



## IdleBox: What's in It for EPA Advance?

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Argonne National Laboratory

# What Is DOE's Clean Cities?

## Clean Cities

advances the energy,  
economic, and  
environmental security of  
the United States by  
supporting local actions  
to cut petroleum use in  
transportation.

Reduced petroleum consumption

Reduced greenhouse gas  
(GHG) emissions

Reduced dependence  
on imported petroleum

## Local Partnerships: Clean Cities Coalitions

- National network of nearly **100 local coalitions**
- **82% of the total U.S. population** lives within coalition boundaries
- Nearly **500,000 alternative fuel vehicles**



[cleancities.energy.gov/coalitions/locations/](https://cleancities.energy.gov/coalitions/locations/)

# Quick Refresher: What's Wrong with Idling?

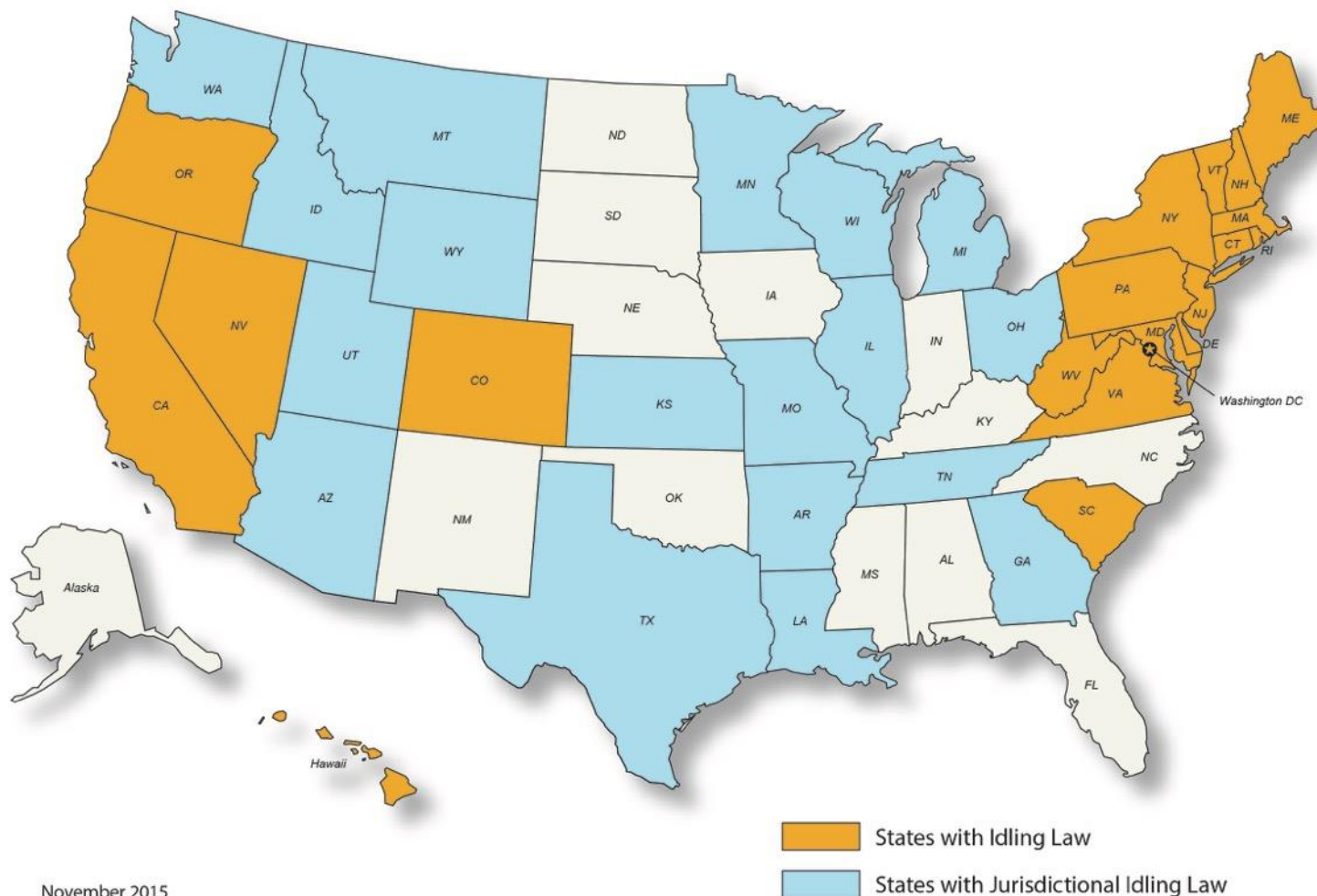
- *Idling in the U.S. uses more than 6 billion gallons of fuel at a cost of more than \$20 billion each year.*
- Idling vehicles consume from 0.2 to 1+ gallons of fuel per hour.
- Idling vehicles emit and contribute to the formation of criteria pollutants.
- Each gallon of fuel burned produces about 20 pounds of carbon dioxide.
- Especially for heavy-duty trucks, idling increases vehicle maintenance costs and can shorten engine life.
- Idling may be against the law.





# Also . . . Idling May Be Against the Law

## States with Idling Regulations



November 2015

## But . . . Idling Reduction Is More Complicated Than “Turn Off Your Engine”

- With passenger cars, the message may indeed be as simple “Turn the key.”
- With vehicles that need power for nonpropulsion purposes, it’s more complicated.
  - Vehicles that need power while stationary range from emergency vehicles to work trucks to long-haul, heavy-duty trucks.
  - The good news is that there are devices/technologies available that reduce or eliminate idling.
    - The ROI on these technologies will be a key factor in adoption and acceptance.

# What Is IdleBox?

IdleBox is an **electronic, modular toolkit** to help you advance the acknowledged low-hanging fruit of fuel economy—**idling reduction**.

**Modular** for maximum flexibility.

Originally developed for use by Clean Cities coalitions only, IdleBox is **now organized to assist any person or organization seeking to to advance idling reduction**.



# What's in IdleBox?

- Information cards, tip sheets, and pledge forms
- Outreach letters and press releases
- PowerPoint presentations
- Poster and sign
- Idling calculator
- IdleBase (a database of idling laws)
- Technical reference materials
- And more . . .





# IdleBox Home Page: [cleancities.energy.gov/idlebox](http://cleancities.energy.gov/idlebox)

The screenshot shows the IdleBox Toolkit for Idling Reduction Projects website. The header includes the U.S. Department of Energy logo and a search bar. The main navigation bar lists: Home, About, Coalitions, Partnerships & Projects, Technical Assistance, News & Events, and a Coordinator Toolbar. The page title is "Clean Cities".

**IdleBox Toolkit for Idling Reduction Projects**

IdleBox is an electronic education and outreach toolkit on vehicle idling reduction. The low-hanging fruit of fuel economy, idling reduction is a simple way to use less fuel and to reduce pollution and greenhouse gases.

**What is idling?**  
Idling is running a vehicle's propulsion engine when the vehicle isn't moving. Idling wastes fuel and creates harmful emissions.

**Use IdleBox to:**

- Learn more about the benefits of idling reduction for your organization, fleet, or community.
- Engage and educate others—including drivers, fleet managers, policymakers, sustainability managers, and others—on the value of idling reduction.
- Launch an idling reduction campaign for your organization, fleet, or community.

**Core Resources**

Messaging Materials	Letters & Pledge Forms	Technical Resources
<a href="#">Fact Card</a>	<a href="#">Outreach Letter</a>	<a href="#">Idle Reduction Savings Calculator: Excel</a> or <a href="#">PDF</a>
<a href="#">Fact Card Template</a>	<a href="#">Press Release</a>	<a href="#">Database of Idling Regulations</a>
<a href="#">Tip Sheet</a>	<a href="#">Organization Pledge Form</a>	<a href="#">National Idling Reduction Network News</a>
<a href="#">Stop Idling Graphic</a>	<a href="#">Driver or Employee Pledge Form</a>	
<a href="#">Stickers</a>		
<a href="#">Sign Template</a>		
<a href="#">Poster Template: 11" x 17" N</a> or <a href="#">22" x 34" N</a>		

**Specialty Resources**

Personal Vehicles	Light- and Medium-Duty Fleet Vehicles
<a href="#">Idling Reduction for Personal Vehicles</a> (Fact Sheet)	<a href="#">Idling Reduction Guide for Fleets</a> (Presentation)
<a href="#">Which is Greener: Idle, or Stop and Restart? Comparing Fuel Use and Emissions for Short Passenger-Car Stops</a> (Fact Sheet)	<a href="#">Technology Solutions</a> (Presentation)
<a href="#">Reducing Personal Vehicle Idling</a> (Presentation)	
<a href="#">Stop and Restart Effects on Modern Vehicle Starting System Components—Longevity and Economic Factors</a> (Technical Report)	

Heavy-Duty Vehicles	Emergency & Other Service Vehicles
<a href="#">Long-Haul Truck Idling Burns Up Profits</a> (Fact Sheet)	<a href="#">Idling Reduction for Emergency and Other Service Vehicles</a> (Fact Sheet)
<a href="#">Idling Reduction for Long-Haul, Heavy-Duty Trucks</a> (Presentation)	<a href="#">Case Study—Idling Reduction Technologies for Emergency Service Vehicles</a> (Technical Report)
<a href="#">Emissions From Idling Heavy-Duty Trucks and Idling-Reduction Equipment</a> (Technical Report)	

**Are You a Clean Cities Coordinator?**  
IdleBox has additional resources for Clean Cities coalitions. Go to the Coalition IdleBox Resources.

**STOP Idling. START Saving.**

College students help conduct an IdlingBox campaign at their home Middle School in Columbus, Mississippi.

IdleBox has been a tremendous support to our mission with these schools. We have provided a comprehensive kit with high-quality, ready-to-use information featuring IdlingBox materials and GPR lesson plans that we present to schools to encourage and support their interest in decreasing idling reduction and air quality improvement programs. IdlingBox has been a great resource for our coalition's educational outreach efforts.

Lauren Lambert-Funkhouser, Louisiana Clean Fuels

IdleBox has been a great set of tools for many of our projects. Most recently, the IdlingBox was used as a foundation for our successful volunteer on Driver Training. We were able to educate fleet managers and drivers in our region about the environmental and economic impacts of idling during their day. We also used the book extensively for a presentation given to Sleeping Bear Dunes park which was part of the National Parks initiative with which we are involved.

Heather Crothers, Area Administrator, Clean Cities Coalition

- IdleBox is organized by **Core Resources** and **Specialty Resources**.

# IdleBox Organization: Core Resources

## Core Resources

### Messaging Materials

Fact Card 

Fact Card Template 

Tip Sheet 

Stop Idling Graphic 

Stickers 

Sign Template 


Poster Template: 11" x 17"  or 22" x 34" 

### Letters & Pledge Forms



Outreach Letter 


Press Release 

Organization Pledge Form 

Driver or Employee Pledge Form 

### Technical Resources

Idle Reduction Savings Calculator: Excel  or PDF 

Database of Idling Regulations 

National Idling Reduction Network News

# Core Resources: Messaging Materials Examples



# Core Resources: Messaging Materials Examples, cont.

- **Sign** for loading, unloading, and parking areas
- **Poster** for employee areas




▲ Sign



▲ Poster



# Core Resources: Letter/Pledge Form Examples



Dear \_\_\_\_\_

In business, every dollar counts. Did you know that there are simple ways to reduce fuel costs with minimal or even no expense?

Reducing the time a vehicle idles is the simplest form of fuel economy; it can be easy to implement and often requires little or no financial investment.

**Why Care About Idling?**

- **Idling is expensive:** Idling may consume a gallon of fuel or more per hour, depending on the vehicle.
- **Idling pollutes:** Each gallon of fuel burned creates about 20 lbs. of greenhouse gases.
- **Idling threatens health:** Breathing vehicle emissions increases the risk of respiratory illness, especially in children.

[if desired, provide a description of a success with idling reduction for a local or regional company.]


We are Organization Name, provide a brief description. I believe we have a shared interest in increasing economic and environmental sustainability. Your organization's previous sustainability efforts, such as specific example, demonstrate an investment in reducing your carbon footprint. With the help of the Clean Cities IdleBox toolkit, we are helping organizations like yours reap the benefits of idling reduction. In addition to the organizational strategies, individual pledges for idling reduction can show your employees how to make a personal contribution.

I will call you in the coming week to request a brief meeting to discuss how you can save money and support the environment with simple measures to reduce idling. If you prefer, please call me directly at the number below.

Sincerely,

Name \_\_\_\_\_  
Title, Organization name \_\_\_\_\_  
Phone number, E-mail address \_\_\_\_\_

Space for organization's logo



**Organizational Idling Reduction Pledge**

We at [name of company or organization] hereby pledge our commitment to idling reduction. In support of this pledge, we establish the following guidelines for our facility, our vehicles, and our employees:

1. Excessive idling (more than seconds/minutes) is prohibited at our facility, including during pickups and deliveries.
2. Drivers of our vehicles will not idle unnecessarily (more than seconds/minutes) on or off site.
3. All employees are encouraged to limit unnecessary idling in their private vehicles.

Name/Signature of Policy Official: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Space for organization's logo

# Core Resources: Technical Tool Example

## Idle Reduction Savings Calculator

Share the **Idle Reduction Savings Calculator** to help fleet managers and others estimate how much they can save with idling reduction.

**Argonne** **Clean Cities**  
U.S. Department of Energy

### Idling Reduction Savings Calculator

For an interactive Excel version of this calculator, please go to [http://www.transportation.anl.gov/downloads/idling\\_worksheet.xls](http://www.transportation.anl.gov/downloads/idling_worksheet.xls)

#### Calculate Costs for Avoidable Idling

1 How much fuel is used for idling? (If you don't know, see reference table on reverse.)  gallons/hour  $\times$   hours/year =  gallons/year  $\times$  \$  /gallon = **Avoidable Idling Fuel Costs** \$  /year +

2  gallons/hour  $\times$   hours/year  $\times$   miles/gallon =  miles/year

3 How much does an oil change cost? \$  /oil change  $\div$   miles/oil change = \$  /mile  $\times$   miles/year = **Preventive Maintenance Cost\*** \$  /year +

4 How much does an engine overhaul or new vehicle cost? \$  /overhaul or replacement  $\div$   miles/overhaul or replacement = \$  /mile  $\times$   miles/year = **Overhaul or Replacement Cost\*** \$  /year

5 Add values in right-hand column = **Total Avoidable Idling Costs** \$  /year

#### Calculate Costs for Idling Reduction (IR) – Device and/or Electrified Parking Space (EPS)

6 How much fuel is used by the IR device?  gallons/hour  $\times$   hours/year =  gallons/year  $\times$  \$  /gallon =  /year

7 Maintenance cost for IR device \$  /year +  /year = **Operating Cost for On-board IR Device** \$  /year

8 Cost per hour to plug into EPS \$  /hour  $\times$   hours/year =  /year +  /year = **Total Operating Costs for IR** \$  /year

#### Calculate Savings from IR



9 Capital cost of on-board IR device \$   $\div$   /year saved = **Payback Time**  years

10   $-$   =  gallons saved/year

\* Total number of hours from line 6 and 8 should equal the number of hours in line 1.  
\*\* TMC, Recommended Practice 1108, "Analysis of Costs from Idling and Parasitic Devices for Heavy-Duty Trucks" (2005), Technology & Maintenance Council, American Trucking Associations (TMCA/ATA).

[www.anl.gov/energy-systems/downloads/vehicle-idle-reduction-savings-worksheet](http://www.anl.gov/energy-systems/downloads/vehicle-idle-reduction-savings-worksheet)

# Core Resources: Technical Tools Example, *cont.*

## Idling Reduction Savings Calculator

For an interactive Excel version of this calculator, please go to [http://www.transportation.anl.gov/downloads/idling\\_worksheet.xls](http://www.transportation.anl.gov/downloads/idling_worksheet.xls)

### How Much Fuel Is Used for Idling?

Vehicle Type	Class	Fuel Type	Size Indicator		Idling Fuel Use (gal/h)		Source
			Engine Size (l)	GVWR (lb)	No load	With load	
Passenger Car (Ford Focus)	1	G	2	—	0.16	0.29	ANL 1
Passenger Car (Volkswagen Jetta)	1	D	2	—	0.17	0.39	ANL 1
Passenger Car (Ford Crown Victoria)	1	G	4.6	—	0.39	0.59	ANL 1 & 2
Medium Heavy Truck	6	G	5–7	19,700–26,000	0.84	—	WVU
Delivery Truck	5	D	—	19,500	0.84	1.1 <sup>1</sup>	NREL
Tow Truck	6	D	—	26,000	0.59	1.14 <sup>2</sup>	ORNL
Medium Heavy Truck	6–7	D	6–10	23,000–33,000	0.44	—	WVU
Transit Bus	7	D	—	30,000	0.97	—	ORNL
Combination Truck	7	D	—	32,000	0.49	—	ORNL
Bucket Truck	8	D	—	37,000	0.90	1.50 <sup>3</sup>	ORNL
Tractor-Semitrailer	8	D	—	80,000	0.64	1.15 <sup>3,1</sup>	TMC

D = diesel; G = gasoline; Gal = gallon(s); GVWR = gross vehicle weight rating; h = hour(s); l = liter(s); lb = pound(s); PTO = power take-off.

<sup>1</sup> High idle.  
<sup>2</sup> PTO on.  
<sup>3</sup> Air conditioning on.

#### Sources

ANL 1: Stutenberg, K., and Lohse-Busch, H. "APRF [Advanced Powertrain Research Facility at Argonne National Laboratory] Conventional Vehicles Snapshot Study." Presentation to U.S. DOE, December 2, 2012.

ANL 2: Rask, E.; Keller, G.; Lohse-Busch, H.; et al. (2013). "Final Report: Police Cruiser Fuel Consumption Characterization." Work performed by Argonne National Laboratory for the Illinois Tollway Authority.

NREL: National Renewable Energy Laboratory Project Draft Final Report for the Period August 1, 2012, through March 31, 2014, "Data Collection, Testing and Analysis of Hybrid Electric Trucks and Buses Operating in California Fleets." ARB Agreement Number 11-600. NREL Contract Number FIA-12-1763, April 15, 2014.

ORNL: Lascourain, M.B.; Franzese, O.; Capps, G.; et al. (2012). *Medium Truck Duty Cycle Data from Real-World Driving Environments: Project Final Report* (ORNL/TM-2012/240). Work performed by Oak Ridge National Laboratory for the U.S. DOE.

TMC: TMC Recommended Practice 1106, "Analysis of Costs from Idling and Parasitic Devices for Heavy Duty Trucks" (2003). Technology & Maintenance Council, American Trucking Associations (TMC/ATA).

WVU: Khan, ABM S.; Clark, N.N.; Gautam, M.; et al. (2009). "Idle Emissions from Medium Heavy Duty Diesel and Gasoline Trucks." *Journal of the Air & Waste Management Association* (59.3) 354–359.

#### Other Idling Reduction Resources

- IdleBox [www.cleancities.energy.gov/idlebox](http://www.cleancities.energy.gov/idlebox)
- IdleBase <http://cleancities.energy.gov/idlebase>
- National Idling Reduction Network News [energy.gov/here/vehicles/vehicle-technologies-office-national-idling-reduction-network-news](http://energy.gov/here/vehicles/vehicle-technologies-office-national-idling-reduction-network-news)
- Argonne National Laboratory <http://www.transportation.anl.gov/engines/idling.html>
- Alternative Fuels Data Center [http://www.afdc.energy.gov/conservation/idle\\_reduction\\_basics.html](http://www.afdc.energy.gov/conservation/idle_reduction_basics.html)

# Specialty Resources

## Specialty Resources



### Personal Vehicles

[Idling Reduction for Personal Vehicles](#) 📄 (Fact Sheet)

[Which Is Greener: Idle, or Stop and Restart? Comparing Fuel Use and Emissions for Short Passenger-Car Stops](#) 📄 (Fact Sheet)

[Reducing Personal Vehicle Idling](#) 📄 (Presentation)

[Stop and Restart Effects on Modern Vehicle Starting System Components—Longevity and Economic Factors](#) 📄 (Technical Report)



### Light- and Medium-Duty Fleet Vehicles

[Idling Reduction Basics for Fleets](#) 📄 (Presentation)

[Technology Solutions](#) 📄 (Presentation)



### Heavy-Duty Vehicles

[Long Haul Truck Idling Burns Up Profits](#) 📄 (Fact Sheet)

[Idling Reduction for Long-Haul, Heavy-Duty Trucks](#) 📄 (Presentation)

[Emissions From Idling Heavy-Duty Trucks and Idling-Reduction Equipment](#) (Technical Report)



### Emergency & Other Service Vehicles

[Idling Reduction for Emergency and Other Service Vehicles](#) 📄 (Fact Sheet)

[Case Study – Idling Reduction Technologies for Emergency Service Vehicles](#) (Technical Report)



# Specialty Resources: Personal Vehicles



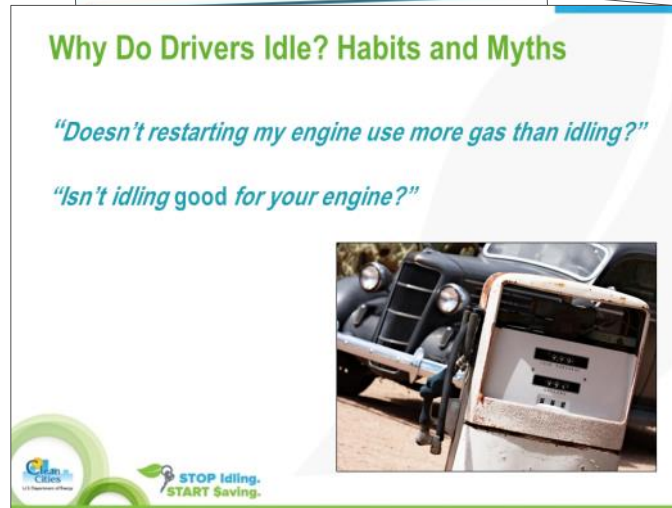
## Personal Vehicles

Idling Reduction for Personal Vehicles (Fact Sheet)

Which Is Greener: Idle, or Stop and Restart?  
Comparing Fuel Use and Emissions for Short  
Passenger-Car Stops (Fact Sheet)

Reducing Personal Vehicle Idling (Presentation)


Stop and Restart Effects on Modern Vehicle  
Starting System Components—Longevity and  
Economic Factors (Technical Report)



# Specialty Resources: Light- and Medium-Duty Fleet Vehicles



## Light- and Medium-Duty Fleet Vehicles

Idling Reduction Basics for Fleets 

(Presentation)

Technology Solutions  (Presentation)

## Idling Reduction Technology Solutions

- Technology Options To Support Idling Reduction in Light- and Medium-Duty Vehicles
- Calculating Costs
- Savings and Payback
- Funding Resources

## Idling Reduction Basics for Fleets

- What Is Idling?
- What Vehicles Idle?
- Some Idling Is Difficult To Avoid
- Much Idling Is Wasteful
- Why Care About Idling?
- What Can YOU Do?
- IdleBox Can Help!

 **STOP Idling.**  
**START \$aving.**



 **STOP Idling.**  
**START \$aving.**



U.S. Department of Energy

# Specialty Resources: Heavy-Duty Vehicles



## Heavy-Duty Vehicles

Long-Haul Truck Idling Burns Up Profits (Fact Sheet)

Idling Reduction for Long-Haul, Heavy-Duty Trucks (Presentation)

Emissions From Idling Heavy-Duty Trucks and Idling-Reduction Equipment (Technical Report)

## What Are the Costs and Consequences of Idling?

### Fuel Use, Costs, and Typical Payback

Power Source	Services	Fuel Use (gal/hr)	Typical Equipment Cost (\$)	Charge (\$/hr)	Typical Payback (yr)
Idling	All	0.6-1.5	NA	NA	NA
Auxiliary power unit	All	0.2-0.5	8,000-12,000 <sup>a</sup>	NA	3.6
Diesel-fired heater	Heat	0.04-0.08	900-1,500 <sup>b</sup>	NA	0.6
Heat recovery	Heat (limited duration)	Negligible	600	NA	<1
Storage cooling	Air conditioning	0.15	8,500-8,800 <sup>a</sup>	NA	5
Automatic engine start/stop system	All (intermittent)	0.25	1,500-2,500 <sup>a</sup>	NA	1
EPS (single system)	All	NA	5 <sup>c</sup>	1.85 <sup>d</sup>	NA
EPS (dual system)	All	NA	Up to 2,500 <sup>c</sup>	1.00	1

NA = not applicable; EPS = electrified parking space.

<sup>a</sup> Assumptions for payback: \$3.00/gal fuel, 1.0 gal/hr for idling, 0.1 for APU, mid-range prices, heat and AC each cost 10¢/hr; vehicle fuel economy 7 mpg; zero-idling required for one engine; 10% of idling time; 10% of idling time is for the engine to start; 10% of idling time is for the engine to stop.

<sup>b</sup> Includes installation. (North American Council for Freight Efficiency [NACFE] and the Carbon War Room. "Combustion Report on Idle-Reduction Solutions, 2014.")

<sup>c</sup> Cost for vehicle adapter for single or dual EPS and cost for related equipment for dual system EPS.

<sup>d</sup> This is a standard rate, but discounts are available for rates >10 hours. In addition, previously service is available for \$0.10/hr.



## U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy

### Long-Haul Truck Idling Burns Up Profits

Long-haul truck drivers perform a vitally important service. In the course of their work, they must take rest periods as required by federal law. Most drivers remain in their trucks, which they keep running to provide power for heating, cooling, and other necessities. Such idling, however, comes at a cost: it is an expensive and polluting way to keep drivers safe and comfortable. Increasingly affordable alternatives to idling not only save money and reduce pollution, but also help drivers get a better night's rest.



A long-haul truck idles about 1,800 hours per year for rest periods. Photo credit: Shutterstock/303454

### Idling Wastes Fuel and Increases Engine Wear

Idling a heavy-duty truck consumes about 0.8 gallon of fuel per hour. Even when diesel costs as little as \$2.50 a gallon, fuel for one 10-hour rest period will cost \$20. Typically, a long-haul truck idles about 1,800 hours per year, using about 1,500 gallons of diesel. Argonne National Laboratory (Argonne) estimates that, in the U.S., rest-period truck idling consumes up to 1 billion gallons of fuel annually at a cost of around \$3 billion. Idling also accelerates engine wear and tear. Where manufacturer warranties and maintenance intervals apply to "hours operated" rather than "miles traveled," the cost of idling is greater than just fuel.

### Idling Degrades Air Quality

Argonne estimates that rest-period idling results in the emission of about 11 million tons of carbon dioxide, 55,000 tons of nitrogen oxides, and 400 tons of particulate matter annually in the U.S. These emissions contribute to climate change and diminish local air quality, which can affect the health of not only those living in the community, but the truck drivers themselves.

### Idling May Be Illegal

Many state and local laws restrict the idling of heavy-duty trucks, and violating idling laws can result in steep fines. "Clean Cities' IdleBase (cities.energy.gov/idlebase), a database of idling laws and ordinances, catalogs known idling restrictions and penalties for all classes of on-road vehicles. The American Transportation Research Institute (atrti-online.org) provides a downloadable card card for laws specific to heavy-duty trucks.

### Alternatives to Idling Heavy-Duty Trucks

Some current idling alternatives use up to 95% less fuel, saving money, reducing air pollution, and helping truck drivers get a better night's sleep. Depending on how much a truck idles and current fuel prices, alternatives to idling can pay for themselves in as little as six months.

### Auxiliary Power Units

Auxiliary power units (APUs) provide drivers with on-board power for climate control and electrical devices. Most APUs are powered by diesel, but battery-powered APUs and alternative-fuel APUs are also available. Some APUs are equipped to plug into a power pedestal for grid power (see Electrified Parking Spaces on the next page).

**Considerations:** On-board power allows use wherever needed. APUs have an initial high cost and are heavy, although most states have weight exemptions for APUs (see [energy.gov/eere/vehicles/map-state-recognition-auxiliary-power-weight-exemption](http://www.energy.gov/eere/vehicles/map-state-recognition-auxiliary-power-weight-exemption)). Diesel APUs can keep the driver comfortable for as long as needed, but require regular maintenance. For trucks model year 2010 and newer, idling emissions are so well controlled that a diesel APU's particulate matter (PM) emissions will actually be higher than the truck engine's emissions. In California, diesel APUs on trucks newer than model year 2007 must be equipped with a diesel particulate filter. Battery APUs are essentially battery-electric air conditioners with heat supplied either by electrical resistance heating or by a diesel bank heater.



VEHICLE TECHNOLOGIES OFFICE

[http://www.afdc.energy.gov/uploads/publication/hdv\\_idling\\_2015.pdf](http://www.afdc.energy.gov/uploads/publication/hdv_idling_2015.pdf)

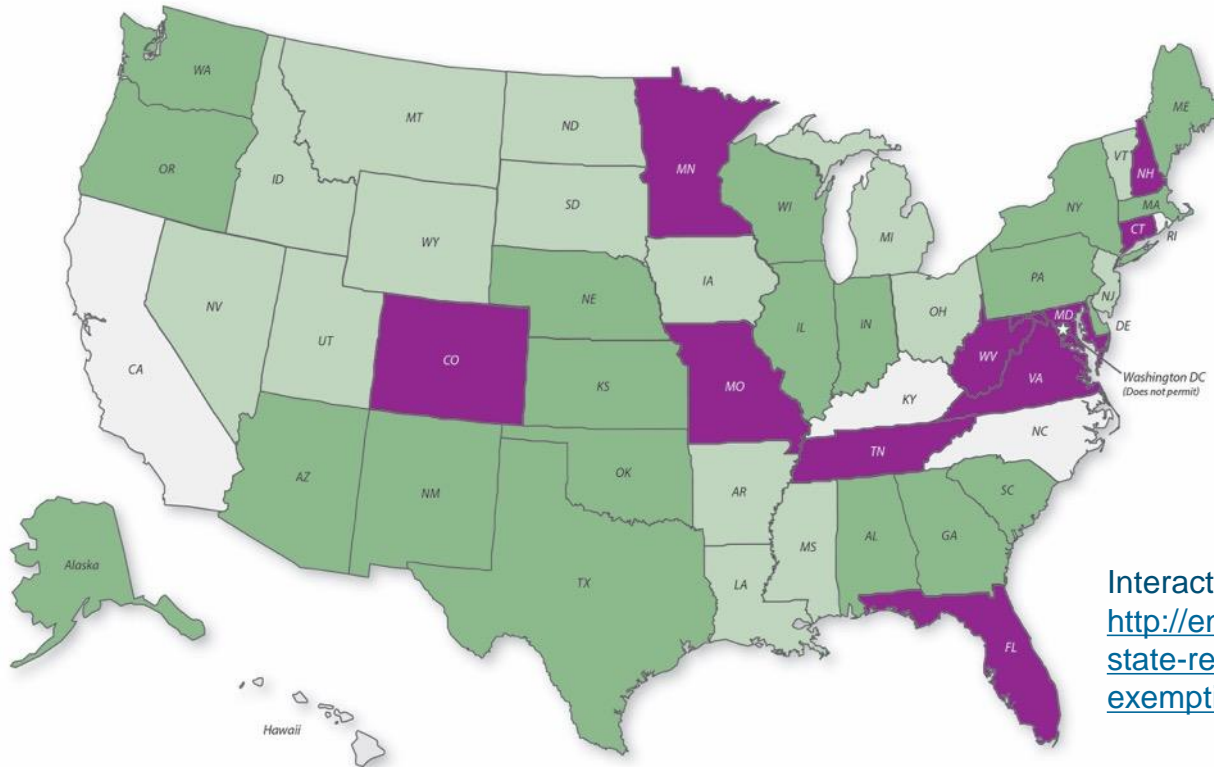


U.S. Department of Energy



# Specialty Resources: Heavy-Duty Vehicles, *cont.*

## APU Weight Exemption Status



Interactive map at <http://energy.gov/eere/vehicles/map-state-recognition-auxiliary-power-weight-exemption>

- Allows a 550-lb weight exemption by state law.
- Allows a 400-lb weight exemption by state law.
- Allows a 400-lb weight exemption by enforcement policy rather than by state law.
- Does not permit an APU weight exemption.



# Specialty Resources: Emergency & Other Service Vehicles



## Emergency & Other Service Vehicles

Idling Reduction for Emergency and Other Service Vehicles  (Fact Sheet)

Case Study – Idling Reduction Technologies for Emergency Service Vehicles (Technical Report)

U.S. DEPARTMENT OF  
**ENERGY** | Energy Efficiency & Renewable Energy

### Idling Reduction for Emergency and Other Service Vehicles

Emergency vehicles, such as police cars, ambulances, and fire trucks, along with other service vehicles such as armored cars, are often exempt from laws that limit engine idling. However, these vehicles can save fuel and reduce emissions with technologies that allow them to perform vital services without idling.

#### Police Vehicles

Police cruisers spend much of their time parked and running while officers monitor traffic, help at accident scenes, write reports, and wait to be called. Officers commonly require lights, radios, computers, radar, and video cameras.

In one recent report about police vehicle fuel consumption, the cruiser studied was found to idle 60% of the time during normal operation and used 21% of its total fuel while parked.<sup>1</sup> While the engine provided 250 horsepower (hp), together all of the accessories needed less than 2 hp. (Air conditioning consumed the most power, followed by external lighting.)

Several idling-reduction systems, with varying capabilities and costs, are available for police vehicles. Power-management systems may significantly reduce (but not eliminate) idling. They allow the vehicle's battery to power auxiliaries in engine-off mode and monitor the battery's state-of-charge. When the battery charge falls below a preset threshold, the system restarts the vehicle's engine to recharge the battery.

Another option is a heat-recovery device, which uses a small pump to circulate coolant from the warmed engine, providing heat to the passenger compartment after the engine has been turned off.

Battery auxiliary power units (APUs) are another option for police vehicles. These units store power when the engine is running and supply it to the vehicle's electrical devices for 4 hours or more when the engine is off.



VEHICLE TECHNOLOGIES OFFICE



Police vehicle auxiliaries can fit in the trunk. Used with permission of the U.S. Department of Energy.

#### Ambulances

Ambulance engines are idled to power medical equipment, computers, refrigeration equipment, as well as the vehicle's air conditioning. Idling these diesel engines out of the drivers complete paperwork wastes fuel but produces significant respiratory or cardiovascular pollution.

On-board battery-powered APUs needed functions are available: the APU to charge at the hospital while the ambulance is being used to provide additional power and receive conditions.



Ambulance hooked up to a heat-recovery device. Used with permission of the U.S. Department of Energy.



ANL/ESD-16/3

### Case Study – Idling Reduction Technologies for Emergency Service Vehicles

Energy Systems Division



[http://www.afdc.energy.gov/uploads/publication/idling\\_emergency-service\\_vehicles.pdf](http://www.afdc.energy.gov/uploads/publication/idling_emergency-service_vehicles.pdf)

# IdleBox Tool: IdleBase



[cleancities.energy.gov/idlebase](http://cleancities.energy.gov/idlebase)

# IdleBox Tool: IdleBase, cont.

A	B	C	D	E	F	G
Illinois	Type of Vehicle	Idling Restriction	Exemptions	Consequences of Infraction	Regulation	Resources
<b>Counties in the Chicago Area:</b> <ul style="list-style-type: none"> <li>• Cook</li> <li>• DuPage</li> <li>• Lake</li> <li>• Kane</li> <li>• McHenry</li> <li>• Will</li> <li>• Aux Sable and Goose Lake Townships in Grundy</li> <li>• Oswego Township in Kendall</li> </ul> <b>Counties in the Metro East St. Louis Area:</b> <ul style="list-style-type: none"> <li>• Madison</li> <li>• St. Clair</li> <li>• Monroe</li> </ul>	Diesel vehicles ≥8,000 lbs	10 minutes/hour	Traffic conditions or controls. Prevent a health or safety emergency. Emergency or law enforcement purposes. Service or repair. Government inspection. Idling necessary to operate auxiliary equipment to accomplish intended use of vehicle. Guarding contents of armored vehicle. Bus can idle a maximum of 15 minutes/hour to maintain passenger comfort. Resting in sleeping berth. Mechanical difficulties out of control of operator. Airport ground control support. Buses owned by public transportation authorities on bus route. Implements of husbandry. Electric utility service vehicles. If temperature <32F or >80F, idle limit to 30 minutes/hour while in queue.	\$90 for first conviction. \$500 for second or subsequent conviction in 12-month period. Fines are divided and paid to 3 groups, dependant on the county that wrote the ticket.	625 Illinois Compiled Statutes (ILCS) 5/11-1429	<a href="http://www.iga.gov/legislation/ilc/s/fulltext.asp?DocName=062500050K11-1429">http://www.iga.gov/legislation/ilc/s/fulltext.asp?DocName=062500050K11-1429</a>
<b>City of Chicago</b>	Diesel-powered vehicles	3 minutes/hour	Emergency vehicles providing health and safety services. Airport support vehicles necessary for airport operations. Engine running is necessary to operate auxiliary equipment to accomplish the intended use of the vehicle. Vehicles standing with engine running for purpose of service, repair, or inspection. Vehicles standing in traffic. Air conditioning if temperature >80F or heat if temperature <32F. Operation of APU or generator set. Mechanical requirements or difficulties out of operator's control. Vehicles standing due to automatic regeneration of diesel particulate filters or pre-shutdown cooling required by engine manufacturer.	\$250 per violation	Chicago Municipal Code, Section 9-80-095	<a href="http://www.cityofchicago.org/dam/city/depts/dco/general/ESB_PD/Es/StandingLimitOrdinanceApproved.pdf">http://www.cityofchicago.org/dam/city/depts/dco/general/ESB_PD/Es/StandingLimitOrdinanceApproved.pdf</a>

# National Idling Reduction Network News

Want to follow potential funding opportunities? Subscribe!



<http://energy.gov/eere/vehicles/vehicle-technologies-office-national-idling-reduction-network-news>

To subscribe, visit the link above or e-mail [pweikersheimer@anl.gov](mailto:pweikersheimer@anl.gov)



# IdleBox in Use

IdleBox has a range of uses, from policy development to fleet outreach to messaging to the general public.

West Palm Beach, Florida, used IdleBox materials for the launch of its no-idling policy for public utility vehicles (November 2014).



# IdleBox in Use, cont.



Bank of Utah used IdleBox materials to encourage its drive-through-window users to shut down rather than idle while waiting in line (February 2015).

<http://www.good4utah.com/news/midday/how-you-can-reduce-air-pollution/205564819>

# IdleBox in Use, cont.

**ENVIRONMENTAL INITIATIVES**  
**REDUCE OUR CARBON FOOTPRINT**

**STOP Idling.**  
**START \$aving.**

- IDLING IS EXPENSIVE**  
up to a gallon or more of fuel per hour, depending on vehicle size
- IDLING POLLUTES**  
a gallon of fuel creates about 20 lbs. of greenhouse gases
- IDLING THREATENS HEALTH**  
breathing vehicle emissions increases risk of respiratory illness

**ComEd**  
An Exelon Company

Idling uses more fuel than restarting your engine

- Unnecessary idling at ComEd wastes over **HALF A MILLION GALLONS** of fuel **AND** more than **\$2 MILLION** each year

© Commonwealth Edison Company, 2011

ComEd ISO 14001 Certified  
SINCE 2008

"At **ComEd**, we used the IdleBox toolkit to create posters and information cards that were used for an internal education program. Employees provided feedback that the anti-idling booth was their favorite of the day, and many said that they were going to change their behavior to limit or reduce idling of their personal vehicles after hearing about the impacts."

—**Marla Westerhold** of the **Environmental Department** at **ComEd**, **Illinois' largest electric utility.**

# Wrapping Up: Organizing an Idling Reduction Campaign

- Target audience
- Strategy
- Messaging





# Success with IdleBox: Tips from Clean Cities Coalitions

- Seek collaborative partnerships with other organizations that will benefit.
- Start with closest stakeholders/partners and build from those successes.
- Reach out to new audiences knowing that success will take multiple “touches.”
- Consider outreach to nontraditional fleets (e.g., Meals on Wheels).
- Use IdleBox to assist in ordinance development and outreach to local media.

## We welcome your questions, feedback, and comments!

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