replacement" difference. (See appendix for a sample scenario of funding breakdown)

6. Is your project related to the University's Vision 2020 Sustainability Strategy? ☒ Yes ☐ No ☐ Not sure

7. If you answered yes to Question 6, how does it relate? Please refer to the strategy category (e.g. Research, Education, Connectivity, Operations, and Governance & Administration) or related action from the 2017-2020 Climate & Sustainability Action Plan in your response. *Limit ~100 Words*

McGill has committed to achieving carbon neutrality by 2040 in its "Vision 2020: Climate & Sustainability Action Plan". Included in our GHG inventory scope - and therefore our carbon neutrality target - is our vehicle fleet. The Plan also includes a directly related short-term priority action: to address GHG emissions from McGill's fleet of vehicles (Operations: Action 1). Emissions from our fleet are a Scope 1 emission source. Per best practice GHG accounting, Scope 1 and 2 emissions are activities that an organization has the most control over - and therefore also the most responsibility to reduce. This fund will directly contribute to the goals of the SVMP, and to fuel & GHG reductions, by facilitating fleet decarbonization.

TRANSFORMING CAMPUS

Criteria assessed in this section: **AT MCGILL, IMPACT**

8. In the table below, describe your proposed project's 2-5 main impacts on the McGill campus community or goals to accomplish. Please check the stakeholders that will be impacted. Finally, please list at least one key success indicator for each impact (e.g. # people will be engaged in the project, % waste will be diverted from the landfill, # buildings will be LEED certified, etc.)

		Main Impacts/Goals	McGill Stakeholders Impacted (check all that apply)	Key Success Indicator(s)
REQUIRED	1	Reduce McGill's use of conventional fuels in its vehicle fleet	☐ Undergraduate ☒ Academic Staff ☐ Postgraduate ☒ Admin. Staff ☐ Alumni	L of fuel (gasoline and diesel) saved
REQUIRED	2	Achieve Scope 1 GHG emission reductions through the decarbonization of some fleet vehicles	☐ Undergraduate ☒ Academic Staff ☐ Postgraduate ☒ Admin. Staff ☐ Alumni	Gross CO_2e reductions and net CO_2e reductions (factors in e-charging); both in tCO_2e
OPTIONAL	3	Create opportunities for visible embodiments of the SPF and Vision 2020 goals	☐ Undergraduate ☒ Academic Staff ☐ Postgraduate ☒ Admin. Staff ☐ Alumni	# of vehicles successfully subsidized

	4	Provide support for units affected by the incoming SVMP in recognition of budget & timing realities	☐ Undergraduate ☒ Academic Staff ☐ Postgraduate ☒ Admin. Staff ☐ Alumni	# of units (administrative and/or academic) supported
	5	Increase awareness of the SVMP, carbon neutrality target, and Vision 2020 Operations-1 action	☒ Undergraduate ☒ Academic Staff ☒ Postgraduate ☒ Admin. Staff ☒ Alumni	# of articles, reports and other communications released

9. Have you considered implementing your project at more than one McGill campus? (e.g. If your project is downtown, could it be implemented at Macdonald Campus as well?)

☒ Yes ☐ No

10. If relevant, please describe your choice(s) of campus(es) and why this choice is best for your project. *Limit ~150 Words*

The SAVR Fund would be available to our full community of McGill-owned vehicle owners and operators. As such, administrative, academic, and self-funded units from McGill's three Quebec campuses (downtown, Macdonald and Gault Nature Reserve) could utilize the fund. Since there are few vehicles at Gault and the market for sustainable alternatives for farm vehicles & equipment is nascent, the majority of the funds would likely be used by units on the downtown campus. If funding is running low after 3 years and one or more campuses have not utilized the fund, a 2-year forecast will be done and funding will be earmarked for that campus.

Since Procurement already handles vehicle purchase requests and will be working with requestor units to apply the Regulation and Minimum Standard Requirements of the SVMP (training of buyers complete; soft pilot underway), their support (see letter) is vital. Buyers would help make units aware of the SAVR Fund as part of the vehicle acquisition process for relevant vehicles, embedding this action into a natural home and existing process.

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PART 2: PROJECT PLAN

IMPLEMENTATION

Criteria assessed in this section: **ACTION ORIENTED, FEASIBILITY, IMPACT**

1. List the key activities for your project and indicate the timing for these on the right. Please be specific and realistic when formulating your activities, ensuring that they are achievable within the indicated timeframe.

Key Project Activities	Start Date (MM-DD-YY)	End Date (MM-DD-YY)
Notify Procurement team to initiate buyer training & embed SAVR into acquisition process	03-13-19	03-27-19
Create 1-page SAVR Guide for use by Procurement and units and add to MOOS website	03-13-19	03-27-19
Establish fund transfer preferences and process with SPF administrator	03-13-19	03-27-19
Pilot process with chosen unit(s) (likely NCS), gather feedback, and refine process if necessary	03-13-19	05-31-19
Design decals for SAVR vehicles with Design Services, building on logo used by Parking	03-27-19	04-30-19
Purchase decals for SAVR vehicles	04-30-19	05-31-19
Finalize McGill's 2018 GHG inventory to establish baseline for McGill fleet	02-20-19	05-31-19
Write and publish article with pilot unit (and others, if relevant) to communicate to community	06-01-19	07-15-19
Create and distribute data tracking templates for units following pilot	03-13-19	05-31-19
Update SAVR Guide once Roulez Vert program ends	12-10-20	01-15-21
Annually: collect data from Procurement, SPF and units	January	February
Annually: calculate total fleet fuel consumption & emissions, reductions, SAVR Fund impact	February	May
Annually: write and submit SAVR Fund Impact Report to units & SPF GC for review and renewal	May	June
Annually: Check whether CIRAIG has released any updated LCA reports for vehicle impacts in QC	January	February
Contribute SAVR Fund impact statistics to Vision 2020 final report	01-01-21	04-30-21
Periodically: Publish articles and social media updates to remind community of fund and progress	TBD	TBD

2. Please describe what will happen to your project after the SPF funding ends. Additionally, please share if anything will be produced or installed. (e.g. a workshop guide, equipment, a toolkit, a network, website, etc.) If so, please describe these items and indicate how they will be maintained. *Limit ~200 Words*

At the end of the SAVR Fund lifespan in 2023 (or earlier, if the funds are exhausted or the SPF GC decides to end the fund), very few actions need to be taken given the project design. There are no succession steps to be planned, and risks associated with stranded assets or resources are non-existent.

Key steps to take at the closure of the project
1) Notify buyers in Procurement of the fund end date, so that they know that it is no longer an option for units looking to purchase a new vehicle;
2) Calculate and provide a final "SAVR Fund Impact Report" that includes fund lifespan metrics (L fuel saved (annually and cumulatively), gross and net GHG reductions (annually and cumulatively), # vehicles subsidized, # units supported, total # communications) as well as context within the SVMP, Vision 2020, e-vehicle charging infrastructure and future sustainability & energy plans;
3) Collect vehicle lifetime mileage data and current vehicle status from all units who used the SAVR Fund to assess progress towards the 43,000km lifetime mileage goal, remind them of this goal, and remind them of end-of-life sale and disposal processes established in the SVMP.

3. Please list any potential risks associated with your project and the measures you will take to reduce their likelihood.

Main Risks	Preventative Measures
Roulez Vert funding used before Dec 31/20 program end date	SAVR Fund covers eligible rebate amount up to Dec 31, 2020
McGill e-vehicle charging infrastructure behind schedule	Assess in 2021; work with energy team; apply for SPF funding
One or more campuses haven't used fund & fund running low	Forecast upcoming replacements & set aside necessary funds

STAKEHOLDER ENGAGEMENT

Criteria assessed in this section: **AT MCGILL, COLLABORATION, SUPPORT, CAPACITY BUILDING**

4. **Please list all of the key stakeholders involved in your project, indicating their role and support. If the stakeholder has provided a support letter, please indicate so here and attach it as an appendix document.**
Note: Projects involving modifying a space on campus, making a permanent installation, hiring a full-time staff, or adding/modifying a garden, etc., must seek permission from the appropriate stakeholder(s) (e.g. building director, Campus Planning and Development office, staff supervisor, etc.). SPF Staff can help you assess if any key stakeholders need to be added to your list.

Stakeholder's Name(s)	Title	Role in the Project	Support/ Permission	Support Letter
Stephanie Leclerc	Sustainable Procurement Office	SVMP team; training buyers; providing data	Confirmed	Attached
Elliott Stekewich	Senior Manager, Finance & IT Contracts	Vehicle purchaser	Confirmed	Yes
Pierre Barberie	Director, Campus Public Safety	Vehicle purchaser; fleet manager	Confirmed	Yes
Oliver de Volpi	Executive Chef, Operations & Sustainability	Vehicle purchaser; fleet manager	Confirmed	Yes
Jerome Conraud	Interim Director, Utilities & Energy Management	Long-term e-vehicle capacity strategy; providing data	Confirmed	Yes
Amelia Peres	Vision 2020 Administrator	Unit Level Action Plan development; Vision 2020 final report	Confirmed	Yes

5. **How will you communicate about your project and share its impacts with your stakeholders and the McGill community? Please describe your tactics (e.g. social media, workshops, tabling, newsletters, etc.) and any related timing (e.g. at the beginning, during, or after the project). Related activities can also be included in Question 1.** *Limit ~200 Words*

I've identified some key project activities related to communication and progress reporting in #1 above.
1) I will write a 1-page PDF Guide for use by Procurement and interested units, and this will also be posted on the "Resources" and "Topics: Transportation" sections of the MOOS website; it could also be posted on the Procurement website alongside the SVMP documents.
2) The MOOS Communications Officer will write an article for the McGill Reporter following the pilot period and promote the fund periodically on our social media (Facebook, Instagram, Twitter). A couple articles/posts will be written each semeser throughout the fund's lifespan.
3) I will also support units looking to create their own communications with emissions calculations and other supporting expertise.
4) Units who use the SAVR Fund will use decals to visibly promote the SPF and/or fleet decarbonization efforts.
5) Impacts associated with vehicle transition will be calculated and reported annually as part of the existing GHG inventory process. A separate "SAVR Fund Impact Report" will be written annually and provided to the SPF GC to allow for evaulation each year; this report will also be distributed to participating units & key stakeholders such as the folks at Procurement and UEM.
6) Data related to the SAVR Fund will be included as part of the Vision 2020 final report, to be produced in 2021.

6. **If applicable, are there any training, volunteer opportunities, jobs, or complementary applied student research integrated in your project? Please describe.** *Limit ~100 Words*

Buyers in Procurement are already participating in training related to the SVMP & TCO tool; SAVR Fund training (which is very minimal and simply requires mentioning the existence of the fund and the three conditions) would be delivered as well.

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I have hired a Climate Capacity Intern to support my work this Winter and Summer semester. This position may become an annual or semi-annual position. Part of the role is to learn how to calculate GHG emissions associated with University travel (air, sports team, fleet). Assuming the timing works out, the current intern would assist with the calculations for the pilot article. Future interns could track progress for SAVR Impact Reports or the Vision 2020 final report.

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PROJECT BUDGET

Criteria assessed in this section: **FEASIBILITY**

Revenues

Indicate any funding you will receive or may receive to complete your project, including funds from McGill Departments and Units.

Funding Source(s)	Amount Requested	Request Status
Sustainability Projects Fund (SPF)	$252,250.00	Requested
	$0.00	Choose one.
	$0.00	Choose one.
	$0.00	Choose one.
REVENUES GRAND TOTAL *(must match Expenses Grand Total))*	**$252,250.00**	

Expenses

Indicate your project expenses below. In the Funding Sources column, use the reference number from the first column of the Revenues section, above. You may list more than one source if applicable (e.g. 1,3).

Item Description	Unit Cost	# of Units	Total Cost	Expense paid by SPF?
SAVR Fund subsidy	$10,000.00	25	$250,000.00	Yes, fully
Vehicle decal design	$1,000.00	1	$1,000.00	Yes, fully
Vehicle decal purchase	$50.00	25	$1,250.00	Yes, fully
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
	$0.00		$ 0.00	Choose one.
Expenses Subtotal			**$252,250.0**	

Salaries & Wages

If applicable, please indicate any paid positions needed for your project. Please note: if you complete the Salaries & Wages section, you must also complete the Staff Position Information Appendix.

Position Title	~# Hours per Week	~# Weeks	Hourly Wage	Subtotal	+ 20% Benefits	Total Cost	Funding Sources
N/A			$0.00	$ 0.00	1.2	$ 0.00	
			$0.00	$ 0.00	1.2	$ 0.00	
			$0.00	$ 0.00	1.2	$ 0.00	
			$0.00	$ 0.00	1.2	$ 0.00	
Salaries & Wages Subtotal						**$ 0.00**	

EXPENSES GRAND TOTAL *(must match Revenues Grand Total)*	**$252,250.0**

APPENDIX

Relevant Support Documents

List any appendix documents in order in the table, below.
Please keep the total number of pages as low as possible (recommended max 10). Please include any relevant support letters.

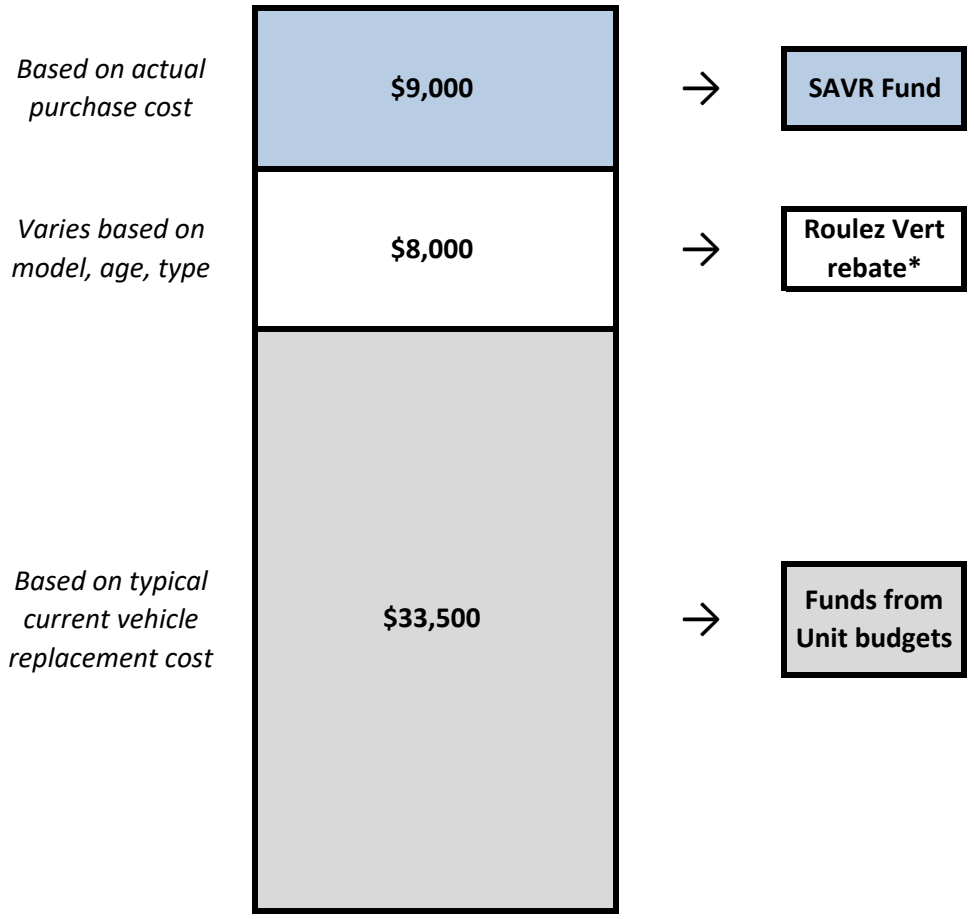
Doc #	Appendix Document Title	# of Pages
1	Calculations - Fleet Age, Sample Funding Scenario, GHG and Fuel Consumption	2
2	CIRAIG analyse-comparaison-vehicule-electrique-vehicule-conventionnel - key info	2
3	Quebec Roulez Vert Program - Key Details	3
4	Letter of support - UEM: Jerome Conraud	1
5	Letter of support - Procurement: Stephanie Leclerc	1
6	Letter of support - Vision 2020 Administrator: Amelia Peres	1
7	Letters of support - Units w/ Fleet Vehicles: Pierre Barberie, Oliver de Volpi, Elliott Stekewich	3
8	TCO Vehicles - Sample SAVR Fund Scenario (SVMP Resource developed by Procurement)	1
9		
10	Staff Position Information Appendix, if applicable	

Age of McGill Vehicles: Fleet Breakdown

Age of Vehicle (years)	# Vehicles	%	#/Bin	%/Bin
0	3	4%		
1	4	6%		
2	2	3%	**16**	**23%**
3	0	0%		
4	3	4%		
5	4	6%		
6	7	10%		
7	5	7%		
8	8	12%	**25**	**36%**
9	2	3%		
10	3	4%		
11	1	1%		
12	1	1%		
13	2	3%	**11**	**16%**
14	5	7%		
15	2	3%		
16	4	6%		
17	6	9%		
18	2	3%	**14**	**20%**
19	1	1%		
20	1	1%		
21	2	3%	**3**	**4%**
22	1	1%		
Total	**69**	**100%**		
Vehicles >=6 yrs	**53**	**77%**		
Vehicles >=11 yrs	**28**	**41%**		

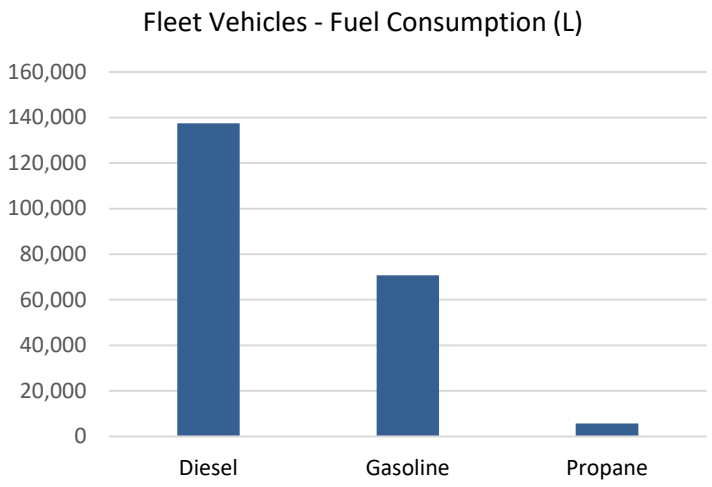
Sample Scenario: Funding Breakdown

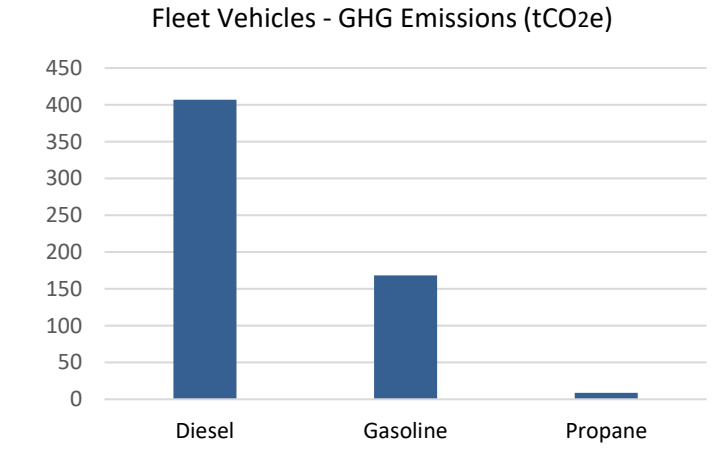
Scenario: Convert Dodge Caravan (gas) to Chrysler Pacifica (plug-in hybrid)



**Unit covers this cost if they choose not to apply. Roulez Vert ends Dec 31, 2020 after which SAVR would fund full difference*

McGill 2017 Fleet Emissions and Fuel Consumption





Comparison of Gasoline vs. Electric Vehicle (average)

Specs: average gasoline vehicle (Ford Transit Connect 2011)

City:	11.5	L/100 km	NRCan online tool
Highway:	9.1	L/100 km	NRCan online tool
Combined:	**10.4**	**L/100 km**	NRCan online tool

Specs: average electric vehicle (Chevrolet Bolt EV 2018)

City:	16.4	kWh/100 km	NRCan online tool
Highway:	19.0	kWh/100 km	NRCan online tool
Combined:	**17.6**	**kWh/100 km**	NRCan online tool

Emission Factors

Electricity, QC	**0.0000011**	**tCO2e/kWh**	MDDELCC
Gasoline, on-road vehicle	**0.0024**	**tCO2e/L**	MDDELCC

Energy Consumption and GHG Emissions from 50,000 km Usage

	Energy	**Unit**	**Emissions**	**Unit**
Transit 2011	5,200	L	12.36	tCO2e
Bolt EV 2018	8,800	kWh	0.0099	tCO2e

GHG Savings	**1 e-vehicle**	**12.35**	**tCO2e**
	5 e-vehicles	62	tCO2e
	10 e-vehicles	124	tCO2e
	10 e-vehicles + 10 hybrids	**185**	**tCO2e**

(assumes 50% impact for plug-in hybrids over lifetime)

5.3.3 Analyse sensibilité 3 – Type de conduite

Considérant l'importance de la contribution de l'étape de l'utilisation du véhicule conventionnel, plusieurs paramètres de conduite peuvent influencer les résultats obtenus. Cette section cherche donc à mettre en lumières les hypothèses permettant de renforcir ou, au contraire, d'infirmer les conclusions établies.

5.3.3.1 Durée de vie des véhicules

La Figure 5-5 présente les résultats de l'analyse de sensibilité en ne considérant qu'une variation de la distance parcourue.

Il apparaît que :

- À faible distance le véhicule conventionnel présente moins d'impacts potentiels, pour toutes les catégories considérées, comparativement au véhicule électrique. Seule l'étape d'utilisation permet une inversion des conclusions (à l'exception de la catégorie *Épuisement des ressources minérales*) ;
- Il existe donc une distance pour laquelle l'impact du véhicule électrique est équivalent à celui du véhicule conventionnel. Ce point d'équivalence pour les diverses catégories se trouve :
    - *Santé humaine* : à une distance de 85 300 km ; soit près de 6 ans en considérant un déplacement de 15 000 km/an ;
    - *Qualité des écosystèmes :* à une distance de 43 000 km soit près de 3 ans en considérant un déplacement de 15 000 km/an ;
    - *Changement climatique* à une distance de 32 000 km ; soit près de 2 ans en considérant un déplacement de 15 000 km/an ;
    - *Épuisement des ressources fossiles* à une distance de 29 000 km ; soit près de 2 ans en considérant un déplacement de 15 000 km/an ;
    - *Épuisement des ressources minérales:* le véhicule électrique ne s'avère pas préférable au véhicule conventionnel pour la catégorie selon l'intervalle de distance considéré.
- Ainsi, en considérant une distance parcourue de 300 000 km, plutôt que 150 000 km dans le scénario de base, on constate que les impacts potentiels du véhicule électrique sont (100%-Véhicule électrique/véhicule conventionnel) :
    - *Santé humaine* : 55 % inférieurs à ceux du véhicule conventionnel ;
    - *Qualité des écosystèmes :* 75 % inférieurs à ceux du véhicule conventionnel ;
    - *Changement climatique* : 80 % inférieurs à ceux du véhicule conventionnel ;
    - *Épuisement des ressources* fossiles : 79 % inférieurs à ceux du véhicule conventionnel ;
    - *Épuisement des ressources minérales :* 21 % supérieurs à ceux du véhicule conventionnel.

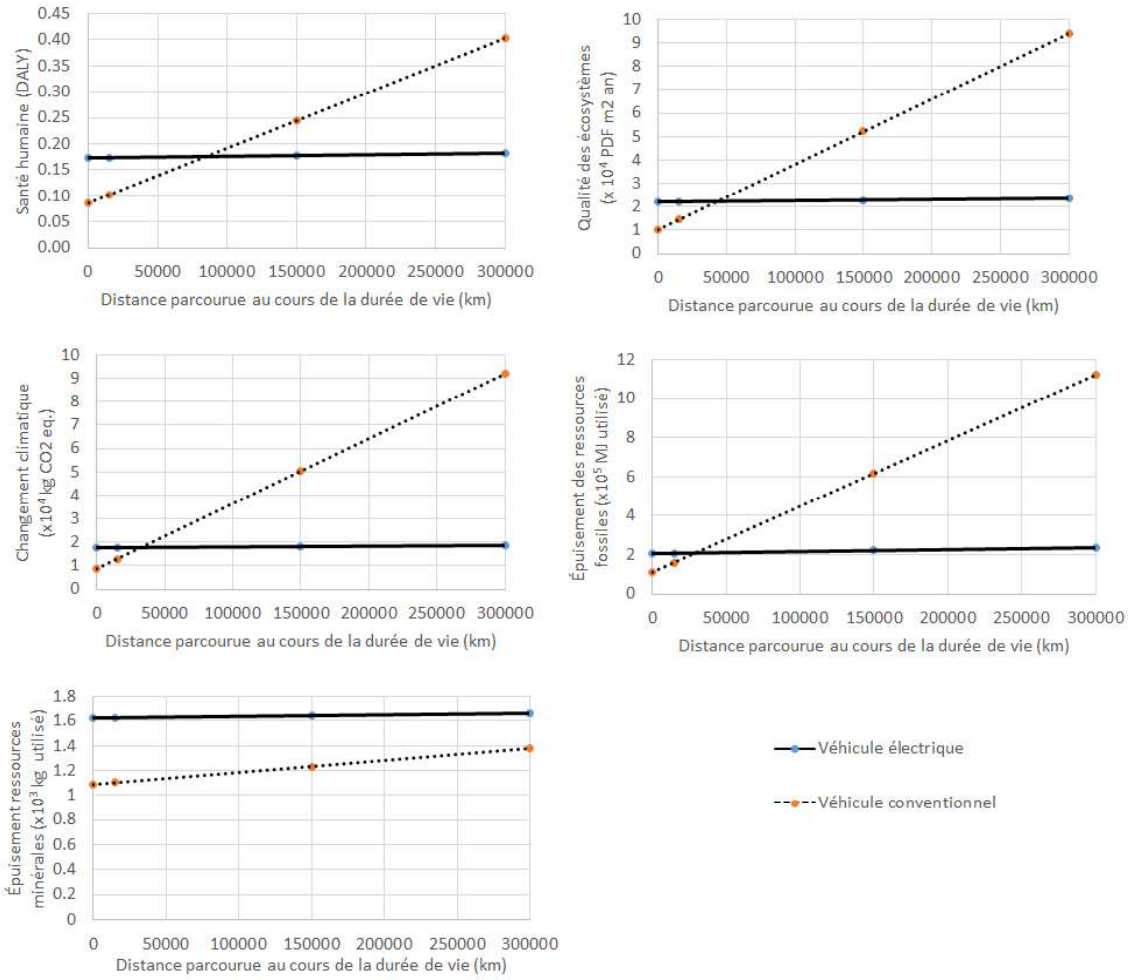


Figure 5-5 : Analyse de sensibilité portant sur le type de conduite : distance parcourue uniquement.

5.3.3.2 Tous paramètres confondus

Cette analyse de sensibilité incorpore de nombreux paramètres : la distance parcourue par les véhicules, la consommation d'électricité par le véhicule électrique, la consommation de carburant en milieu urbain, la consommation de carburant sur l'autoroute et le scénario de déplacement des véhicules.

La multiplication de l'évaluation des paramètres crée une plage de variations des résultats d'indicateurs de catégories pour une durée de vie donnée. La Figure 5-6 présente les résultats de l'analyse de sensibilité portant sur tous les paramètres définissant le type de conduite.

Quebec "Roulez Vert" Program – Key Details

Available Online: http://vehiculeselectriques.gouv.qc.ca/english/rabais/ve-neuf/programme-rabais-vehicule-neuf.asp

New Vehicle Rebate

The Québec government is offering individuals, businesses, organization and Québec municipalities a **rebate of up to $8,000** on the purchase or lease of a new electric vehicle.

The amount of the rebate depends on the type of vehicle and conditions such as the vehicle's selling price, electric battery capacity, model year, year of purchase, and so on. Moreover, the vehicle must be included on the list of eligible new vehicles.

Vehicle type	Additional conditions	Rebate Amount
All-electric vehicles	If the manufacturer's suggested retail price (MSRP) is less than $75,000:	$8,000
	If the MSRP of the vehicle is between $75,000 and $125,000:	$3,000
Plug-in hybrid vehicles	If the manufacturer's suggested retail price (MSRP) is less than $75,000: the amount of the rebate is calculated according to the electric battery capacity.	$500, $4,000 or $8,000
Hybrid vehicles	For the 2017 or earlier model years: no rebate starting with the 2018 model year.	$500
Hydrogen-powered vehicles	If the manufacturer's suggested retail price (MSRP) is less than $75,000:	$8,000
	If the MSRP of the vehicle is between $75,000 and $125,000:	$3,000
Low-speed electric vehicles		$1,000
Electric motorcycles		$2,000
Limited-speed electric motorcycles (electric scooters)		$500

Note on vehicles that are ineligible for the program:

Since April 1, 2017, certain vehicles are no longer eligible for the rebate program:

- All-electric vehicles and fuel cell vehicles (commonly called hydrogen-powered vehicles) on which the manufacturer's suggested retail price is $125,000 or more;
- Plug-in hybrid vehicles on which the manufacturer's suggested retail price is $75,000 or more;
- Hybrid vehicles for model year 2018 or later.

Eligibility requirements

Here is a summary of the conditions governing eligibility for the Roulez électrique program – Roulez électrique component:

- The applicant must reside in Québec.
- The vehicle must necessarily be acquired in Canada, initially be registered in Québec and not have been registered outside Québec.
- The vehicle for which a rebate application is submitted must be on the list of eligible vehicles provided on this website.

Conditions on the vehicle

1) All-electric vehicles and plug-in hybrid vehicles

Eligible new all-electric vehicles and plug-in hybrid vehicles must be:

- Purchased or leased long term (12 months or more);
- Registered between November 1, 2013 and December 31, 2020;
- Equipped with a battery with a capacity of 4 kWh or more;
- Sold at a manufacturer's suggested retail price under $125 000 in the case of an all-electric vehicle;
- Sold at a manufacturer's suggested retail price under $75 000 in the case of a plug-in hybrid vehicle.

2) Hybrid vehicles

Eligible new hybrid vehicles must be:

- Purchased or leased long term (12 months or more);
- Registered between November 1, 2013 and December 31, 2020;
- Of model year 2017 or earlier;
- Have a combined fuel consumption lower than or equivalent to 6.33 L/100 km (gasoline) in the case of a vehicle of model year 2015 to 2107.

3) All vehicles

- Only one rebate application may be submitted per eligible vehicle.
- The vehicle must remain registered in Québec for a minimum period of:
  - Twelve months for an applicant who acquires two vehicles or less in the same year.
  - Thirty-six months for an applicant who acquires three vehicles or more in the same year.

4) Vehicles excluded from the program

- Vehicles acquired for resale or long-term lease purposes;
- Vehicles that underwent an electric motor conversion;
- Vehicles purchased outside Canada.
- Vehicles registered outside Québec.

TEQ may require that the financial assistance granted be reimbursed in the event of noncompliance with the program conditions.

Calculation of the amount of the rebate
The following calculation methods are in force from April 1, 2017.

For all-electric vehicles and hydrogen-powered vehicles

- An $8,000 rebate is offered for the purchase or lease of the vehicle if the manufacturer's suggested retail price is less than $75,000.
- A $3,000 rebate is offered for the purchase or lease of the vehicle if the manufacturer's suggested retail price is $75,000 or more but less than $125,000.

This rebate calculation method came into force on April 1, 2017 and will apply until December 31, 2020.

Plug-in hybrid vehicles
The rebate applies solely to **plug-in hybrid vehicles** on which the manufacturer's suggested retail price **is less than $75 000.** The amount of the rebate is calculated as follows:

- A rebate of $500 is granted for the purchase or lease of a plug-in hybrid vehicle with a battery capacity of at least 4 kWh but less than 7 kWh.
- A rebate of $4,000 is granted for the purchase or lease of a plug-in hybrid vehicle with a battery capacity of at least 7 kWh but less than 15 kWh.
- A rebate of $8,000 is granted for the purchase or lease of a plug-in hybrid vehicle with a battery capacity of at least 15 kWh.

This rebate calculation method came into force on January 1, 2016 and will apply until December 31, 2020.

Non-plug-in hybrid vehicles

- A $500 rebate is offered for the purchase or lease of a hybrid vehicle of model year 2017 or earlier.
- Hybrid vehicles of model year 2015 or later must have a combined fuel consumption rating of not more than 6.33 L/100 km.

For low-speed electric vehicles, electric motorcycles and electric scooters

- A $1,000 rebate is offered on the purchase of an eligible low-speed electric vehicle.
- A $2,000 rebate is offered on the purchase of an eligible electric motorcycle.
- A $500 rebate is offered on the purchase of an eligible limited-speed electric motorcycle.

Purchase or Lease
In order not to penalize consumers who choose to lease their vehicle, electric vehicle rebates are also available for long-term leases.

The rebate amount is calculated based on the lease term. The lease period for the vehicle must be a minimum of 12 months to be eligible for a rebate. A lease of 48 months or more makes it possible to receive a rebate equal to the purchase rebate.

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February 21, 2019

SPF Working Group

Re : Letter of Support for the SAVR Fund Project

Dear Members of the SPF Work Group,

I hereby support the SAVR Fund project and offer the technical expertise of Utilities & Energy Management.

In order to achieve carbon neutrality by 2040, as per the commitment made by McGill's administration, greenhouse gas emissions from all sources must be reduced. Not only does this include large emission sources such as building energy use, but this also includes smaller emission sources such as McGill-owned vehicles.

Reducing emissions from McGill-owned vehicles involve, among other things, purchasing electric vehicles instead of conventional vehicles when the option exists for the intended use of the vehicle. Though there is a debate about the environmental benefits of electric vehicles compared to conventional vehicles (e.g. batteries require rare-earth elements), a recent life cycle analysis[1] shows that in the Province of Québec, where the power grid has an extremely low carbon footprint, electric vehicles generate net environmental benefits relative to conventional vehicles after 43,000 km.

Preliminary total cost of ownership analyses also show that financially, electric vehicles generate savings relative to conventional vehicles only if they are used 40,000 km or more during their lifetime. The upfront cost premium of electric vehicles is hard to justify for academic and administrative units. The

[1] *Analyse du cycle de vie comparative des impacts ednvironnementaux potentiels du véhicule électrique et du véhicule conventionnel dans un context d'utilisation Québécois*, CIRAIG, 2016

SAVR Fund, with its proposed eligibility criteria, would alleviate the financial burden on units and enable the gradual conversion of McGill's fleet of vehicles.

The presence of more electric vehicles on campus will induce the need for more charging solutions. Three units of Facilities Management and Ancillary Services (Utilities & Energy Management, the Office of Sustainability, Campus Public Safety, and Building Operations) identified strategic locations for electric vehicle charging stations[2] to be deployed in the short and medium term[3]:

- Bronfman Management/Armstrong garage: 1 station installed in 2018,
- Facilities Management (Macdonald Campus): 1 station installed for staff only in 2018,
- Gault Nature Reserve: 1 station installed for public in 2018,
- Gardner Hall: 1 station for SHHS security vehicle only in 2019,
- McIntyre Garage: 8 stations to be installed in 2020-2021,
- 680-688 Sherbrooke: 2 stations (TBC) to be installed in 2019-2020.

When we proposed this strategy in 2017, we knew we would need to revisit it and adapt it to a foreseeable increase in the demand for charging stations on campus. For instance, we have identified the need for more charging stations at Macdonald Campus and in the northeast quadrant of Downtown Campus. Electrical infrastructure permitting, we will do our best to support units that wish to install a charging station for their newly-purchased plug-in vehicle.

The SAVR Fund is one of the many creative solutions McGill must deploy to reach its carbon neutrality target by 2040. As such, I encourage you to consider this project for funding.

Best regards,

Jerome Conraud, ing., MASc, CEM

Director (Interim), Utilities & Energy Management

[2] Each station has two nozzles, i.e. can be used to charge two vehicles at the same time.
[3] Charging Stations for Electric Vehicles: Preliminary Analysis and Proposal for Short-Term Action, Facilities Management and Ancillary Services, 2017

McGill | Procurement Services | Services de l'approvisionnement

Montréal, 22 February 2019

Dear members of the SPF Fund Working Group,

On behalf of Procurement Services, I would like to express our very strong support for Ms. Ali Rivers' SPF proposal aiming to transition the University's Fleet of vehicles towards alternative fuel sources (the Sustainable Alternatives for Vehicle Replacement Subsidy Fund – SAVR Fund). We believe that this source of funding would be essential to facilitating a better access to alternative vehicles and enable McGill's progress towards carbon neutral operations.

McGill University has been committed to Sustainable Procurement since 2013, from the time the first Procurement Policy was adopted. As part of this commitment, all Procurement Services staff and managers have been trained to incorporate lifecycle thinking in their work. We are also continuously seeking opportunities to incorporate social and environmental criteria in the University's purchases, as a way to support positive social development and reduce negative environmental impacts throughout our supply chain. Our unit is also the leading team behind the University's Asset Management Program, an innovative strategy aiming to apply circular economy principles to the way the University manages the lifecycle of its assets, including its vehicle assets (from purchasing to end-of-life material recovery). We are, in effect, seeking to operationalise the University's long established 4-R hierarchy (Rethink, Reduce, Reuse, Recycle).

As part of the Asset Management Strategy, we found that improvements could be brought to the purchasing of vehicle assets. We have found that McGill faculty and staff have often purchased lower quality, and therefore less fuel efficient vehicles, because of budget constraints. With the adoption of the Sustainable Vehicles Management Program (the SVMP), the central administration will be taking the bold step of mandating Minimum Standard Requirements for vehicles (including, in some cases, the obligation to purchase electric or hybrid vehicles). Our community agrees with such standards and understands the importance of transitioning the University's fleet towards better vehicles. However, some have also expressed a clear concern that they might not have the funds to purchase alternative vehicles.

Procurement Services buyers have recently faced multiple instances where the total cost of ownership of electric or hybrid vehicles rendered these options prohibitive, even after factoring in provincial subsidies, and the reduced consumption of fuel over 10 years. Unfortunately, this means that departments and units will likely refuse to purchase these alternative vehicles in spite of the new standards we are seeking to adopt. We therefore view the SAVR- Fund to be crucial to the transition of McGill's fleet of vehicles towards greener options. The request is reasonable, timely, and would be impactful. Our Procurement Services buyers would be proud to share information about the Fund, explain how it could be used, and with what benefits for the climate.

We thank you for considering this request and will be happy to support the uptake of the program.

Stéphanie H. Leclerc
Program Manager for Sustainable Procurement

Facilities Management and Ancillary Services | Gestion des installations et services auxiliaires

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Object: Letter of Support for the SAVR Fund Project

To whom it may concern,

As the Vision 2020 Administrator, my role is to monitor the progress of the Vision 2020 Climate and Sustainability Action Plan, and help units across campus write their own unit-level action plans. The transition towards more sustainable fleet vehicles is related to both of these capacities.

In the campus-wide strategy, Action O-1 states that we will "Address GHG emissions from McGill's fleet of vehicles". It has become clear that while owners of fleet vehicles are excited about the idea of purchasing hybrid or electric vehicles, these models are cost-prohibitive. Addressing the GHG emissions from our fleet is a key piece of our transition towards becoming a carbon neutral campus, and I agree with our Climate Officer's assessment that the SAVR Fund is the most efficient way forward.

Through working on Unit-Level Action Plans, units have either expressed interest in applying to the SPF to offset the cost of purchasing a hybrid or electric vehicle, or have avoided committing to hybrid or electric vehicles due to the initial sticker shock. Creating the SAVR Fund would address both of these issues – the SPF would not be flooded with countless identical applications, and units would be encouraged by the guaranteed funding to include fleet-related actions. I have already received positive feedback from at least 3 units about purchasing hybrid or electric vehicles, and will likely be working on 2-3 more action plans this winter that involve units with fleet vehicles. It is my hope that if the SAVR fund were to be approved, hybrid or electric vehicle purchasing would be included in these upcoming action plans.

In both these capacities, I am fully in support of the creation of the SAVR Fund because of its direct and immediate impact on our campus footprint.

Please do not hesitate to reach out if you have any questions about Vision 2020 or the Unit-Level Action Plans,

Amelia Peres
Vision 2020 Administrator

February 21, 2019

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February 26, 2019

To SPF Governance Council members,

As Director of Campus Public Safety at McGill, I am responsible for managing the fund that is utilized to purchase vehicles that are used by Facilities Management and Ancillary Services (FMAS) employees. Since FMAS is the McGill unit that owns and operates the most vehicles on campus, the intention of electrifying our fleet of vehicles, while relevant in the face of climate change, has a direct financial impact on our activities.

I am supportive of the current SPF proposal that would cover the price difference between a conventional vehicle and a hybrid/electric model (when the hybrid/electric model matches & satisfies the intended use of the vehicle). Such an initiative will directly increase our capacity to maintain an up-to-date fleet of vehicles, and send a clear message that McGill is a leading institution in the fight against climate change.

Best Regards

Pierre Barbarie
Director

McGill

February 22nd, 2019

McGill Sustainability Project Fund
RE: project
SAVR (Sustainable Alternatives for Vehicle Replacement)

Dear member of the SPF working group,

Student Housing and Hospitality Service will be replacing their food service delivery van within the next year. SHHS and food service has made some great advancements in sustainability component of the food service on campus over the last few years. The next step would be the replacement of their delivery van (Ford Transit 2011) with something that has much less of an environmental footprint. The cost of a sustainable vehicle alternatives suited to Food & Dining's needs are prohibitive even with available government rebates. If the SFP accepts the current proposed project, SAVR, SHHS would commit to replacing and purchasing a sustainable vehicle.

Should you need addition information, please do not hesitate to contact me.

Oliver de Volpi
Executive Chef, Operations and Sustainability – Chef exécutif, opérations et développement durable
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To the members of the SPF Working Group,

The Network and Communications Services (NCS) group within IT Services presently uses five vehicles to install and maintain telecommunication and network infrastructure on campus. Given the increased age of the current fleet, NCS has reserved budget in the current fiscal year to replace two of its five vehicles.

The IT Services organization endorses the mandate of the Sustainable Alternatives for Vehicles Replacement program and supports the replacement the current NCS fleet of gasoline-powered vehicles with plug-in hybrid models. At this time, a lack of charging infrastructure on campus does not permit NCS to move to full electric vehicles.

Note that due to budgetary constraints NCS will be moving forward with the replacement of two vehicles prior to April 30, 2019, regardless of whether SAVR funding is secured. If our application is successful, it would enable NCS to replace two gasoline-powered vehicles with two plug-in hybrid vehicles, resulting in fuel consumption and GHG emissions reductions.

I look forward to hearing from the working group.

Best regards,

Elliott Stekewich
Sr. Manager, Finance & IT Contracts

2017-07-12

Vehicle Total Cost of Ownership (TCO)

Description	Chrysler Pacifica Chargeable Hybrid 2019		Dodge Caravan SXT 2019	
	Criteria	***Cost***	***Criteria***	***Cost***
Allocation km	4,500		4,500	
Study period	10		10	
Type (Gas, Chargeable Hybrid or Electric)	Chargeable Hybride		Gas	
Fuel rate ($/L)	1.20 $		1.20 $	
City (L/100 km)	0		13.7	
% City	67%		67%	
Highway (L/100 km)	7.9		9.4	
% Highway	33%		33%	
Electricity ratio (kWh/100 km)	24.9		0.0	
Electricity rate¢/kWh	5.6			0.0
Buying cost		**50,695.00 $**		**28,845.00 $**
Government subsidy (Roulez Vert)		**(8,000.00) $**		

Fuel cost (Unit budget)	1,422.00 $	6,624.00 $
Electricity cost (Central Budget)	418.32 $	- $
Total Cost of Ownership	**44,535.32 $**	**35,469.00 $**
Comments		