

*How tomorrow moves* [CSX]



Operational Strategies to Improve Fuel Efficiency

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# CSX is built on a strong foundation

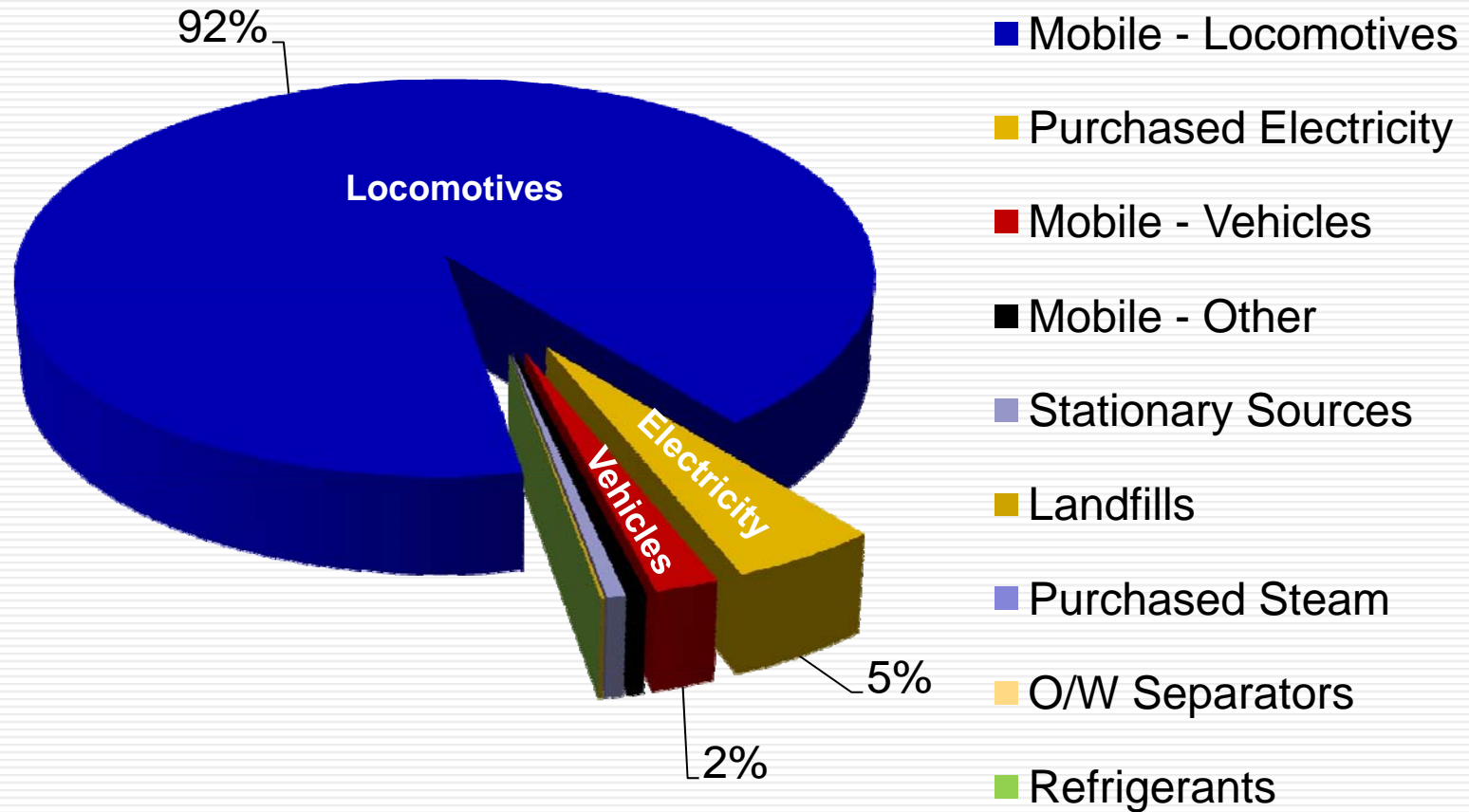


- Founded in 1827
- Operates in 23 states
- 21,000 miles of network
- 30,000 employees
- Approx. 3,900 locomotives

## Core Values:

- It starts with the customer
- People make the difference
- Safety is a way of life
- Fact based
- Right results, right way

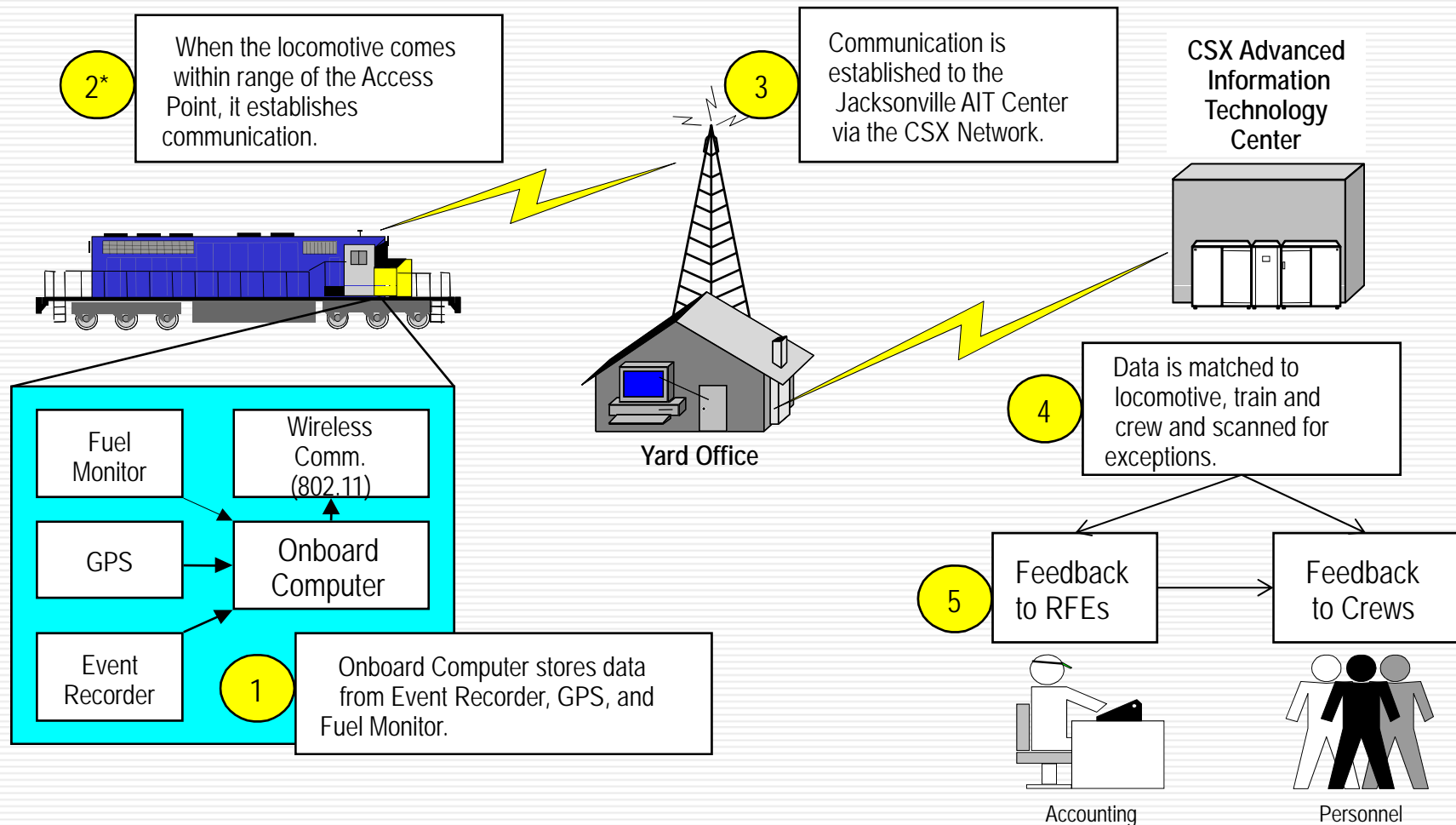
# Greenhouse Gas Carbon Footprint



# *Operational Programs to Improve Fuel Efficiency and Reduce Locomotive GHG Emissions*

1. Event Recorder Automated Download (ERAD)
2. Trip Optimizer
3. Locomotive idling and shut down rule
4. Locomotive Simulator

# Locomotive Event Recorder Automated Download Process



\* Communication is two way and supports automated software distribution

## *Locomotive Trip Optimizer Program*

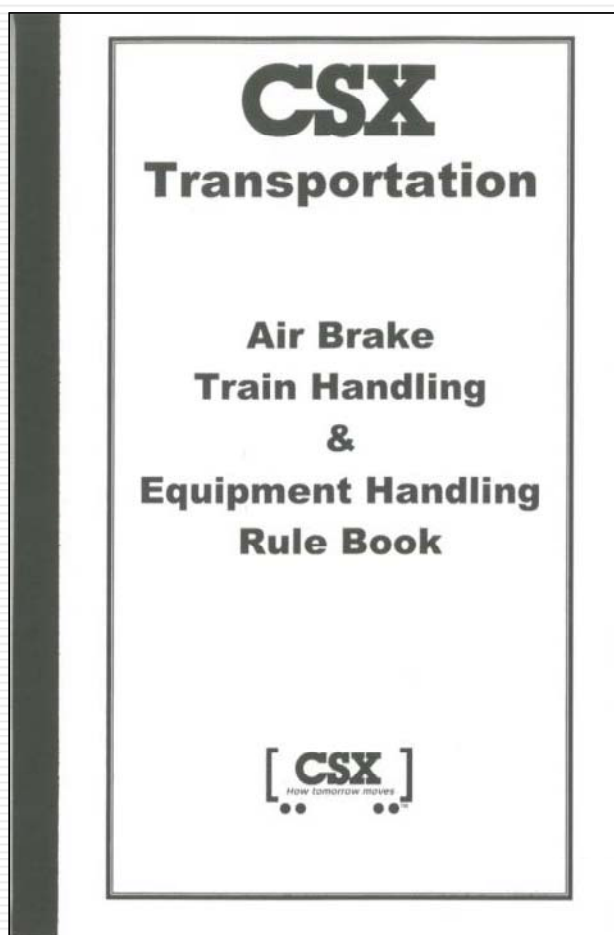
- The Trip Optimizer is an automated cruise control device that enables the locomotive engineer to achieve optimal fuel efficiency taking into account terrain, curvature, grade, tonnage, and other factors.
- The Trip Optimizer provides immediate feedback to the locomotive engineers.
- Early results are favorable with measurable fuel efficiencies and locomotive engineers have embraced this tool.
- CSX will continue to install Trip Optimizer on additional locomotives during 2012.

# Locomotive Trip Optimizer Program

GE Transportation's Trip Optimizer fuel management system automatically controls locomotive speed and acceleration in real-time, reducing driver fluctuations for increased efficiency.



# Locomotive Operation – Conserving Fuel



- Operating rule to ensure fuel conservation practices for locomotives:
  - Employees may not allow locomotive to idle more than 15 minutes when external temperature is greater than 32°F
  - Unless locomotive is equipped with AESS or APU, locomotive shutdown in less than 32°F will potentially damage a locomotive engine



## Training – Locomotive Simulator

- Locomotive simulators offer a lifelike technology train handling experience
- Operational efficiencies are pointed out to the employee during the locomotive simulator training



Employee at locomotive simulator



Close-up of locomotive simulator controls

# *Future Operational Fuel Efficiencies Under Consideration or In Progress*

**Train Pacing**

**Train Power Matching**

**Consist Management**

**Dwell Reduction**

**Wind Resistance**

**National Gateway**