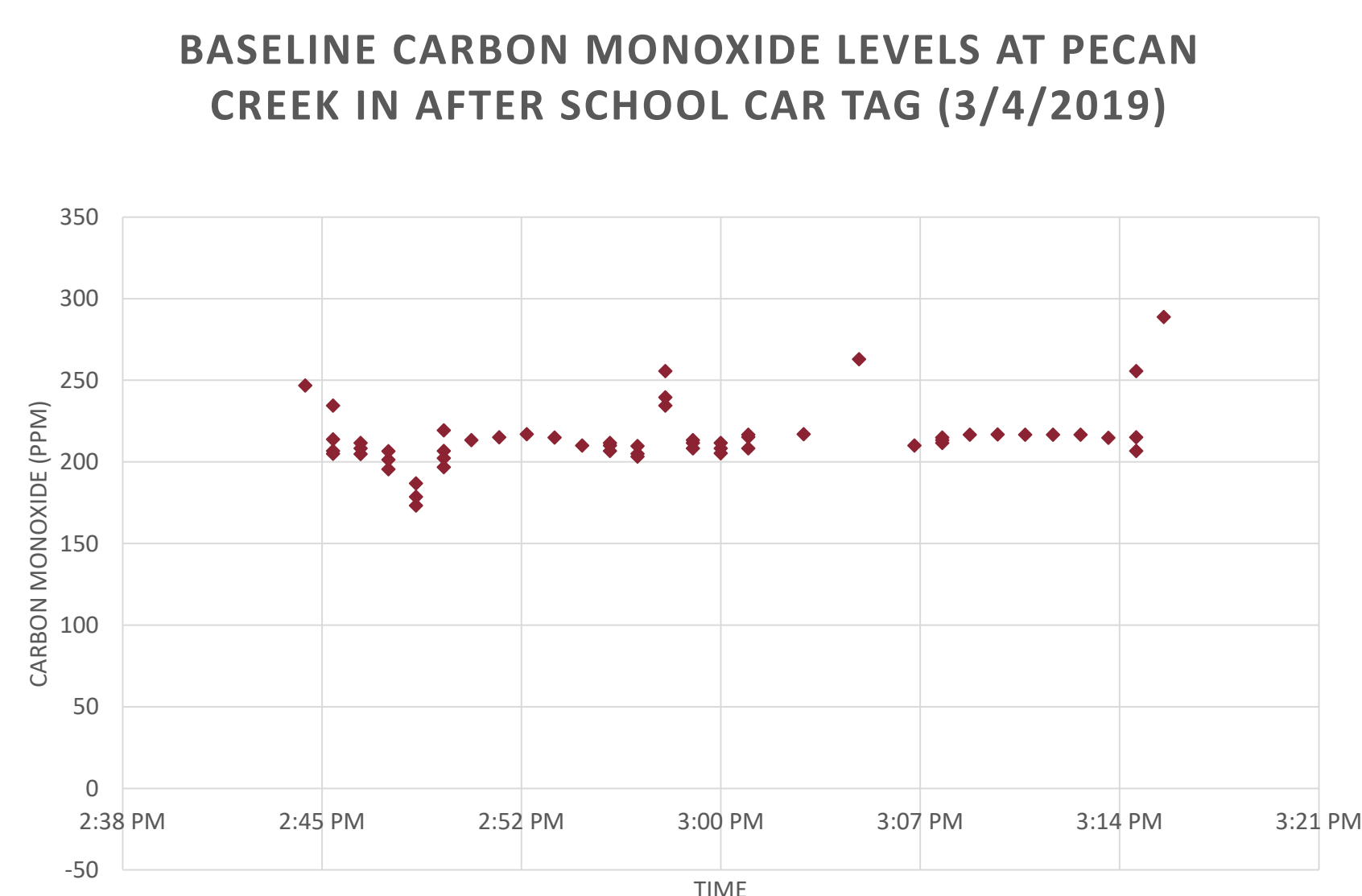


# No Time to Idle (Phase II)

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## Abstract

No Time to Idle aims to improve air quality by reducing the amount of time vehicles idle in school's parent drop off/pick up lanes. According to the U.S. Department of Energy, if you idle your car for more than 10 seconds you would save more gas by turning the engine off and restarting (stop/start method) than if you were to leave the car idling. This project's goal is to implement signage in school drop off/pick up lanes to educate and remind drivers to use the stop/start method. Observations are conducted with/without signage to see if there is a change in behavior among drivers. Air quality monitors are used to read carbon monoxide levels. We hypothesize that drivers are more likely to use the stop/start method if they are given the information that it helps save them money and is beneficial to their children's health.



## THE 10 SECOND RULE

- If you idle your car for more than 10 seconds you are wasting more gas (and \$\$) than if you were to restart<sup>1</sup>
- By turning off your engine you are helping reduce carbon dioxide (CO<sub>2</sub>) emissions<sup>2</sup>
- Reduced emissions make for cleaner air in Denton and reduce related health issues<sup>2</sup>

## TURN YOUR ENGINE OFF



## IDLING WASTES FUEL AND \$

- Si deja inactivo su automóvil por más de 10 segundos, está desperdiciando más gasolina (y \$\$) que si reiniciara<sup>1</sup>
- Al apagar el motor, ayuda a reducir las emisiones de dióxido de carbono (CO<sub>2</sub>)<sup>2</sup>
- Las emisiones reducidas hacen que el aire sea más limpio en Denton y reducen los problemas de salud relacionados<sup>2</sup>

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1. <https://www.energy.gov/vehicles/articles/fact-984-july-3-2017-10-more-efficient-stop-and-restart-vehicle-s-engine-idle>  
2. <https://www.epa.gov/transportation/turn-off-engine-if-not-driving-reduce-idle-emissions>

## The Problem

When parents come to pick up their children they sometimes arrive 45 minutes or even an hour early. While waiting, parents often idle their engines. One of the pollutants from idling cars is carbon monoxide or CO. Carbon monoxide has harmful health effects because it can reduce the amount of oxygen that gets to the body's tissues (1). Children, in general, are more susceptible to air pollution than adults because their lungs are still developing and children with asthma have an even greater risk since air pollution can trigger an asthma attack (2).

## Methods

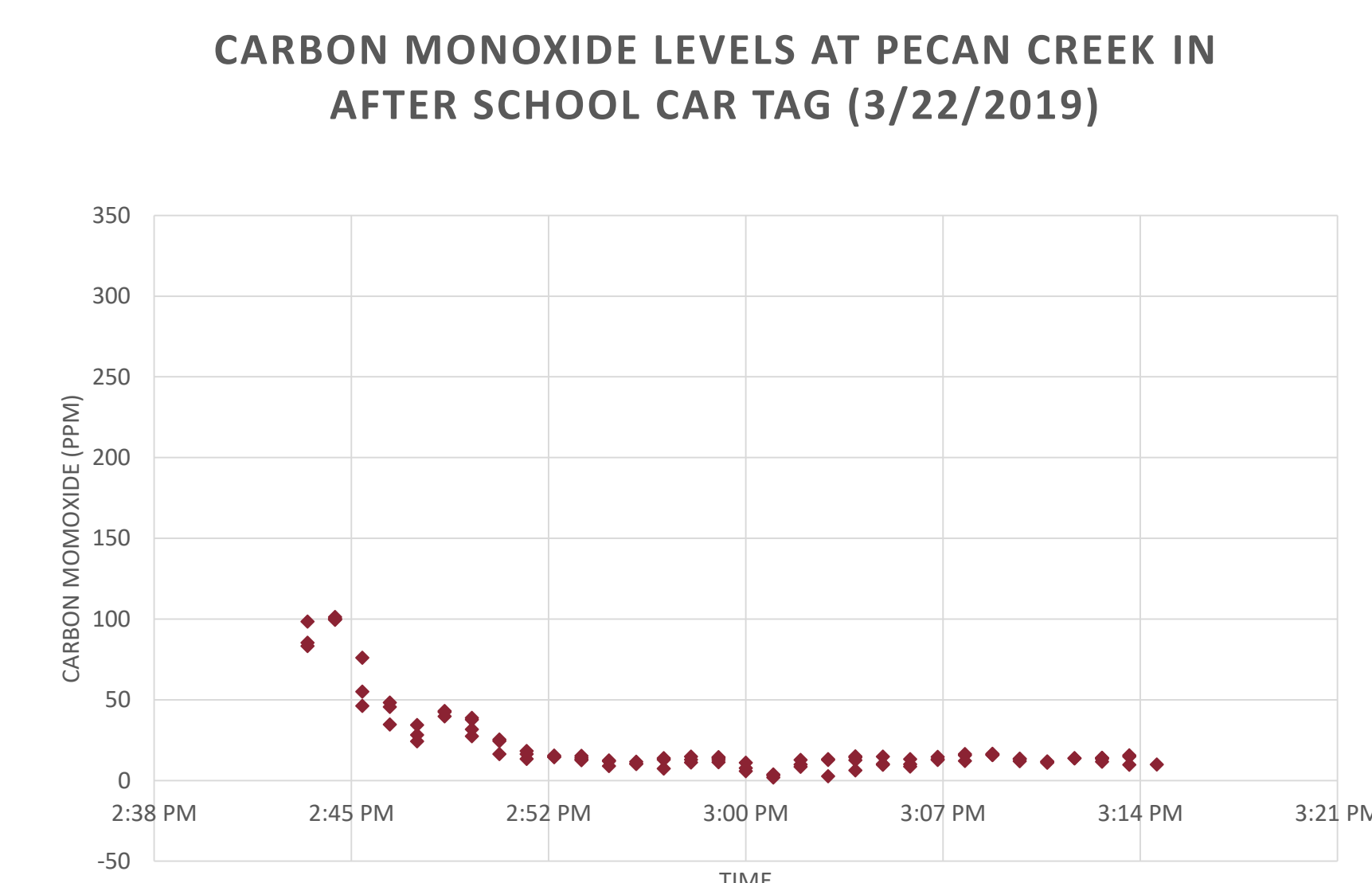
During each session a carbon monoxide monitor was placed near where the children wait for their parents to pick them up. Before placing the monitors outside the monitors were calibrated inside for 10 minutes. All measurements were done over a period of 30 minutes. Baseline measurements were done on March 1 and 4, 2019 with no signage. On March 7 the researcher spoke to parents at a PTA meeting about how idling affects their children's health. Afterward a sign (pictured left) that reminded drivers to use the stop/start method was displayed during pick up times and follow up measurements were taken.

## Conclusion

The baseline was done on March 4, 2019 and the temperature that day was 43°F. The CO levels from the baseline measurement were around 200 ppm (graph on left). After the start of the education campaign all of the CO levels were significantly lower. The temperature during the rest of the data collection ranged from 75-80°F. The CO level never went above 100 ppm and usually stayed around 50 ppm or under (graph on right), a decrease of around 75%.

## Conclusion

While the baseline CO levels were significantly larger than the following CO levels we cannot say for certain that it was because of the education campaign. Another factor that could have influenced the change in behavior could be weather. Other possible sources of error could be that cold temperatures make combustion efficiency in cars decrease thus producing more CO (1). More studies need to be done under different weather conditions to measure whether the education campaign changes behavior long term.



## References

1. Carbon Monoxide (CO.) Government of New South Wales. 2013. Retrieved <https://www.health.nsw.gov.au/environment/air/Pages/carbon-monoxide.aspx>
2. Who is affected by air pollution? Government of New South Wales. 2013. Retrieved <https://www.health.nsw.gov.au/environment/air/Pages/who-is-affected.aspx>

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