Energy Campaign
Turn it Off – Vehicle Engines

Background and concepts

Idling vehicles produce CO_{2e} and other emissions that are hard on our breathing, and hard on the environment. Turning off your engine if idling more than 10 seconds (except in traffic) saves fuel and reduces emissions. This campaign targets drivers waiting to pick up students from school.
- Gathering and charting data
- Calculating CO_{2e} emissions
- Environmental health issues
- Reducing greenhouse gas emissions

Timeline and Temperatures

The campaign should be done over a period of about a month. Ideally, the pre and post audits will happen on days with similar outdoor temperatures.

Procedure

1. Collect data on vehicle idling behaviour outside the school.
- Gather data on vehicle idling behaviour, before and after providing education on vehicle idling.
- In small groups, (with a teacher or parent present, and wearing safety vests or other visible clothing) use the charts provided to record the total number of cars waiting outside the school, the number of cars idling, as well as the amount of time they are idling for.
- A good time to check: from 15 minutes before school is dismissed to 15 minutes after.
- Over the course of each half hour audit, vehicles will come and go from areas outside the school. Assign small groups of students to specific areas so they can keep track of the changing vehicles.

2. Educate drivers and the school community to turn off vehicle engines while waiting.

3. Calculate greenhouse gas emissions saved by reducing vehicle idling.

Pre Campaign Audit

Ask your classmates and their parents the following questions. Summarize the answers in the space below.

1. Do you/your parents idle your vehicle while waiting to pick up someone from school? Number of **yes** answers_____   Number of **no** answers _____

2. What are the main reasons for idling your vehicle while waiting to pick someone up from school?

3. What could be done to help people remember to turn off their vehicle engine while waiting to pick someone up from school?

Use the chart below or create your own to monitor the number of cars idling near the school. **Note**: record all vehicles waiting, not just the vehicles that are idling. Having a total number of vehicles recorded allows you to create percentages of vehicles idling and make comparisons with your data.

Pre Campaign Audit: Vehicle Idling
Date: Temp (ºC):   Students:

Vehicle (make and/or colour)	Is it Idling? YES /NO	If Yes, record time in minutes e.g. (3:15 – 3:26) = 11minutes
Totals:		

Education and Monitoring

Use the chart below to monitor vehicle idling and comments on your education day. In small groups, (with a teacher or parent present, and wearing safety vests or other visible clothing) approach vehicles waiting to pick up students at your school.
Note: Practice or role play this in advance, so you feel better prepared to approach, and talk to the people waiting in their vehicles.

- Ask them to turn off their engine while waiting, and offer them prepared information on vehicle idling, invite them into the school to stay warm, or
- Thank them for turning off their engine while they wait and offer them prepared information on vehicle idling.
- Record any comments on the chart.

Date: **Temp (ºC):**   **Students:**

Vehicle (make and/or colour)	Is it Idling? YES /NO	Driver Comments	Did driver turn off vehicle? YES/NO

Post Campaign Audit

Ask a number of students/parents and staff in your school the following questions.
Summarize the answers in the space below.

1. Were you aware of the Turn it Off – Vehicle Engines campaign?
Number of **yes** answers _____ Number of **no** answers_____
2. Which of the following were effective at getting across the message to turn off your vehicle engine while waiting?
- Assembly
- School newsletter information
- Posters
- Being approached by a student while in your vehicle
- Posted "no idling" sign on school property
- Other _____
3. What types of reminders would help you to continue to turn off your vehicle engine while waiting?

Use the chart below to monitor the number of cars idling near the school. Record the total number of vehicles waiting; the number that are idling, and how long each is idling for.

Post Campaign Audit: Vehicle Idling
Date: **Temp (°C):**   **Students:**

Vehicle (make and/or colour)	Is it Idling? YES/ NO	If Yes, record time in minutes e.g. (3:19 – 3:24) = 5 minutes
Totals:		

Calculate the CO_{2e} emissions reduced

Using your pre and post-campaign audit data, add up the total number of minutes that vehicles idled during each audit.

- On average, a vehicle burns 0.3 litres of gas for every 10 minutes of idling.
- Burning one litre of gasoline creates 2.4 kg of CO_{2e}.
- CO_{2e} emissions = idling minutes x 0.3 litres/10 minutes x 2.4 kgCO_{2e}/litre.
- Subtract your post audit idling emissions from the pre audit emissions to find your savings. Reductions in idling could also be represented by showing a reduction in the number of cars that are idling, or a reduction in the number of minutes idling.
- If vehicle drivers reduce their idling by this much every day, estimate how many greenhouse gas emissions could be reduced in one school year?

Turn it Off – Vehicle Engines
Ideas for Campaigns

- Post idle free signs outside of the school. Contact pamb@environmentalsociety.ca for signs for your school.
- Search *Idle Free Kit for Schools*, and download a pdf on how to run an idle free campaign at your school, or
- Go to http://www.nrcan.gc.ca and search idle-free, for a ready-made vehicle idling campaign

- Print off *Ready to use graphic materials*
  from the NRCAN site,
  or make your own brochures
  with the important messages you are sharing

- Send a note home with students, or write a newsletter item letting families know the school is doing a turn off vehicle engines campaign
- Kick off your campaign with a "hot chocolate day" in the school. Hand out the pamphlets about idling and invite parents/guardians in to the school to keep warm while they are waiting
- Prepare an assembly or class presentations about why it is important to reduce CO_{2e} emissions, and how turning off idling vehicles helps.

Curriculum Connections

Grade 5 English Language Arts: Outcome CC5.2 Demonstrate a variety of ways to communicate understanding and response including illustrated reports, dramatizations, posters, timelines, multimedia presentations, and summary charts.
CC5.3 Speak to express and support a range of ideas and information in formal and informal speaking situations (e.g., giving oral presentations and reports, retelling a narrative, explaining a display to others, working in groups) for particular audiences and purposes.
CC5.4 Use a writing process to experiment with and produce multi-paragraph narrative (including stories that contain dialogue), expository (including reports, explanations, letters, and requests), and persuasive (including letters) compositions that clearly develop topic and provide transitions for the reader.
AR5.1 Identify strengths in viewing, listening, reading, speaking, writing, and other forms of representing.
AR5.2 Set goals to enhance the development and improvement of the skills and strategies in viewing, listening, reading, speaking, writing, and other forms of representing and take steps to achieve goals
Social Studies: Outcome RW5.1 Explain the importance of sustainable management of the environment to Canada's future.
Mathematics: Outcome N5.3 Demonstrate, with and without concrete materials, an understanding of division (3-digit by 1-digit) and interpret remainders to solve problems. [C, CN, PS, R] **N5.7** Demonstrate an understanding of addition and subtraction of decimals (limited to thousandths). [C, CN, PS, R, V] **SP5.1** Differentiate between first-hand and second-hand data. [C, R, T, V] **SP5.2** Construct and interpret double bar graphs to draw conclusions. [C, PS, R, T, V] **SP5.3** Describe, compare, predict, and test the likelihood of outcomes in probability situations. [C, CN, PS, R]

Grade 6 English Language Arts: Outcomes CC6.1 Create various visual, multimedia, oral, and written texts that explore identity (e.g., Your Choices), social responsibility (e.g., Looking for Answers), and efficacy (e.g., Systems for Living). **CC6.2** Select and use the appropriate strategies to communicate meaning before (e.g., identifying purpose and audience), during (e.g., acknowledging sources), and after (e.g., revising to enhance clarity) speaking, writing, and other representing activities.
CC6.3 Use pragmatic (e.g., function and purpose), textual (e.g., paragraphs), syntactic (e.g., complete sentences with appropriate subordination and modification), semantic/lexical/morphological (e.g., figurative words), graphophonic (e.g., spelling strategies), and other cues (e.g., appropriate volume and intonation) to construct and to communicate meaning.
CC6.4 Create and present a variety of representations that communicate ideas and information to inform or persuade and to entertain an audience, including illustrations, diagrams, posters, displays, and cartoons. **CC6.5** Use oral language to interact appropriately with others in pairs, and small and large group situations (e.g., asking questions to explore others' ideas and viewpoints, discussing and comparing ideas and opinions, completing tasks and contributing to group success). **CC6.6** Use oral language appropriately to express a range of information and ideas in formal and informal situations including presenting an oral report based on research, a demonstration, and a short dramatization.
CC6.7 Write to describe a place; to narrate an incident from own experience in a multi-paragraph composition and in a friendly letter; to explain and inform in multi-step directions and a short report explaining a problem and providing a solution; and, to persuade to support a viewpoint or stand.
CC6.8 Experiment with a variety of text forms (e.g., a peer interview, presentation at an assembly, poem, letter to parents, short review, poster, tableau, graphic organizer) and techniques (e.g., surprise ending). **CC6.9** Prepare a teacher-guided inquiry report related to a stand on a topic, theme, or issue studied in English language arts.
Social Studies: Outcome RW6.2 Contribute to initiating and guiding change in local and global communities regarding environmental, social, and economic sustainability.

Mathematics: Outcome P6.1 Extend understanding of patterns and relationships in tables of values and graphs. [C, CN, PS, R] **SP6.1** Extend understanding of data analysis to include: line graphs, graphs of discrete data, data collection through questionnaires, experiments, databases, and electronic media, interpolation and extrapolation.

Grade 7 English Language Arts Outcome CC7.5 Create and present a variety of representations including visual and multimedia presentations such as displays, illustrations, and videos, and enhance communication with appropriate graphic organizers, charts, circle graphs, timelines, maps, and sound effects. **CC7.6** Use oral language to interact purposefully and appropriately with others in pairs, small groups, and large group situations (e.g., contributing to sustaining dialogue, expressing support for others and their viewpoints, discussing and analyzing ideas and opinions, completing a variety of tasks, and contributing to group consensus building). **CC7.7** Use oral language to express effectively information and ideas of some complexity in formal and informal situations (e.g., a procedural description based on personal experience, a demonstration, a persuasive speech, a dramatization). **CC7.8** Write to describe a person; to narrate an imaginary incident or story; to explain and inform in a news story, a factual account, and a business letter; to persuade in a letter and in interpretation of a text. **CC7.9** Experiment with a variety of text forms (e.g., meeting, presentation to adults, descriptive poem, opinion piece, a review, front page of a newspaper, short script) and techniques (e.g., dialogue, figurative language).
Science Outcome IE7.4 Analyze how ecosystems change in response to natural and human influences, and propose actions to reduce the impact of human behaviour on a specific ecosystem. [DM, CP]
Social Studies: Outcome RW7.3 Assess the ecological stewardship of economies of Canada and the circumpolar and Pacific Rim Countries.
Mathematics: Outcome: SP7.2 Demonstrate an understanding of circle graphs. [C, CN, PS, R, T, V]

Grade 8 English Language Arts Outcomes: CC8.2 Create and present a group inquiry project related to a topic, theme, or issue studied in English language arts. **CC8.5** Create and present a variety of visual and multimedia presentations including an illustrated report, a role play that ends with a tableau, a dramatization, presentation software, a newscast with adequate detail, clarity, and organization to explain (e.g., an important concept), to persuade (e.g., an opinion on an issue, a mini-debate), and to entertain (e.g., a humourous incident). **CC8.7** Use oral language to effectively express information and ideas of complexity in formal and informal situations (e.g., to debate a point, to participate in a meeting, to give a dramatic reading of a poem or play excerpt). **CC8.9** Experiment with a variety of text forms (e.g., Reader's Theatre, role play, humourous instructions, an electronic presentation, a dramatization, a mini-debate) and techniques (e.g., imagery, music, graphics and statistics in a multimedia presentation).
Health Education: Outcome USC8.6 Examine and assess the concept of sustainability from many perspectives, and develop an understanding of its implications for the well-being of self, others, and the environment.
Social Studies: Outcome RW8.3 Critique the approaches of Canada and Canadians to environmental stewardship and sustainability.
Mathematics: Outcome: SP8.1 Analyze the modes of displaying data and the reasonableness of conclusions. [C, CN, R]
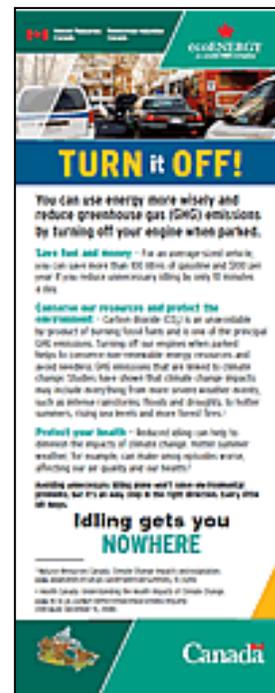
Additional Resource

Case Study – **Idle Free Campaign**
This case study takes students through an idle free campaign, including education resources used to promote idle-free behaviour, and results of pre and post audits. This case study could be used as pre-teaching for students before they begin their own turn it off-vehicle engines campaign.

Directions:
1. Read the case study.
2. Look at the idle-free materials included, as well as ***Ready to use graphic materials*** available from:
   http://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/idling/4469
   http://www.rncan.gc.ca/energie/efficacite/collectivites-infrastructures/transports/ralenti/4470
3. Discuss the questions.

Examples of some of the ***Ready to use graphic materials***

A few years ago, an elementary school in Saskatoon held an idle free campaign. **Their goal was to reduce vehicle idling in front of the school.** In other words, **get people to turn off their engines.** In class the students learned about vehicle idling, the problems with pollution and CO_{2e} emissions from idling, and some simple solutions.

This was their plan:
- Find out how many vehicles idled in front of the school.
- Practice what they were going to say, and decide what information they thought would be useful for people to know so they wouldn't idle.
- Talk to the people in vehicles outside their school using the information students had prepared.
- Ask people not to run their vehicles in front of the school.
- Later: Check to see if fewer people were idling their vehicles.

When they did their campaign, these are a few of the things that teachers and drivers said to them about idling vehicles:

" But it is so cold here in the winter!"

" I'm afraid my car won't start if I don't leave it running."

"They need to do this campaign all over the city."

" Gas doesn't cost much for 10 minutes."

" My grandson has asthma – I never thought it might be connected."

" The article you put in the school newsletter had a lot of good information."

Discussion:

Look at the pre-audit data students collected on car idling. Why was an idle free campaign a good idea for this school? Do you think it might be a good idea at your school?

What was the purpose of the pre and post audits for the students?

How could they have let everyone in the school know about their campaign and its results? What could they do with the information they gathered?

Look at the brochures and other information on idle-free campaigns and list a few of the things students probably told the drivers they spoke to.

Do you think there will always be people who don't want to turn off their vehicle engine, and what should students do about this?

Share some of your discussion with the whole group.

Campaign Day
Date- Nov 17th, 2011

Vehicle (make/colour)	Is it Idling? YES /NO	Driver Comments	Did driver turn off vehicle? YES/NO
SUV-Hyundai silver	Yes	my kids have asthma	Yes
Truck silver	NO	Good idea	
Volkswagon Green	Yes	It's cold	Yes
Ford white	YES	my car won't start again	NO
Truck Dodge Silver	YES	Gas doesn't cost much	Yes
KIA blue	NO	need no idling where I work	
mini orange	NO	turned off when they saw us.	
Van black	Yes	So cold today!	Yes
Truck Ram white	No	saw newsletter	

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Pre-Campaign Audit- Idling
Date- Nov 15th, 2011 –(3^{15} – 3^{45} pm.)

Vehicle (make/colour)	Is it Idling? YES /NO	If Yes, for how long?
Honda blue	Yes	10 minutes
Ford silver	NO	
Ford TRUCK white	YES	15 mins 3:20 – 3:35pm
Toyota white	Yes	8 mins.
Truck red	No	
Chevy Black	YES	2mins
Hyundai white	Yes	22 mins 3:15 – 3:37
Truck Dodge silver	No	
SUV white	YES	10 mins.

Counted-74 cars Total: 38 cars idled
Average idling time- 10 mins.

Post-Campaign Audit- Idling
Date – Nov 24th, 2011 (3^{15}–3^{45}) page 4.

Vehicle (make/colour)	Is it Idling? YES/NO	If yes, for how long?
Toyota grey	NO	
Hyundai orange	YES	5 mins
Bug green	NO	
Ford truck white	turned off when they saw us	
Honda green	Yes	11 mins.
Truck black	NO	
Van Blue	No brought baby in school	
Red Ford	NO	
Toyota Van	No	

Counted- 67 cars Total: 8 cars idled
Average time- 6 mins