



• August 15-18, 2010 • Dallas, Texas •  
• Dallas Convention Center •

## GHG Track Session 2

August 16, 2010

Matt Holtry & Carol Guy



## Scope 3: Real World Examples



# Agenda

- Contracted Municipal Solid Waste Disposal
- Business Air Travel
- Business Ground Travel
- Employee Commuting



# Contracted MSW Disposal Composition of “Waste Disposed”

Data Element	Preferred Source
Mass of solid waste disposed [short ton]	Reporting to OFEE under EO 13514, Sec. 2(e)



# Contracted MSW Disposal Data Sources

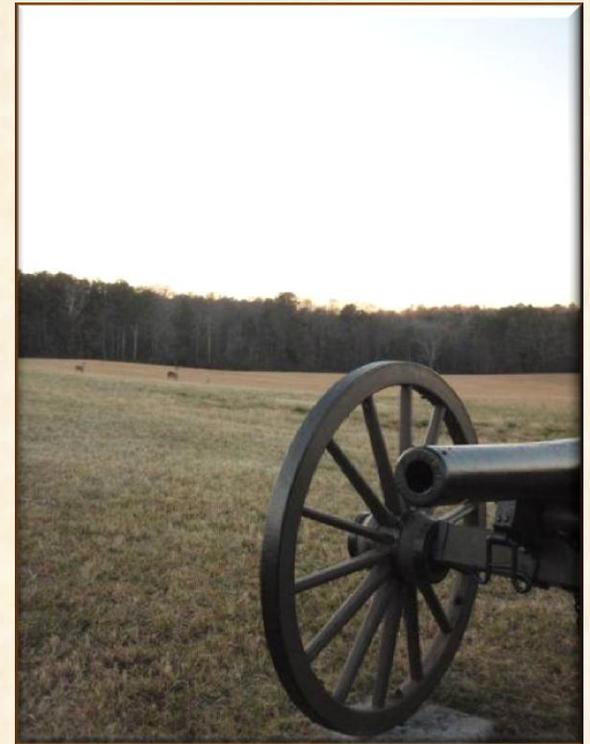
- Where does the data come from?
  - Facility level: Tipping fees, dumpster size, % full  
(10 dumpsters) x (8 cu. yd.) x  
(250 lbs./cu. yd.) x (75% full)  
7.5 short tons (per pickup)
  - Agency level: Part of EO 13423 annual data call
    - Total solid waste generated
    - Total solid waste diverted
    - Diversion rate



# Contracted MSW Disposal Success Story: National Park Service

## Chickamauga and Chattanooga National Military Park

- Oldest and largest national military park in US
- >5,500 acres
- 23 distinct sites within 25 mile radius of HQ
- Visitor centers, admin and maintenance buildings, campgrounds, parking lots



# Contracted MSW Disposal Success Story: National Park Service

Old Single-Stream  
Container



New Recycling  
Container



# **Contracted MSW Disposal Success Story: National Park Service**

Questions asked by park administration

- 1.) Who generates the waste, how much, and what type?  
How much of it can be diverted?
- 2.) How much does our MSW cost to remove?
- 3.) What financial and environmental benefits can we expect from managing MSW better?

# Contracted MSW Disposal

## Success Story: National Park Service

Q1: How much waste do we generate?

- Baseline annual MSW generated: 81.7 tons
- Baseline diversion rate: 14.7%
- Baseline “solid waste disposed”: 69.7 tons
- Scope 3 GHG emissions: 50.9 MT CO<sub>2</sub>e (roughly 0.7 MT CO<sub>2</sub>e per 1 ton of MSW)

# Contracted MSW Disposal

## Success Story: National Park Service

Q1: Who generates the waste and what type of waste do they generate?

	Total	Paper	Plastic	Glass	Metals	Organics	Other
<i>Visitors</i>	33.9%	7.6%	2.8%	4.4%	2.7%	10.2%	6.5%
<i>Administration</i>	60.4%	<b>44.8%</b>	3.8%	1.5%	1.3%	8.1%	0.2%
<i>Maintenance</i>	5.8%	2.2%	0.1%	0.1%	1.3%	1.2%	1.2%
<b>Total Tons</b>	<b>81.7</b>	<b>44.6</b>	<b>5.6</b>	<b>4.9</b>	<b>4.4</b>	<b>15.9</b>	<b>6.5</b>
<i>(% of whole)</i>		<b>54.6%</b>	<b>6.9%</b>	<b>6.0%</b>	<b>5.4%</b>	<b>19.5%</b>	<b>8.0%</b>

Where to focus limited resources

# Contracted MSW Disposal

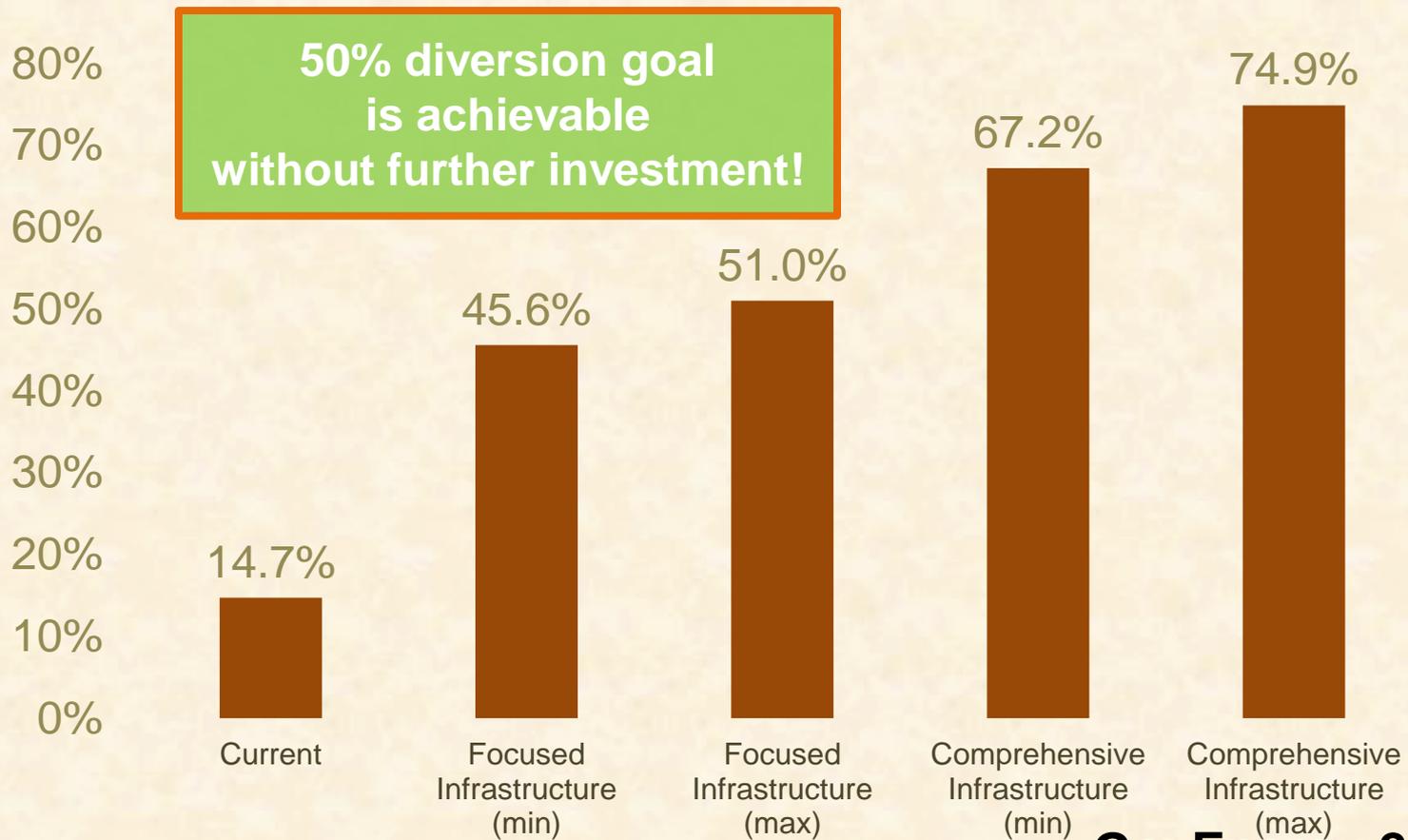
## Success Story: National Park Service

Q1: How much can we divert?

Type of Material	Weight of Material (tons)	% of Total Waste Stream	Projected Capture Rate	Potential Diversion Rate (tons)
<i>Paper</i>	44.6	54.6%	85%	33.5 to 37.9
<i>Plastic</i>	5.6	6.9%	75%	3.9 to 4.2
<i>Glass</i>	4.9	6.0%	85%	3.9 to 4.2
<i>Metals</i>	4.4	5.4%	85%	3.5 to 3.7
<i>Organics</i>	15.9	19.5%	50%	7.2 to 8.0
<i>Other Wastes</i>	6.5	8.0%	50%	2.9 to 3.3
<b>Potential Waste Diversion %</b>				<b>67.2% to 74.9%</b>

# Contracted MSW Disposal Success Story: National Park Service

Q1: Seriously... How much can we REALLY divert?



# Contracted MSW Disposal Success Story: National Park Service

Q2: How much does it cost to remove?

Park's cost to remove 1 pound  
of MSW: \$0.07

Park's cost to remove 1 pound  
of recyclables: \$0.01



Total cost of managing solid waste at park: >\$70,000/year

# Contracted MSW Disposal Success Story: National Park Service

## Q2: Comparative Cost/Ton to Remove



# Contracted MSW Disposal Success Story: National Park Service

	Baseline	FY 2015 Goal	

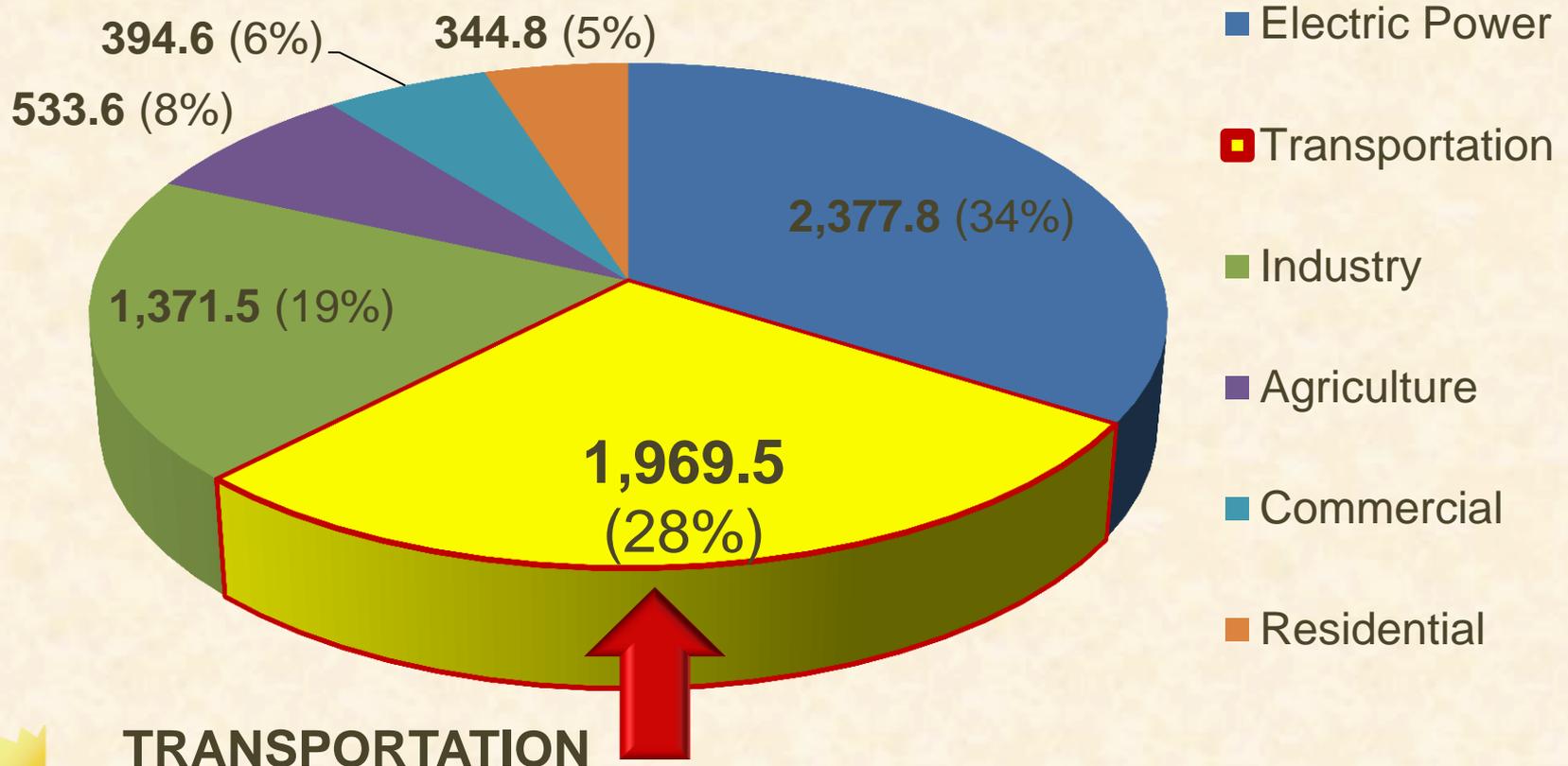
# Contracted MSW Disposal Success Story: National Park Service

- Outcomes to date (after 6 months):
  - Achieving ~10% MSW source reduction
  - On track for 21% diversion rate for FY11
  - Reduced MSW disposal costs by 25% (~\$15,000)
  - Slightly increased recycling costs (new contractor)
  - In just 1 year, will achieve 16% GHG reduction
  - Waste stream is now “valuable”



# Business Travel

## 2006 U.S. GHG Emissions Allocated to Economic Sectors (Tg CO<sub>2</sub> eq.)



# Business Travel

Where does transportation fit in your GHG inventory?

Scope 1



Owned and operated:  
Vehicles  
Equipment  
Aircraft

Scope 3



Business Air Travel  
Business Ground Travel  
Employee Commuting

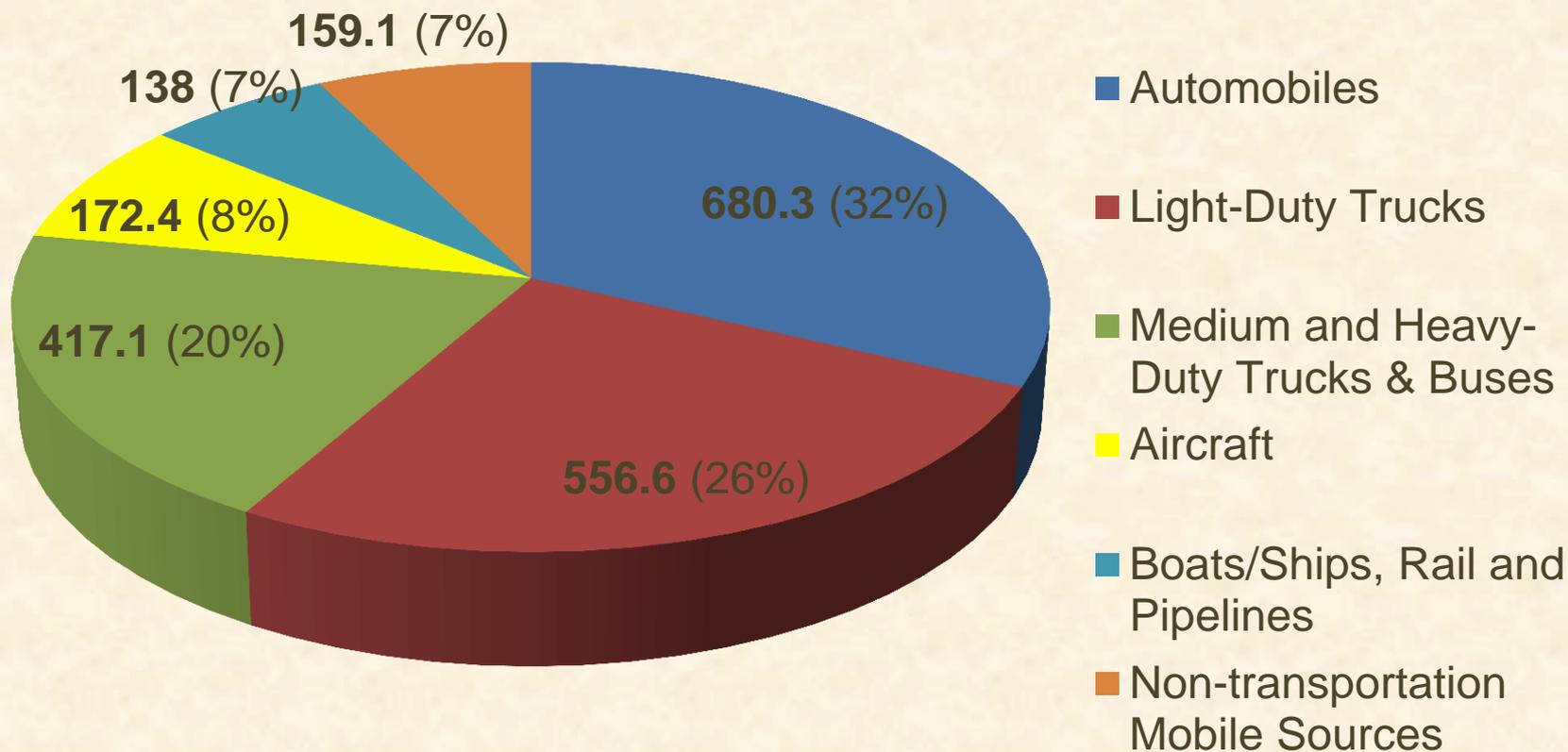
# Business Travel

- 2.0 million Federal employees
- Federal dollars spent on travel in FY2009:

**\$17.4 billion**

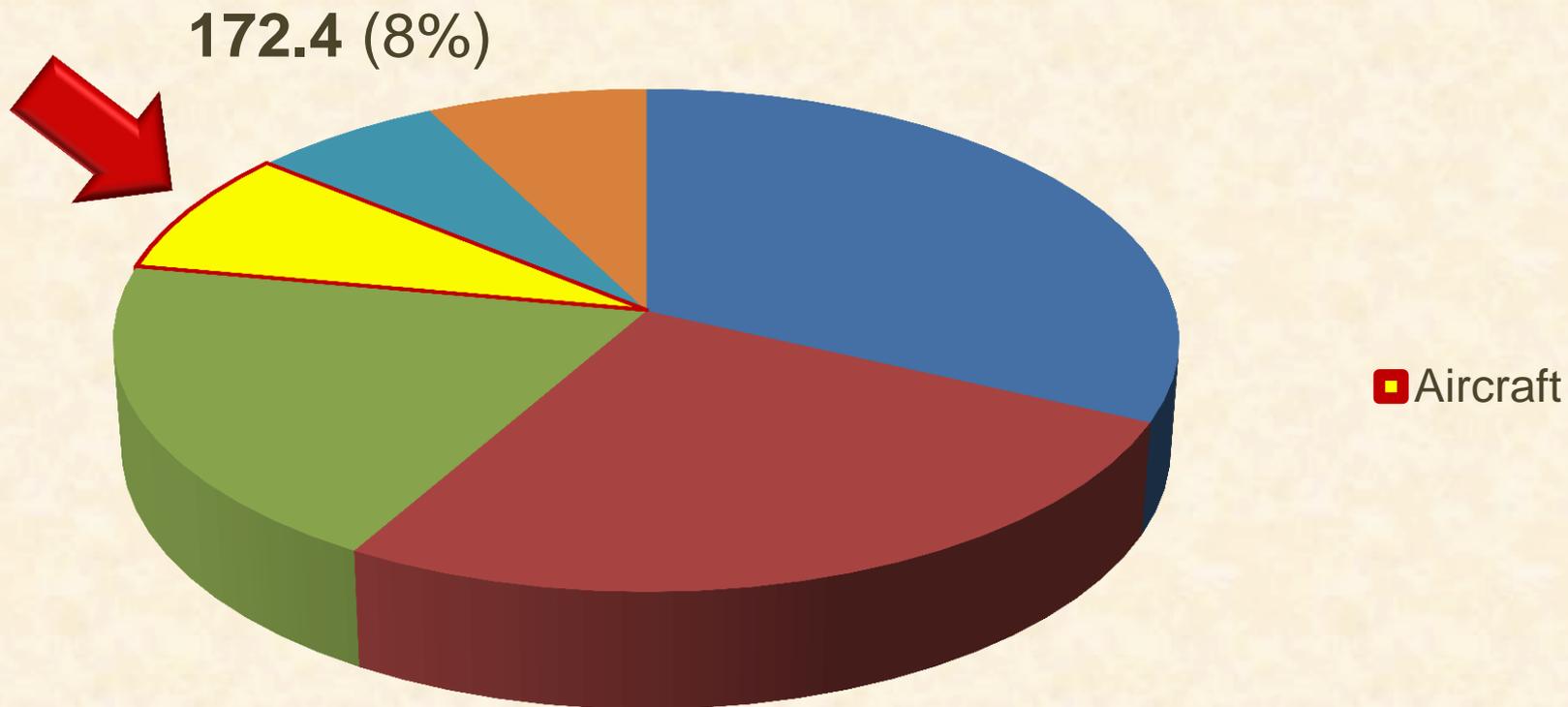
# Business Travel

## 2006 U.S. GHG Emissions from Transportation by Vehicle Type (Tg CO2 eq.)



# Business Travel

2006 U.S. GHG Emissions from Transportation  
by Vehicle Type (Tg CO2 eq.)



# Business Air Travel

➔ *Official business-related travel aboard third-party owned or operated aircraft.*

Data Element	Preferred Source
Passenger Name Record (PNR) – airline, flight number, class of service, and miles traveled	E-Gov Travel Service (ETS), travel agency or internal records

# Business Air Travel

1. Determine whether the agency PNR data are in GSA Travel MIS
  2. Obtain a user name and password for the GSA Travel MIS from GSA
  3. Access the GSA Travel MIS
  4. Generate the GHG emissions estimate and report
- ➔ *Calculation methodology is performed automatically by the GSA Travel MIS*

# Business Air Travel

Success Story: 2009 US Forest Service Sustainable Operations Summit, Portland OR



- Virtual Participation Objectives:
  - To highlight sustainable operations taking place across the country
  - To give participants the tools and information to institute sustainable operation practices in their work and community
  - To explore cutting-edge science and ideas in sustainable practices
  - To model green practices with the use of new technologies

# Business Air Travel

- GHG emissions from travel to the Summit:
  - **31** “out-of-town” attendees traveled via air
    - 52 ground transportation
    - 83 total in-person attendees

**17 MTCO<sub>2</sub>e**

- *Avoided* emissions:
  - **500** virtual participants nationwide

**-267 MTCO<sub>2</sub>e**

# Business Air Travel

- If 10% of the virtual participants (50 people) decided to join the conference in person:

	Actual	Plus 10%
GHG Emissions (MTCO <sub>2</sub> e)	17	44
GHG Emissions Avoided (MTCO <sub>2</sub> e)	-267	-240
Cost of Airfare	0	\$8,750

# Business Air Travel



17 MTCO<sub>2</sub>e

# Business Air Travel



44 MTCO<sub>2</sub>e

# Business Air Travel

- GHG Emissions and Cost of Round-Trip Flights Per Person:

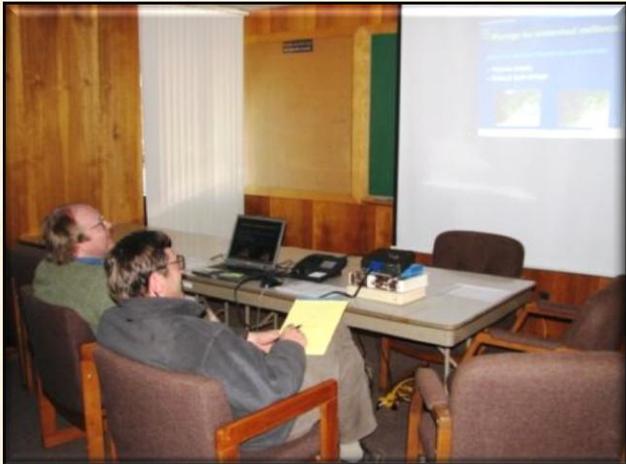
Flight	Pounds of CO <sub>2</sub> e	Cost (Sept. 13 – 17)
Dallas to Washington	489	\$178
Chicago to Washington	221	\$175
Portland to Albuquerque	417	\$254
Scranton to Denver	569	\$343

# Business Air Travel



“I applaud the planning team for sticking with the virtual technology. It was groundbreaking for the Forest Service to use this technology on such a grand scale. I know that it took lots of time to plan for the use of this technology. Yes, there were some glitches. But overall, it was amazing to see the technology action.”

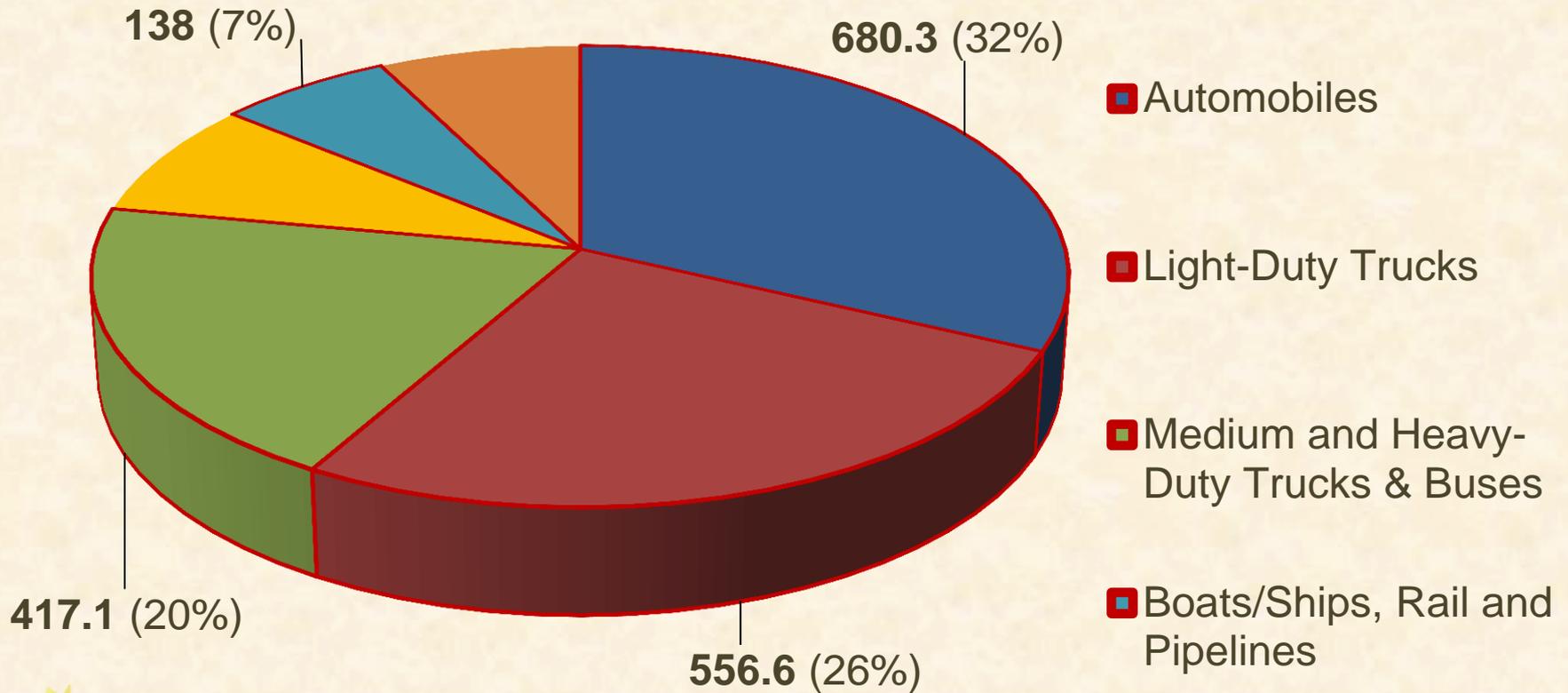
- Participant, USFS Sustainable Operations Summit 2008, Madison WI





# Business Ground Travel

## 2006 U.S. GHG Emissions from Transportation by Vehicle Type (Tg CO2 eq.)



# Business Ground Travel

➔ *Official business-related travel aboard third-party owned or operated ground vehicles.*



Personal vehicles  
Rental vehicles  
Taxi cabs



Transit rail  
Commuter rail  
Intercity rail



Diesel buses  
Buses driven by other fuels, such as CNG

# Business Ground Travel

## Default Methodology

### Data Element

Number of rentals

### Preferred Data Source

GSA Travel MIS or Travel Agency

## Advanced Methodology

### Data Element

Distance traveled (miles) by mode of transport

### Preferred Data Source

Rental vehicles: GSA Travel MIS or Travel Agent  
PV, Rail, Bus: Travel reimbursement  
Representative sample of distance based data

Emissions factor

GHG Technical Support Document

# Business Ground Travel

## Example: GovEnergy 2010, Dallas TX



- 4,000 attendees
- Transportation options:
  - Rental vehicle
  - Taxi
  - DART (Dallas Area Rapid Transit)
  - Airport Shuttle

# Business Ground Travel



Source: [www.visitdallas.com](http://www.visitdallas.com)

# Business Ground Travel

GHG Emissions and Cost Comparison of 2,000 GovEnergy Conference Attendees Traveling 46 miles:

Mode of Transport	GHG Emissions (MTCO <sub>2</sub> e)	Cost
Rental Vehicle	37.4	\$320,000
Taxi	37.4	\$160,000
DART	3.0	Free with 3-day GovEnergy Pass!
Airport Shuttle	11	\$68,000



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MAXIMUM  
80



20-32

58-20

CAN-TECH

2004

2004

# Employee Commuting Big Picture

TeleTrips: If the average employee teleworked 1-2 days per week, he/she would save:

- \$2,000 to \$10,000 in after tax dollars/year;
- 160 hours of commuting time/year;
- 1.5 to 5.0 MT of CO<sub>2</sub>e/year



**YOUR NEW COMMUTE.**  
*You'll even have time to stop for coffee.*

**TELEWORKING WORKS.** Imagine your commute to work consisting of a simple walk from your bedroom to your home computer. No traffic. No stress. No time or money wasted on travel. And imagine how teleworking—even just one or two days a week—could be a real boost for your job productivity, as well as your quality of life. Take the time to find out if teleworking is right for you.

**COMMUTER CONNECTIONS**  
SPECIALISTS IN THE WORK

[www.commuterconnections.org](http://www.commuterconnections.org)  
1-800-745-TRICE

# Employee Commuting

## 2010 Snowmageddon, Snowpocalypse, Snowverkill, Snowcation...

- Snowmageddon: 4 day shut down of Federal government for snowstorm
- Original cost estimated at \$100 million/day
- Costs revised downward to \$71 million/day because ~30% of federal workers teleworked during storm
- After storm, OPM Director John Berry pledged to increase number of federal workers eligible to telework by 50% from FY2009 to FY2011



# Employee Commuting Data Sources

Data Element	Preferred Source
Number of passengers, transportation mode, number and distance of trip	Employee Survey

 **RITA** John A. Volpe National Transportation Systems Center  
U.S. Department of Transportation

## Federal Employee Commuter Choice Survey Methodology

- Commuting Habits (e.g., commute type each day of week)
- Commuting and Work Scheduling (e.g., average minutes for commute on good, average, and bad days)
- Demographic Information (e.g., home zip code)
- Comments (e.g., ideas to improve telework options)

# Employee Commuting Data Sources

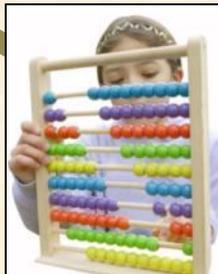
## Method 1

## Method 2



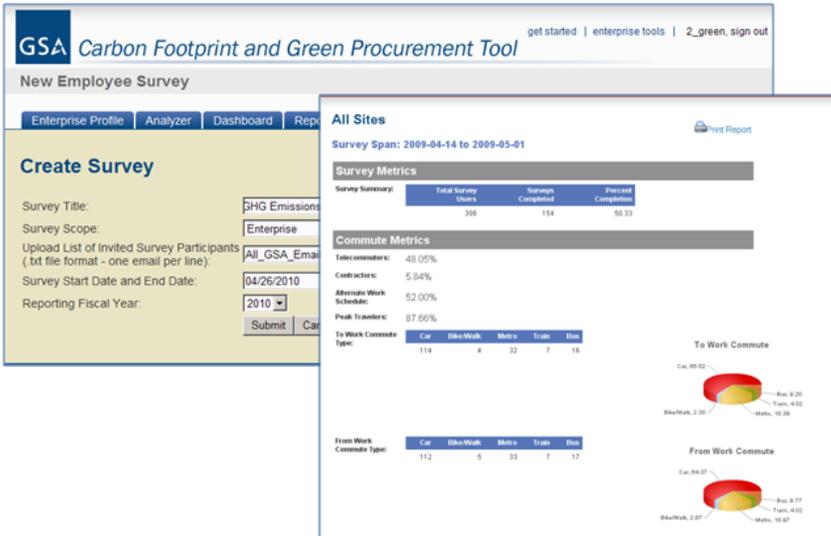
**John A. Volpe National Transportation Systems Center**  
U.S. Department of Transportation

**Federal Employee Commuter Choice Survey Methodology**

X.X. Scope 3: Federal Employee Commuting

Process Type	Vehicle Type	Fuel Type	Commute Distance Traveled (miles)
Commuter Travel - Personal Owned Vehicles	POV Passenger Car	Gasoline	0.0
	POV SUV or Truck	Gasoline	0.0
	POV SUV or Truck	Diesel	0.0
Commuter Travel - Mass Transit	Bus	Diesel	0.0
	Metro / Transit Rail	Electric	0.0
	Commuter Rail	Diesel	0.0
	Intercity Rail	Diesel	0.0
Commuter Travel - Human Powered	Walking and/or Bicycling		0.0
<b>Total Commuter Travel Emissions</b>			<b>0.0 MT CO2e</b>



**GSA Carbon Footprint and Green Procurement Tool**

Enterprise Profile | Analyzer | Dashboard | Reports

**Create Survey**

Survey Title: GHG Emissions  
 Survey Scope: Enterprise  
 Upload List of Invited Survey Participants (txt file format - one email per line): All\_GSA\_Emails  
 Survey Start Date and End Date: 04/26/2010  
 Reporting Fiscal Year: 2010

**Survey Metrics**

Survey Summary	Total Survey Users	Surveys Completed	Percent Completed
	308	154	50.00

**Commuter Metrics**

Telecommuter: 48.05%  
 Contracter: 5.94%  
 Alternate Work Schedule: 52.00%  
 Peak Traveler: 87.66%

**To Work Commute**

Commuter Type	Car	Bike/Walk	Metro	Train	Bus
	114	4	32	7	16

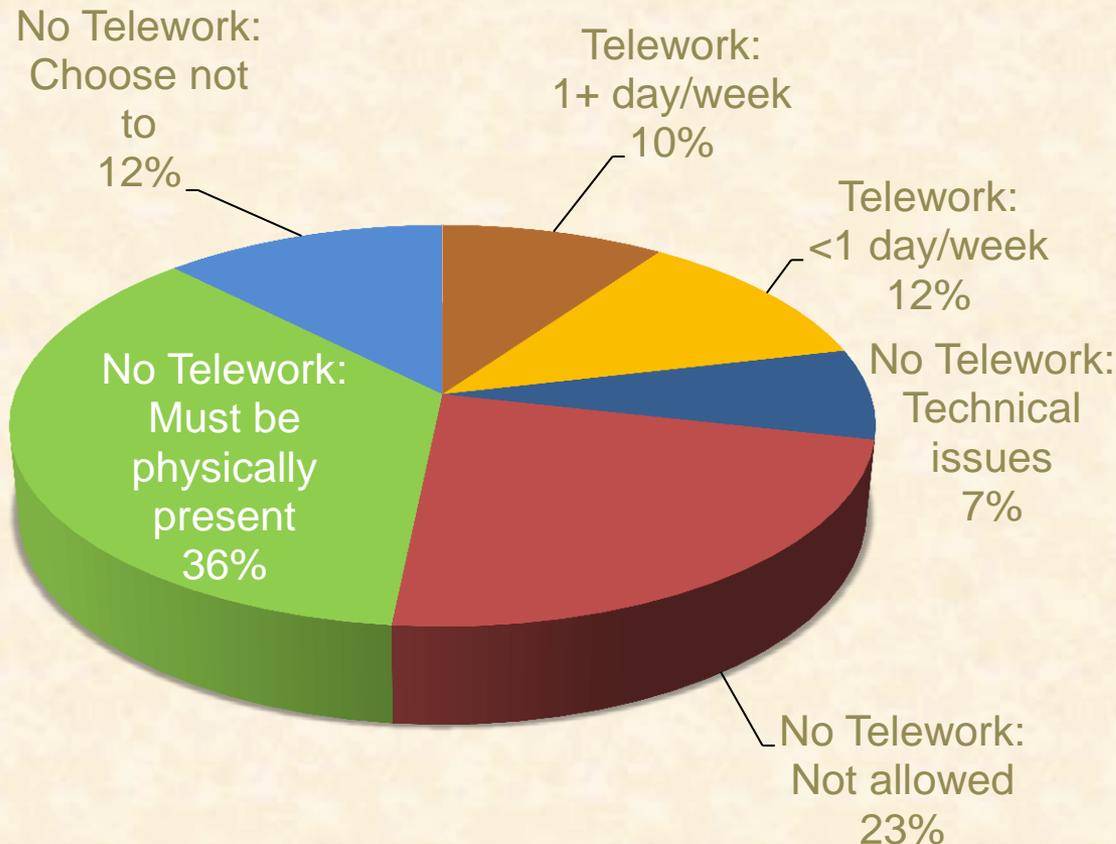
**From Work Commute**

Commuter Type	Car	Bike/Walk	Metro	Train	Bus
	112	5	33	7	17

# Employee Commuting

## Is a 13% GHG Reduction Possible?

OPM's 2010 Federal Employee Viewpoint Survey of ~250,000 full-time, federal workers found:



### Summary

- 10% DO telework at least once/week
- 42% COULD telework at least once/week
- 48% CANNOT or do not want to

# Employee Commuting

## Is a 13% GHG Reduction Possible?

Baseline Scenario (based on 2010 OPM survey)

- ~10% of employees telework ~1.5 days/week
- Average employee: 4.85 commutes/week

Potential Scenario (based on 2010 OPM survey)

- ~52% of employees could telework ~1.5 days/week
- Average employee: 4.22 commutes/week

➔ *The difference is exactly a 13% decrease.*

# Employee Commuting Overcoming Management Barriers

H.R. 1722: “Telework Improvements Act of 2010”

- Passed House by a vote of 290 to 131
- Requires each agency to:
  - Establish a telework policy within 1 year that “authorizes employees to telework to the maximum extent possible”
  - Appoint a senior-level Telework Managing Officer;
  - Notify and train eligible employees; and
  - Report annual telework status to OPM.

# Employee Commuting Overcoming Management Barriers

“Work is something you do, not someplace you go. There is no magic about strapping ourselves into a car, driving sometimes up to an hour and a half to our workplaces, and sitting in front of our computers all day.”

- Representative Frank Wolf (VA-10), lead sponsor of Telework Improvements Act of 2010

To identify current agency telework policies and telework coordinator, visit:

[www.opm.gov/FAQS/topic/telework/](http://www.opm.gov/FAQS/topic/telework/)

# Employee Commuting

## Overcoming Barriers: USPTO Case Study (2008)

### US Patent and Trademark Office Telework Program

- Of total staff of ~9,700, about 5,300 are authorized to work from home (55%).
- Of those 5,300:
  - 2,300 are “hotelers” who telework 4+ days/week (~24%);
  - 256 telework 2+ days/week (~3%);
  - 2,700 telework 1 day/week (~28%);
- More than 3,000 USPTO teleworked for Snowmageddon

# Employee Commuting

## Overcoming Barriers: USPTO Case Study (2008)

### USPTO's Top 3 Technology Challenges (and Resolutions)

#### Data Security

- Secure, error-free, encrypted point-to-point VPN
- Information stored on USPTO server, not laptop
- Encrypted laptop hard drive

#### Bandwidth

- Huge files being transmitted and downloaded
- Employees must have 2 MB/sec connection at home
- USPTO pays at least 50% of high-speed internet cost

#### Training

- Technology troubleshooting training for all staff
- Help desk for other assistance

### USPTO's Management Challenge (and Resolution)

#### Management Uncertainty

- Quantitative assessments (e.g., patents reviewed, time logged in) of employee performance
- Measurable, verifiable information that could be used to assess both telework and non-telework staff

# Employee Commuting

## Benchmarking Agency Workspace Cost/Person

GSA Study: “An investment of approximately \$16 million over three years towards a ‘basic’ teleworker-at-home solution [...] can be offset with a realization of over \$36 million in benefits over the same three-year period.”

Sources: GSA and Telework Exchange. “The Benefits of Telework.” Available: [www.teleworkexchange.com/pdfs/The-Benefits-of-Telework.pdf](http://www.teleworkexchange.com/pdfs/The-Benefits-of-Telework.pdf)

# Employee Commuting

## Benchmarking Agency Workspace Cost/Person

GSA Cost Per Person Model (CPPM):

- Excel-based tool
- Computes the cost/person for workspace, IT, and telecom
- Calculates cost savings from alternative work environment scenarios (e.g., telework, hoteling)

<input type="button" value="CLEAR"/>	<b>Cumulative Cost per Person</b> \$0	<a href="#">CLICK HERE TO VIEW RESULTS GRAPHICALLY IN THE "CPPM GRAPHS" TAB</a>
<b>2006 COST PER PERSON MODEL</b>		
<b>People</b>		
Number of employees	<input type="text"/>	<a href="#">CLICK HERE TO REACH THE "DEFINITIONS" TAB OF KEY TERMS</a>
<b>A. Real Estate</b>		
For additional details: Click here to go to GSA's "Office Space Use Review" Performance 2002, Appendix B		
Number of workstations	<input type="text"/>	
User-estimated space per person (rentable sq. ft.)	<input type="text"/>	Suggested rentable sq. ft. per person, based on GSA's "Office Space Use" update <input type="text" value="230"/>
User-Estimated fully serviced rental rate (cost per sq. ft.)	<input type="text"/>	
<b>REAL ESTATE SUBTOTAL (A)</b>	<input type="text" value="\$0"/>	



2010

# Scope 3 Emissions GSA Carbon Footprint Tool

Enterprise Profile
Analyzer
Dashboard
Reports
Carbon Profile Map
ROI Calculator
Employee Survey

**User Profile**

- Update Password
- Update Information

**Agency**

- Manage Profile
- Manage Sites
- Manage Users

**Locations**



- Crystal City
- Willow Wood
- Test - Mobility Paper

**GHG Reports**

**GSA ITS Emissions**

Category	2008 CO <sub>2</sub> e Emission	2009 CO <sub>2</sub> e Emission	2010 CO <sub>2</sub> e Emission
<b>Enterprise</b>	4,666	8,888	8,888
Purchased Electricity	2,500		
Direct Fuel			
Business Travel	800		
Commuting	1,200		

All values are in metric tons of CO<sub>2</sub>e.

**GSA ITS Benchmark for Building Operations**

Category	2008	2009	2010
<b>Enterprise 2008</b>			
Purchased Electricity			
Direct Fuel			
<b>Enterprise 2009</b>			
Purchased Electricity			
Direct Fuel			
<b>Enterprise 2010</b>			
Purchased Electricity			
Direct Fuel			

**Enterprise Profile** Analyzer

You are here: Enterprise Profile >> M

**Sites (Add)**

Action	Site Name	Address 1	Address 2
<input checked="" type="checkbox"/>	Crystal City	2200 Crystal Drive	
<input checked="" type="checkbox"/>	Test - Mobility Paper	1800 F St NW	
<input checked="" type="checkbox"/>	Willow Wood	10304 Eaton Pl	



U.S. General Services  
Administration

**When:** August 18, 2010

**Where:** Aloft Hotel (across from the Dallas convention center) – in the Plush Pad conference room

**Time:** 2:30 to 4:00 p.m.

*Open to all federal employees*



GovEnergy Source: GSA.  
www.govenergy.gov

Fiscal Year  
2008  
2010  
2008



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