

# 2012 CONSPECTUS OF IDLING STATEMENTS

**Prepared for Oak Ridge National Laboratory  
By East Tennessee Clean Fuels Coalition**

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**Kristy Keel-Blackmon**

**East Tennessee Clean Fuels Coalition**

**311 Conference Center Building**

**Knoxville, TN 37996**

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### **Kristy Keel-Blackmon**

East Tennessee Clean Fuels Coalition

with contributions by

### **Jonathan Overly**

### **Kathy Hanson**

East Tennessee Clean Fuels Coalition

## Introduction

This project was conceived in 2012 in discussion between the East Tennessee Clean Fuels Coalition (ETCleanFuels) and Oak Ridge National Laboratory (ORNL) who both noted that detailed information about idling recommendations from a wide variety of engines and vehicles was missing. That summer, ORNL agreed to fund ETCleanFuels to work on developing a first-of-its-kind collection of idling recommendations.

## History

While idling recommendations for some light-duty (LD), medium-duty (MD) and heavy-duty (HD) vehicles can be found from manufacturers or other sources, sometimes that information is misstated or inaccurate, depending on the source. Additionally, drivers of all size vehicles have used personally relayed recommendations that are widely misleading. Often drivers believe or assume that leaving vehicles running is the best thing for the engine when in fact idling for very limited periods or not idling at all is what is recommended by the manufacturer.

## Purpose

The purpose of this work was to amass the best recommendations that could be found on idling recommendations for LD, MD and HD vehicles. Depending the company or manufacturer, the amount of information they provide on idling varies or is provided in different locations. While not attesting to being an end-all compendium of idling information, this conspectus does put together current and older statements from the OEMs (original equipment manufacturer) and other best-found sources to compile idling information into one location.

The following tables are split into LD, MD, and HD vehicle sections, and are presented alphabetically by OEM. For this work, we used the following gross vehicle weight rating (GVWR) mass categories: <10,000 pounds GVWR is light duty; 10,000-26,000 pounds is medium duty; and >26,001 is heavy duty.

Questions or comments should be directed to Kristy Keel-Blackmon of the East Tennessee Clean Fuels Coalition at 865-974-9665; [kristy@etcleanfuels.org](mailto:kristy@etcleanfuels.org).

## Light Duty Vehicles

Select idling notes from this section:

- Avoid idling for long periods of time
- Idling beyond 30 seconds is excessive and should be avoided
- Extended idling wastes fuel and causes reduction in fuel economy
- Excessive idling can create engine wear and carbon soot buildup in the engine and components
- Excessive idling can effect the life of engine oil
- At startup: idle for 0-25 seconds and drive gently to warm the engine

OEM	Recommendation	Reference
Audi	Now standard at Audi began in 2009, Start/stop system turns off engine when gear shift is in neutral and clutch is released in manual transmissions and when the brake pedal is depressed and vehicle is stopped in automatic transmissions.	<a href="http://www.audi.com.hk/hk/brand/en/models/Efficiency/efficiency_technologies/energy_management/automatic_start_stop.html">http://www.audi.com.hk/hk/brand/en/models/Efficiency/efficiency_technologies/energy_management/automatic_start_stop.html</a>
BMW	Drive away without delay. Do not wait for the engine to warm up while the vehicle remains stationary. Switch off the engine during longer stops, e.g., at traffic lights, railroad crossings or in traffic congestion.	2013 6 Series, X3 Manuals 2006 Z4 Coupe Manual
	Do not race the engine while warming it up. Drive at moderate speed for a short distance first, especially in cold weather.	2009 328i Manual
	Do not allow the engine to warm up by leaving it running while the vehicle remains stationary. Instead, begin to drive at a moderate engine speed.	2008 535i Manual
	Driving off Immediately: Do not allow the engine to warm up by leaving it running while the vehicle remains stationary. Instead, begin to drive at a moderate engine speed. This is the fastest way for the cold engine to reach its operating temperature.	2010 328i xDrive Sedan Manual 2008 650i Coupe Manual 2008 128i Coupe Manual
Cadillac	Avoid idling the engine for long periods of time.	2013 ATS, XTS Manual 2010 Escalade/Escalade ESV Manual 2009 CTS/CTS-V Manual 2009 Escalade/Escalade ESV Manual
	It is better not to park with the engine running.	2011 Escalade/Escalade ESV Manual 2010 Escalade/Escalade ESV Manual 2009 STS/STS-V Manual 2009 Escalade/Escalade ESV Manual 2009 SRX Manual

Chevrolet	<p>It is better not to park with the engine running.</p> <p>Do not race the engine immediately after starting it. Operate the engine and transmission gently to allow the oil to warm up and lubricate all moving parts.</p>	<p>2008 Equinox, HHR Manuals 2012 Chevrolet Express Manual</p>
	<p>Avoid idling the engine for long periods of time.</p> <p>It is better not to park with the engine running.</p> <p>Do not race the engine immediately after starting it. Operate the engine and transmission gently to allow the oil to warm up and lubricate all moving parts.</p>	<p>2009 Silverado Manual 2010 HHR, Aveo, Malibu, Cobalt Coupe Manuals 2011 HHR, Aveo Manuals 2012 Chevy Corvette, Impala Manuals 2013 Malibu Manual</p>
	<p>25 seconds of idling at start up for LD non-diesel.</p>	<p>Correspondence with Todd Wenzel Chevrolet Service Dept.</p>
	<p>Do not warm up the car. Even on the coldest mornings, the vehicle is ready to go in just 30 seconds. In fact, vehicles reach optimum operating temperatures faster when driven instead of idling.</p>	<p><a href="http://www.youtube.com/watch?v=ZfB3HuNbn2M">http://www.youtube.com/watch?v=ZfB3HuNbn2M</a></p>
	<p>Avoid Idling: A car gets 0 mpg when the engine is idling: While it does take a small amount of fuel to restart a vehicle, 15 minutes in the drive-through can burn through a quarter of a gallon of fuel. So that dollar menu is more like a \$2 menu.</p>	<p><a href="http://media.gm.com/product/public/us/en/FuelEfficiency/tips.html">http://media.gm.com/product/public/us/en/FuelEfficiency/tips.html</a></p>
	<p>Forget the practice of idling your car. Even on the coldest morning, your vehicle is ready to go after just 30 seconds.</p>	<p><a href="http://www.youtube.com/watch?v=ZfB3HuNbn2M">http://www.youtube.com/watch?v=ZfB3HuNbn2M</a></p>
	Chrysler	<p>Long periods of engine idling, especially at high engine speeds can cause excessive exhaust temperatures which can damage your vehicle. Do not leave your vehicle unattended with the engine running.</p> <p>Extensive engine idling can affect the oil change interval.</p>
<p>Engine break-in recommendations: Avoid excessive idling.</p> <p>Extensive engine idling can significantly reduce oil change interval.</p>		<p>2005 ZH Crossfire Manual</p>
<p>Avoid Excessive Idling: Idling your vehicle gets 0 miles per gallon.</p>		<p><a href="http://www.chrysler.com/en/owners/fuel_conservation_tips/">http://www.chrysler.com/en/owners/fuel_conservation_tips/</a></p>
Dodge		<p>But if you're waiting while parked, turn off your truck to save gas – because one thing's for sure: Idling your vehicle gets 0 miles per gallon.</p>
	<p>Engine Warm-Up: Avoid full throttle operation when the engine is cold. When starting a cold engine, bring the engine up to operating speed slowly to allow the oil pressure to stabilize as the engine warms up.</p> <p>If temperatures are below 32°F (0°C), operate the engine at moderate speeds for 5 minutes before full loads are applied.</p> <p>Avoid prolonged idling, long periods of idling may be harmful to your engine because combustion chamber temperatures can drop so low that the fuel may not burn completely. Incomplete combustion allows carbon and varnish to form on piston rings, engine valves, and injector nozzles. Also, the unburned fuel can enter the crankcase, diluting the oil and causing rapid wear to the engine.</p>	<p>2004 Ram 3500 Diesel Manual 2006 Ram 2500/3500 Manual 2009 Ram Diesel Manual</p>
	<p>Long periods of engine idling can cause excessive exhaust temperatures which can damage your vehicle. Do not leave your vehicle unattended with the engine running.</p> <p>Extensive engine idling can affect the oil change interval.</p>	<p>2004 Durango Manual 2005 XL Magnum Manual 2006 XL Charger, Ram (Gas), ND Dakota Manuals 2008 Nitro Manual</p>

Ford	Don't idle for more than 30 seconds. Today's engines don't need to be warmed up. Prolonged idling creates excess emissions and wastes fuel. Start the car and immediately drive away. Older model, non-fuel injected vehicles needed warm-up time. We recommend you check with the Service Department of your local Ford dealership regarding specific engines.	Correspondence with Bility, Sustain (A.) [sustaina@ford.com]
	No idling – Today's engines don't need a warm up. Start the car immediately and gently drive away. Don't leave your car idling. Prolonged idling increases emissions and wastes fuel. Turn the engine off in non-traffic situations, such as at bank and fast food drive-up windows, when idling more than 30 seconds.	<a href="http://media.ford.com/article_display.cfm?article_id=28946">http://media.ford.com/article_display.cfm?article_id=28946</a> , <a href="http://corporate.ford.com/news-center/press-releases-detail/ecodriving-458p">http://corporate.ford.com/news-center/press-releases-detail/ecodriving-458p</a>
	Turn your engine off when sitting in a parking lot, in line at the drive-thru, or waiting at the car wash.	<a href="http://www.youtube.com/watch?v=2b7nMW-LIdI">http://www.youtube.com/watch?v=2b7nMW-LIdI</a>
GMC	Avoid idling the engine for long periods of time.	<a href="http://www.gmc.com/fuel-efficiency.html">http://www.gmc.com/fuel-efficiency.html</a>
Honda	Avoid excess idling- Idling results in 0 miles per gallon (0 kms per liter). Fuel economy factors: excessive idling.	2009 Ridgeline, Fit Manuals  2010 CRV Manual via <a href="http://idlefreevt.org/manuals/Honda_CR-V_2010.pdf">http://idlefreevt.org/manuals/Honda_CR-V_2010.pdf</a>
Hyundai	While during the break in period avoid idling for longer than 3 minutes, after the break in period of 600 miles avoid idling at high RPMs for longer than 5 minutes.	Correspondence with Hyundai Rep
	Don't let the engine idle longer than necessary. If you are waiting (and not in traffic), turn off your engine and restart only when you're ready to go. Remember, your vehicle does not require extended warm-up. After the engine has started, allow the engine to run for 10 to 20 seconds prior to placing the vehicle in gear. In very cold weather, however, give your engine a slightly longer warm-up period.	2010 Elantra Manual via <a href="http://idlefreevt.org/manuals/Hyundai_Elantra_2010A.pdf">http://idlefreevt.org/manuals/Hyundai_Elantra_2010A.pdf</a>
Infiniti	Allow the engine to idle for at least 30 seconds after starting. Do not race the engine while warming it up. Drive at moderate speed for a short distance first, especially in cold weather. In cold weather, keep the engine running for a minimum of 2 - 3 minutes before shutting it off. Starting and stopping the engine over a short period of time may make the vehicle more difficult to start.	2012 FX Manual 2008 G Manual JX Owners Manual QX Owners Manual
Jeep	Long periods of idling, especially at high engine speeds can cause excessive exhaust temperatures which can damage your vehicle. Do not leave your vehicle unattended with the engine running.	2004 WJ Grand Cherokee Manual 2005 Wrangler Manual
	Before turning off your Diesel engine, always allow the engine to return to normal idle speed and then run for several seconds. This assures proper lubrication of the turbocharger. This is particularly necessary after periods of high speed driving.	2006 Liberty Manual
	Extensive engine idling may affect oil change interval.	
Lincoln	After idling for a few seconds, release the parking brake, apply the brake, shift into gear and drive.  Idling for long periods of time (longer than one minute) may waste fuel.	2000 LS Manual 2007 Town Car Manual 2010 Navigator Manual
	Extended engine idling decreases fuel economy.	1996 Lincoln Continental Manual
	There are also some things you may not want to do because they may reduce your fuel economy: Idle for periods longer than one minute.	2013 MKS Manual
	From Stuart Powell Ford-Lincoln-Mazda: No Idling- Today's engines don't need a warm up. Start the car immediately and gently drive away. Don't leave your car idling. Prolonged idling increases emissions and wastes fuel. Turn the engine off in non-traffic situations, such as at bank and fast food drive-up windows, when idling more than 30 seconds.	<a href="http://media.ford.com/article_display.cfm?article_id=28946">http://media.ford.com/article_display.cfm?article_id=28946</a>

Mazda	<p>After idling for a few seconds, release the parking brake, apply the brake, shift into gear and drive.</p> <p>Idling for long periods of time (greater than one minute) may waste fuel.</p>	2011 Tribute Manual
	<p>After starting the engine, let it idle for about 10 seconds.</p> <p>Do not operate the engine at high idle for more than 5 minutes.</p>	2010 Mazda 6 Manual, p.3.13 & 4.3, respectively
Mercedes-Benz	<p>Do not warm up the engine with the vehicle stationary.</p>	2011 Maintenance Manual: <a href="http://www.mbusa.com/vcm/MB/DigitalAssets/pdfmb/maintenancebooklets/2011_Maintenance_Manual.pdf">http://www.mbusa.com/vcm/MB/DigitalAssets/pdfmb/maintenancebooklets/2011_Maintenance_Manual.pdf</a>
	<p>From Mercedes Rep: In speaking with our Product Advice department they have advised the only concern is getting oil circulated through the engine. They stated that this is possible in about 10 seconds in warm weather and about a minute in cold weather. They did not have anything official pertaining to older versus newer model year vehicles.</p>	Correspondence with Mercedes Rep
	<p>Idling your Mercedes-Benz can use a quarter to a half-gallon of fuel per hour, depending on engine size and air conditioner use. Turn off the engine when your vehicle is parked.</p>	<a href="http://media.ford.com/article_display.cfm?article_id=28946">http://media.ford.com/article_display.cfm?article_id=28946</a>
Nissan	<p>Avoid unnecessary engine idling.</p> <p>Allow the engine to idle for at least 30 seconds after starting. Do not race the engine while warming it up. Drive at moderate speed for a short distance first, especially in cold weather.</p> <p>In cold weather, keep the engine running for a minimum of 2—3 minutes before shutting it off. Starting and stopping the engine over a short period of time may make the vehicle more difficult to start.</p> <p>Extensive idling may require more oil and filter changes.</p>	<p>2008 XTerra Manual</p> <p>2009 Z Roadster Manual</p> <p>2010 Maxima Manual</p> <p>2011 Quest Manual</p> <p>2012 Altima Manual</p>
	<p>Avoid unnecessary engine idling.</p> <p>To optimize fuel economy, it is recommended to avoid unnecessary engine idling. There are no specific details of what "unnecessary engine idling" is. When I think of that, I think of waiting for someone and instead of turning the car off, the car remains on.</p> <p>Our non-turbo, 4-cylinder models are equipped with an Coolant Temperature Indicator Light. When one of these vehicles is started, this indicator light is in Blue, which indicates that the vehicle is not warmed up to engine operating temperature. Once the light turns off, the vehicle is at engine operating temperature. The other models we offer are equipped with an engine coolant temperature gauge. For those vehicles, once the gauge reaches it normal driving level, the vehicle's engine is warmed up. We do not state, however, that it is required or necessary to let a vehicle's engine be warmed up to operating temperature before driving. If before warmed up, there may be driveability differences.</p>	<p>2013 Outback Manual</p> <p>2000 Outback Manual</p> <p>Correspondence with Subaru Rep</p>

Toyota	The longer the warming-up time is, the more fuel will be lost. Set off just after starting the engine. If you start engine when it's very cold or if you're starting engine which has not been run for several days or more, wait for some dozens of seconds after starting engine until oil is distributed throughout the engine and then set off.	<a href="http://www.toyota-global.com/sustainability/environmental_responsibility/global_warming_prevention_initiatives/eco_driving/eco_driving_at_its_best.html#start">http://www.toyota-global.com/sustainability/environmental_responsibility/global_warming_prevention_initiatives/eco_driving/eco_driving_at_its_best.html#start</a>
	Stop the engine instead of idling, if possible. Stop the engine, even for a short time, such as when stopping by a convenience store, when loading or unloading or when waiting for an empty space in a parking lot. If the engine is running, gasoline will be consumed even if the car is stopped.	<a href="http://www.toyota-global.com/sustainability/environmental_responsibility/global_warming_prevention_initiatives/eco_driving/eco_driving_at_its_best.html#start">http://www.toyota-global.com/sustainability/environmental_responsibility/global_warming_prevention_initiatives/eco_driving/eco_driving_at_its_best.html#start</a>
	Avoid lengthy warm- up idling. Once the engine is running smoothly, begin driving—but gently. Remember, however, that on cold winter days this may take a little longer.  Avoid long engine idling. If you have a long wait and you are not in traffic, it is better to turn off the engine and start again later.	1998 4Runner Manual 1999 Tercel Manual 2000 Rav4 Manual 2001 Highlander Manual 2005 Avalon Manual 2007 Camry Manual 2008 Matrix Manual
Volkswagen	Avoid idling. You get 0 miles per gallon when you idle.	<a href="http://www.vw.com/en/owners/parts-and-accessories/care/fuel-efficiency.html">http://www.vw.com/en/owners/parts-and-accessories/care/fuel-efficiency.html</a>
	We suggest not letting your VW idle for longer periods of time, such as an hour, while parked. Doing so may cause damage to the engine, especially if you have many systems running such as the air conditioner. Do not worry about traffic jams as long as you are in gear and moving every so often. We have designed many of the electronic systems in your car to work with an “accessory on” feature. Your radio will play with the engine and battery off. Just turn it on as you normally would. This saves idling time.  If you have a VW with a TDI engine, we suggest not letting your engine idle unnecessarily after a cold start. Driving off slowly will shorten the warm-up period.  In addition, if you have driven your car for a long period of time, the engine could overheat when it is stopped. To reduce the risk of engine damage, let the engine idle in Neutral for about two minutes before you switch off the ignition.	Correspondence with Volkswagen Rep
Volvo	Don't let your car run at idling speed unless necessary (it's worth your while to switch off the engine if you're going to be at a standstill for more than 20 or 30 seconds)	<a href="http://www.swedespeed.com/artman2/publish/Volvo_News/Volvo_Cars_Driving_Academy_-_Interest_in_Eco-Drivi_1073.html">http://www.swedespeed.com/artman2/publish/Volvo_News/Volvo_Cars_Driving_Academy_-_Interest_in_Eco-Drivi_1073.html</a>
	Our vehicles are designed to start up and go. Our engine management systems are designed to warm up very quickly. For the most part you really don't have to warm up any engines too much unless its below freezing then you should give it 3-5 minute warm up. Excessive idling would be anything over 5 minutes. Some states have laws against idling any vehicles over 5 minutes and the downside to excessive idling would be a buildup of hydrocarbons in the crank case which leads to early break down of engine oil.	Correspondence with Volvo Rep

## Medium Duty Vehicles

Select idling notes from this section:

- Avoid excessive idling
- Idling beyond 5-15 minutes is excessive and should be avoided
- Extended idling wastes fuel and causes reduction in fuel economy
- Excessive idling can create engine wear and carbon soot buildup in the engine and components
- Idle time at cooldodwn is only required if vehicle operated under extended, high power conditions

OEM	Recommendation	Reference
Chevrolet	25 seconds of idling at start up is appropriate for non-diesel vehicles.	Correspondence with Todd Wenzel Chevrolet Service Dept.
Ford	Ford Motor Company defines extended idling as follows: Over 10 minutes per hour of normal driving, Frequent low speed operation, Sustained heavy traffic less then 25 MPH	<a href="https://www.fleet.ford.com/truckbbas/non-html/DeiselTips/DLSIDLETIMESS.pdf">https://www.fleet.ford.com/truckbbas/non-html/DeiselTips/DLSIDLETIMESS.pdf</a>
Freightliner	<p>Cummins engines: Excessive Idle: Should be avoided when possible. Results in reduced fuel economy and increased engine wear. An automatic shutdown feature is available. Fast Idle: ISB engines with the common rail fuel system may automatically increase engine speed under cold ambient conditions to decrease time for engine warm up under idling conditions. Engine Warm-up: Do not operate at full speed/load until coolant temperature reaches normal operating range. Do not operate above low idle until oil pressure is indicated. Engine Cooldown: Prior to shutdown, an engine should be idled 3-5 minutes after extended full throttle or high power operation. However, under normal driving conditions, such as exiting a highway, engine operation is generally lighter in nature and thereby, the 3-5 minute cooldown is not necessary.</p> <p>Detroit Engines: It is not necessary to idle the engine before engaging or starting the operation, but load should be applied gradually during the warm-up period until the oil temperature reaches 140°F (60°C). Prolonged idling of engines is not recommended. Idling produces sulfuric acid that is absorbed by the lubricating oil, and eats into bearings, rings, valve stems, and engine surfaces. If you must idle the engine for cab heating or cooling, use the high idle function of the cruise control switches. An idle speed of 900 rpm should be enough to provide cab heat in ambient temperatures that are above freezing.</p>	<p><a href="http://www.cummins-sp.com/support/rv_maintenance_operation-isb.htm">http://www.cummins-sp.com/support/rv_maintenance_operation-isb.htm</a></p> <p><a href="https://secure.freightliner.com/newbulletins/techmanuals/DM-MM_Web/English/freightliner/Driver's%20Manuals/cascadia%20driver's%20manual.pdf">https://secure.freightliner.com/newbulletins/techmanuals/DM-MM_Web/English/freightliner/Driver's%20Manuals/cascadia%20driver's%20manual.pdf</a></p>
International	Low idle speed for the MaxxForce® DT, 9, and 10 Diesel Engines is 700 rpm (nonadjustable). If the engine coolant temperature is below 70 °C (158 °F), the Electronic Control Module (ECM) will adjust the low idle speed from 700 rpm to a maximum of 875 rpm. High idle speed is a nonadjustable factory setting. The high idle setting depends on the application of the vehicle and has the following ranges: MaxxForce® DT: 2600 rpm through 2770 rpm MaxxForce® 9 and 10: 2325 rpm through 2425 rpm. To prevent engine damage, do not extend low idle periods. Idling periods over 15 minutes should be avoided. Diesel engine efficiency is improved when the cylinder temperature remains high. Low temperature in cylinders may cause the following: Unburned fuel may seep from exhaust manifold gaskets and vehicle exhaust system connections. This seepage has the dark colored appearance of lubricating oil. Incomplete combustion and unburned fuel washes lubricating oil from cylinder sleeves. Unburned fuel will be carried into the lubricating oil, dilute the oil, and change oil viscosity. Carbon forms on internal components of turbochargers and EGR, reducing engine efficiency. Carbon clogs and damages the Diesel Particulate Filter (DPF).	MaxxForce Engine Operation and Maintenance Manual DT 9 and 10 Diesel Engines

Kenworth	<p>Cummins engines: Excessive Idle: Should be avoided when possible. Results in reduced fuel economy and increased engine wear. An automatic shutdown feature is available. Engine Warm-up: Do not operate at full speed/load until coolant temperature reaches normal operating range. Do not operate above low idle until oil pressure is indicated. Engine Cooldown: Prior to shutdown, an engine should be idled 3-5 minutes after extended full throttle or high power operation. However, under normal driving conditions, such as exiting a highway, engine operation is generally lighter in nature and thereby, the 3-5 minute cooldown is not necessary.</p> <p>Paccar engines: Idle the engine 3 to 5 minutes before operating with a load. Do not allow your engine to idle, at low rpm's (400-600 rpm), longer than five minutes. Long periods of idling after the engine has reached operating temperatures can decrease engine temperature and cause gummed piston rings, clogged injectors, and possible engine damage from lack of lubrication. Allow the engine to idle 3 to 5 minutes before shutting it off after a full-load operation. Idling the engine for 3 or more hours in freezing temperatures causes the build up of soot and moisture in the diesel particulate filter (DPF).</p>	<p><a href="http://www.cummins-sp.com/support/rv_maintenance_operation-isb.htm">http://www.cummins-sp.com/support/rv_maintenance_operation-isb.htm</a></p> <p><a href="http://www.peterbilt.com/uploaded/manual/PACCAR%20PX-8%20Operators%20Manual.pdf">http://www.peterbilt.com/uploaded/manual/PACCAR%20PX-8%20Operators%20Manual.pdf</a></p> <p><a href="http://www.peterbilt.com/uploaded/manual/Engine%20Aftertreatment%20Systems.pdf">http://www.peterbilt.com/uploaded/manual/Engine%20Aftertreatment%20Systems.pdf</a></p>
Mack	<p>Cummins engines: Excessive Idle: Should be avoided when possible. Results in reduced fuel economy and increased engine wear. An automatic shutdown feature is available. Engine Warm-up: Do not operate at full speed/load until coolant temperature reaches normal operating range. Do not operate above low idle until oil pressure is indicated. Engine Cooldown: Prior to shutdown, an engine should be idled 3-5 minutes after extended full throttle or high power operation. However, under normal driving conditions, such as exiting a highway, engine operation is generally lighter in nature and thereby, the 3-5 minute cooldown is not necessary.</p> <p>MP engine: After a hard run, allow the engine to idle three minutes before shutdown to stabilize the temperature of all engine parts. Quick shutdowns can cause engine damage and prevent the turbocharger from being properly lubricated. Idling the engine unnecessarily for long periods of time wastes fuel and fouls injection nozzles. Unburned fuel causes carbon formation and oil dilution. Shut the engine down when prolonged loading or unloading of cargo is required.</p>	<p><a href="http://www.cummins-sp.com/support/rv_maintenance_operation-isb.htm">http://www.cummins-sp.com/support/rv_maintenance_operation-isb.htm</a></p> <p><a href="http://www.macktrucks.com/assets/mack/Service/US10OperatorManuals/PV776-21394647.pdf">http://www.macktrucks.com/assets/mack/Service/US10OperatorManuals/PV776-21394647.pdf</a></p>
Peterbilt	<p>Paccar engines: Idle the engine 3 to 5 minutes before operating with a load. Do not allow your engine to idle, at low rpm's (400-600 rpm), longer than five minutes. Long periods of idling after the engine has reached operating temperatures can decrease engine temperature and cause gummed piston rings, clogged injectors, and possible engine damage from lack of lubrication. Allow the engine to idle 3 to 5 minutes before shutting it off after a full-load operation. Idling the engine for 3 or more hours in freezing temperatures causes the build up of soot and moisture in the diesel particulate filter (DPF).</p>	<p><a href="http://www.peterbilt.com/uploaded/manual/PACCAR%20PX-8%20Operators%20Manual.pdf">http://www.peterbilt.com/uploaded/manual/PACCAR%20PX-8%20Operators%20Manual.pdf</a></p> <p><a href="http://www.peterbilt.com/uploaded/manual/Engine%20Aftertreatment%20Systems.pdf">http://www.peterbilt.com/uploaded/manual/Engine%20Aftertreatment%20Systems.pdf</a></p>
UD Trucks Corp. (Volvo/Nissan Diesel)	<p>There are different recommendations depending on the model year of the vehicle.</p> <p>If you are talking about 2011 and newer vehicles, there is a warm up switch on the dash that is used during starting to properly warm-up the vehicle. Proper warm up time depends on ambient air temperature and engine coolant temperature. Thus the time for proper warm up will vary.</p> <p>Vehicle application and local laws will dictate idling duration. Typically, if the vehicle is stationary and not being used, then the engine should be turned off to conserve fuel. This vehicle is approved for Clean Idle if extended idle is required for vehicle application. The vehicle can also be programmed to shut the engine off automatically after a predetermined time.</p>	<p>Correspondence with UD Rep</p>
	<p>Nissan Diesel holds monthly meeting of their safety committee and various kinds of safety training and awareness-raising sessions with the aim of eradicating traffic accidents. Also, we are conducting an "idling stop" campaign to encourage employees to stop unnecessary engine idling as a measure to conserve the global environment.</p>	<p><a href="http://www.udtrucks.com/ENV/2005/7.pdf">http://www.udtrucks.com/ENV/2005/7.pdf</a></p>

## Heavy Duty Vehicles

Select idling notes from this section:

- Avoid excessive idling (more than 3-5 minutes at startup)
- Idling beyond 5-15 minutes is excessive and should be avoided
- Extended idling wastes fuel and causes reduction in fuel economy
- Excessive idling can create engine wear and carbon soot buildup in the engine and components
- Idling produces sulfuric acid which can eat into engine surfaces and components
- Idle time at coldodwn is only required if vehicle operated under extended, high power conditions

OEM	Recommendation	Reference
Bluebird	Do not idle in "D" (drive) for more than five minutes. Extended idle time in "D" (drive) may cause transmission overheating and damage.	<a href="http://www.fts4buses.com/uploads/2012_Blue_Bird_All_American_A3_Driver_Handbook.pdf">http://www.fts4buses.com/uploads/2012_Blue_Bird_All_American_A3_Driver_Handbook.pdf</a>
	Excessive idling produces higher soot output. Idling over 5 minutes is unnecessary. Initial warm up period may take up to 15 minutes.	Correspondence with Bluebird Rep
	See Cummins; uses Cummins engines	
Caterpillar	<p>Caterpillar engines with ACERT Technology do not require long cool down periods. Therefore, do not idle for long periods of time.</p> <p>— If the vehicle is to be parked for more than 5 minutes, shut it down</p> <p>— If idling for heating or cooling, idle between 800-1000 rpm</p> <p>Please note that a reduction in idle time from 50% to 25% can improve fuel economy up to 4%.</p> <p>Excessive idling wastes fuel, adds contaminants to the oil, and adds carbons to the combustion chamber. Allow the engine to warm up during the normal walk-around inspection. The engine will approach operating temperature while driving at low rpm and low power as you begin your trip.</p>	<a href="http://www.cat.com/cda/files/2222312/7/LEDT4661-02.pdf">http://www.cat.com/cda/files/2222312/7/LEDT4661-02.pdf</a>
Cummins	Avoid Excess idling; generally defined as more than 5 minutes. Excessive idling could lead to carbon soot build-up in the engine.	Correspondence with Cummins Rep
	The normal starting procedure suggests 3-5 minutes of idling at start up. It is fair to say that excessive idling could cause carbon soot buildup in the engine. The driver should minimize idling as much as possible. In general, idling for long periods is bad for diesel engines unless the engine coolant temperature stays above 170 degrees F.	Correspondence with Cummins Rep
	Idle time can significantly affect the vehicle's fuel efficiency. Therefore, avoid unnecessary engine idling. The vehicle gets its worst mpg when the engine runs and the truck doesn't move. Every hour of idle time in a long-haul operation can decrease fuel efficiency by 1%. Idle/PTO fuel consumption increases exponentially with engine speed (0–10% impact on mpg). When idling is necessary to maintain cab/bunk compartment temperatures, select the lowest idle speed possible (no higher than 800 rpm).	White Paper: <a href="http://cumminsengines.com/assets/pdf/Secrets%20of%20Better%20Fuel%20Economy_whitepaper.pdf">http://cumminsengines.com/assets/pdf/Secrets%20of%20Better%20Fuel%20Economy_whitepaper.pdf</a>
Detroit Diesel	We have always recommended that if the engine is going to be idling, low idle, longer than five minutes, that it be shut off.	<a href="http://busbuilding.com/bus-conversion/diesel-engine-idling-from-an-authority-detroit-diesel/">http://busbuilding.com/bus-conversion/diesel-engine-idling-from-an-authority-detroit-diesel/</a>

Freightliner	Detroit Engines: It is not necessary to idle the engine before engaging or starting the operation, but load should be applied gradually during the warm-up period until the oil temperature reaches 140°F (60°C). Prolonged idling of engines is not recommended. Idling produces sulfuric acid that is absorbed by the lubricating oil, and eats into bearings, rings, valve stems, and engine surfaces. If you must idle the engine for cab heating or cooling, use the high idle function of the cruise control switches. An idle speed of 900 rpm should be enough to provide cab heat in ambient temperatures that are above freezing.	<a href="https://secure.freightliner.com/newbulletins/techmanuals/DM-MM_Web/English/freightliner/Driver's%20Manuals/cascadia%20driver's%20manual.pdf">https://secure.freightliner.com/newbulletins/techmanuals/DM-MM_Web/English/freightliner/Driver's%20Manuals/cascadia%20driver's%20manual.pdf</a>
International	Behaviors such as avoiding sudden accelerations and excessive idling can have a positive impact on each vehicle's fuel economy. For example, since idling yields 0.0 MPG every hour of idling reduces fuel economy by 1%.	<a href="http://www.internationaltrucks.com/ICCorp/documents/White_Paper_on_Fuel_Economy.pdf">http://www.internationaltrucks.com/ICCorp/documents/White_Paper_on_Fuel_Economy.pdf</a>
Kenworth	See Paccar	
	Minimize idling. Five minutes of warm-up is generally adequate and cool-down is accomplished when pulling in for parking. To verify the negative effect of excessive idling, watch the fuel economy display.	White Paper on Fuel Economy <a href="http://www.loadtrek.net/loadtrek_net/literature/fueleconomywhitepaper.pdf">http://www.loadtrek.net/loadtrek_net/literature/fueleconomywhitepaper.pdf</a>
Mack	MP engine: After a hard run, allow the engine to idle three minutes before shutdown to stabilize the temperature of all engine parts. Quick shutdowns can cause engine damage and prevent the turbocharger from being properly lubricated. Idling the engine unnecessarily for long periods of time wastes fuel and fouls injection nozzles. Unburned fuel causes carbon formation and oil dilution. Shut the engine down when prolonged loading or unloading of cargo is required.	<a href="http://www.macktrucks.com/assets/mack/Service/US10OperatorManuals/PV776-21394647.pdf">http://www.macktrucks.com/assets/mack/Service/US10OperatorManuals/PV776-21394647.pdf</a>
Navistar (Parent company of International trucks, Maxxforce engines)	Most engine manufacturers recommend that newer diesel engines run for no more than 3 minutes before driving. Letting an engine idle actually does more damage to the engine than starting and stopping," he continues. "Running an engine at low speed (idling) causes twice the wear on internal parts compared to driving at regular highway speeds, which can increase maintenance costs and shorten the life of the engine.	<a href="http://fr.navistar.com/IDealer/Wallace+International+Trucks/Finance/www.arb.ca.gov/msprog/ordiesel/ordiesel.htm">http://fr.navistar.com/IDealer/Wallace+International+Trucks/Finance/www.arb.ca.gov/msprog/ordiesel/ordiesel.htm</a>
Paccar (Kenworth, Peterbilt, DAF, Leyland)	Avoid idling the engine by turning it off whenever possible including waiting for long freight trains and while waiting to load or unload.	<a href="http://www.paccar.com/environmental/FuelEfficiency_PB_R4.pdf">http://www.paccar.com/environmental/FuelEfficiency_PB_R4.pdf</a>
Peterbilt	See Paccar	

Volvo	<p>With an idle time of 10% of total engine hours, you'll see a 1% fuel economy loss.</p> <p>When required to idle, idle at 650 RPMs vs 1000 RPMs to save 0.5 gals/hr.</p>	<p><a href="http://www.volvotrucks.com/SiteCollectionDocuments/VTNA_Tree/ILF/Business%20Tools/Fuelwatch_Brochure_2008.pdf">http://www.volvotrucks.com/SiteCollectionDocuments/VTNA_Tree/ILF/Business%20Tools/Fuelwatch_Brochure_2008.pdf</a></p>
	<p>One key way to reduce a truck's environmental footprint is to make sure the vehicle isn't wasting fuel—and producing unnecessary emissions—while the engine is idling. Volvo Trucks is addressing this problem by supporting electrification of truck stops and loading docks, to help drivers eliminate the need for idling. We offer shore power units and cab parking heaters, as well as the option of extra cab insulation. Volvo Trucks also offers auxiliary HVAC systems that can be powered by shore power or by generator to cool and heat the cab without idling.</p>	<p><a href="http://www.volvotrucks.com/SiteCollectionDocuments/VTNA_Tree/ILF/about_us/core_values_brochure.pdf">http://www.volvotrucks.com/SiteCollectionDocuments/VTNA_Tree/ILF/about_us/core_values_brochure.pdf</a></p>
	<p>The below information is from US2012 operators manual. I would expect this general rule-of-thumb applies to all HD diesel engines, regardless of year. Warm-up time would be dependent on outside ambient temperature and engine temperature when started, measuring time to reach normal operating temperature when thermostat is fully open at ~190F.</p> <p>Idling: Diesel engines are electronically governed. The idle speed is pre-programmed from the manufacturer. Low idle speed is adjustable within certain limits (for most engines between 600 to 750 rpm).</p> <p>The common belief that idling a diesel engine causes no engine damage is wrong. Idling produces sulfuric acid, which breaks down the oil and eats into bearings, rings, valve stems and engine surfaces.</p> <p>Note: Avoid excessive idling. If the vehicle is parked for more than 5 minutes, stop the engine. An engine can burn from 3 to 5.5 liters (0.75 to 1.5 gallons) of fuel per hour while idling. During long engine idling periods, the engine coolant temperature may fall below the normal operating range. Incomplete combustion of fuel during the warm-up period can cause dilution of the oil in the crankcase, formation of lacquer or gummy deposits on the valves, pistons and rings, and rapid accumulation of sludge in the engine.</p>	<p>Correspondence with Volvo Rep</p>
	<p>I would prefer no engine idle, but our customers demand that their trucks idle for basic reasons of heating or cooling of the cab by sleeper units for driver comfort. Average sleeper unit has a 40% / 50% average 40% idle times and 50% on highway use (sleep time /work time).</p> <p>At basic start up, the engine is already to start work. Diesel engines work off the heat of compressed air in the cylinders. At the first power stroke you have the heat needed to completely burn the fuel.</p> <p>Idle times have always been an issue and a waste of fuel. It was believed that the older engines needed to idle to warm up before use. The only difference that comes with age is that older diesel engines have a lower compression. Based on the age most engine compression has always been higher than 750 psi of compression, but you only need 370 psi for completed fuel burn (via Car diesel). Today's truck engines are way past to 370 psi and pressures are as high today as 3000 psi of compressed air per cylinder. So with the first power stroke you have the heat needed for completed burn of fuel delivered to the cylinder.</p> <p>Effects of idling: It's a waste of fuel and increases wear of our engines because of idle speeds (650-700 rpms). The engine works less effectively when compression is lower because compressed air passes the compression rings of the piston. Compressed air passes the rings and transfers unburned oils and fuels to the engine crankcase and causes greater increase of wear to engine components. At higher RPM's the engine makes a complete burning of the fuels at the higher compressed air and seals compression rings for better complete burn of fuels with less transfer to crankcase.</p>	<p>Correspondence with Volvo Rep</p>