

# Alternatives to Truck Engine Idling Workshop Iowa

## Environmental Objectives

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# Types of Idling

- Unavoidable
  - Waiting at traffic light
  - Waiting in traffic congestion
    - Borders
    - Emergencies
- Avoidable
  - For cab comfort
  - For engine warmth
  - For operating on-board auxiliaries

# Idling Impacts

- Air pollution
- Fuel consumption
- Engine maintenance/life
- Driver health & safety

# Extent of Idling

- Population of trucks:
  - 500,000 – 1,000,000
- Idling hours per year:
  - 1,800 – 2,400
- Fuel consumption per truck
  - .80 – 1.20 gallons per idle hour
- Maintenance costs
  - \$1.14 per day at idle

# Air Impacts

- Oxides of Nitrogen (NO<sub>x</sub>)
- Particulate Matter (PM)
- Carbon Dioxide (CO<sub>2</sub>)
- Air Toxics (e.g., formaldehyde)

# Pollutants of Concern

- NO<sub>x</sub>
  - 135 grams/hour at idle (average)
  - .35 tpy per truck (average)
- PM
  - 3.68 grams/hour at idle (average)
  - .009 tpy per truck (average)
- CO<sub>2</sub>
  - 8,224 grams/hour at idle (average)
  - 22 tpy per truck (average)

	NO <sub>x</sub>	PM	CO <sub>2</sub>
Industry	180,000 tpy	5,000 tpy	11 million tpy

# Alternatives

- On-Board Technologies
- Off-Board Technologies
- Behavior

# On-Board Technologies

Technology	Cost	Pros/Cons
Engine Control Module	0	No cost, OEM. Does not address cab comfort needs.
Auto. Shut-Down/Turn-On System	<\$1,000	Low cost, OEM. Low driver acceptance.
Fuel Fired Heaters	\$900-\$1,200	Low cost, lightweight, OEM. Heat only.
Auxiliary Power Units/Generator Sets	\$5,000-\$7,000	Provides all needs. Expensive, heavy, noisy, maintenance, after-market retrofit.
Battery Powered Heating/AC	\$7,000-\$8,000	Provides all needs, zero air emissions. Heavy.

# Off-Board Technologies

Technology	Cost	Pros/Cons
Electrified Parking Spaces – RV Model	\$6,000 per space	Lower cost. Requires modifications to truck (electric heat/AC, inverter/charger)
Electrified Parking Spaces –All Inclusive	\$18,000 per space	No truck modifications needed. Very expensive.

# Behavior

- Driver Incentives/Bonuses
  - Differs per trucking company
- State/Local Anti-Idling Law
  - Lack of enforcement; fines add revenue
- Personal Choice

# EPA's Objective

- Presidential Directive (May, 2001):
  - Develop ways to reduce demand for petroleum transportation fuels by:
    - Working with the trucking industry to establish a program to reduce emissions and fuel consumption from long-haul trucks at truck stops by:
      - Implementing alternatives to idling, such as electrification and auxiliary power units.
      - Developing partnership agreements with trucking fleets, truck stops, and manufacturers of idle reducing technologies.

# EPA's Idle Reduction Program

- Research, Testing, and Assessment
- Education and Outreach
- Air Quality Guidance
- Demonstration Projects
- Innovative Funding and Incentive Opportunities
- Partnerships and Relationship Management

# EPA's Idle Reduction Program

- Emissions Testing

- 1<sup>st</sup> Federal agency to comprehensively examine extent of idling emissions from trucks
- Future efforts will examine school and transit buses
- <http://www.epa.gov/smartway/idlingimpacts.htm>

- Education and Outreach

- Hosted conferences and workshops to educate industry and reach consensus on idling issues
- Future efforts will focus on smaller workshops targeting innovative funding opportunities
- <http://www.epa.gov/smartway/idlingplan.htm>

# EPA's Program

- State Efforts – Air Quality Guidance
  - Mobile Emission Reduction Credits
    - Published landmark guidance for quantifying and using idle emission reductions in SIPs, transportation and general conformity, and NSR offset credits
    - <http://www.epa.gov/smartway/idlingplan.htm>
  - Future efforts will target working with States to create harmonization of anti-idling laws
    - Need to avoid patchwork of inconsistent state laws

# EPA's Program

- Industry Efforts

- Launched SmartWay Transport Partnership this year
  - Voluntary program that encourages energy efficiency, energy security, emission reductions, and greenhouse gas reductions
  - Rewards successful partners with EPA recognition
  - Targets ground freight shippers and carriers (truck and rail)
  - Partners include: Fed Ex, UPS, Swift, Schneider, J.B. Hunt, Roadway, Ikea, Home Depot, Cannon, Michelin, Nike, Coca-Cola, Yellow, etc.
- To join: [www.epa.gov/smartway](http://www.epa.gov/smartway)
- Expanding program to include truck stops and rest areas for implementing off-board idle reduction technology or no-idle zones.

# EPA's Program

- Grant Programs – Demonstration Projects
  - Awarded over \$1.3 million in grants to deploy:
    - On-board technologies
    - Off-board technologies
    - Locomotive on-board technologies
  - Leveraged over 50 demonstration projects in 20 States
- Future focus on loan programs

# EPA's Program

- Partnership and Relationship Management

- Working closely with:

- Technology manufacturers – see web listing of all commercially available idle reduction technologies at:<http://www.epa.gov/smartway/idlingalternatives.htm>
- States: held 4 regional workshops, and planning 3-5 more
- Federal gov't: working closely with DOT/FHWA, DOE (Clean Cities & ANL)

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