BREATHE BETTER PROGRAM ANNUAL REPORT
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"Breathe Better" is an anti-idling/clean air campaign. The goal of this program is to protect the health of children by reducing harmful vehicle emissions on school campuses in our State. This environmentally sustainable project is ideal for all age levels: elementary, middle and high schools. It can be easily developed, implemented and maintained on any school campus, public or private.   It is a voluntary initiative and there is zero cost for schools to participate.

During the 2013-2014 school year, the Breathe Better program had a total of **83** schools enrolled into the program. However, only **43** of those schools were considered active and submitted usable data. Usable data is defined as submission of at least two data sets. This requires a baseline data set at in initial onset of the campaign near the beginning of the school year and at least one additional data set before the end of the school year. Only schools that submitted two data sets are included in the calculations.

Data is summarized below:

CARS	BASELINE			FINAL			
Total # of schools reporting	Total # cars	# Idling	% Idling	Total # cars	# Idling	% Idling	Adjusted # Idling*
43	2,538	835	**32.9%**	2,539	633	**24.9%**	**633**

FINAL CAR RESULTS	
# Ceased Idling	% Idling Reduction
202	**24.2%**

BUSES	BASELINE			FINAL			
Total # of schools reporting	Total # Buses	# Idling	% Idling	Total # Buses	# Idling	% Idling	Adjusted # Idling*
43	319	116	**36.4%**	308	75	**24.4%**	**78**

FINAL BUS RESULTS	
# Ceased Idling	% Idling Reduction
38	**33.0%**

*"Adjusted # idling" for cars and buses take into account the difference in baseline and final total numbers for each.

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Outcome #1: Audience Reached

The Breathe Better program impacted approximately **51,602 students, parents and bus drivers** and **83 schools** in our State.

Table 1:   Schools with a Baseline and Final Count
- **25,641 students enrolled**
- **2,539 parents, guardians impacted**
- **319 bus drivers**

Schools with a Baseline and Final Count

Regions	Participating Schools by Counties	Students Enrolled	Total # of Students
Pee Dee	**Horry County**		
	Burgess Elementary	631	
	Ocean Bay Middle	1,066	1,697
Upstate	**Anderson County**		
	Hunts Meadow Elementary	397	
	Wren Elementary	561	
	Greenville County		
	Augusta Circle Elementary	513	
	A.J. Whittenberg Elementary	390	
	Buena Vista Elementary	824	
	Camperdown Academy	98	
	Christ Church Episcopal	960	
	Duncan Chapel Elementary	603	
	Dunbar CDC	185	
	Golden Strip CDC	160	
	Greenview CDC	241	
	Legacy Charter Elementary	300	
	Legacy Charter Middle/High	408	
	Northest CDC	128	
	Oakview Elementary	1,241	
	Overbrook CDC	111	
	Riley CDC	99	
	Stone Academy	583	
	Taylors Elementary	739	
	Greenwood County		
	Ware Shoals Jr/Sr High	473	
	Oconee County		
	Blue Ridge Elementary	641	
	Pickens County		
	Central Elementary	327	
	Daniel High School	1,037	
	Holly Springs Elementary	218	

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Regions	Participating Schools by Counties	Students Enrolled	Total # of Students
Upstate (continued)	**Pickens County**		
	Pickens Middle	834	
	Spartanburg County		
	Pine Street Elementary	679	**12,750**
Midlands	**Lancaster County**		
	Indian Land Middle	611	
	Lexington County		
	Pleasant Hill Elementary	872	
	White Knoll High	1,931	
	Richland County		
	A.C. Moore Elementary	509	
	Brockman Elementary	269	
	H.E. Corley Elementary	509	
	Irmo High	1,730	
	Summit Parkway Middle	1,132	
	W.J. Keenan High	740	
	York County		
	Banks Trail Middle	655	
	Belleview Elementary	440	
	Ebinport Elementary	574	
	Finley Road Elementary	413	
	Gold Hill Middle	706	
	Springfield Middle	714	**11,194**
Total Impacted	**43 schools**		**25,641 students**

Table 2:   Schools with a Baseline Count Only
- **1,226 students enrolled**
- **58 parents, guardians impacted**
- **13 bus drivers**

Schools with a Baseline Count Only

Regions	Participating School by Counties	Students Enrolled	Total # of Students
Upstate	**Greenville County**		
	Bryson Elem	837	**837**
Midlands	**Lexington County**		
	Congaree Elem	389	**389**
Total Impacted	**2 schools**		**1,226 students**

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Table 3: Schools that did not submit data (anti-idling signage only)
- **21,806 student enrolled**
- **Anti-idling signs posted on school campuses**
- **Data for parents/guardians and buses not reported**

Schools that did not submit data (anti-idling signage only)

Regions	Participating Schools by Counties	Students Enrolled	Total # of Students
Pee Dee	**Chesterfield County**		
	Ruby Elementary	237	
	Florence County		
	Williams Middle School	658	895
Lowcountry	**Berkeley County**		
	Hannah Middle	812	
	Charleston County		
	Daniel Island Academy	280	
	Orangeburg County		
	Dover Elementary	260	1,352
Upstate	**Anderson County**		
	Nevitt Forest Elementary	483	
	Greenville County		
	Fountain Inn Elementary	757	
	Sevier Middle	617	
	Sterling School	755	
	Summit Drive Elementary	453	
	Spartanburg County		
	Oakland Elementary	581	
	Spartanburg Charter	353	3,999
Midlands	**Aiken County**		
	Milbrook Elementary	620	
	Kershaw County		
	Doby's Mill Elementary	536	
	Jackson Elementary	523	
	Lancaster County		
	Indian Land Elementary	1,372	
	Lexington County		
	Batesburg-Leesville Elem	436	
	Gilbert High	910	
	Meadow Glen Elementary	739	
	Springdale Elementary	477	
	Newberry County		
	Newberry Elementary	375	
	Newberry High	800	

Regions	Participating Schools by Counties	Students Enrolled	Total # of Students
Midlands (continued)	**Newberry County**		
	Prosperity-Rikard Elementary	358	
	Mid-Carolina High	753	
	Mid-Carolina Middle	606	
	Richland County		
	Bridge Creek Elementary	562	
	Columbia Jewish Day	46	
	Covenant Christian School	138	
	Langford Elementary	506	
	Leaphart Elementary	432	
	Longleaf Elementary	689	
	Nursery Road Elementary	492	
	River Springs Elementary	629	
	Round Top Elementary	593	
	York County		
	Gold Hill Elementary	853	
	India Hook Elementary	598	
	Orchard Park Elementary	870	
	Springfield Elementary	647	**15,560**
Total Impacted	**38 schools**		**21,806 students**

Outcome #2: Behavior Change Observed:

During the 2013-2014 school calendar, **83** schools were enrolled into the Breathe Better program. However, only **43** schools successfully reported usable data and were considered active Breathe Better participants.

One of the major components of the program is the ability to measure a school's success. One way that we are able to demonstrate a school has satisfied this is through **usable data. Usable data** is the submission of at least two data points **(one baseline data set prior to posting signs and sharing information about the program and at least one additional data set before the end of the school year)**.

At the beginning of the school year, approximately **32.9%** of all cars drivers and **36.4 %** of bus drivers were observed idling while waiting to pick up a student after school. By the end of school year just **24.9% of cars and 24.4% of buses were idling, an idling reduction of 24.2% for cars and 33.0% for buses.**

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Note: This data is self-reported and may contains some inconsistencies, some of which are related to the warm weather during the fall and spring data collections. Despite this factor, the overall trend has been towards positive behavioral change.

Outcome #3: Emissions Reductions Estimated

Emissions reductions are estimated for the following pollutants: carbon dioxide (CO2), volatile organic compounds (VOCs), carbon monoxide (CO), oxides of nitrogen (NOx) and particulate matter (PM). Proportionate quantities of priority and toxic chemicals are also reduced.

Due to the varying circumstances at these schools and several confounding factors (ex. effect of weather on drivers' behavior), the following assumptions are necessary to estimate quantitative emissions reductions:

- All participating drivers avoided idling on all 180 days of the 2013-2014 school year (participation started at different times of the year and may have varied at times). Each driver reduced daily idling time by **15 minutes** on average (based on anecdotal observations from participating schools).
- School buses consume fuel at **0.5 gallons/hour** while idling (http://www.epa.gov/cleanschoolbus/antiidling.htm). Personal vehicles consume an average of **0.375 gallons/hour** at idle (https://www.fueleconomy.gov/feg/driveHabits.jsp).

Idle Reduction and Fuel Savings

Assuming that **240 vehicles** (**202** personal vehicles and **38** school buses) reduced their daily idling time by 15 minutes/day for all 180 days of the 2013-2014 school year, each participating vehicle, on average, avoided 45 hours of idling. The school buses collectively reduced **1,724 hours of idling**, and the personal vehicles collectively reduced **9,101 hours of idling**. Each bus saved 22.5 gallons of fuel and personal vehicles saved on average 16.9 gallons of fuel. Collectively, the school buses **saved 862 gallons of diesel**, and the personal vehicles **saved 3,413 gallons of gasoline.**

CO_2 Emission Reductions

Diesel fuel emits 22.4 pounds CO_2/gallon consumed, and gasoline emits **19.6 pounds CO_2/gallon** consumed (http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11). Therefore, the **school buses reduced 9.7 tons** of CO_2, and the **personal vehicles reduced 33.1 tons** of CO.

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Criteria Pollutant Emission Reductions

1 gram= 0.0022 pounds

Idling school buses emit an estimated: 4.968 g/hr **VOCs, 43.505 g**/hr NO_x, 25.630 g/hr CO and1.523 g/hr PM

- **18.8** pounds VOCs reduced
- **165.1** pounds NO_x reduced
- **97.2** pounds CO reduced
- **5.8** pounds PM reduced

Idling **personal vehicles (cars and light trucks)** emit an estimated: 3.309g/hr VOCs, 3.768g/hr NO_x, and 71.915g/hr CO.

- **66.3** pounds VOCs reduced
- **75.4** pounds NO_x reduced
- **1,439.9** pounds CO reduced

Emissions Reduction Totals

Collectively, all vehicles that actively participated in Breathe Better by reducing idling time during the 2013-2014 school year achieved the following estimated emissions reductions:

- **42.8** tons CO_2
- **85.1** pounds of VOCs*
- **240.5** pounds of NO_x*
- **1,537.2** pounds CO
- **5.8** pounds of PM**

*   Ground-level ozone precursors
**   Bus emissions only