

ATTACHMENT B

J Logan

From: Don Weiden <DonWeiden@KennedyJenks.com>
Sent: Wednesday, May 16, 2018 9:32 AM
To: J Logan
Cc: Sarah Williams
Subject: FW: Anti-Idling

This is the first response I have received to the distribution of the anti-idling report.

Don Weiden

From: Monica Ventrice <mventrice@pinewood.edu>
Sent: Wednesday, May 16, 2018 8:39 AM
To: Don Weiden <DonWeiden@KennedyJenks.com>
Subject: Re: Anti-Idling

Hi Don,

Thank you for allowing us to be involved. We are in the process of creating a campaign to encourage positive driving behaviors on our campuses as a result of the survey.

Sincerely,
Monica Ventrice

On Tue, May 15, 2018 at 10:19 AM, Don Weiden <DonWeiden@kennedyjenks.com> wrote:

I want to thank each of you for assisting the City of Los Altos Environmental Commission (EC) in its data gathering efforts on voluntary vehicle idling. We could not have completed our survey work without support from you and members of your staff.

On behalf of the EC's Anti-Idling Subcommittee, I am pleased to attach a copy of our report and collected data. This report and data were presented to the Los Altos Council on May 1, 2018, as part of the EC's 2017/18 Accomplishments and the EC's 2018/19 Work Plan. The Los Altos Council was supportive of the EC recommendation to develop and assist with anti-idling community education programs if interest and support is received from the impacted parties.

Anti-Idling education efforts could significantly reduce CO2 emissions and student / public exposure to the associated toxic gasses contained in vehicle exhaust. (Note, EPA has prepared a comprehensive tool kit on how to reduce voluntary idling, <https://www.epa.gov/region8/idle-free-schools>).

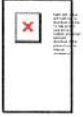
Let us know how we can be of assistance.

Don Weiden

Anti-Idling Subcommittee

Los Altos Environmental Commission

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	<p>Monica Ventrice Faculty, Biology Pinewood School Upper Campus, 26800 Fremont Road, Los Altos Hills, CA 94022 Direct: 650-209-3160 Fax: 650-209-3011 Web: www.pinewood.edu</p>
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J Logan

From: Don Weiden <DonWeiden@KennedyJenks.com>
Sent: Tuesday, May 15, 2018 10:20 AM
To: Galen.Rosenberg@mvla.net; jbaier@lasdschools.org; mventrice@pinewood.edu
Cc: J Logan
Subject: Anti-Idling
Attachments: Idling EC Status Memo 4-24-2018 Rev.pdf; Survey Data.pdf

I want to thank each of you for assisting the City of Los Altos Environmental Commission (EC) in its data gathering efforts on voluntary vehicle idling. We could not have completed our survey work without support from you and members of your staff.

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Anti-Idling education efforts could significantly reduce CO2 emissions and student / public exposure to the associated toxic gasses contained in vehicle exhaust. (Note, EPA has prepared a comprehensive tool kit on how to reduce voluntary idling, <https://www.epa.gov/region8/idle-free-schools>).

Let us know how we can be of assistance.

Don Weiden
Anti-Idling Subcommittee
Los Altos Environmental Commission

April 24, 2018

To: City of Los Altos
Staff Liaison to Environmental Commission

From: Environmental Commissioner, Don Weiden

Subject: Anti-Idling Survey Results and Environmental Commission Recommendations

I. The Environmental Commission appointed an Anti-Idling Subcommittee on August 14, 2017 and authorized a preliminary survey to assist in evaluating the extent of voluntary vehicle idling within Los Altos. Subcommittee activities:

- August 25, 2017 Gary Hedden and Don Weiden met with Jay Logan and Sarah Henricks – Discussed and identified items to be investigated.
- September 1, 2017 Gary Hedden, Lei Yuan and Don Weiden met with Sarah Hendricks – Continued discussion of items to be investigated. The City has the ability to post anti-idling signs without an ordinance if approved by Public Works.
- September 6, 2017 Lei Yuan met with Sybil Cramer of the Los Altos High School Green Team and Cheryl Weiden – Sybil stated that the Green Team selects their activities. Sybil would like to see City direction so that School District will take action including posting signs and enforcing anti-idling.
- September 11, 2017 – Subcommittee report to Environmental Commission.
- September 18, 2017 met with Jay Logan and Sarah Henricks – Custom signs would cost \$200 to \$250 each depending on size and graphics. Installation cost could be at nominal if done by City crews on existing posts. The Chief of Police met with the Los Altos High School Superintendent and found support for educational efforts and inclusion in Drivers Education program. Gary Hedden contacted Joe Simitian's office and found his staff willing to discuss and evaluate the subject. Simitian's staff later encouraged continuing grassroots efforts on anti-idling, although the staff would not pick this issue up at this time.
- October 9, 2018 – Subcommittee report to Environmental Commission. Environmental Commission authorized conducting surveys.
- November 13, 2018 – Oral report to Commission. Survey of Rancho Shopping Center, Hillview/Civic Center and Main Street/State Street completed 11/9, 11/10 and 11/11.
- December 11, 2018 – Oral report to Commission. Survey at Los Altos High School completed 12/1, 12/4 and 12/5.
- January 8, 2018 – Oral report to Commission. Surveys at K – 8 schools to be scheduled after Solar installations are complete.
- February 12, 2018 – Oral report to Commission. Survey at Pinewood School done by Pinewood students 1/23, 1/24 & 1/25. Aimi Wen spoke of Pinewood students' interest in anti-idling and interest expressed at High School Environmental Group summit on 1/27.
- March 12, 2018 – Oral report to Commission. Surveys at K – 8 schools are scheduled, Couvington during week of 3/19, Santa Rita during week of 3/26, Blach during week of April 2 and Gardner-Bullis during the week of 4/16.

- April 9, 2018 – Subcommittee report to Commission and discussion of survey results. Commission recommended next steps.

II. Idling Survey Results

LOCATION	SURVEY TIME MINUTES	IDLING MINUTES OBSERVED	OCCUPIED VEHICLES WAITING	VEHICLES IDLING 1+ MINUTES	AVERAGE IDLING MINUTES PER DAY
RANCHO S CTR	172	111	Did not count	33	37
HILLVIEW/CIVIC C	83	12	Did not count	6	4
MAIN/STATE STS	202	66	Did not count	24	22
LOS ALTOS HS	519	1080	431	141	360
PINEWOOD	160	611	259	154	204
COUVINGTON	209	1244	222	142	415
SANTA RITA	200	1986	378	285	662
BLACH	137	427	297	90	142
GARDNER-BULLIS	170	1011	333	174	337

A one page summary of data collected at each location is attached to the end of this report

III. Idling Survey Observations

1. Surveys at Schools
 - a. Some vehicles arrive for student pickup 30+ minutes prior to student discharge and idle the entire time.
 - b. Survey recorded idling only in specific zones in the school entry / exit loop from sidewalks. Idling within parking lots, on streets and adjacent areas waiting to enter the school entry / exit loop or waiting for students to walk to the waiting vehicles was significant (probably greater than the surveyed zones) and was not recorded.
 - c. Weather was mild on the survey days so Idling was not required for comfort within vehicles.
 - d. Activities while idling included activities on mobile devices and talking. Some even exited their vehicle to talk with other adults while their vehicle idled.
 - e. School busses turned off their engines.
 - f. Pick-up service providers (vans) generally idled their vehicles.
 - g. The vast majority of vehicles waiting in the student pickup lane at K-6 schools idled.
2. Surveys at Locations other than Schools
 - a. When entering or leaving parking spaces, individuals often become distracted with mobile devices and idle.
 - b. Idling occurs when driver waits for a passenger to run an errand in a store.
 - c. Idling occurs when food is brought into and consumed in the vehicle.
3. General
 - a. More than a majority of occupied vehicles idle while parked.
 - b. Generally, vehicle occupants seem unaware and not concerned about idling.

- c. Survey work generated interest in anti-idling among high school students and K – 8 student’s parents.

IV. Benefits of Reducing Voluntary Vehicle Idling in Los Altos

1. Estimated prevention of MT CO₂ for Los Altos from the Voluntary Vehicle Idling Study.
 - a. An idling vehicle emits approximately 1.4g of CO₂ per second, Reference Vanderbilt paper Article 4.1, Therefore, 455 kilograms of CO₂ emission ($1.4 \times 60 \times 5,415 = 454,860$) was observed.
 - b. Based on the survey data and a number of assumptions, MT CO₂ from voluntary vehicle idling in Los Altos most likely exceeds 94 MT CO₂. Schools exceed 66 MT CO₂: 180 school days per year, 9 public schools in Los Altos with surveyed average idling of 350 minutes per day, 7 private schools in Los Altos with assumed average idling of 175 minutes per day. Commercial and civic areas most likely exceed 28 MT CO₂: 261 commercial/civic days per year, 4 times the survey observed idling minutes per day, 5 times the survey area for the total Los Altos commercial and civic area. Los Altos total most likely exceeds 94 MT CO₂ (66 + 28).
2. Estimated prevention of MT CO₂ for Los Altos Voluntary Vehicle Idling derived from various studies ranged from 47 to 542 MT CO₂.
 - a. City of Palo Alto Colleagues Memo dated August 28, 2017 – Factoring private vehicle estimate of MT CO₂ prevented by population of Los Altos to population of Palo Alto yields 271 to 542 MT CO₂.
 - b. Vanderbilt University Paper titled Costly myths: An analysis of idling beliefs and behavior in personal motor vehicles and dated March 4, 2009 – Factoring private vehicle estimate of MT CO₂ prevented by number of private vehicles in US to number of vehicles in Los Altos yields 390 MT CO₂.
 - c. Improving Toronto’s Idling Control Bylaw, McKowen, Toronto Medical Officer of Health, Environmental Protection, 2010, page 6 – Factoring Toronto’s estimate of total idling MT CO₂ by population of Los Altos to population of Toronto yields 1,164 MT CO₂. This is approximately 43% of the total idling MT CO₂ estimated in #1 and 12% of that estimated in #2 and results in estimated prevention of 47 to 234 MT CO₂.
3. Environmental Benefits of Reducing Voluntary Vehicle Idling in Los Altos
 - a. Would reduce CO₂ emissions and help Los Altos meet its Climate Action Plan (CAP) Greenhouse Gas Target. Of the 43 measures identified in the Los Altos CAP, the reduction in unnecessary idling would rank between 12th and 21st.
 - b. Would reduce the concentration of chemicals hazardous to human health in the air we breath at our schools, public gatherings, recreation events, shopping locations and outside/sidewalk dining locations.
 - c. Would set a standard of good practice and demonstrate leadership for others to follow, magnifying the positive environmental impacts.
4. Economic Benefits of Reducing Voluntary Vehicle Idling in Los Altos
 - a. Reduce vehicle maintenance costs. Idling a vehicle is harder on the vehicle’s engine, electrical and mechanical systems than turning the vehicle off and on.

- b. Save fuel costs. Idling passenger vehicles or light duty trucks consume between 0.32 and 0.71 gal/hr of gasoline. If the City's fleet of 71 vehicles idled unnecessarily for 15 minutes per day with gasoline at \$3.50 per gallon the wasted fuel would total approximately \$10,000 per year.

V. Environmental Commission Recommendations

1. Consider incorporation of Anti-Idling into the next Climate Action Plan Implementation Work Plan Update
2. Assist in the development of a Community Anti-Idling Education Campaign if expressions of support are received from key stake holders (City, Schools, Businesses)
3. Assist in the development of an Anti-Idling policy for City Vehicle Fleet
4. Present recommendations to the City Council as part of the Environmental Commission's 2018/19 work plan.
5. Report survey results to K – 8 School District, High School and Pinewood.
6. Encourage others to move forward on anti-idling as a grassroots activity

Idling Survey Results												
Revised 11/11/2017												
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Comments
Rancho Shopping Center	11/9/2017	Thurs	10:44	11:02		3	1		1	18	14	Cloudy 63 to 67F
Rancho Shopping Center	11/9/2017	Thurs	12:05	12:25		2			3	20	19	Cloudy 63 to 67F
Rancho Shopping Center	11/9/2017	Thurs	2:37	2:51		1				14	2	Cloudy 63 to 67F
Rancho Shopping Center	11/10/2017	Fri; Holiday	10:55	11:14	1	2				19	5	Cloudy, Rain, 65F
Rancho Shopping Center	11/10/2017	Fri; Holiday	11:45	12:00				1	1	15	9	Cloudy, Rain, 65F
Rancho Shopping Center	11/10/2017	Fri; Holiday	2:33	2:49		2				16	2	Cloudy, Rain, 65F
Rancho Shopping Center	11/11/2017	Saturday	10:46	11:07			2		1	21	11	Partly Cloudy 61 to 63F
Rancho Shopping Center	11/11/2017	Saturday	12:03	12:26		2	1	1	2	23	21	Partly Cloudy 61 to 63F
Rancho Shopping Center	11/11/2017	Saturday	2:15	2:41				2	4	26	28	Partly Cloudy 61 to 63F
Hillview/Civic Center	11/9/2017	Thurs	11:09	11:25	2				1	16	7	Cloudy 63 to 67F
Hillview/Civic Center	11/9/2017	Thurs	12:44	12:56						12	0	Cloudy 63 to 67F
Hillview/Civic Center	11/9/2017	Thurs	3:24	3:39	1	2				15	5	Cloudy 63 to 67F
Hillview/Civic Center	11/10/2017	Fri; Holiday	11:30	11:40						10	0	Cloudy, Rain, 65F; (HCC, Library & City Closed)
Hillview/Civic Center	11/10/2017	Fri; Holiday	1:15	1:20						5	0	Cloudy, Rain, 65F; (HCC, Library & City Closed)
Hillview/Civic Center	11/10/2017	Fri; Holiday	3:00	3:05						5	0	Cloudy, Rain, 65F; (HCC, Library & City Closed)
Hillview/Civic Center	11/11/2017	Saturday	11:14	11:23						9	0	Partly Cloudy 61 to 63F (Library & City Closed)
Hillview/Civic Center	11/11/2017	Saturday	1:23	2:30						7	0	Partly Cloudy 61 to 63F (Library & City Closed)
Hillview/Civic Center	11/11/2017	Saturday	2:48	2:52						4	0	Partly Cloudy 61 to 63F (Library & City Closed)
Main St / State St	11/9/2017	Thurs	11:30	11:50						20	0	Cloudy 63 to 67F
Main St / State St	11/9/2017	Thurs	1:10	1:41	1			1	2	31	15	Cloudy 63 to 67F
Main St / State St	11/9/2017	Thurs	3:00	3:16	2	1				16	4	Cloudy 63 to 67F
Main St / State St	11/10/2017	Fri; Holiday	11:44	12:16		1	2	1	2	32	21	Cloudy, Rain, 65F
Main St / State St	11/10/2017	Fri; Holiday	1:29	1:49		1				20	2	Cloudy, Rain, 65F
Main St / State St	11/10/2017	Fri; Holiday	3:08	3:30	3		1			22	6	Cloudy, Rain, 65F
Main St / State St	11/11/2017	Saturday	11:26	11:45				1		19	4	Partly Cloudy 61 to 63F
Main St / State St	11/11/2017	Saturday	1:35	1:59	1	1		1		24	7	Partly Cloudy 61 to 63F
Main St / State St	11/11/2017	Saturday	3:02	3:20		1			1	18	7	Partly Cloudy 61 to 63F
										457	189	
Notes												
1. Actual idling times are greater than observed idling times because idling before start of observation and after 5 min of observation is not recorded.												
2. An idling vehicle emits 1.4g of CO2 per second, Reference Vanderbilt paper Article 4.1. Therefore, we observed 15.9 kilograms of CO2 emission (1.4 x 60 x 189 = 15,876)												
3. If the idling observed is repeated each day for a year the resultant CO2 would be 1.9 Mt (15.88/3 x 365 = 1,931 Kilograms)												
4. An estimate of CO2 idling emissions at these three locations would be significantly higher than 1.9 Mt observed because A) we could not observe the entirety of each location during the survey time and B) our survey time was less than 60 minutes each day at each location.												

Idling Survey Results														
Revised 12/5/2017														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Los Altos HS, Almond Av, Pickup / Dropoff Crescent	12/1/2017	Friday	2:10	3:54	4	7	4	5	18	104	281	107	38	Clear, Sunny, 63F, Note of the 18 cars observed idling 5+ min, 10 idled 10+ min, 5 idled 20+ min and 1 idled 30+ min, total of 231 min of idling
Los Altos HS, Jardin Av (Casita to Panchita)	12/1/2017	Friday	2:15	2:58		1			1	43	7	19	2	Clear, Sunny, 63F
Los Altos HS, Jardin & Casita	12/1/2017	Friday	3:19	3:43			1	2		24	11	13	3	Clear, Sunny, 63F
Los Altos HS, Almond Av, Pickup / Dropoff Crescent	12/4/2017	Monday	2:10	3:42	8	3	3	3	19	92	281	103	36	Clear, Sunny, 63F, Note of the 19 cars observed idling 5+ min, 12 idled 10+ min, 5 idled 20+ min, total 246 min of idling
Los Altos HS, Jardin & Casita	12/4/2017	Monday	2:18	2:49			1		1	31	20	8	2	Clear, Sunny, 63F, Note the one vehicle observed idling 5+ min actually idled for 17 min
Los Altos HS, Jardin & Casita	12/4/2017	Monday	3:10	3:43	1		1	1	3	33	32	16	6	Clear, Sunny, 63F, Note of the 3 cars observed idling 5+ min, 1 idled 14 min, total 24 min of idling
Los Altos HS, Almond Av, Pickup / Dropoff Crescent	12/5/2017	Tuesday	2:10	4:00	4	5	6	2	30	110	417	138	47	Clear, Sunny, 66F, Note of the 30 cars observed idling 5+ min, 17 idled 10+ min, 9 idled 15+ min, 4 idled 20+ min, 1 idled 30+ min, total 377 min of idling
Los Altos HS, Jardin & Casita	12/5/2017	Tuesday	2:15	2:51				1		36	4	7	1	Clear, Sunny, 66F
Los Altos HS, Jardin & Casita	12/5/2017	Tuesday	3:07	3:53		3		1	2	46	27	20	6	Clear, Sunny, 66F, Note of the 2 cars observed idling 5+ min, 1 idled 7 min and one idled 10 min, total 17 min of idling
					17	19	16	15	74	519	1080	431	141	
Notes														
1. Actual idling times are greater than observed idling times because idling before start of observation and after completion of observation is not recorded.														
2. An idling vehicle emits 1.4g of CO2 per second, Reference Vanderbilt paper Article 4.1. Therefore, we observed 90.7 kilograms of CO2 emission (1.4 x 60 x 1080 = 90,720)														
3. Survey did not include the following additional pickup areas at LAHS: main parking lot, Almond Ave, Jardin & Los Ninos														

Idling Survey Results														
Pinewood School														
Revised 01/25/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 1	1/23/2018	Tuesday	14:40	15:20	3	4					11		7	Clear, Sunny, 60F
Zone 2	1/23/2018	Tuesday	14:44	15:20	3	1	1				8		5	Clear, Sunny, 60F
Zone 3	1/23/2018	Tuesday	14:40	15:20	2	3		1	3		36		9	Clear, Sunny, 60F, Note of the 3 cars observed idling 5+ min, 2 idled 6+ min, and 1 idled 12+ min, total of 24 min of idling
Zone 4	1/23/2018	Tuesday	14:40	15:20		1					2		1	Clear, Sunny, 60F
Zone 5	1/23/2018	Tuesday	14:40	15:20	4	9	3		2		49		18	Clear, Sunny, 65F, Note the 2 vehicles observed idling 5+ min, 1 idled 6+ min and 1 idled 12+ min, total of 18 min of idling
Subtotal					12	18	4	1	5	40	106	79	40	
Zone 1	1/24/2018	Wednesday	13:03	13:43		1					2		1	Cloudy, 60F
Zone 2	1/24/2018	Wednesday	13:03	13:43		2	1				7		3	Cloudy, 60F
Zone 3	1/24/2018	Wednesday	13:03	13:43				1			4		1	Cloudy, 60F
Zone 4	1/24/2018	Wednesday	13:10	13:43									0	Cloudy, 60F
Zones 5A & 5B	1/24/2018	Wednesday	13:03	13:43	1	1	1		1		14		4	Cloudy, 60F, Note the vehicle observed idling 5+min idled for 8+ min
Subtotal					1	4	2	1	1	40	27	37	9	
Zone 1	1/24/2018	Wednesday	14:40	15:20		2			2		14		4	Overcast, Light Rain, 55F
Zone 2	1/24/2018	Wednesday	14:40	15:20	1				8		61		9	Overcast, Light Rain, 55F, Note the 8 vehicles observed idling 5+ min, 1 idled 6+ min, 1 idled 7+ min, 1 idled 8+ min, 1 idled 9+ min and 2 idled 10+ min, total of 60 min of idling
Zones 3 & 4	1/24/2018	Wednesday	14:40	15:20		2			1		12		3	Overcast, Light Rain, 55F, Note the vehicle observed idling 5+min idled for 8+ min
Zone 5A	1/24/2018	Wednesday	14:40	15:20	6	1			2		37		9	Overcast, Light Rain, 55F, Note the 2 vehicles observed idling 5+ min, 1 idled 9+ min and 1 idled 20+ min, total of 29 min of idling

Idling Survey Results														
Pinewood School														
Revised 01/25/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 5B	1/24/2018	Wednesday	14:40	15:20	5	4	2	2	1		53		14	Overcast, Light Rain, 55F, Note the vehicle observed idling 5+min idled for 26+ min
Subtotal					12	9	2	2	14	40	177	71	39	
Zone 1	1/25/2018	Thursday	15:01	15:14	3	1					5		4	Partly Cloudy, 56F
Zone 2	1/25/2018	Thursday	14:40	15:20	1	5	2		7		81		15	Partly Cloudy, 56F, Note the 7 vehicles observed idling 5+ min, 1 idled 7+ min, 1 idled 8+ min, 3 idled 9+ min and 2 idled 11+ min, total of 64 min of idling
Zone 3	1/25/2018	Thursday	14:40	15:20	1	3		3	5		69		12	Partly Cloudy, 56F, Note the 5 vehicles observed idling 5+ min, 2 idled 13+ min and 1 idled 14+ min, total of 50 min of idling
Zone 4	1/25/2018	Thursday	14:40	15:20									0	Partly Cloudy, 56F
Zone 5A	1/25/2018	Thursday	14:40	15:20	10	4	4	2	5		83		25	Partly Cloudy, 56F, Note the 5 vehicles observed idling 5+ min, 2 idled 6+ min, 1 idled 7+ min, and 1 idled 21+ min, total of 45 min of idling
Zone 5B	1/25/2018	Thursday	14:40	15:20		2	3	2	3		63		10	Partly Cloudy, 56F, Note the 3 vehicles observed idling 5+ min, 1 idled 6+ min, 1 idled 8+ min, and 1 idled 28+ min, total of 42 min of idling
Subtotal					15	15	9	7	20	40	301	72	66	
TOTALS					40	46	17	11	40	160	611	259	154	
Notes														
1. Survey area was the Pinewood School entry/exit loop. Students were assigned specific zones and recorded activity within his or her assigned zone. Therefore, a specific car could have been recorded idling in more than one zone.														
2. Electric vehicle idling not included.														
3. Idling was only recorded during the noted survey times. In some cases idling was observed at the start of the survey time and after the end of the survey time.														
4. An idling vehicle emits approximately 1.4g of CO2 per second, Reference Vanderbilt paper Article 4.1. Therefore, 51.3 kilograms of CO2 emission (1.4 x 60 x 611 = 51,320) was observed														

Idling Survey Results														
Couvington School														
Revised 03/23/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 1	3/21/2018	Wednesday	14:05	15:15	5	3	1		16		234		25	Cloudy, 66F, Note the 16 vehicles observed idling 5+ min, 3 idled 6+ min, 1 idled 7+ min, 2 idled 8+ min, 1 idled 9+ min, 1 idled 10+ min, 1 idled 12+ min, 3 idled 15+ min, 1 idled 21+ min, 2 idled 22+ min and 1 idled 40+ min, total of 222 min of idling
Zone 2	3/21/2018	Wednesday	14:05	15:15	1	3			7		89		11	Cloudy, 66F, Note the 7 vehicles observed idling 5+ min, 1 idled 6+ min, 1 idled 10+ min, 3 idled 11+ min, 1 idled 16+ min and 1 idled 17+ min, total of 82 min of idling
Subtotal					6	6	1		23	70	323	64	36	
Zone 1	3/22/2018	Thursday	13:03	14:10	1	1	1	3	24		248		30	Cloudy, Drizzles, 54F, Note the 24 vehicles observed idling 5+ min, 1 idled 5+ min, 2 idled 6+ min, 3 idled 7+ min, 4 idled 8+ min, 1 idled 9+ min, 7 idled 10+ min, 4 idled 13+ min, 1 idled 14+ min, and 1 idled 15+ min, total of 230 min of idling
Zone 2	3/22/2018	Thursday	13:03	14:10	6	5	1		10		242		22	Cloudy, Drizzles, 54F, Note the 10 vehicles observed idling 5+ min, 2 idled 6+ min, 1 idled 10+ min, 1 idled 11+ min, 1 idled 12+ min, 2 idled 13+ min, 1 idled 17+ min, and 2 idled 23+ min, total of 222 min of idling
Zone 3	3/22/2018	Thursday	13:03	14:10		2	1		1		26		4	Cloudy, Drizzles, 54F, Note the vehicle observed idling 5+ min idled for 19 min, total of 19 min of idling
Subtotal					7	8	3	3	35	67	516	85	56	
Zone 1	3/23/2018	Friday	14:05	15:17	2	2		3	17		151		24	Partly Cloudy, 59F, Note the 17 vehicles observed idling 5+ min, 2 idled 5+ min, 4 idled 6+ min, 1 idled 7+ min, 3 idled 8+ min, 4 idled 9+ min, 2 idled 10+ min, and 1 idled 12+ min, total of 133 min of idling

Idling Survey Results														
Couvington School														
Revised 03/23/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 2	3/23/2018	Friday	14:05	15:17	3	3	1		13		197		20	Partly Cloudy, 59F, Note the 13 vehicles observed idling 5+ min, 1 idled 6+ min, 2 idled 8+ min, 2 idled 9+ min, 1 idled 10+ min, 2 idled 12+ min, 1 idled 13+ min, 1 idled 14+ min, 1 idled 17+ min, 1 idled 20+ min and 1 idled 47+ min, total of 185 min of idling
Zone 3	3/23/2018	Friday	14:05	15:17	2				4		57		6	Partly Cloudy, 59F, Note the 4 vehicles observed idling 5+ min, 1 idled 5+ min, 1 idled 7+ min, 1 idled 13+ min and 1 idled 30+ min, total of 55 min of idling
Subtotal					7	5	1	3	34	72	405	73	50	
TOTALS					20	19	5	6	92	209	1244	222	142	
Notes														
1. Survey area was the Couvington School entry/exit loop and first isle of parking. Survey takers were assigned specific zones and recorded activity within his or her assigned zone. Therefore, a specific car could have been recorded idling in more than one zone.														
2. Electric vehicle idling not included.														
3. Idling was only recorded during the noted survey times.														
4. An idling vehicle emits approximately 1.4g of CO2 per second, Reference Vanderbilt paper Article 4.1. Therefore, 104.5 kilograms of CO2 emission (1.4 x 60 x 1244 = 104,496) was observed														

Idling Survey Results														
Santa Rita School														
Revised 03/28/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 1	3/26/2018	Monday	14:10	15:15		2	6	5	35		451		48	Sunny, 63F, Note the 35 vehicles observed idling 5+ min, 7 idled 5+min, 4 idled 6+ min, 2 idled 8+ min, 6 idled 9+ min, 2 idled 11+ min, 5 idled 12+ min, 5 idled 13+ min, 1 idled 15+ min, 3 idled 16+ min, 3 idled 17+ min, and 1 idled 19+ min, total of 409 min of idling
Zone 2	3/26/2018	Monday	14:10	15:15	1	3	5	1	6		113		16	Sunny, 63F, Note the 6 vehicles observed idling 5+ min, 1 idled 9+ min, 1 idled 12+ min, 1 idled 15+ min, 2 idled 16+ min and 1 idled 19+ min, total of 87 min of idling
Subtotal					1	5	11	6	41	65	564	100	64	
Zone 1	3/27/2018	Tuesday	14:10	15:15	1	3	5	3	20		195		32	Sunny, 68F, Note the 20 vehicles observed idling 5+ min, 2 idled 5+ min, 8 idled 6+ min, 2 idled 8+ min, 1 idled 9+ min, 5 idled 10+ min, and 2 idled 14+ min, total of 161 min of idling
Zone 2	3/27/2018	Tuesday	14:10	15:15	7	9	3	4	23		325		46	Sunny, 68F, Note the 23 vehicles observed idling 5+ min, 3 idled 6+ min, 3 idled 7+ min, 1 idled 8+ min, 1 idled 11+ min, 5 idled 12+ min, 3 idled 13+ min, 1 idled 15+ min, 3 idled 16+ min, 1 idled 17+ min, and 2 idled 19+ min, total of 275 min of idling
Zone 3	3/27/2018	Tuesday	14:10	15:15	5	2	1	1	9		162		18	Sunny, 68F, Note the 9 vehicles observed idling 5+ min, 1 idled 5+ min, 1 idled 6+ min, 2 idled 7+ min, 1 idled 11+ min, 1 idled 16+ min, 1 idled 17+ min, 1 idled 24+ min, and 1 idled 53+ min, total of 146 min of idling
Subtotal					13	14	9	8	52	65	682	149	96	

Idling Survey Results														
Santa Rita School														
Revised 03/28/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 1	3/28/2018	Wednesday	14:05	15:15	4	5	5	4	41		327		59	Sunny, 78F, Note the 41 vehicles observed idling 5+ min, 9 idled 5+ min, 9 idled 6+ min, 11 idled 7+ min, 5 idled 8+ min, 4 idled 9+ min, and 3 idled 10+ min, total of 282 min of idling
Zone 2	3/28/2018	Wednesday	14:05	15:15	4	9	6	7	17		244		43	Sunny, 78F, Note the 17 vehicles observed idling 5+ min, 4 idled 5+ min, 2 idled 6+ min, 2 idled 8+ min, 1 idled 9+ min, 2 idled 12+ min, 1 idled 13+ min, 2 idled 14+ min, 1 idled 16+ min, 1 idled 17+ min, and 1 idled 21+ min, total of 176 min of idling
Zone 3	3/28/2018	Wednesday	14:05	15:15	4	4	3	3	9		169		23	Sunny, 78F, Note the 9 vehicles observed idling 5+ min, 1 idled 8+ min, 1 idled 10+ min, 1 idled 11+ min, 1 idled 12+ min, 1 idled 13+ min, 1 idled 16+ min, 1 idled 20+ min, 1 idled 21+ min and 1 idled 25+ min, total of 136 min of idling
Subtotal					12	18	14	14	67	70	740	129	125	
TOTALS					26	37	34	28	160	200	1986	378	285	
Notes														
1. Survey area was the Santa Rita School entry/exit loop. Survey takers were assigned specific zones and recorded activity within his or her assigned zone. Therefore, a specific car could have been recorded idling in more than one zone.														
2. Electric vehicle idling not included.														
3. Idling was only recorded during the noted survey times.														
4. An idling vehicle emits approximately 1.4g of CO2 per second, Reference Vanderbilt paper Article 4.1. Therefore, 166.8 kilograms of CO2 emission (1.4 x 60 x 1986 = 166,824) was observed														

Idling Survey Results														
Blach Middle School														
Revised 04/05/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 1	4/2/2018	Monday	14:40	15:30	8	2		2	5		77		17	Sunny, 73F, Note the 5 vehicles observed idling 5+ min, 2 idled 5+min, 1 idled 6+ min, 1 idled 18+ min, and 1 idled 23+ min, total of 57 min of idling
Zone 2	4/2/2018	Monday	14:40	15:30	2	4	1		5		45		12	Sunny, 73F, Note the 5 vehicles observed idling 5+ min, 2 idled 5+ min, 1 idled 6+ min, and 2 idled 8+ min, total of 32 min of idling
Zone 3	4/2/2018	Monday	14:40	15:30	2	1		1	1		13		5	Sunny, 73F, Note the 1 vehicle observed idling 5+ min, idled for 5+ min
Zone 4	4/2/2018	Monday	14:40	15:30				1			3		1	Sunny, 73F
Subtotal					12	7	2	3	11	50	138	109	35	
Zone 1	4/3/2018	Tuesday	14:45	15:30			6	3	2	2	45		13	Sunny, 70F, Note the 2 vehicles observed idling 5+ min, 1 idled 5+ min, and 1 idled 11+ min, total of 16 min of idling
Zone 2	4/3/2018	Tuesday	14:45	15:30	4	4	3	1	2		40		14	Sunny, 70F, Note the 2 vehicles observed idling 5+ min, 1 idled 7+ min, and 1 idled 8+ min, total of 15 min of idling
Zone 3	4/3/2018	Tuesday	14:45	15:30		2	2	1	8		82		13	Sunny, 70F, Note the 8 vehicles observed idling 5+ min, 1 idled 5+ min, 3 idled 6+ min, 1 idled 9+ min, 1 idled 11+ min, 1 idled 12+ min, and 1 idled 13+ min, total of 68 min of idling
Subtotal					4	12	8	4	12	45	167	103	40	
Zone 1	4/5/2018	Thursday	14:42	15:24		2			1		26		3	Overcast, 68F, Note the vehicle observed idling 5+ min, idled for 22+ min, total of 22 min of idling
Zone 2	4/5/2018	Thursday	14:42	15:24	2				6		59		8	Overcast, 68F, Note the 6 vehicles observed idling 5+ min, 1 idled 6+ min, 1 idled 7+ min, 1 idled 10+ min, 1 idled 11+ min, and 2 idled 12+ min, total of 58 min of idling

Idling Survey Results														
Blach Middle School														
Revised 04/05/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 3	4/5/2018	Thursday	14:42	15:24	1			1	2		37			Overcast, 68F, Note the 2 vehicles observed idling 5+ min, 1 idled 8+ min, and 1 idled 24+ min, total of 32 min of idling
Subtotal					3	2		1	9	42	122	85	15	
TOTALS					19	21	10	8	32	137	427	297	90	
Notes														
1. Survey area was the Blach Middle School entry/exit loop. Survey takers were assigned specific zones and recorded activity within his or her assigned zone. Therefore, a specific car could have been recorded idling in more than one zone.														
2. Electric vehicle idling not included.														
3. Idling was only recorded during the noted survey times.														
4. An idling vehicle emits approximately 1.4g of CO2 per second, Reference Vanderbilt paper Article 4.1. Therefore, xxx kilograms of CO2 emission (1.4 x 60 x yyy = zzzzzz) was observed														

Idling Survey Results														
Gardner-Bullis School														
Revised 04/18/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 1	4/16/2018	Monday	14:05	15:15	2	5	6		20		217		33	Showers, 55F, Note the 20 vehicles observed idling 5+ min, 6 idled 5+min, 3 idled 6+ min, 4 idled 8+ min, 1 idled 11+ min, 1 idled 12+ min, 3 idled 16+ min, and 2 idled 18+ min, total of 187 min of idling
Zone 2	4/16/2018	Monday	14:05	15:15	5	5	10		7		122		27	Showers, 55F, Note the 7 vehicles observed idling 5+ min, 1 idled 5+min, 3 idled 11+ min, and 3 idled 13+ min, total of 77 min of idling
Zone 3	4/16/2018	Monday	14:05	15:15				3	10		115		13	Showers, 55F, Note the 10 vehicles observed idling 5+ min, 2 idled 5+min, 1 idled 6+ min, 1 idled 8+ min, 2 idled 9+ min, 1 idled 10+ min, 2 idled 11+ min, and 1 idled 32+ min, total of 106 min of idling
Subtotal					7	10	19		37	70	454	133	73	
Zone 1	4/17/2018	Tuesday	14:25	15:20	3	4	4	3	11		143		25	Sunny, 65F, Note the 11 vehicles observed idling 5+ min, 1 idled 5+ min, 3 idled 6+ min, 1 idled 8+ min, 1 idled 9+ min, 1 idled 10+ min, 1 idled 11+ min, 1 idled 14+ min,
Zone 2	4/17/2018	Tuesday	14:25	15:20	2	1	4	7	7		83		21	Sunny, 65F, Note the 7 vehicles observed idling 5+ min, 6 idled 5+ min, and 1 idled 8+ min, total of 38 min of idling
Subtotal					5	5	8	10	18	55	226	104	46	
Zone 1	4/18/2018	Wednesday	14:30	15:15	4	8	3	5	13		181		33	Overcast, 58F, Note the 13 vehicles observed idling 5+ min, 4 idled 5+ min, 2 idled 7+ min, 1 idled 8+ min, 1 idled 10+ min, 1 idled 12+ min, 1 idled 13+ min, 1 idled 16+ min, 1 idled 19+ min, and 1 idled 20+ min, total of 132 min of idling

Idling Survey Results														
Gardner-Bullis School														
Revised 04/18/2018														
Location	Date	Day	Survey Start Time	Survey End Time	# Cars 1 Min Idl	# Cars 2 Min Idl	# Cars 3 Min Idl	# Cars 4 Min Idl	# Cars 5+ Min Idl	Survey Time	Idling Time Observed	Total Vehicles Waiting	Total Vehicles Idling 1+ min	Comments
Zone 2	4/18/2018	Wednesday	14:30	15:15	3	6			13		150		22	Overcast, 58F, Note the 13 vehicles observed idling 5+ min, 1 idled 7+ min, 4 idled 9+ min, 3 idled 10+ min, 4 idled 11+ min, and 1 idled 18+ min, total of 135 min of idling
Subtotal					7	14	3	5	26	45	331	96	55	
TOTALS					19	29	30	15	81	170	1011	333	174	
Notes														
1. Survey area was the Gardner-Bullis School entry/exit loop. Survey takers were assigned specific zones and recorded activity within his or her assigned zone. Therefore, a specific car could have been recorded idling in more than one zone.														
2. Electric vehicle idling not included.														
3. Idling was only recorded during the noted survey times.														
4. An idling vehicle emits approximately 1.4g of CO2 per second, Reference Vanderbilt paper Article 4.1. Therefore, 85 kilograms of CO2 emission (1.4 x 60 x 1011 = 84,924) was observed.														