

**Final Summary Report**

**Colorado Convention Center Idling Study  
Pre- and Post-Campaign Results**



---

## **Final Summary Report**

December 11, 2008

# **Colorado Convention Center Idling Study Pre- and Post-Campaign Results**

### **Prepared for**

City and County of Denver  
Department of Environmental Health



### **Prepared by**

BBC Research & Consulting  
3773 Cherry Creek N. Drive, Suite 850  
Denver, Colorado 80209-3868  
303.321.2547 fax 303.399.0448  
[www.bbcresearch.com](http://www.bbcresearch.com)  
[bbc@bbcresearch.com](mailto:bbc@bbcresearch.com)



For the City and County of Denver Department of Environmental Health, BBC Research & Consulting (BBC) examined vehicle idling around the Colorado Convention Center. Emily Griffith Opportunity School, northeast of the Convention Center, reported an idling issue to the City. BBC's research provided insights for the "Engines Off!" campaign launched by GBSM, Inc. in July, 2008 to reduce idling. BBC conducted pre-campaign onsite observation visits and interviews, and post-campaign observations.

## Summary of Pre- and Post-Campaign Research

Pre-campaign research identified factors influencing idling and the duration of idling: (a) awareness of the City's 10-minute idling ordinance was low; (b) compliance with the City's idling ordinance was low; (c) motivation to reduce idling was limited; and (d) needed communication required both "top-down" and "bottom-up" channels.

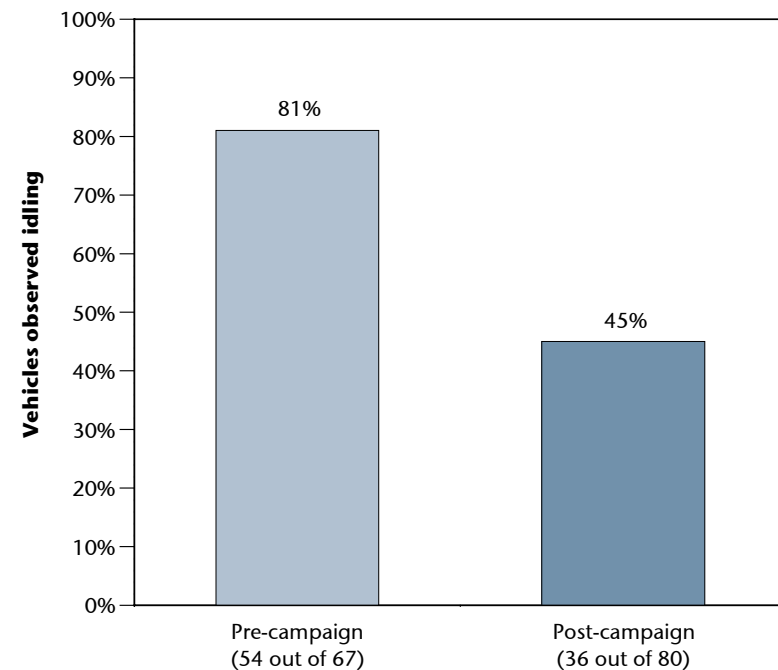
Research from post-campaign observations demonstrated a number of positive changes, including: (a) fewer large vehicles idling near the Convention Center; and (b) less time spent idling. Compliance with the City's 10-minute idling ordinance increased.

## Pre- and Post-Campaign Vehicle Idling

BBC analyzed idling behaviors near the Convention Center through a total of 36 onsite observation visits (with 147 vehicles observed). Eighteen pre-campaign observation visits were conducted from March to May, 2008 and 18 post-campaign observation visits were conducted from October to November, 2008. Visits lasted from 20 minutes to over one hour. Temperatures were similar during pre- and post-campaign observation visits, ranging from 31 to 82 degrees Fahrenheit. Vehicles observed included semi-trucks, delivery trucks, utility trucks, dump trucks, charter buses, public transit buses, shuttle buses and school buses.

During the pre-campaign observation visits, a total of 67 large, stationary vehicles were observed. Of these vehicles, 54 (or 81%) of them were observed idling, as shown in Figure 1. During the post-campaign observation visits, a total of 80 vehicles were observed. Of these vehicles, only 36 (or 45%) of them were observed idling. This represents a substantial reduction in idling.

**Figure 1.**  
**Percentage of vehicles that were observed idling, pre- and post- "Engines Off!" campaign**



Source: BBC Research & Consulting, based on observational research from March – May, 2008 and October – November, 2008.

## Idling Time

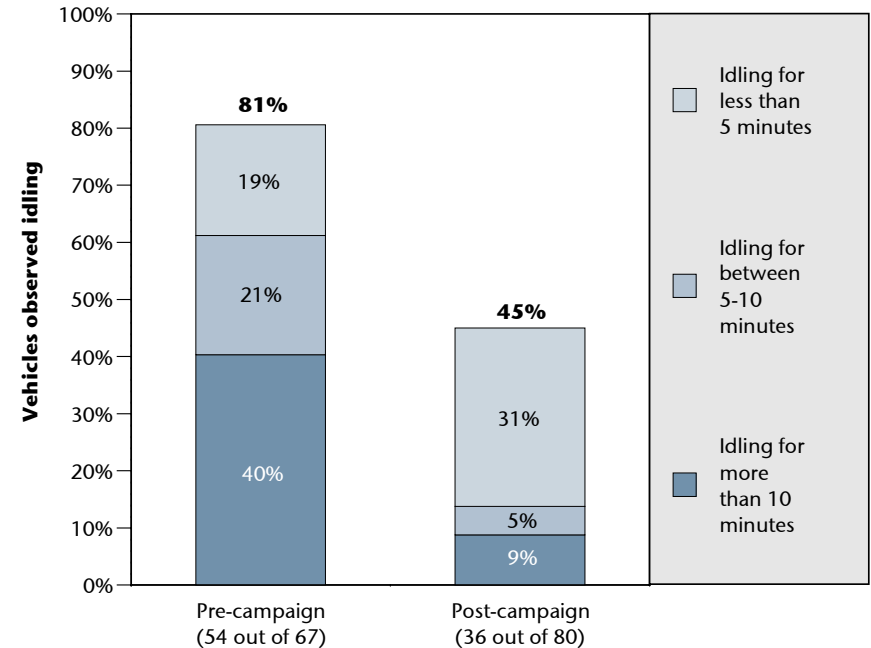
BBC’s pre-campaign research found that 19 percent of vehicles idled for less than five minutes; another 21 percent of vehicles idled for between five and ten minutes; and 40 percent of vehicles idled for more than 10 minutes (half of these vehicles idled for more than 30 minutes). Figure 2 shows these results.

Post-campaign, 31 percent of vehicles idled for less than five minutes; another 5 percent of vehicles idled for between five and ten minutes; and only 9 percent of vehicles idled for more than 10 minutes, based on BBC observations.

These results indicate a substantial reduction in the relative number of vehicles idling more than 10 minutes (40% pre-campaign and 9% post-campaign). Vehicles idling 10 or fewer minutes were in compliance with the City’s idling ordinance.

During the pre-campaign observation visits, the driver was present 69 percent of the time when the vehicle was idling. During the post-campaign observation visits, the driver was present 83 percent of the time when the vehicle was idling.

**Figure 2.**  
**Idling time for vehicles that were observed idling, pre- and post- “Engines Off!” campaign**



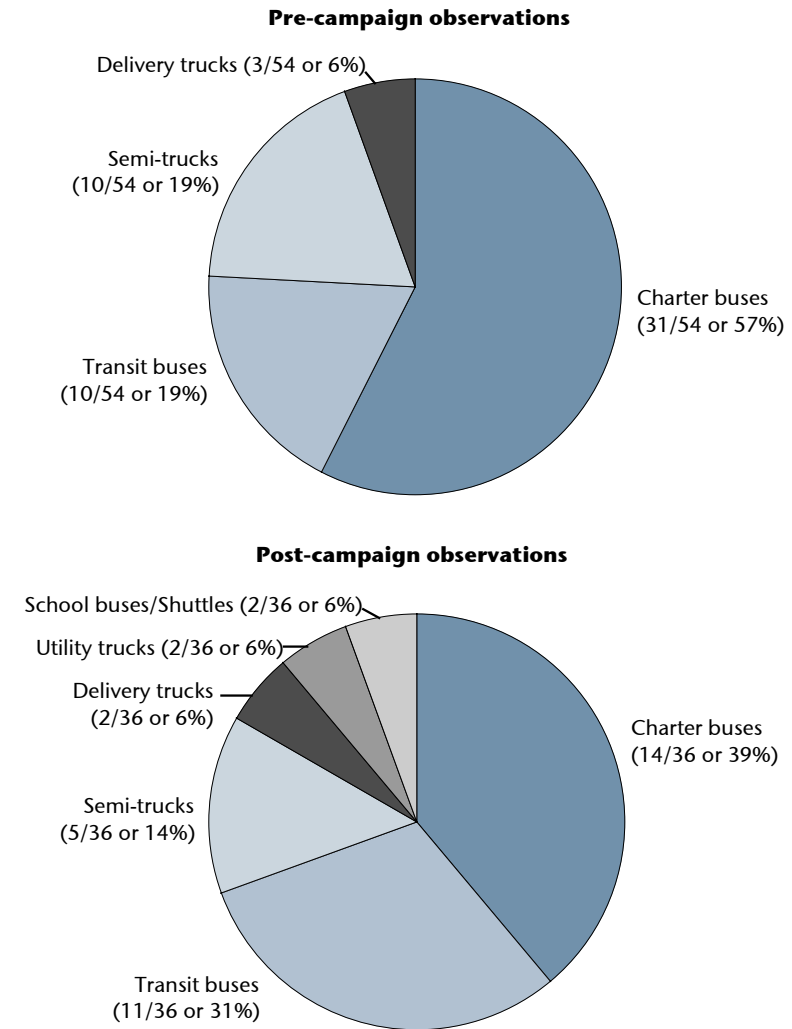
Source: BBC Research & Consulting, based on observational research from March – May, 2008 and October – November, 2008.

## Types of Vehicles

Figure 3 compares the different types of vehicles observed idling in pre- and post-campaign observation visits. During the pre-campaign observation visits, 31 out of 54 (or 57%) of the idling vehicles were charter buses. Transit buses and semi-trucks each represented 19 percent of idling vehicles and delivery trucks represented 6 percent.

During post-campaign observation visits, 14 out of 36 (or 39%) of the idling vehicles were charter buses. Transit buses represented 31 percent and semi-trucks accounted for 14 percent of idling vehicles. Delivery and utility trucks each represented 6 percent of idling vehicles.

**Figure 3.**  
Types of vehicles that were observed idling, pre- and post- “Engines Off!” campaign



Source: BBC Research & Consulting, based on observational research from March – May, 2008 and October – November, 2008.

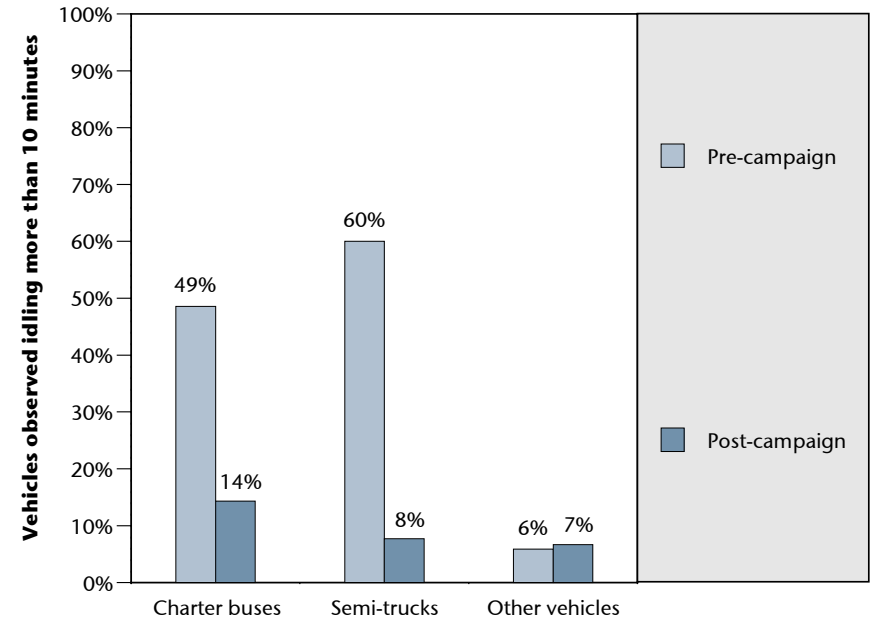
## Vehicles Idling More Than 10 Minutes

The campaign appears to have reached both charter bus operators and drivers of semi-trucks – the incidence of idling for more than 10 minutes dropped for each group.

Figure 4 provides detailed analysis of the types of vehicles that were observed idling for more than 10 minutes in pre- and post-campaign observation visits. Pre-campaign, charter buses idled for more than 10 minutes 49 percent of the time. Semi-trucks idled for more than 10 minutes 60 percent of the time, and other vehicles idled for more than 10 minutes 6 percent of the time.

Post-campaign, charter buses idled for more than 10 minutes only 14 percent of the time. Semi-trucks idled for more than 10 minutes only 8 percent of the time, and other vehicles idled for more than 10 minutes 7 percent of the time.

**Figure 4.**  
**Vehicles that were observed idling more than 10 minutes, pre- and post- “Engines Off!” campaign**



Note: n=35 during pre-campaign and n=21 during post-campaign research for charter buses.  
 n=15 during pre-campaign and n=13 during post-campaign research for semi-trucks.  
 n=17 during pre-campaign and n=45 during post-campaign research for other vehicles.  
 Other vehicles include delivery trucks, utility trucks, dump trucks, school buses, shuttles and transit buses (no transit buses or dump trucks were observed idling for more than 10 minutes in both pre-campaign and post-campaign research).

Source: BBC Research & Consulting, based on observational research from March – May, 2008 and October – November, 2008.

## Summary of Pre-Campaign Interviews

In addition to the onsite pre-campaign observation visits, BBC conducted 18 telephone and in-person interviews to give insights to campaign development. Telephone interviews were conducted with groups that could contribute to or impact idling behaviors. Interviewees included the security manager of the Colorado Convention Center, destination management companies (DMCs), charter companies, and vendors associated with the Colorado Convention Center. BBC conducted intercept interviews with bus and truck drivers parked or idling around the Convention Center and with two Denver police officers. Key points from interviews include:

- Large and concentrated idling problems usually occur during particular shows at the Convention Center. As many as 10 to 30 buses may be parked (and potentially idling) around the Colorado Convention Center at one time.
- DMCs said they did have some responsibility to promote an idling policy of the Colorado Convention Center, but they should not be responsible for enforcing it.
- Three out of four charter companies interviewed said drivers are only allowed to leave the bus idling during “extreme weather.” One company said drivers are permitted to leave the engine idling “at all times.”
- Drivers interviewed around the Convention Center generally reported that it was wasteful to idle a bus or truck for an extended period of time.
- When asked if the police do anything to enforce the City’s idling ordinance, the officers interviewed said that they do not.

## Caveats

These results only reflect idling behavior during selected days from March to May, 2008 and October to November, 2008 (BBC over-sampled event days). Results might differ if the days of observation visits were randomly-sampled for March to May and for October to November. Because the post-campaign selection strategy for observation visits was parallel to the pre-campaign selection strategy, BBC is able to generally compare results but is not be able to perform tests of statistical significance of any pre- versus post-campaign differences. BBC is not able to account for variables such as the cost of gas or changes in weather patterns.

BBC’s post-campaign research did not include telephone or in-person interviews.

## Summary Tables

Summary tables of onsite observation visits are provided in Appendix A on the following pages. A summary table of pre-campaign observation visits is provided in Figure A-1, and a summary table of post-campaign observation visits is provided in Figure A-2.

# Appendix A – Summary Tables

**Figure A-1.**  
**Pre-Campaign Observations Summary Table**

Date	Time	Temperature/ weather	Vehicle		Idling?	Driver present?	Idling Time		
			Description	Location			Less than 5 min	Between 5-10 min	More than 10 min
1 3/5/2008	2:00-2:30 p.m.	31°F/Cloudy	Semi truck	13th/Welton	Yes	No			■
3/5/2008	2:00-2:30 p.m.	31°F/Cloudy	Semi truck	13th/Welton	Yes	No			■
2 3/5/2008	3:30-4:00 p.m.	31°F/Cloudy	Delivery truck	12th/Welton	Yes	No		■	
3 3/24/2008	12:10-1:15 p.m.	66°F/Sunny	Charter bus	14th/Champa	Yes	No			■
3/24/2008	12:10-1:15 p.m.	66°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
3/24/2008	12:10-1:15 p.m.	66°F/Sunny	Transit bus	13th/Welton	Yes	No		■	
3/24/2008	12:10-1:15 p.m.	66°F/Sunny	Transit bus	13th/Welton	Yes	Yes		■	
4 3/24/2008	5:30-5:50 p.m.	66°F/Sunny	Charter bus	14th/Champa	Yes	No			■
5 3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	13th/Champa	Yes	Yes			■
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	13th/Champa	No	No			
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	14th/California	Yes	No			■
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	14th/Welton	No	Yes			
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	13th/Welton	No	Yes			
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	13th/Welton	Yes	Yes			■
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	13th/Glenarm	No	No			
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	12th/Welton	Yes	Yes			■
3/25/2008	10:00-11:00 a.m.	63°F/Sunny	Semi truck	12th/Welton	Yes	Yes	■		
6 3/26/2008	2:45-3:30 p.m.	72°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
3/26/2008	2:45-3:30 p.m.	72°F/Sunny	Transit bus	13th/Welton	Yes	Yes		■	
7 3/28/2008	1:20-2:30 p.m.	49°F/Cloudy	Transit bus	13th/Welton	Yes	Yes	■		
3/28/2008	1:20-2:30 p.m.	49°F/Cloudy	Charter bus	14th/Arapahoe	Yes	No			■
3/28/2008	1:20-2:30 p.m.	49°F/Cloudy	Charter bus	14th/Arapahoe	Yes	No		■	
3/28/2008	1:20-2:30 p.m.	49°F/Cloudy	Charter bus	14th/Champa	Yes	No			■

# Appendix A – Summary Tables

**Figure A-1.**  
**Pre-Campaign Observations Summary Table, continued**

Date	Time	Temperature/ weather	Vehicle		Idling?	Driver present?	Idling Time		
			Description	Location			Less than 5 min	Between 5-10 min	More than 10 min
<b>8</b> 3/31/2008	9:30-10:30 a.m.	45°F/Rain	Charter bus	14th/Arapahoe	Yes	No			■
3/31/2008	9:30-10:30 a.m.	45°F/Rain	Charter bus	14th/Arapahoe	Yes	No			■
3/31/2008	9:30-10:30 a.m.	45°F/Rain	Charter bus	14th/Arapahoe	Yes	No			■
3/31/2008	9:30-10:30 a.m.	45°F/Rain	Transit bus	13th/Welton	No	No			
3/31/2008	9:30-10:30 a.m.	45°F/Rain	Transit bus	13th/Welton	No	No			
3/31/2008	9:30-10:30 a.m.	45°F/Rain	Transit bus	13th/Welton	Yes	Yes		■	
<b>9</b> 4/14/2008	2:30-3:30 p.m.	75°F/Sunny	Charter bus	14th/California	Yes	Yes		■	
4/14/2008	2:30-3:30 p.m.	75°F/Sunny	Charter bus	14th/California	Yes	Yes		■	
4/14/2008	2:30-3:30 p.m.	75°F/Sunny	Charter bus	14th/California	Yes	Yes		■	
4/14/2008	2:30-3:30 p.m.	75°F/Sunny	Charter bus	14th/Welton	Yes	Yes		■	
4/14/2008	2:30-3:30 p.m.	75°F/Sunny	Transit bus	13th/Welton	No	Yes			
<b>10</b> 4/15/2008	4:00-4:45 p.m.	82°F/Sunny	Charter bus	14th/California	Yes	Yes	■		
4/15/2008	4:00-4:45 p.m.	82°F/Sunny	Charter bus	14th/California	Yes	Yes	■		
4/15/2008	4:00-4:45 p.m.	82°F/Sunny	Charter bus	14th/California	Yes	Yes	■		
4/15/2008	4:00-4:45 p.m.	82°F/Sunny	Charter bus	14th/California	Yes	Yes		■	
4/15/2008	4:00-4:45 p.m.	82°F/Sunny	Charter bus	14th/California	Yes	Yes		■	■
4/15/2008	4:00-4:45 p.m.	82°F/Sunny	Charter bus	14th/California	Yes	Yes		■	
4/15/2008	4:00-4:45 p.m.	82°F/Sunny	Charter bus	14th/California	Yes	Yes	■		
<b>11</b> 4/19/2008	3:00-3:20 p.m.	76°F/Sunny	No vehicles						
<b>12</b> 4/25/2008	12:30-1:00 p.m.	57°F/Cloudy	Charter bus	15th/Welton	No	No			
4/25/2008	12:30-1:00 p.m.	57°F/Cloudy	Charter bus	14th/Welton	No	No			
4/25/2008	12:30-1:00 p.m.	57°F/Cloudy	Charter bus	14th/Welton	Yes	Yes			■
4/25/2008	12:30-1:00 p.m.	57°F/Cloudy	Charter bus	14th/Welton	No	Yes			
4/25/2008	12:30-1:00 p.m.	57°F/Cloudy	Charter bus	14th/Welton	No	Yes			

# Appendix A – Summary Tables

**Figure A-1.**  
**Pre-Campaign Observations Summary Table, continued**

Date	Time	Temperature/ weather	Vehicle		Idling?	Driver present?	Idling Time		
			Description	Location			Less than 5 min	Between 5-10 min	More than 10 min
<b>13</b> 4/28/2008	4:10-4:55 p.m.	72°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■		
4/28/2008	4:10-4:55 p.m.	72°F/Sunny	Charter bus	13th/Welton	Yes	Yes			■
4/28/2008	4:10-4:55 p.m.	72°F/Sunny	Charter bus	13th/Welton	Yes	Yes		■	
4/28/2008	4:10-4:55 p.m.	72°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
<b>14</b> 4/29/2008	4:15-5:00 p.m.	79°F/Cloudy	Charter bus	13th/Welton	Yes	Yes			■
4/29/2008	4:15-5:00 p.m.	79°F/Cloudy	Transit bus	13th/Welton	Yes	Yes	■		
<b>15</b> 4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Charter bus	14th/Welton	Yes	Yes			■
4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Charter bus	14th/Welton	Yes	Yes			■
4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Charter bus	14th/Welton	Yes	Yes			■
4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Charter bus	13th/Welton	Yes	Yes			■
4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Delivery truck	12th/Welton	Yes	Yes			■
4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Charter bus	13th/Welton	Yes	No			■
4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Charter bus	13th/Welton	Yes	No			■
4/30/2008	6:30-7:30 p.m.	82°F/Cloudy	Delivery truck	15th/Welton	Yes	No	■		
<b>16</b> 5/3/2008	1:00-1:20 p.m.	59°F/Sunny	No vehicles						
<b>17</b> 5/5/2008	1:30-2:00 p.m.	77°F/Sunny	Transit bus	13th/Welton	No	Yes			
<b>18</b> 5/6/2008	11:40-12:30 p.m.	78°F/Cloudy	Semi truck	14th/California	Yes	Yes			■
5/6/2008	11:40-12:30 p.m.	78°F/Cloudy	Semi truck	14th/California	Yes	Yes			■
5/6/2008	11:40-12:30 p.m.	78°F/Cloudy	Semi truck	14th/California	Yes	Yes			■
5/6/2008	11:40-12:30 p.m.	78°F/Cloudy	Semi truck	14th/California	No	Yes			

# Appendix A – Summary Tables

**Figure A-2.**  
**Post-Campaign Observations Summary Table**

Date	Time	Temperature/ weather	Vehicle		Idling?	Driver present?	Idling Time		
			Description	Location			Less than 5 min	Between 5-10 min	More than 10 min
1 10/6/2008	3:45-4:15 p.m.	68°F/Sunny	No vehicles						
2 10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Charter bus	14th/California	Yes	Yes	■		
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Charter bus	14th/California	Yes	Yes	■		
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Utility truck	14th/Welton	Yes	Yes			■
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Delivery truck	15th/California	No	Yes			
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Transit bus	13th/Welton	No	Yes			
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Charter bus	14th/Curtis	No	No			
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Charter bus	14th/Curtis	No	No			
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Charter bus	14th/Curtis	Yes	No			■
10/7/2008	1:00-1:30 p.m.	70°F/Sunny	Charter bus	14th/Curtis	No	No			
3 10/8/2008	2:30-3:15 p.m.	81°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
10/8/2008	2:30-3:15 p.m.	81°F/Sunny	Charter bus	14th/Glenarm	No	No			
4 10/9/2008	9:45-10:00 a.m.	56°F/Sunny	Utility truck	14th/Welton	No	No			
10/9/2008	9:45-10:00 a.m.	56°F/Sunny	Delivery truck	15th/Welton	No	No			
10/9/2008	9:45-10:00 a.m.	56°F/Sunny	Shuttle bus	14th/Welton	Yes	Yes	■		
5 10/16/2008	8:00-8:15 a.m.	60°F/Sunny	Delivery truck	14th/Welton	Yes	Yes	■		
6 10/18/2008	8:00-8:30 a.m.	58°F/Sunny	Semi truck	12th/Welton	No	Yes			
7 10/18/2008	9:00-9:30 a.m.	60°F/Sunny	Semi truck	12th/Welton	Yes	Yes		■	
10/18/2008	9:00-9:30 a.m.	60°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
10/18/2008	9:00-9:30 a.m.	60°F/Sunny	Transit bus	13th/Welton	Yes	Yes	■		
8 10/20/2008	1:10-1:30 p.m.	71°F/Sunny	Transit bus	13th/Welton	No	Yes			
10/20/2008	1:10-1:30 p.m.	71°F/Sunny	Semi truck	13th/Welton	No	No			
10/20/2008	1:10-1:30 p.m.	71°F/Sunny	Semi truck	14th/Stout	No	No			

# Appendix A – Summary Tables

**Figure A-2.**  
**Post-Campaign Observations Summary Table, continued**

Date	Time	Temperature/ weather	Vehicle		Idling?	Driver present?	Idling Time			
			Description	Location			Less than 5 min	Between 5-10 min	More than 10 min	
9	10/21/2008	8:30-8:45 a.m.	49°F/Sunny	Delivery truck	14th/Stout	Yes	Yes			■
	10/21/2008	8:30-8:45 a.m.	49°F/Sunny	Transit bus	13th/Welton	Yes	No	■		
	10/21/2008	8:30-8:45 a.m.	49°F/Sunny	Dump truck	14th/Stout	No	Yes			
	10/21/2008	8:30-8:45 a.m.	49°F/Sunny	Utility truck	14th/Stout	No	No			
10	10/21/2008	1:30-1:45 p.m.	68°F/Cloudy	Dump truck	14th/California	No	Yes			
	10/21/2008	1:30-1:45 p.m.	68°F/Cloudy	Transit bus	13th/Welton	Yes	Yes	■		
11	10/22/2008	3:40-4:10 p.m.	50°F/Cloudy	Transit bus	13th/Welton	No	Yes			
	10/22/2008	3:40-4:10 p.m.	50°F/Cloudy	Semi truck	14th/Welton	No	No			
	10/22/2008	3:40-4:10 p.m.	50°F/Cloudy	Semi truck	12th/Welton	Yes	No		■	
	10/22/2008	3:40-4:10 p.m.	50°F/Cloudy	Transit bus	13th/Welton	Yes	Yes		■	
12	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Charter bus	14th/Arapahoe	No	No			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Semi truck	14th/Stout	Yes	Yes			■
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Delivery truck	14th/Stout	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Dump truck	14th/California	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Utility truck	14th/California	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Utility truck	14th/California	Yes	Yes			■
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Transit bus	13th/Welton	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Transit bus	13th/Welton	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Semi truck	15th/Champa	No	No			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Semi truck	13th/Champa	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	School bus	14th/Arapahoe	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	School bus	14th/Arapahoe	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	School bus	14th/Arapahoe	No	Yes			
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Charter bus	13th/Champa	Yes	No			■
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Charter bus	13th/Champa	Yes	No			■
	10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Charter bus	14th/California	Yes	Yes	■		
10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■			
10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■			
10/30/2008	10:45-11:45 a.m.	73°F/Sunny	Delivery truck	14th/Welton	No	Yes				

# Appendix A – Summary Tables

**Figure A-2.**  
**Post-Campaign Observations Summary Table, continued**

Date	Time	Temperature/ weather	Vehicle		Idling?	Driver present?	Idling Time		
			Description	Location			Less than 5 min	Between 5-10 min	More than 10 min
<b>13</b> 10/31/2008	11:00-11:40 a.m.	60°F/Sunny	School bus	14th/California	Yes	Yes	■		
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Utility truck	14th/California	No	Yes			
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Semi truck	14th/California	No	Yes			
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Transit bus	13th/Welton	No	Yes			
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Transit bus	13th/Welton	No	Yes			
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Transit bus	13th/Welton	No	No			
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■		
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■		
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■		
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Charter bus	13th/Welton	Yes	Yes		■	
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■		
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Semi truck	12th/Welton	Yes	No	■		
10/31/2008	11:00-11:40 a.m.	60°F/Sunny	Semi truck	15th/Welton	No	No			
<b>14</b> 11/5/2008	3:20-3:40 p.m.	51°F/Cloudy	Transit bus	13th/Welton	Yes	Yes	■		
11/5/2008	3:20-3:40 p.m.	51°F/Cloudy	Transit bus	13th/Welton	Yes	Yes	■		
11/5/2008	3:20-3:40 p.m.	51°F/Cloudy	Delivery truck	14th/California	No	No			
<b>15</b> 11/7/2008	3:30-4:00 p.m.	59°F/Cloudy	Transit bus	13th/Welton	No	No			
11/7/2008	3:30-4:00 p.m.	59°F/Cloudy	Semi truck	12th/Welton	Yes	Yes	■		
11/7/2008	3:30-4:00 p.m.	59°F/Cloudy	Transit bus	13th/Welton	Yes	Yes	■		
<b>16</b> 11/11/2008	5:25-5:50 p.m.	53°F/Cloudy	Delivery truck	14th/California	No	No			
<b>17</b> 11/12/2008	8:00-8:20 a.m.	35°F/Sunny	Delivery truck	13th/Welton	No	No			
11/12/2008	8:00-8:20 a.m.	35°F/Sunny	Transit bus	13th/Welton	No	No			
11/12/2008	8:00-8:20 a.m.	35°F/Sunny	Delivery truck	14th/Stout	No	No			
<b>18</b> 11/17/2008	2:00-2:30 p.m.	70°F/Sunny	Transit bus	13th/Welton	No	Yes			
11/17/2008	2:00-2:30 p.m.	70°F/Sunny	Charter bus	13th/Welton	No	Yes			
11/17/2008	2:00-2:30 p.m.	70°F/Sunny	Charter bus	13th/Welton	Yes	Yes	■		
11/17/2008	2:00-2:30 p.m.	70°F/Sunny	Charter bus	13th/Welton	No	Yes			