Report: Developing an Anti-idling Bylaw for the City of Charlottetown

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Introduction

In recent years, the impact of human based polluting activities on environmental health has become an ever-increasing concern. An activity such as idling, which is quite obvious to observers and prevalent in our society, has been put under a spotlight due to this increasing concern. Despite popular belief, idling has little benefit for the driver or vehicle, it instead leads to wasting of money, fuel, and increased damage to the environment through increased CO_2 emissions (Mendoza, et al., 2022) (U.S. Department of Energy, 2015). In response, many municipalities have begun implementing policies or bylaws in an attempt to control idling, or to stop it entirely.

The goal of this report is to provide an overview of the current state of idling in the City of Charlottetown, examine the provisions and contents of existing anti-idling bylaws across Canada, identify specific considerations for Charlottetown, and analyze the feasibility of taking an educational approach versus an enforcement approach to reducing idling within city limits. With the information provided, the City of Charlottetown and relevant stakeholders will be given recommendations on how to move forward in developing an anti-idling bylaw that is both easy to implement and transferable between municipalities.

Idling: Myths vs. Facts

There are many myths surrounding engine idling that people often use as justifications for keeping their engine running when they should not. One of the most popular myths is that idling wastes less fuel and is easier on a vehicles starter system than shutting off the engine and turning it back on again. A 2003 study by Natural Resources Canada disproves this myth and shows that *"idling for over 10 seconds uses more fuel and produces more CO_2 emissions than restarting your engine"* (Government of Canada, 2016). In addition to this, idling leaves fuel

residue that damages engine components and leads to higher maintenance costs per year than restarting your engine does. In addition, the starter systems in modern vehicles are much more durable than they were in the past (South Carolina Department of Health and Environmental Control) (U.S. Department of Energy, 2015).

A second myth that has a hold on the public perception of idling is that it is required to warm up a vehicle's engine in colder temperatures. While idling may help clear/defrost windshields during colder months, most manufacturers do not recommend extended idling as a strategy for warming up a vehicle's engine. Instead, engines will warm up quicker by driving gently after running the engine for no more than 30 seconds (U.S. Department of Energy, 2015).

Idling in Charlottetown

There is little information available concerning the pervasiveness of idling in Charlottetown, nor the impact it has on our environment or fuel consumption. Nonetheless, any Prince Edward Islander can attest to the long wait times in traffic, or drive thru line ups that occur in the city. In addition, other idling hotspots including schools, gyms, and grocery stores also contribute to the issue and leave little doubt that a solution is required (U.S. Department of Energy, 2015). The City of Charlottetown's current anti-idling policy (which can be found on page 5 of the City's *Environment & Sustainability Report),* is a well defined and solid first step towards developing more specific anti-idling regulations in the future (City of Charlottetown, 2021).

A 2003 report found that throughout North America & Europe, idling time makes up on average about 13% - 23% of total vehicle operating time, and that idling events under 3 minutes in length make up to 80% of total idling time (GW Taylor Consulting, 2003). This information shows that the majority of idling time is likely attributable to avoidable or reducible activities.

For the purpose of this report, inquiries were made in an attempt to determine the amount of idling that happens in drive thru locations throughout Charlottetown. Information was provided by managers or staff of 12 different drive thru locations throughout Charlottetown regarding…

1. The number of vehicles that utilize the drive thru on an average day
2. The average amount of time a vehicle might spend waiting in the drive thru.

A list of restaurants contacted, and specific results can be found in Appendix A.

It was determined that more than 7200 vehicles make use of drive thru locations in Charlottetown on any given day; and on average, these vehicles are waiting (while presumably idling) at least 2 minutes. Using these numbers and data on idling fuel consumption provided by the Argonne National Laboratory (US), the National Renewable Energy Laboratory (US), and the Journal of the Air & Waste Management Association as well as data on CO_2 emissions from fuel usage, given by the Government of Canada, an estimate of the impact of idling can be determined (Government of Canada, 2016) (U.S. Office of Energy Efficiency & Renewable Energy, 2015).

Data provided by the U.S. Office of Energy Efficiency & Renewable Energy (2015) shows that vehicles that fit in the category of a compact sedan use 0.61 litres of fuel per hour while idling, vehicles in the large sedan category use 1.5 litres/hour, and vehicles in the category of a medium heavy truck use 3.2 litres/hour. If we assume that 40% of the vehicles fit in the category of compact sedan, 30% as large sedan, and 30% as a medium heavy truck, it is estimated that at least **397 litres of fuel** are wasted each day, by idling in the listed drive thru locations alone (Statistics Canada). This is equivalent to **144,905 litres of fuel per year**. Using the average price of gas for 2021 in PEI (130.81cents/litre) as provided by Statistics Canada

(2022), this number is also equivalent to a total of **$189,550** worth of fuel wasted by idling over the course of a year (See Appendix B and Appendix C for calculations). In terms of CO_2 emissions, idling in the above drive thru locations is estimated to result in **333,281kg of CO_2** being emitted per year (See Appendix C for calculations).

Finally, if we assume that each vehicle uses approximately 2500 litres of fuel per year, reducing the amount of idling that happens in drive thrus by 80%, would be equivalent to removing more than 45 vehicles from the road, in terms of CO_2 emissions and fuel wasted (See Appendix D for calculations).

It cannot be stressed enough that the above calculations provide an incredibly limited view of the impact and frequency of idling in Charlottetown. Not all drive thru locations in the city were able to provide numbers, nor were any other idling situations considered, such as idling in traffic, idling at schools, transit buses, or idling at home. If all idling scenarios are considered, the impact undoubtedly would be much greater than what is captured in this report.

Existing Idling Control Bylaws Throughout Canada

Since the City of Toronto passed the first stand-alone anti-idling bylaw in 1996 many municipalities have followed suit. These bylaws are often put in place to address issues of noise or air pollution and have recently become more common in our society due to the increasing public focus and worry surrounding anthropogenic climate change and the effects of greenhouse gas (GHG) emissions on the atmosphere (Ma & Chang, 2019) (Clean Air Partnership, 2005).

The information provided in this section comes from an excel spreadsheet found online through the Natural Resources Canada website. This spreadsheet provides information pertaining to anti-idling bylaws in 68 different municipalities across Canada. The information included for the purpose of this report includes the amount of allowable idling time, enforcement

agents, type of enforcement, and fine amounts (Idling Control Bylaws Across Canada). It is important to note that the majority of municipalities featured in this spreadsheet reside in the provinces of Ontario, Alberta, or British Columbia, with only one featured municipality being from an Atlantic province (Kentville, Nova Scotia).

Average Length of Allowable Idling Time

The allowable idling time differs between municipalities, 12 of the 68 municipalities featured in the spreadsheet allowed for 5+ minutes of idling (sometimes up to 30 minutes), 3 municipalities did not allow any idling to take place, however, the majority of municipalities (44) allowed for 3 consecutive minutes of idling in a 60 minute period. If an average is taken of all 68 municipalities, it is found that the mean amount of allowable idling time is **3.8 minutes**. However, the Government of Canada views lengthy allowable idling times as a weakness of many existing bylaws, therefore, if we remove the five municipalities that allow for 10 minutes of idling or more, the mean allowable idling time then becomes **2.7 minutes** (Natural Resources Canada). This average of 2.7 minutes seems reasonable when one considers that the typical justifications for idling (warming up an engine, running quick errands, talking to a friend, etc…) should not require more than 3 minutes of idling (Government of Canada, 2016).

Kentville, NS, the only Atlantic province featured in this spreadsheet, allows for no more than 3 consecutive minutes of engine idling, within the municipal limits for Kentville (Natural Resources Canada).

Average Fine Amount and Enforcement Method

The typical method of enforcement of these bylaws takes the form of a monetary fine. While some municipalities (18) have opted to not use set fines and have instead placed a greater importance on education, most have set minimum fines, with the average amount being **$96.00**.

Seventeen (17) municipalities opt for fine amounts between $50.00 - $74.99, twenty-three (23) municipalities opt for fines greater than $100.00.

Kentville, NS, the only Atlantic province featured in this spreadsheet, notes that an "emphasis will be placed on warnings and public education", however, offenders can still be fined a minimum of $150.00 upon conviction (Natural Resources Canada).

Throughout Canada, anti-idling bylaws are typically enforced by municipal bylaw enforcement officers/departments, as well as police officers (Natural Resources Canada). There are many factors that may limit the amount of enforcement done, such as competing responsibilities or limited time/resources; it is for this reason that if a municipality has a separate parking enforcement office, it is recommended to consider sharing the enforcement responsibility with this department as well. Parking enforcement officers typically have "*comparatively larger numbers…, a more pro-active enforcement mandate, additionally, many idling infractions occur in areas where parking officers regularly patrol*" (Clean Air Partnership, 2005).

Weaknesses of Existing Bylaws

Anti-idling bylaws across Canada are still being developed, with many in their infancy, and many still taking a more gradual approach to implementation. Due to this, there is a considerable number of identifiable weaknesses with current bylaws, some of which will be outlined in this section. It is important to keep in mind that some of these weaknesses are product of a bylaw still in its infancy or can be seen as necessary exemptions to help ease the transition towards a more complete anti-idling campaign.

Lengthy Allowable Idling Period

One of the primary aspects of an anti-idling bylaw that needs to be taken into consideration is the length of the allowable idling period. While having an allowable idling period that is too short is not ideal, the more prevalent issue is having an idling period that is too lengthy. A longer allowable idling period is less likely to be enforced, due to a larger time requirement on behalf of the enforcement officer. As mentioned in previous sections, a fair and justifiable time limit for idling seems to be 3 minutes. *"When a municipality chooses an allowable idling period, it must balance these issues of enforceability, climate change, pollutant emissions and health concerns."* (Government of Canada, 2016)

Extended Idling for Transit Vehicles

Second, many existing bylaws allow extended idling for transit vehicles, typically at a layover or stop, and is usually justified through the reasoning that idling is required to provide a comfortable environment for passengers. While this is true, this extended idling makes enforcement difficult, and can lead to increased air pollution near the bus stops (a place where large numbers of people typically gather) (Government of Canada, 2016). On top of this, an idling transit bus with no load – meaning without the use of air conditioning or heating systems – still wastes 6 times more fuel than a compact sedan (3.7 Litres/Hour as opposed to 0.6 Liters/Hour) (U.S. Office of Energy Efficiency & Renewable Energy, 2015). Coupled with the fact that transit buses typically use diesel fuel, extended frequency/duration of idling for transit vehicles leads to gross impacts on air quality and CO_2 emissions quite rapidly.

Large Amounts of Exemptions

Existing bylaws have on average between 10-12 exemptions, the most common of which are temperature exemptions – which typically allow idling during times of extreme high or extreme low temperatures (less than 5℃ or more than 27℃). These exemptions are often

justified when examined individually, however, the effect of these large numbers of exemptions builds up and also makes enforcement difficult and uneven across the board. This also potentially creates a feeling of discontent with citizens who abide by the anti-idling guidelines voluntarily or those who wish to make complaints (Government of Canada, 2016).

Lack of Set Fines

Finally, not having a set fine for anti-idling infractions leads to a host of challenges. Simply put, having a set fine is easier to enforce; without one, enforcement officers are required to write a summons, prepare a charge, and appear in court, which can take up to 5 hours to complete for each idling infraction. This uses up valuable time, money, and resources on behalf of the officer and the municipality and may lead to enforcement officers being reluctant to go through this process, which essentially negates the purpose of enforcement (Government of Canada, 2016).

Strengths of Existing Bylaws

The literature on current anti-idling bylaws does not mention much about the strengths of these bylaws, as each bylaw is unique to the place, culture, and climate of the municipality in which it has been implemented. With that in mind however, there are some common factors throughout the bylaws that could be classified as “strengths” and of course, any bylaw that addresses the common weaknesses as laid out in the previous section and by Natural Resources Canada, will have a stronger and more secure bylaw in place. Some of the strengths that may not be explicitly mentioned in the literature include a healthy mix of education & enforcement strategies (to be explored in later sections) and a justifiable yet punitive fine.

Something that can be viewed as both a weakness and a strength would be the consideration of exceptional circumstances leading to certain exemptions. As mentioned in the

previous section, a large number of exemptions make enforcement difficult and uneven across the board (Government of Canada, 2016), however, it is important to remember that the goal is not to suffocate the public with overaggressive bylaws & regulations, but to educate and promote a more eco-friendly and sustainable community. In this sense, the careful consideration of extenuating circumstances as it applies to specific areas, cultures, and communities should be viewed as a strength.

Specific Considerations for Prince Edward Island

The majority of specific considerations for anti-idling bylaws in Prince Edward Island are related to the issue of enforcement. Namely, limited resources for enforcement, which type of enforcement will be the most effective, and when/where an anti-idling bylaw will be enforceable. As an example, any anti-idling bylaw will be difficult to enforce at people's homes, especially since more than 50% of Prince Edward Islanders live in rural areas (Canadian Rural Revitalization Foundation, 2021). Of course, Charlottetown is one of Prince Edward Island's few "urban" areas, but in order to make this bylaw easily transferable to other municipalities throughout the province, such factors will need to be considered. Medical exemptions, temperature exemptions, and other exceptional circumstances will need to be considered in the creation of this bylaw. It is highly recommended that the City of Charlottetown work with the public in the creation of this bylaw, either through census, focus groups, or another form of communication, to develop a bylaw that recognizes and adapts to exceptional circumstances.

Education vs. Enforcement

Education

The debate around education versus enforcement is a long standing one. On one side of the coin, education campaigns may allow the public to better understand underlying issues

related to a problem, as well as promote individual exploration of these issues, and potentially allows individuals to make conscious behavioural changes without being *told* to do so (United States Environmental Protection Agency, 2022). Educational campaigns can utilize behavioural change tools such as commitment, prompts, norms, incentives, and public communication to overcome individual internal barriers and make a lasting impact within a community, placing less pressure on governmental departments in the long term (McKenzie-Mohr Associates; LURA Consulting Group; Cullbridge Marketing and Communications; McKenzie-Mohr Associates 2, 2016).

It is important to note that many municipalities with existing anti-idling bylaws stress an emphasis on public education & educational campaigns before enforcement (Idling Control Bylaws Across Canada). An educational campaign can make use of advertising in newspapers or radio; printed cards, brochures, and posters; webpages; displays in public; and permanent signage at idling "hotspots". The usage of warnings or informal responses to vehicle idling can also be helpful (Clean Air Partnership, 2005). The Government of Canada has "A ready-made vehicle idling campaign" webpage that can be utilized as an effective starting point for public education (Government of Canada, 2015).

Enforcement

Educational campaigns, while effective, may not be effective enough on their own to create lasting change in the City of Charlottetown. Enforcement of an anti-idling bylaw shows commitment from the government to change harmful practices and can help to encourage lasting change when educational campaigns cannot. It is important to partake in some degree of enforcement, as bylaws that are not enforced "lose the power to affect changes in behaviour,

frustrate citizens who wish to see action on environmental issues, and damage the credibility of the government that passed them" (Clean Air Partnership, 2005).

As mentioned in earlier sections, an important factor that needs to be taken into consideration when developing an enforcement plan for Charlottetown is the potential lack of resources, so it is important to focus on enforcement methods that will place the lowest burden on the municipality's resources. One recommended method is the utilization of enforcement blitzes, particularly around idling hot spots, at times of the year when idling is most likely to be the biggest issue (start of the school year, start of winter, start of tourist season, etc…). These enforcement blitzes should be used in tandem with less intensive, but ongoing proactive enforcement by municipal bylaw officers, police, and parking enforcement officers (Clean Air Partnership, 2005). It is believed that such an approach will utilize the fewest number of resources, while still allowing for effective enforcement to be completed year-round.

Additionally, as mentioned in the section on "Average Fine Amount & Enforcement Method", if the duty of enforcing a bylaw is shared with as many departments as possible (bylaw enforcement officers, police officers, parking enforcement officers, etc…), then less pressure is placed on one department or group to carry the entire burden. It is more likely that the bylaw will be enforced, and will be enforced more thoroughly, when the ability to enforce it is shared.

Conclusion & Recommendations

Based on the findings of this report, it is recommended that the City of Charlottetown implement an anti-idling bylaw with the following terms applied… a maximum allowable idling time of 3 minutes in a 60 minute period and a set fine of $100.00 at minimum. A large focus should be placed on creating and implementing an educational campaign to work in tandem with the enforcement of this bylaw. This educational campaign can follow the ready-made vehicle

idling campaign laid out by the Government of Canada (Government of Canada, 2015). It is recommended that municipal bylaw officers, police, and parking enforcement officers are all given the responsibility of enforcing this bylaw. Utilizing enforcement blitzes at places and times when idling is most prevalent, in addition to less intensive ongoing enforcement throughout the year, will likely be the most ideal path forward in terms of an enforcement strategy.

Recommended Readings:

It is recommended that the following webpages and articles be reviewed throughout the process of creating & implementing this anti-idling bylaw for the City of Charlottetown:

1. Cialdini, R. B. (2003). Crafting Normative Messages to Protect the Environment. *Current Directions in Psychological Science*.
2. *Government of Canada*. (2015, December 17). Retrieved from A ready-made vehicle idling campaign: https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/idling/4469
3. Meleady, R., Abrams, C., Van de Vyver, J., Hopthrow, T., Mahmood, L., Player, A., . . . Leith, A. C. (2017). Surveillance of Self-Surveillance? Behavioural Cues Can Increase the Rate of Drivers Pro-Environmental Behaviour at a Long Wait Stop. *Environment and Behaviour*, *49*(10), 1156-1172. doi:10.1177/0013916517691324
4. Ma, C.-C., & Chang, H.-P. (2019). Environmental Consciousness in Local Sustainable Development: A Case Study of the Anti-Idling Policy in Taiwan. *Sustainability*, *11*(4442). doi:10.3390/su11164442

Appendix

Appendix A:

Restaurant & address	Number of vehicles per day	Estimated wait time in drive thru
Dairy Queen (365 University Avenue)	~300	~2 minutes
A&W Canada (650 University Avenue)	~400	n/a
Burger King (473 University Avenue)	~400	~1 minutes 30 seconds
McDonalds (124 Capital Drive)	~1500	n/a
Tim Hortons (385 Grafton Street)	~1000	n/a
McDonalds (427 University Avenue)	~1000	n/a
Wendy's (385 Grafton Street)	~1000	~2 minutes
Tim Horton's (20 Mt. Edward Road)	~250	n/a
Tim Horton's (265 North River Road)	~1000	Average of 52 seconds from when order is placed to when the vehicle reaches pick-up window
Harvey's (359 University Avenue)	~100	~ 4 minutes
Juice Co. (475 University)	~100	~5 minutes
Great Canadian Bagel (449 University Avenue)	~150	~2 minutes
Average	**~7200**	**~2.5 minutes**

Appendix B: Idling Fuel Usage - Calculations

$$\frac{2880\ compact\ sedans}{1\ day} * \frac{2\ minutes\ idling}{1\ compact\ sedan} * \frac{0.61\ litres\ of\ fuel}{1\ hour\ idling} * \frac{1\ hour\ idling}{60\ minutes\ idling} = \mathbf{\frac{59\ litres\ of\ fuel}{1\ day}}$$

$$\frac{2160\ large\ sedans}{1\ day} * \frac{2\ minutes\ idling}{1\ large\ sedan} * \frac{1.5\ litres\ of\ fuel}{1\ hour\ idling} * \frac{1\ hour\ idling}{60\ minutes\ idling} = \mathbf{\frac{108\ litres\ of\ fuel}{1\ day}}$$

$$\frac{2160\ medium\ large\ trucks}{1\ day} * \frac{2\ minutes\ idling}{1\ medium\ large\ trucks} * \frac{3.2\ litres\ of\ fuel}{1\ hour\ idling} * \frac{1\ hour\ idling}{60\ minutes\ idling} = \mathbf{\frac{230\ litres\ of\ fuel}{1\ day}}$$

$$\mathbf{\frac{(59\ litres\ of\ fuel)}{1\ day} + \frac{108\ litres\ of\ fuel}{1\ day} + \frac{230\ litres\ of\ fuel}{1\ day} = \frac{397\ litres\ of\ fuel}{1\ day} * \frac{365\ days}{1\ year} = \frac{144{,}905\ litres\ of\ fuel}{1\ year}}$$

Appendix C: Dollars ($CAD) Wasted While Idling - Calculations

$$\frac{109.1 + 115.3 + 125.4 + 136.2 + 129.5 + 130.9 + 137.1 + 136.7 + 137.5 + 143.9 + 143.5 + 134.6}{12} = \frac{\mathbf{130.81\ cents}}{\mathbf{1\ litre}}$$

$$\frac{130.81\ cents}{1\ litre} * \frac{144{,}905\ litres}{1\ year} * \frac{\$1\ CAD}{60\ cents\ CAD} = \frac{\mathbf{\$189{,}550}}{\mathbf{1\ year}}$$

Appendix D: Idling CO_2 Emissions - Calculations

$$\frac{2.3kg\ CO_2}{1\ litre} * \frac{144{,}905\ litres}{1\ year} = \frac{\mathbf{333{,}281kg\ CO_2}}{\mathbf{1\ year}}$$

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