Financial Impacts of Idling

August 21, 2012

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Basics: What Exactly Is Idling?

Idling is running a vehicle engine while the vehicle isn't moving. Vehicle operators idle for a number of reasons—some better than others.

Basics: Petroleum Use and Emissions

- In the U.S., idling consumes about 6 billion gallons of oil, costing about $20 billion!
- For rest-period truck idling alone, emissions total *more* than 130 tons of particulate matter (PM), 12 million tons of CO_2, 35,000 tons of NOx, and 36,000 tons of CO.
- Half of idling fuel losses are estimated to be from everyday (noncommercial) drivers.

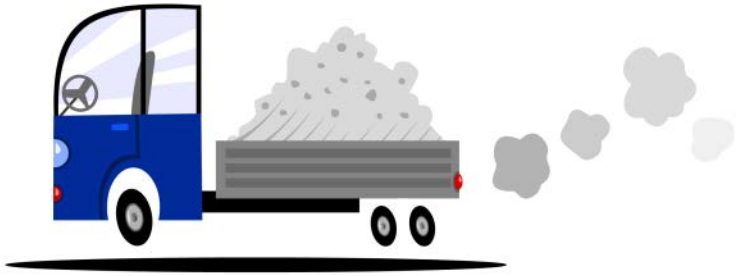
Basics: What Kinds of Vehicles Idle?

Light duty

- Passenger vehicles, including taxis, police cruisers, and some light trucks

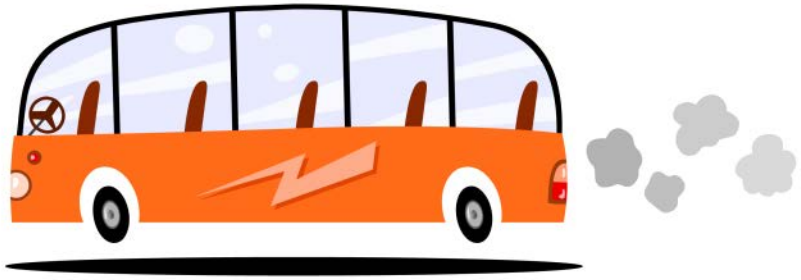
Medium duty

- Utility vehicles, delivery trucks, shuttle buses, ambulances



Heavy duty

- Long-haul trucks, tour buses, school buses



All vehicle types may idle, but not necessarily for the same reasons.

Basics: Why Do Drivers Idle?

- **Habit**
- **Power**
  - For onboard auxiliaries (e.g., lights, computers)
  - For work trucks (power take-off, or PTO)
  - For moving in creep mode

Basics: Idling for Power

Power for Auxiliaries

- For driver and passenger safety and comfort
- To provide power for warning lights and communications equipment
- To maintain proper temperature for sensitive equipment and goods

Basics: Idling for Power, *cont.*

Power Take-Off (PTO)

- *Power take-off* refers to a device that diverts power from a vehicle engine to power another device (e.g., hydraulic lift on a bucket truck).
- PTO powers nonpropulsion functions on work trucks.

Basics: Idling for Power, *cont.*

Other Workday Idling

- "Creeping" in queue
- Waiting to load or unload goods or passengers, including:
  - Delivery trucks
  - Transit buses and motor coaches
  - Shuttle buses
  - Taxis

You can estimate your payback period

- The more you idle, the more you can save!
- Idling reduction equipment can pay for itself quickly
- Worksheets for trucks and cars available on Argonne website

How Much Could You Save by Idling Less?

Instructions: In each row, start at the left and fill in the blanks with information about your equipment and costs. Then multiply or divide as shown. Some answers are used again. Where you see an arrow, copy the answer into the blank at the end of the arrow, so you can use it in the next step.

Calculate Costs for Avoidable Idling

	How much fuel is used for idling? If you don't know, look up the number in the table below.		Realistically, how many hours each year might you use IR devices instead of idling?[a]		What is the price of diesel fuel?			Avoidable Idling Fuel Costs
1	0.8	gallons/hour x	2,000	hours/year x	$ 2.75	/gallon	=	$ 4,400 /year +
2	0.8	gallons/hour x	2,000	hours/year x	6.1	miles/gallon =	"Miles of idling"[2] (idling is like putting miles on your engine) 9,760	miles/year
3	How much does an oil change cost? $ 150	/oil chg. ÷	How many miles between oil changes? 30,000	miles/oil chg. =	$ .005	/mile x	"Miles of idling" 9,760	miles/year = $ 48.80 /year +
4	How much does an engine overhaul cost? $ 10,000	/overhaul ÷	How many miles between overhauls? 500,000	miles/overhaul =	$ 0.02	/mile x	"Miles of idling" 9,760	miles/year = $ 195.20 /year =
5							Add right-hand column	= $ 4644 /year

Preventive Maintenance Costs[1]

Overhaul Costs[1]

Total Avoidable Idling Costs

Calculate Costs for Idling Reduction (IR)

	How much fuel is used by the IR device?		How many hours each year could you use IR devices instead of idling?*		Price of diesel fuel (should equal price listed in line 1)		Fuel cost for IR device	
6	0.2	gallons/hour x	2,000	hours/year x	$ 2.75	/gallon =	$ 1100 /year	
7					Maintenance cost for IR device $ 100	/year +	$ 1,100 /year	= $ 1,200 /year
8	Cost per hour to plug into EPS[b] $ 2.00	/hour x	Enter hours plugged into EPS* 0	hours/year =	Cost to plug in $ 0	/year +	$ 1,200 /year	= $ 1,200 /year

Operating Cost for On-board IR Device

Total Operating Costs for IR

Calculate Savings from IR

9	Capital cost of on-board IR device $ 8,000	÷	Savings Line 5 – Line 8 $ 3,444 /year saved	= Payback Time 2.3 years

[a] IR: Idling Reduction [b] EPS: Electrified Parking Space * Total number of hours from lines 6 and 8 should equal the number of hours in line 1

How much fuel is used for idling (gallons/hour)?

Locate your idling engine RPM and the percentage of time you run your air conditioning (AC) while idling. The corresponding number is approximately how much fuel you use to idle. For example, 800 RPM with no air conditioning consumes about 0.64 gallons of fuel an hour.[1,2]

RPM	AC off	AC on 50%	AC on
800	.64 gal/h	.70	.76
900	.73	.79	.85
1000	.81	.87	.94
1100	.92	.98	1.05
1200	1.03	1.09	1.15

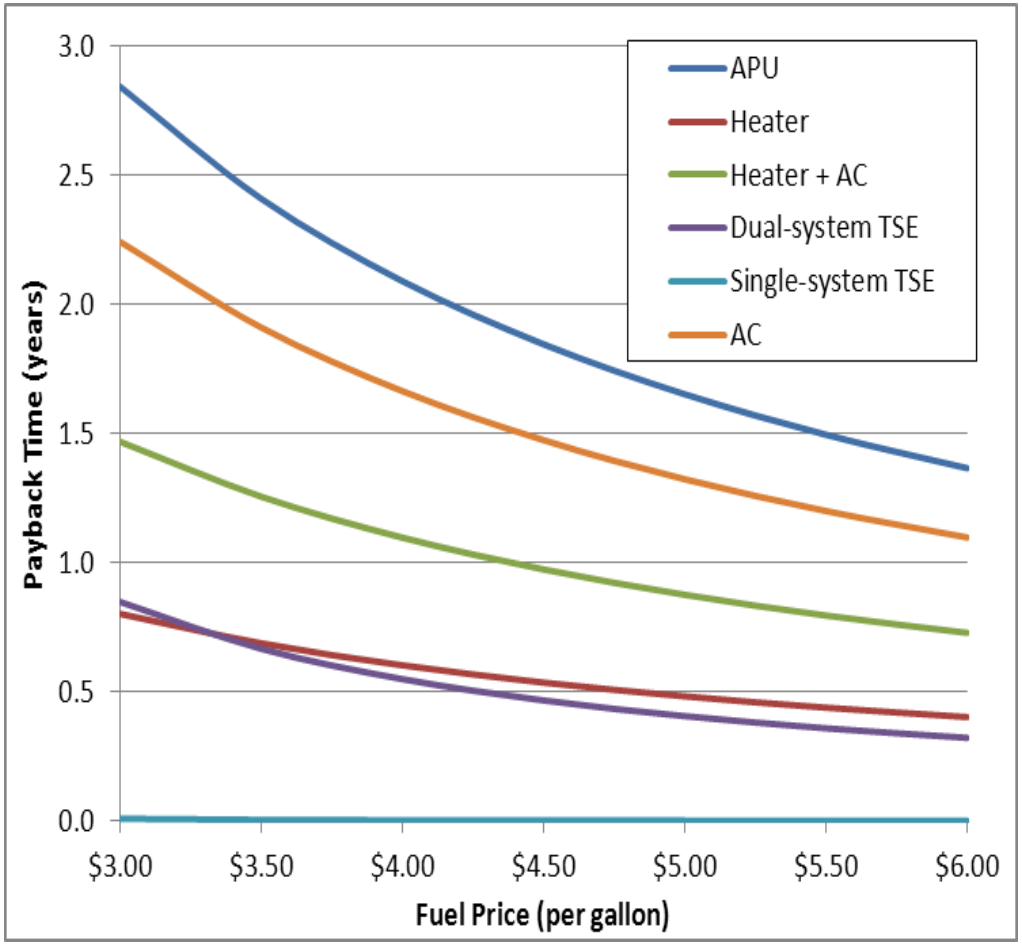
[1] "Analysis of Costs from Idling and Parasitic Devices for Heavy Duty Trucks," Technology and Maintenance Council Recommended Practice Bulletin 1108; issued 3/95 (reprinted 2003 by TMC/ATA)

[2] Lutsey, N.P., J.P. Wallace, C.J. Brodrick, H.A. Dwyer, and D. Sperling, "Modeling Auxiliary Power Options for Heavy-Duty Trucks: Engine Idling vs. Fuel Cells." *Society of Automotive Engineers* 2004-01-1479, October 2004.

Estimated costs for alternatives vary widely

System	Services	Fuel Use/hr	On-board cost ($)	Maintenance ($/hr)	Infrastructure cost ($/space)	Usage Charge ($/hr)
Idling truck	All	0.6-2 gal	0	0.12	0	0
Cab/bunk heater	Heating	0.04-0.08 gal	1,250	0.05	0	0
Storage AC	Cooling	~0.20 gal	4,000	0.13	0	0
APU or gen set	All	0.25-0.40 gal	8,500	0.20	0	0
Single-system EPS	All	~2 kWh	10	0	Pedestal 10,00-12,000 Refurbished gantry 5,000-9,000	2
Dual-system EPS	All	~1.5 kWh	50-2500	0.07	Up to 6,000	1

Benefits: Idling Reduction Is the Low-Hanging Fruit of Fuel Economy



Idling reduction equipment pays for itself in 6 months to 2 years (at 2012 fuel prices). This graph represents the payback time for a long-haul truck that idles an average of 40 hours per week.

Implementation: How Can We Implement—and Afford—Idling Reduction?

- **Bank loans**
- **National grants, loans, and rebates**
  - EPA's Diesel Emissions Reduction Program (DERA)
  - EPA SmartWay Finance Program
  - Manufacturer rebates and loans
  - Nonprofit organizations (e.g., Cascade Sierra Solutions)
- **State grants and loans (including programs targeted to small businesses)**
  - State Clean Diesel grant programs (EPA) and Congestion Mitigation and Air Quality (CMAQ [DOT]) grant programs
  - Some other state agencies and programs

Funding is Available in Wisconsin

Program Name	Funding Type	Special Requirements	Web site	Contact
Wisconsin Diesel Truck Idling Reduction Grant Program	Periodic Grant	For WI carriers to purchase idling reduction units for newer trucks	http://commerce.wi.gov/dieselgrantprogram	Thomas.Coogan@wisconsin.gov
Rural and Small Urban Areas-Wisconsin	Annual Grant	State and local governments, non-profits (including Indian Tribes), and public transit operators	http://www.fta.dot.gov/grant_programs/specific_grant_programs/non_urbanized/4161_ENG_HTML.htm	Donald Chatfield 608-267-8345
Congestion Mitigation and Air Quality Improvement Program	Periodic Grant	Southeastern Wisconsin non-attainment area	http://www.dot.wisconsin.gov/localgov/aid/cmaq.htm	john.duffe@dot.state.wi.us
Wisconsin State Infrastructure Bank	Periodic Loan		http://www.dot.wisconsin.gov/business/econdev/sib.htm	dennis.leong@dot.state.wi.us

EPA SmartWay Includes Finance Program

- Launched in 2004, SmartWay® is an EPA program that reduces transportation-related emissions by creating incentives to improve supply chain efficiency

- The Finance Program was established to award non-profit organizations and local governments competitive grants to establish national, regional, state, or local financing programs that provide financial incentives (e.g., low-cost loans, rebates, etc.) for the purchase of eligible vehicle replacements, **idle reduction technologies**, and emission control retrofits

- Certain idle reduction devices are now exempt from the federal excise tax when purchased with a new truck

For More Information

Argonne National Laboratory's Idling Reduction Page

www.transportation.anl.gov/engines/idling.html

Alternative Fuels & Advanced Vehicles Data Center (AFDC) Idling Reduction Page

http://www.afdc.energy.gov/conserve/idle_reduction_basics.html

Clean Cities

www.cleancities.energy.gov

Clean Cities Coordinator Contact Information

www.afdc.energy.gov/cleancities/progs/coordinators.php

National Idling Reduction Network News

www.eere.energy.gov/vehiclesandfuels/resources/fcvt_national_idling.html

SmartWay Verified Technologies

http://www.epa.gov/smartway/technology/index.htm

DRAFT poster from IdleBox

For More Information

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