EPA
United States
Environmental Protection
Agency

Idle Free Corridors

Implementation Meeting
March 17, 2004
Atlanta, GA

Why Idling?

United States Environmental Protection Agency

- Environmental benefits: reductions of NOx, PM, CO, CO2, and air toxics
- Economic benefits: savings on fuel, maintenance, engine life; decreased dependence on oil imports
- Cost/Benefit: $1,500 (rail) to $2,500 (truck) per NOx ton reduced

Truck/Locomotive Idling

- Truck Top 3 Reasons:
  - Climate Control (AC, heat)
  - Power accessories (e.g., TV)
  - Protect engine in cold weather
- Locomotive Top 3 Reasons
  - Protect engine in cold weather
  - Readily available engine
  - Habit/custom

Idling Emission Impacts

- Long Haul Trucks:
  - NOx: 180,000 tons per year
  - PM: 5,000 tons per year
  - CO2: 11 million tons
  - Fuel: 1 billion gallons
- Switch Yard Locomotives
  - NOx: 13,000 tons per year
  - PM: 430 tons per year
  - CO2: .75 million tons
  - Fuel: 65 million gallons

Other Impacts

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- Air toxics (formaldehyde and trace metals)
- Pollutants in environmental justice areas (inner-city rail yards)
- Noise pollution
- Increased maintenance on engines
- Decreased engine life

Alternatives

- Change Behavior/Provide Incentives
  - Difficult to change behavior when idling is necessary to provide heat or air conditioning to rest comfortably
- State Anti-Idling Laws
  - Difficult to enforce; unfair to impose when alternatives are unavailable
- Idle Reduction Technologies
  - Mobile & Stationary devices (see handout in folder)

Truck Idle Reduction Technologies

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- Automatic engine shut-down systems
- Diesel Fuel Fired Heaters
- Auxiliary Power Units/Generator Sets
- Truck Stop Electrification (on-board HVAC + electrical connection)
- “Advanced” TSE (external unit only)

Auxiliary Power Units

- What is it?
  - Small diesel powered combustion engine, ~10 hp, EPA certified non-road engines
- What does it do?
  - AC, heat and power for auxiliaries
- Cost: $5,000-$7,000
- Issues:
  - Weight, maintenance, extra tax, costly

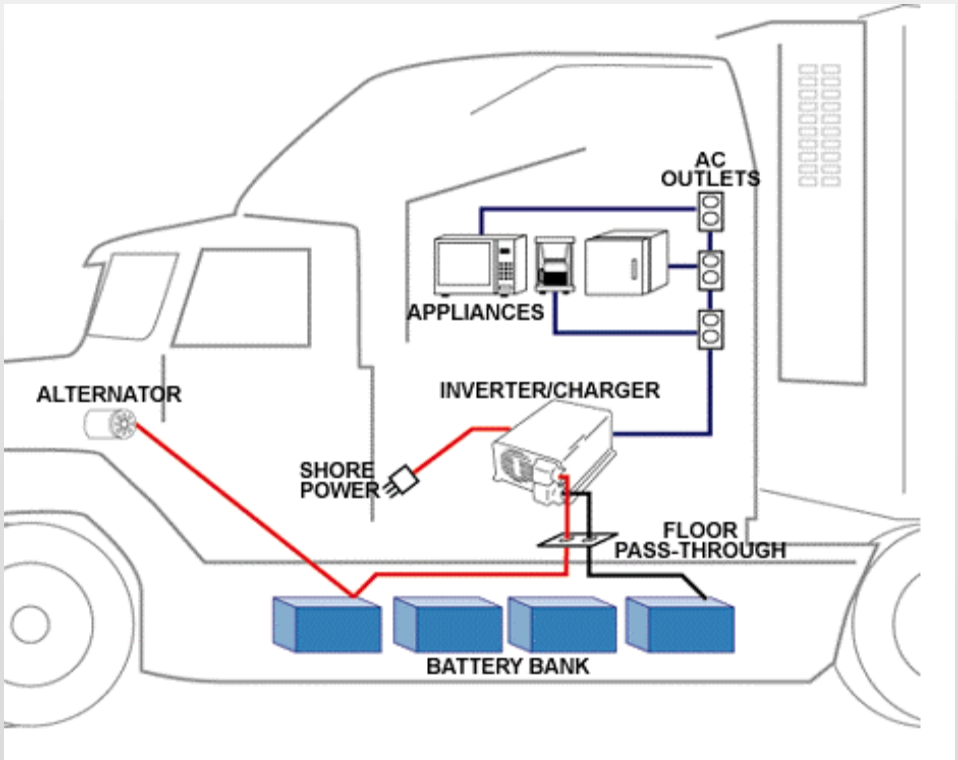
- Major manufacturers:

include Pony Pack (see picture), Rig Master, and Teleflex

Truck Stop Electrification (Shore Power)

- What is it?
  - Inverter/charger & electric HVAC; connection to external electrical grid
- What does it do?
  - Provides power for HVAC and auxiliaries
- Cost: Inverter/Charge + electric HVAC ($4,000); external connection ($2,500/space)
- Issues
  - Requires modifications to truck, external connection not readily available

• Major manufacturers:
Xantrex (see picture below), Dometic/Cab Comfort, Taylor, Phillips, Antares



Advanced TSE

- What is it?
  - Electric HVAC system suspended above trucks
- What does it do?
  - Provides power for HVAC and auxiliaries; cable, telephone
- Cost: $10,000 per space (50 space min); $1.25-$1.50 hourly charge
- Issues:
  - Costly; available in only a few locations

- Major Manufacturer:
IdleAire Technologies, Inc.

Locomotive Idle Reduction Technologies

- Automatic Shut Down/Start Up System
  - Maintains all vital engine systems by turning engine on and off based on temperature and/or time
  - ZTR Control Systems
  - $7,500
- APU
  - Maintains all vital engine systems
  - CSXT
  - $35,000-$40,000
- Diesel Driven Heating System
  - Maintains all vital engine systems
  - Kim Hotstart Manufacturing
  - $27,000-$29,000

Barriers

- Weight of APUs (250-500 lbs)
- Tax on APUs (FET 12%)
- Maintenance of APUs
- APUs too expensive
- TSE not readily available
- TSE too expensive

EPA-DOT-DOE Response

- Weight waiver of 250 lbs in Energy Bill
- TSE projects eligible for CMAQ funds
- Grant program to assist truck fleets in purchase of mobile idle reduction technology
- Demonstration projects for locomotives
- Demonstration projects for TSE

State Wide Truck Parking

STATE	TOTAL TRUCK PARKING SPACES (public & private)
Alabama	7,614
Florida	9,048
Georgia	**12,637**
Kentucky	8,177
Mississippi	7,431
North Carolina	7,965
South Carolina	9,331
Tennessee	7,186

State Wide Truck Impacts: Fuel

STATE (if 50% of all parking spaces had idling trucks)	**FUEL** (million gal/yr)
Alabama	9 M
Florida	11 M
Georgia	**15 M**
Kentucky	9 M
Mississippi	8 M
North Carolina	9 M
South Carolina	11 M
Tennessee	8 M

State Wide Truck Impacts: NOx

STATE (if 50% of all parking spaces had idling trucks)	**NOx** (tpy)
Alabama	1,637
Florida	1,945
Georgia	**2,717**
Kentucky	1,758
Mississippi	1,597
North Carolina	1,712
South Carolina	2.006
Tennessee	1,545

State Wide Truck Impacts: PM

STATE (if 50% of all parking spaces had idling trucks)	**PM** (tpy)
Alabama	45
Florida	53
Georgia	**75**
Kentucky	48
Mississippi	44
North Carolina	47
South Carolina	55
Tennessee	42

Railroad Mileage per State

STATE	Mileage
Alabama	3,296
Florida	2,771
Georgia	**4,795**
Kentucky	2,760
Mississippi	2,613
North Carolina	3,251
South Carolina	2,367
Tennessee	2,682
TOTAL	**24,535**

East Coast Railroads

RAILROAD	# LOCOMOTIVES
Norfolk Southern	3,455
CSX Transportation	3,360
Canadian National/Illinois Central	296
Canadian National/Grand Trunk Western	109

Switch Yard Locomotives (CSXT Only)

STATE	# SWITCHERS
Alabama	59
Florida	**117**
Georgia	92
Kentucky	92
Mississippi	2
North Carolina	68
South Carolina	48
Tennessee	72

Switcher NOx Impact (CSXT Only)

State	Fuel (gal/yr)
Alabama	708,000
Florida	**1.4 M**
Georgia	1.1 M
Kentucky	1.1 M
Mississippi	24,000
North Carolina	816,000
South Carolina	576,000
Tennessee	864,000

Switcher NOx Impact (CSXT Only)

STATE	NOx tpy
Alabama	153
Florida	**304**
Georgia	239
Kentucky	239
Mississippi	5
North Carolina	177
South Carolina	124
Tennessee	187

Switcher PM Impact (CSXT Only)

STATE	PM tpy
Alabama	5
Florida	10
Georgia	8
Kentucky	8
Mississippi	.17
North Carolina	6
South Carolina	4
Tennessee	6

Potential Truck Stop Projects

- Selection Criteria:
  - Site Density: number of other truck stops nearby
  - Usage: current demand/supply ratio
  - Growth: estimated annual % increase in demand
  - Capacity: <25, 25-50, 51-99, 100-199, 200+)
  - Ozone and PM Status: attainment, maintenance, non-attainment
  - Census: population density within 0.5 mile radius
  - Regulation: presence/absence of state or local anti-idling law
- Priority Areas
  - See handout in folder

Objective

- Build idle reduction projects at key locations along major transportation routes
  - Bring together a team to get this done: EPA, DOT, DOE, state/local government, energy provider, technology manufacturer, truck/rail companies, truck stops, community groups, others.