

# Truck Stop Electrification



Maryland Department of Transportation

*Office of Planning*

Presented by:

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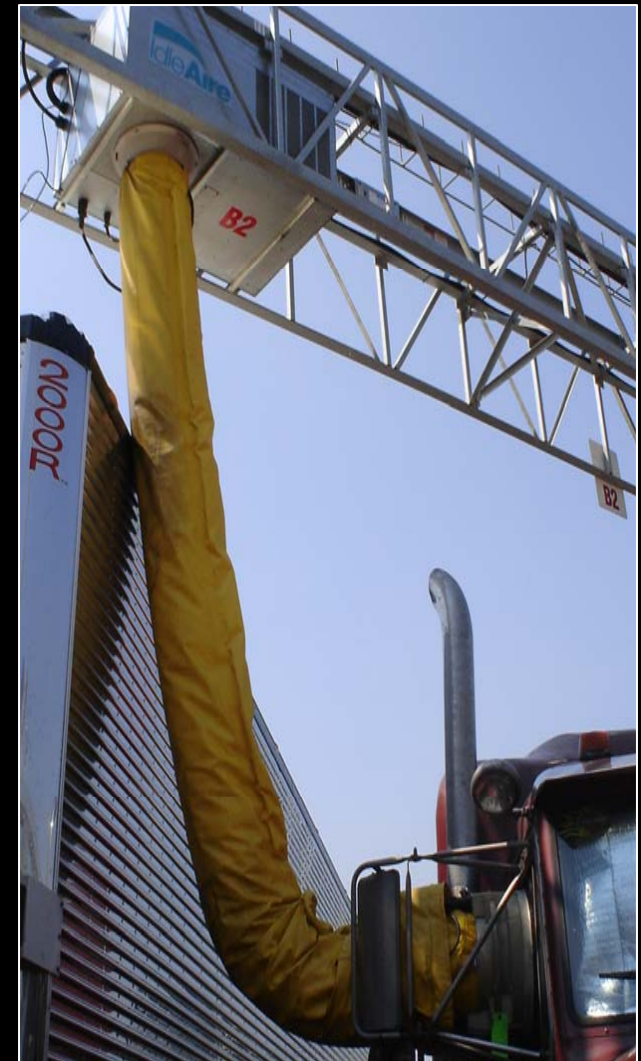
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# Agenda



- TSE Background
- IdleAire Technology
- Costs and Savings
- Emissions Benefits
- Summary



# TSE Background



- Allows truckers to shut down engine and still obtain electric power and comfort needs w/o idling
  - Electricity Outlets (110V)
  - Cab heating/cooling
  - TV & movies
  - Telephone
  - Internet



# IdleAire Technology



## Night Light

Lighted On/Off Button for the screen, so you can find it easily in the dark

## Card Reader

Slide your member Card and follow instructions

## Built-In Touch Screen Computer

Control your "Home-On-The-Road" and surf the Internet

## Help

Available 24x7. On-Screen Context-Sensitive Help or dial 611 from your cab phone or 800-738-7024 from any phone

## Go Buttons

One-Touch Access to Main Functions

## USB Ports

Use a keyboard, mouse or other USB devices

## 120V ShorePower

Inside and Outside your cab for appliances, block/fuel heaters and other accessories

## Internet

High-Speed Ethernet Port for Internet on your Computer - Wireless Internet also available

## Central Heat & Air

Thermostat controlled filtered air flow, recycled from your cab



## Telephone

Plug in a regular phone for incoming and outgoing calls

## Television

Connect your TV with standard COAX cable for Premium Satellite TV



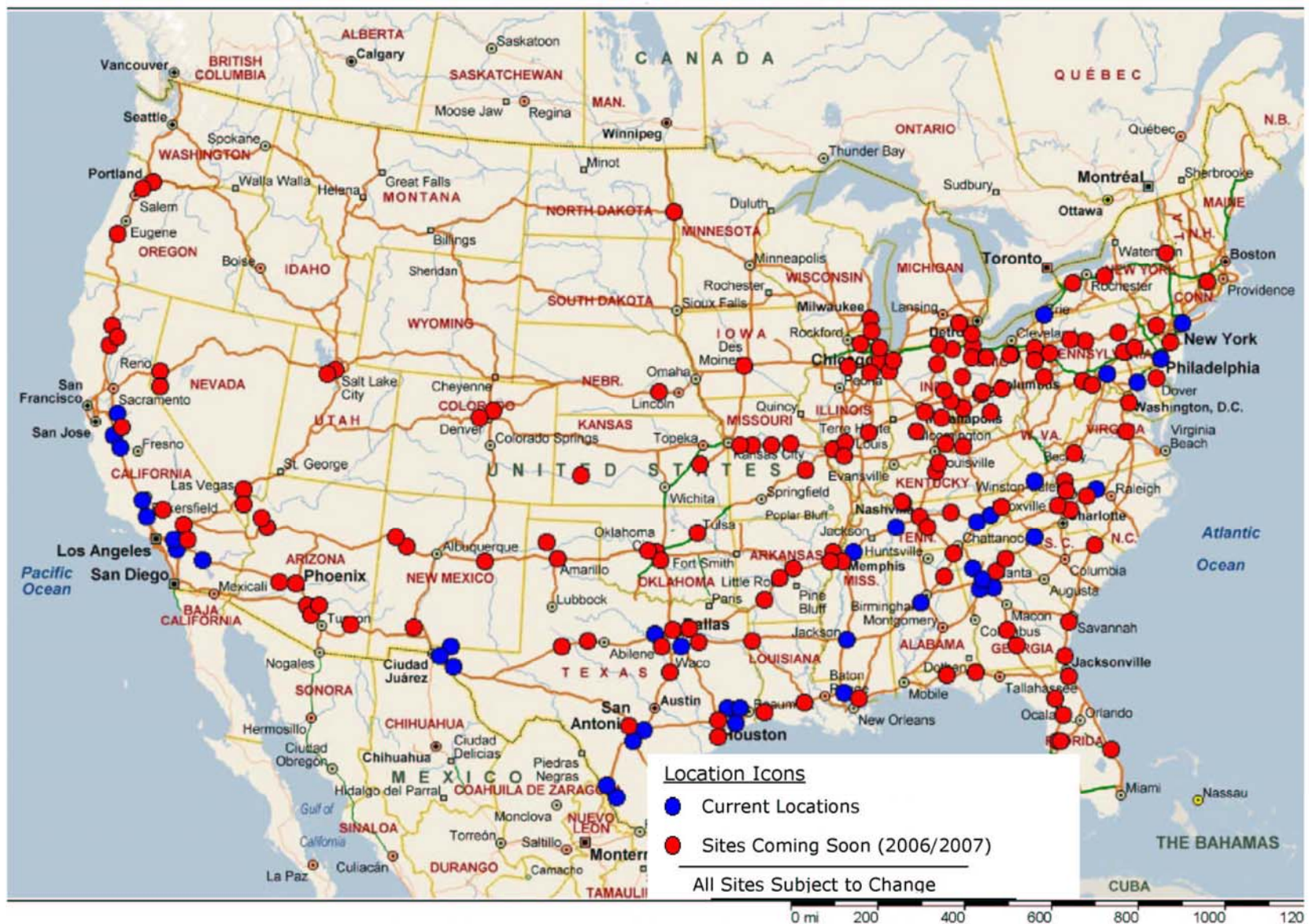
# Technology Availability



- Since August 2001 IdleAire has 44 locations nationally
- 3,110 ATE spaces
- Opening 3-5 sites per week
- Other EPA approved idle reduction technologies available (EPA website)
  - Dual power systems
    - ShurePower
    - Teleflex
  - Auxiliary Power Units
- In Maryland
  - TravelCenters of America (TA)
    - Baltimore: 63 ATE spaces
    - Jessup: 129 ATE spaces (opening 8/14/06)



# IdleAire Deployment Plan





# IdleAire Costs

- Installation
  - Cost of installation covered by IdleAire
  - Estimated \$16,700 per space
- Cost to Truckers/Fleet:

IdleAire Services	Membership Levels	
	Silver	Gold
Basic Service (per hour)*	\$ 2.18	\$ 1.85
Window Adapter	\$ 10.00	\$ 10.00
Computer Starter Kits	\$ 55.00	\$ 55.00

\* Additional Discounts Available by signing Fleet Contracts or with Gold Membership

## – Included Services

- Filtered Heat & AC
- Electricity (110V)
- Incoming Calls
- Satellite TV

## – Additional Services

- Internet w/ Ethernet
- Unlimited Long Distance
- First Run Movies



# Savings to Truckers



- Idling costs of diesel
  - Est. 1.0 gallon per hour during extended idling
  - Fuel costs (\$2.98/gal) – IdleAire costs (\$1.85/hr)  
= **\$1.13 savings per hour of reduced idling**
- Less noise, designated quiet zones
- Wear and tear / maintenance on truck engine
- Cleaner air
- Company image

# Determining Emissions Benefits



- Need to Know:
  - Number of spaces
  - Utilization Rate (hours per space per day)
  - Emission factors for HDDE vehicles
  - Seasonal or Annual Evaluation

Pollutant	Emission Factor (g/hr)
CO	56.14
CO <sub>2</sub>	10,397
NO <sub>x</sub>	135
PM <sub>2.5/10</sub>	3.68
VOC	6.84

Emission factors:

CO and VOC from MOBILE6 defaults

NO<sub>x</sub> and PM based on 2004 EPA Guidance

CO<sub>2</sub> from GREET model by Argonne National Lab.

# Estimating Benefits for Maryland



- 192 total ATE spaces in Maryland
  - 129 in Jessup + 63 in Baltimore
- Usage expected to increase as IdleAire coverage expands and truckers become comfortable w/ services
  - 50-55% average annual usage
  - 55-70% average summer usage
- Estimates using IdleAire demand model
  - 55% utilization of spaces
  - 11 hours / day / space



# Putting it all together



- Formula
  - Hours X Utilization Rate X # of Spaces X  $EF_{NOx}$
- Example for NO<sub>x</sub>
  - 24 hours/space X 55% X 192 spaces X 135 g/hr NO<sub>x</sub> = 342,144 g / day → 0.40 tons / day



# Closing Thoughts



- Demand will increase as the number of IdleAire locations increase and it becomes easier for truckers and trucking companies to rely on their service.
- Emission benefits and cost savings are real and quantifiable
- Technology of today may change in the future, be careful what you commit to in the SIP.
- Truck engine technology could change over the next 10 years
  - Fuel cells
  - Hybrid-diesels
  - Regenerative braking
- Credits for TSE are good for conformity, but could prove risky in the SIP.

