
Understanding and Reducing Personal Greenhouse Gas Emissions

***Personal Choices Collectively Make a
Difference!***

Jeffrey Clark, ICF International

Consultant to ENERGY STAR

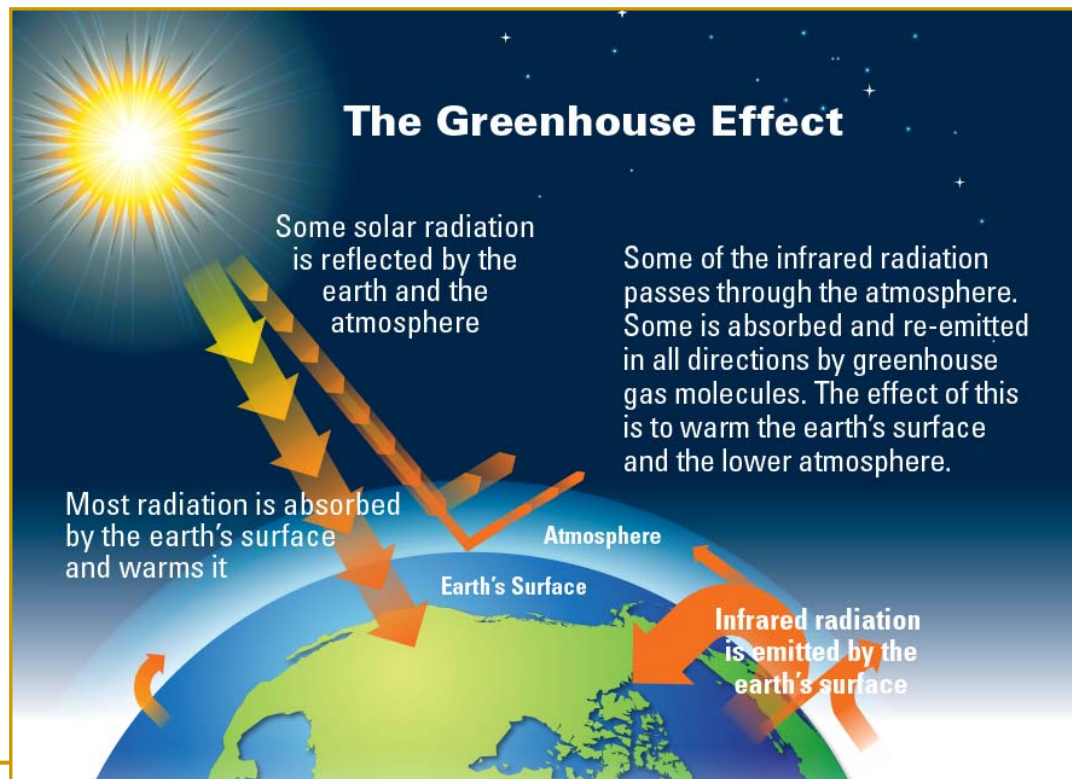
June 16, 2009

- What is climate change
- What are greenhouse gases (GHGs)
- Collectively, our personal choices make a big difference!
- Personal choices affect your GHG output
 - Transportation
 - Home & office
 - Food choices
- Water and energy nexus: wasting water emits GHGs
- Additional information

Climate Change

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- Earth's average surface temperature increase by 1.2 to 1.4⁰ F in the last 100 years (NOAA and NASA)

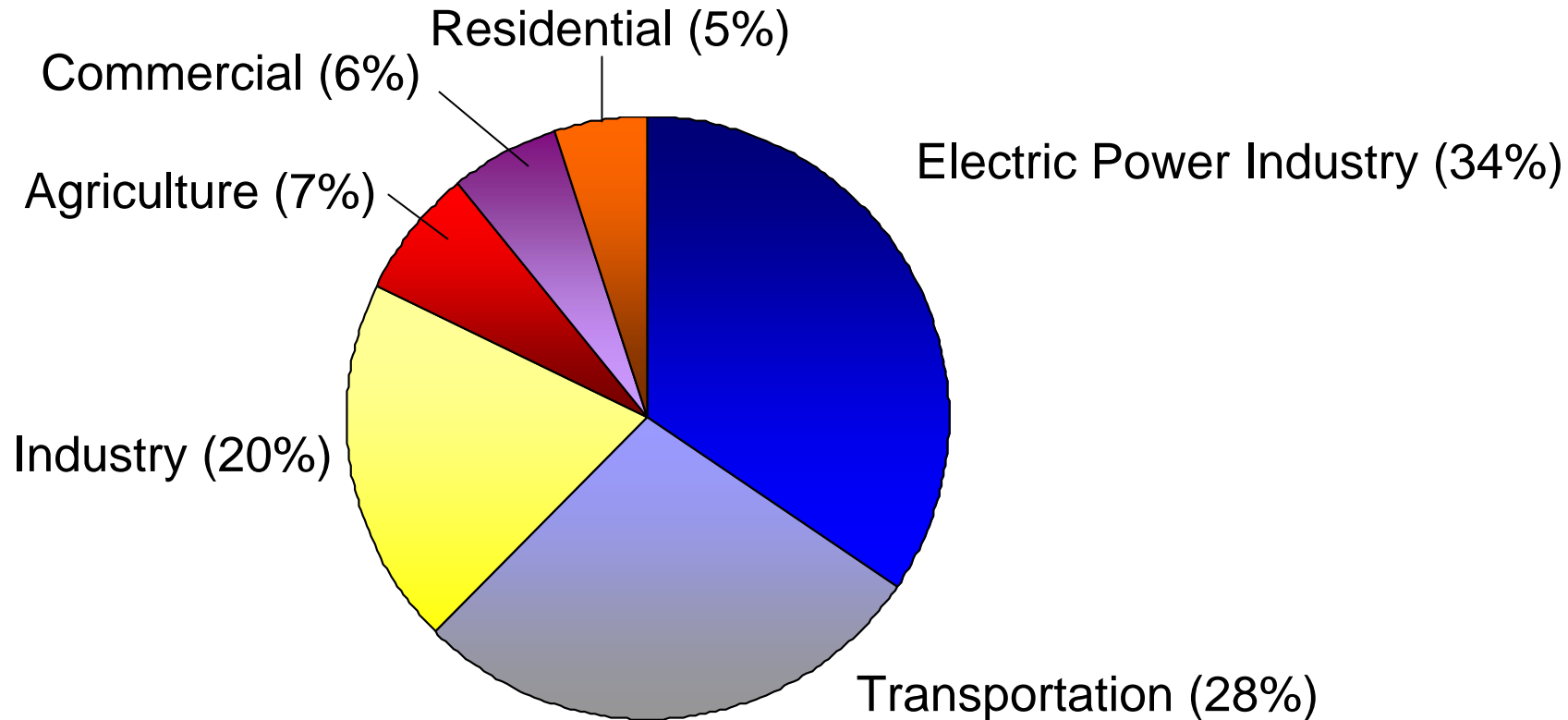


- These gases trap infrared energy from the sun in the Earth's atmosphere
 - Water vapor
 - Carbon Dioxide (CO₂)
 - Methane (CH₄)
 - Nitrous Oxide (N₂O)
 - Fluorinated Gases (e.g., Hydrofluorocarbons)

U.S. GHG Emissions by Sector

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Approx. 2007 U.S. Greenhouse Gas Emissions Allocated to Economic Sectors (%)



2009 U.S. Greenhouse Gas Inventory Report, Table ES-7, April 2009

This Is a Collective Problem

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- As consumers, especially in the United States, we are all responsible for GHG emissions
- Our communities are not designed for energy or water efficiency/pollution prevention
- U.S. emits the most GHGs in the world
- MIT study: U.S. homeless emit more GHGs than the developing world



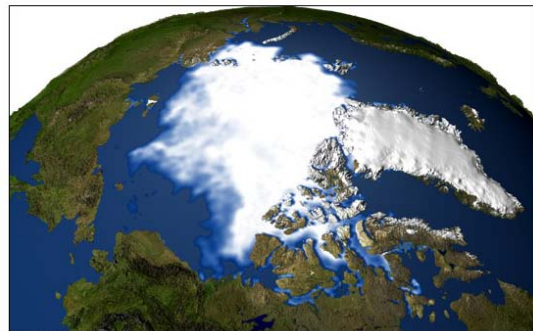
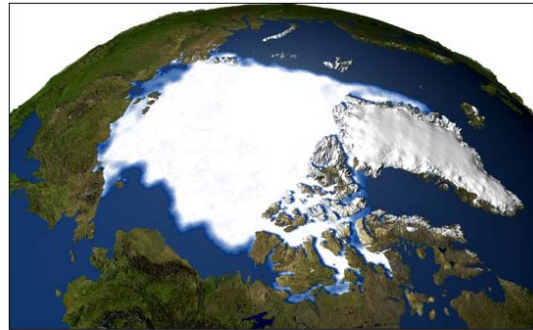
Article about MIT study

www.sciencedaily.com/releases/2008/04/080428120658.htm

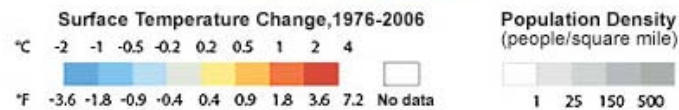
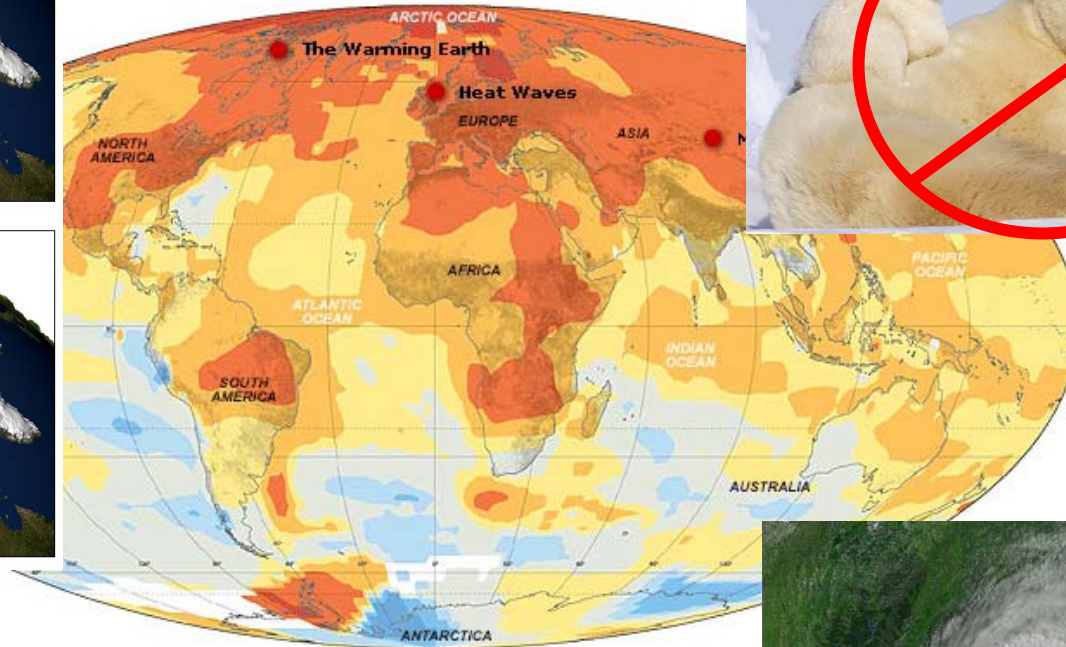
Very Negative Effects

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1979



2003



Sources: National Geographic (2009); NASA (2007)

Voluntary Government Programs

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- Lots and lots of information available
 - Start with government programs
- SmartWay (www.epa.gov/smartway)
 - Certifies vehicles for consumers
- ENERGY STAR (www.energystar.gov)
 - Labels energy-efficient buildings, homes, & products for consumers
- WaterSense (www.epa.gov/watersense)
 - Labels water-efficient products & landscaping for consumers



Reducing Your Carbon Output

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a Difference

- Start thinking in a new way!
- Make smart transportation choices
- Home insulation, heating, cooling
- Buy or replace old products with ENERGY STAR
- Change behavior
 - Turn off lights, reduce heating/cooling temp, drive less, food choices

Transportation Choices

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- Easiest direct impact to “see”; difficult behavior to change
- Think about car and air transportation choices
 - Personal flights emit a huge percentage of personal GHGs
- Choose an appropriate, energy efficient vehicle
- Minimize, as much as possible, vehicle trips
- Use public transportation (easy in DC!)
- Bicycles, bicycles, bicycles

SmartWay Web site

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www.epa.gov/smartway

Compare cars,
find driving tips,
and save money!

Green
Vehicles
Guide

SmartWay

Recent Additions | Contact Us Search: All EPA This Area Go

You are here: EPA Home » Transportation and Air Quality » SmartWay

SmartWay Home
Basic Information
SmartWay Vehicles
SmartWay Transport
Newsroom

SmartWay Certified Vehicles

US EPA Certified SmartWay

Shopping for SmartWay Certified Vehicles? **Look for the leaf on the EPA Green Vehicle Guide!**

- Smart Buying and Driving Tips
- Learn More about SmartWay Certified Vehicles
- Financing discounts for SmartWay Certified Vehicles

SmartWay Financing Options

New for Freight Companies and Owner-Operators!

Get technology and truck financing through our **Innovative Financing!**

- SmartWay Clean Diesel Finance Program
- SmartWay Finance Center [\[EXIT Disclaimer\]](#)

New Leaf Campaign

Learn how **choosing green cars and trucks** can save and money, and help the environment!

- Watch the TV commercial
- Listen to the radio commercial
- View the print PSAs

SmartWay Transport

Ready to **join a partnership** that will save money and reduce fuel use?

- Join SmartWay
- Download the FLEET Models
- View the Partner List
- SmartWay Publications
- **New!** Verified Technologies

SmartWay Tractors & Trailers

Learn about the benefits of **Certified SmartWay tractors and trailers!**

- Partner FAQs
- OEM Specifications
- Idling Reduction Strategies
- **New!** Federal Excise Tax Exemption

News & Features

- **New!** April 6, 2009 SmartWay Excellence Award Nominations Now Being Accepted
- **New!** March 30, 2009 \$300 million of Recovery Act funding for clean diesel activities now available, including SmartWay Clean Diesel Finance Program funding

Read More SmartWay News

Green Vehicles Guide

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www.epa.gov/greenvehicles

The screenshot shows the EPA Green Vehicle Guide website. At the top left is the EPA logo. Below it is a navigation menu with links: Green Vehicle Guide Home, Basic Information, How to Use This Guide, About the Ratings, Frequent Questions, What You Can Do, Glossary, Related Links, Publications, Get Email Updates, Federal Vehicle Acquisition, and Site Map. The main header is 'Green Vehicle Guide' with a search bar and a 'Go' button. Below the header are tabs for 'Home - Basic Search', 'Advanced Search', 'Compare', and 'Complete Guide'. A banner image shows a green car with the text 'You Have Green Options'. Below the banner is a paragraph: 'Use this guide to choose the cleanest and most fuel-efficient vehicle that meets your needs. Low emissions and good fuel economy are both important for the environment.' There are three search boxes: 'Look Up a Vehicle', 'Look Up a Vehicle by Type', and 'Look Up Greenest Vehicles'. Each box has fields for Year, State, Make, and Model, and a 'Submit' button. The 'Look Up Greenest Vehicles' box also has checkboxes for 'SmartWay' and 'SmartWay Elite'. At the bottom, there is a note about EPA's fuel economy estimates and an important reminder.

Green Vehicle Guide

Recent Additions | Contact Us Search: All EPA This Area Go

You are here: EPA Home » Transportation & Air Quality » Green Vehicle Guide

Home - Basic Search Advanced Search Compare Complete Guide

You Have Green Options

Use this guide to choose the cleanest and most fuel-efficient vehicle that meets your needs. Low emissions and good fuel economy are both important for the environment.

Look Up a Vehicle

Year:* 2009
State:† Choose a State
Make:* Choose a Make
Model: Choose a Model
Submit

Look Up a Vehicle by Type

Year:* 2009
State:† Choose a State
Type:* Choose a Type
Submit

Look Up Greenest Vehicles

SmartWay vehicles are good environmental performers.

SmartWay SmartWay Elite

Year:* 2009
State:† Choose a State
Submit

* Required.
† Choose the state where you plan to buy your vehicle, or choose ALL STATES. Choosing ALL STATES might result in multiple listings due to differences between federal and California emission requirements.

NOTE: EPA's fuel economy estimates for 2008 models are calculated differently than for 2007 and earlier years. The fuel economy estimates on this website for model years prior to 2008 have been recalculated using the model year 2008 methodology. As a result, fuel economy estimates for 2007 and earlier years for most models will be lower than the estimates listed originally in the Fuel Economy Guide and posted on the fuel economy window sticker on new cars.

Information on this site is based on data that vehicle manufacturers submit to EPA. The Agency randomly checks the submissions to ensure these data are complete and accurate, but can't guarantee the validity of every measurement presented in this guide.

IMPORTANT REMINDER: EPA's fuel economy estimates are designed to allow consumers to comparison shop. Your fuel economy will almost certainly vary from EPA's rating. This is based on a number of factors such as weather, road conditions, your driving and maintenance habits, and your use of air conditioning.

Find and
compare cars

Find SmartWay
certified
vehicles

Car Results to Compare

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Make and Model

Air Pollution: 0 to 10

GHG Emissions: 0 to 10



Green Vehicle Guide

Recent Additions | Contact Us | Search: All EPA This Area Go
You are here: EPA Home » Transportation & Air Quality » Green Vehicle Guide » Basic Search Results

Home - Basic Search | Advanced Search | Compare | Complete Guide

Basic Search Criteria

Year: 2009
State: District of Columbia
Vehicle Type: Midsize Cars

Click arrow to sort

Definitions | New Search | Advanced Search

Model	Engine	Fuel	Trans	Drive	Air Pollution Score 10 = Best	Fuel Economy (mpg) City / Hwy	Greenhouse Gas Score 10 = Best	SmartWay	Compare Choose up to 3
ACURA RL	3.7L 6 cyl	Gasoline	Select 5 speed	4WD	6	16 / 22	4		<input type="checkbox"/>
ACURA TL	3.5L 6 cyl	Gasoline	Select 5 speed	2WD	6	18 / 26	5		<input type="checkbox"/>
ACURA TL	3.7L 6 cyl	Gasoline	Select 5 speed	4WD	6	17 / 25	5		<input type="checkbox"/>
AUDI A6	4.2L 8 cyl	Gasoline	Select 6 speed	4WD	6	16 / 23	4		<input type="checkbox"/>
AUDI A8	4.2L 8 cyl	Gasoline	Select 6 speed	4WD	6	16 / 23	4		<input type="checkbox"/>
AUDI S6	5.2L 10 cyl	Gasoline	Select 6 speed	4WD	6	14 / 19	3		<input type="checkbox"/>
AUDI S8	5.2L 10 cyl	Gasoline	Select 6 speed	4WD	6	13 / 19	2		<input type="checkbox"/>
BENTLEY Amaze	6.7L 8 cyl	Gasoline	Select 6 speed	2WD	6	10 / 14	0		<input type="checkbox"/>
BENTLEY Continental Flying Spur	6L 12 cyl	Gasoline	Select 6 speed	4WD	6	10 / 17	0		<input type="checkbox"/>
BMW 528i	3L 6 cyl	Gasoline	Manual 6 speed	2WD	6	18 / 28	5		<input type="checkbox"/>
BMW 528i	3L 6 cyl	Gasoline	Select 6 speed	2WD	6	18 / 27	5		<input type="checkbox"/>

Compare Cars to Each Other

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Nissan Versa, Toyota Prius, Volvo S80

Side-by-Side Comparison

Print Close



Make:	NISSAN	TOYOTA	VOLVO
Model:	Versa	Prius	S80
Year:	2009	2009	2009

Vehicle Specifications

Engine:	1.8 Liter, 4 cylinder	1.5 Liter, 4 cylinder	3 Liter, 6 cylinder
Transmission:	Manual 6 speed	Auto Variable	Select 6 speed
Fuel Type:	Gasoline	Gasoline	Gasoline
Drive:	2WD	2WD	4WD
Vehicle Type:	Midsized Cars	Midsized Cars	Midsized Cars

Environmental Information

Air Pollution Score: 10 = best	6	8	6
Greenhouse Gas Score: 10 = best	8	10	4
SmartWay:			
City Fuel Economy: (miles per gallon)	26	48	15
Highway Fuel Economy: (miles per gallon)	31	45	23
Combined Fuel Economy: (miles per gallon)	28	46	18
Fuel Consumption (gallons per 100 miles)	3.57	2.17	5.56
Estimated Annual Fuel Cost: (\$ dollars)	1420	864	2208
Certification Sales Region	Federal All Altitude	Federal All Altitude	Federal All Altitude
Emissions Certification Standard:	Bin 5	Bin 3	Bin 5

Other Ways to Reduce GHG

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- Buy smart (SmartWay)
- Drive smart
 - Avoid hard accelerations; reduce time spent idling
 - Unload unnecessary items from trunk (reduce weight)
 - Remove roof rack: save up to 5% fuel economy
- Tune your ride
 - More fuel-efficient, produces fewer GHGs
- Check tire pressure (improve efficiency by 3%)
- Give your car a break
 - Leave the car at home two days a week and reduce GHG emissions by approximately 1,600 pounds per year

Households & GHG Emissions

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- Households account for around 20% of total energy consumption in the U.S.
- The typical household spends more than \$1,900 a year on energy bills
- ENERGY STAR, you can save up to 30 percent or about \$600 per year.

Home and Office: Quick Steps



- Buy ENERGY STAR products
 - Ensure the “stand-by mode” function is activated
- Use a programmable thermostat: automatically adjust home and office temperature while away
- Seal and insulate your home and office to reduce heating and cooling costs
 - [Home Sealing](#): improve your home’s “envelope”
 - Add insulation, seal air-leaks, and choose an ENERGY STAR labeled windows

If every American home replaced their 5 most frequently used light fixtures or the bulbs in them with ENERGY STAR qualified lighting, we would save close to \$8 billion each year in energy costs, and together we’d prevent the greenhouse gases equivalent to the emissions from nearly 10 million cars.

ENERGY STAR Web Site

www.energystar.gov



The screenshot shows the ENERGY STAR website homepage. At the top, there is a banner for 'SAVE ON SUMMER COOLING COSTS WITH ENERGY STAR' with a 'GO' button. Below the banner is a navigation bar with 'ENERGY STAR' logo, a search bar, and links for 'About ENERGY STAR', 'News Room', 'FAQs', and 'KIDS'. The main content area is divided into several sections: 'PRODUCTS', 'HOME IMPROVEMENT', 'BUILDINGS & PLANTS', and 'NEW HOMES'. Each section has a sub-header and a list of links. For example, 'PRODUCTS' includes 'Appliances', 'Heating & Cooling', and 'Home Electronics'. 'HOME IMPROVEMENT' includes 'Common Home Problems', 'Home Energy Audits', and 'Air Seal & Insulate'. 'BUILDINGS & PLANTS' includes 'Guidelines for Energy Management' and 'Tools & Resources Library'. 'NEW HOMES' includes 'Find an ENERGY STAR Builder' and 'ENERGY STAR New Home Features'. There are also 'HEADLINES' and 'GO TO PARTNER RESOURCES' sections. At the bottom, there are links for 'Tax Credits for Energy Efficiency', 'Cool Your World with ENERGY STAR @home', 'Recursos en Español', 'ENERGY STAR Podcast', 'ENERGY STAR in Affordable Housing', and 'Recycling with ENERGY STAR'. A login form is visible on the right side.

Products
- Click on “special offers” for incentives

Home Improvement

New homes

Office Tool

ENERGY STAR Office Tool



Simple steps you can take!

Bring Your
GREEN TO WORK
with ENERGY STAR®

The small steps you take at work to save energy can make a big difference in the fight against global warming.

Organizations across the country are working with EPA to improve the energy performance of the buildings where we work, shop, play and learn. You can help!

Click on the blue stars to learn more and start saving energy today.



Food & GHGs: What You Eat

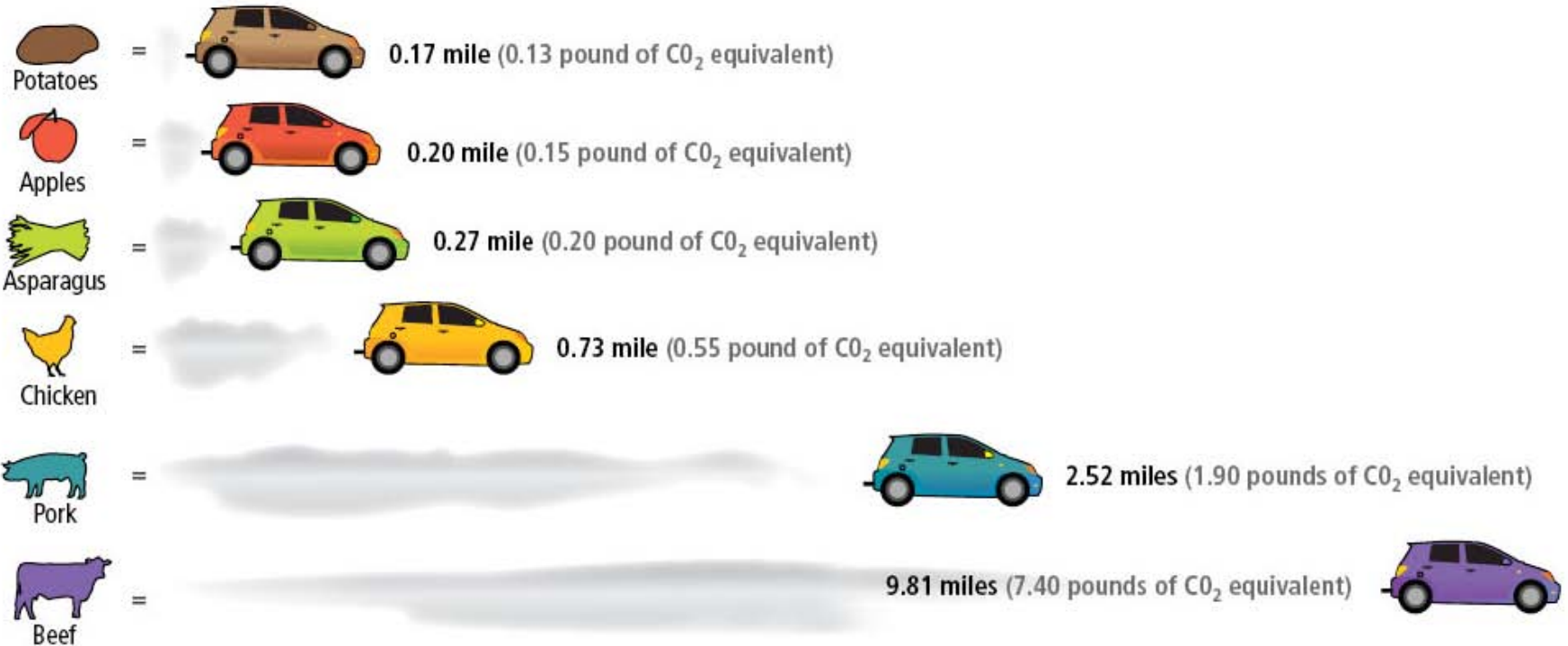
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- Food choices make a big difference in GHG output per person
- Funneling calories (grain) through animals and then eating the animals is less efficient than eating vegetables directly
- “Localism” is a growing movement but:
 - Meat production has serious detrimental environmental effects (water quality; GHG emissions)
 - Food preparation plays a role as well
- Just the facts ma’am: not trying to guilt anyone

Food Choices & GHG Footprints

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CO₂-equivalent
emissions from producing
half a pound of this food ... are the same as emissions from driving ...

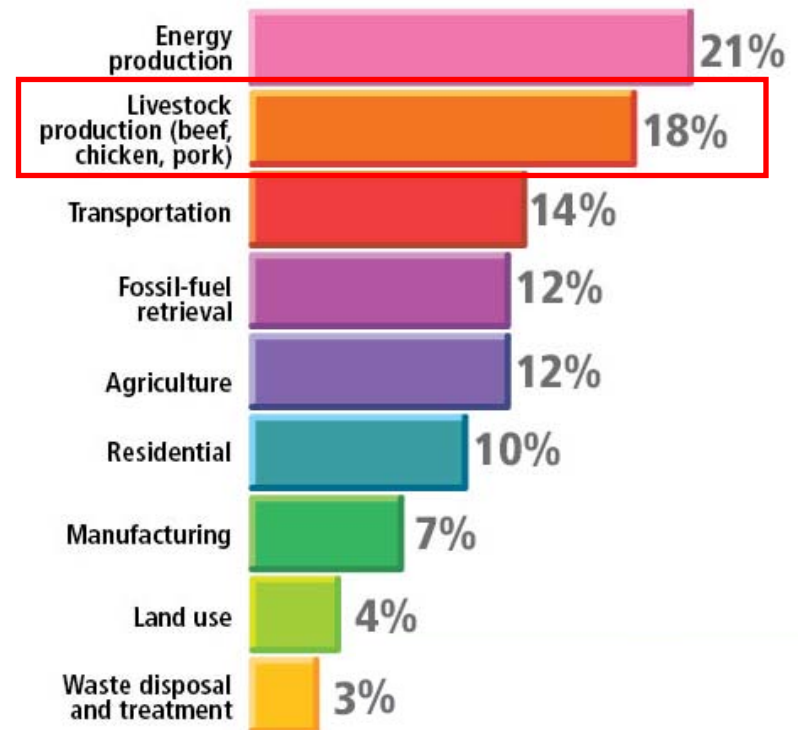


Scientific American, *How Meat Contributes to Global Warming*, February 4, 2009

World Wide Meat Production

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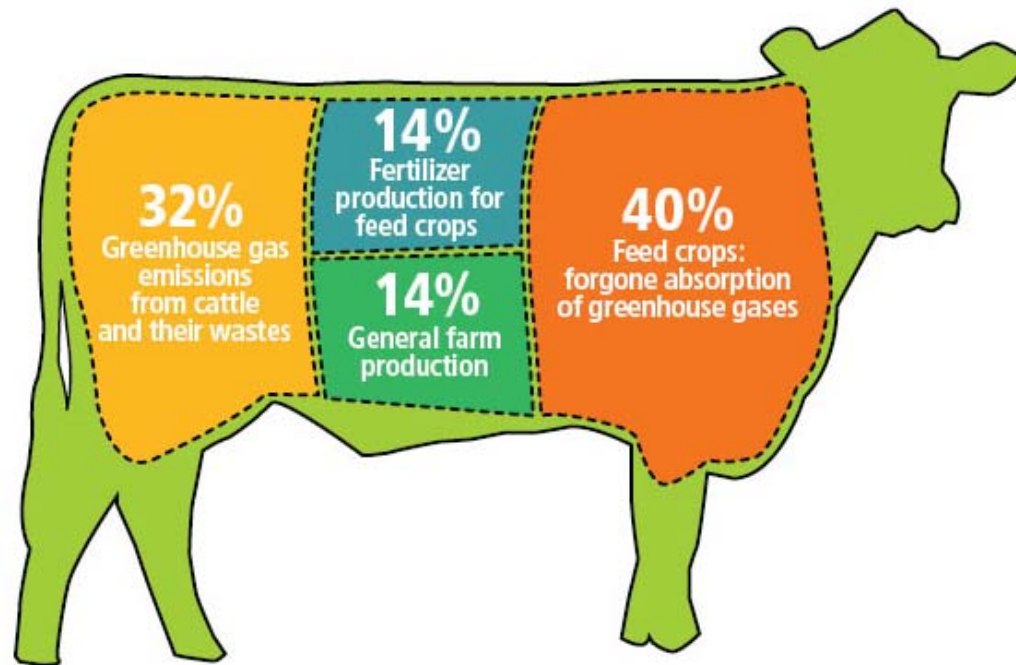
- World wide meat production emits more atmospheric GHG than:
 - Global transportation
 - Industrial processes
- 6.5 billion tons CO₂ equiv.
 - Approx. emissions from 1,270 coal-fired power plants
 - Only 417 plants in 2005



Scientific American, *How Meat Contributes to Global Warming*, February 4, 2009

How Beef Produces GHGs

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Scientific American, *How Meat Contributes to Global Warming*, February 4, 2009

Food Preparation Emits GHGs

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- How food is prepared also contributes to GHG emissions
- Commercial kitchens in restaurants, schools, hospitals, etc. are extremely energy intensive
- Average commercial kitchen uses 2.5 more energy per square foot than other commercial buildings
- Get the word out!

Delicious French Fries Come at a High Energy Cost

An Energy Perspective

- \$10 billion per year for energy in commercial food service
- 10,000,000 commercial kitchen appliances operating in USA
- A single appliance can consume more than a home.

Can use over **13,000 kWh** annually

Ave. house can use **12,000 kWh** annually



Conventional fryer

ENERGY STAR Labeled Equipment



Commercial Refrigerators and Freezers



Hot Food Holding Cabinets



Commercial Dishwashers



Ovens



Commercial Griddles



Commercial Fryers



Commercial Steam Cookers



Ice Machines

Promote to Restaurateurs



+



=

NRA Conserve / EPA ENERGY STAR Challenge!

**CARPE
GREEN^{EM}**

Seize the Savings!

conserve.restaurant.org

The Water and Energy Nexus

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- Water needed for energy production
 - Power Plants (e.g., nuclear and coal power plants)
 - Saving energy conserves water
- Energy needed to use potable water
 - Desalination, purification, distribution, water heating/cooling, treatment

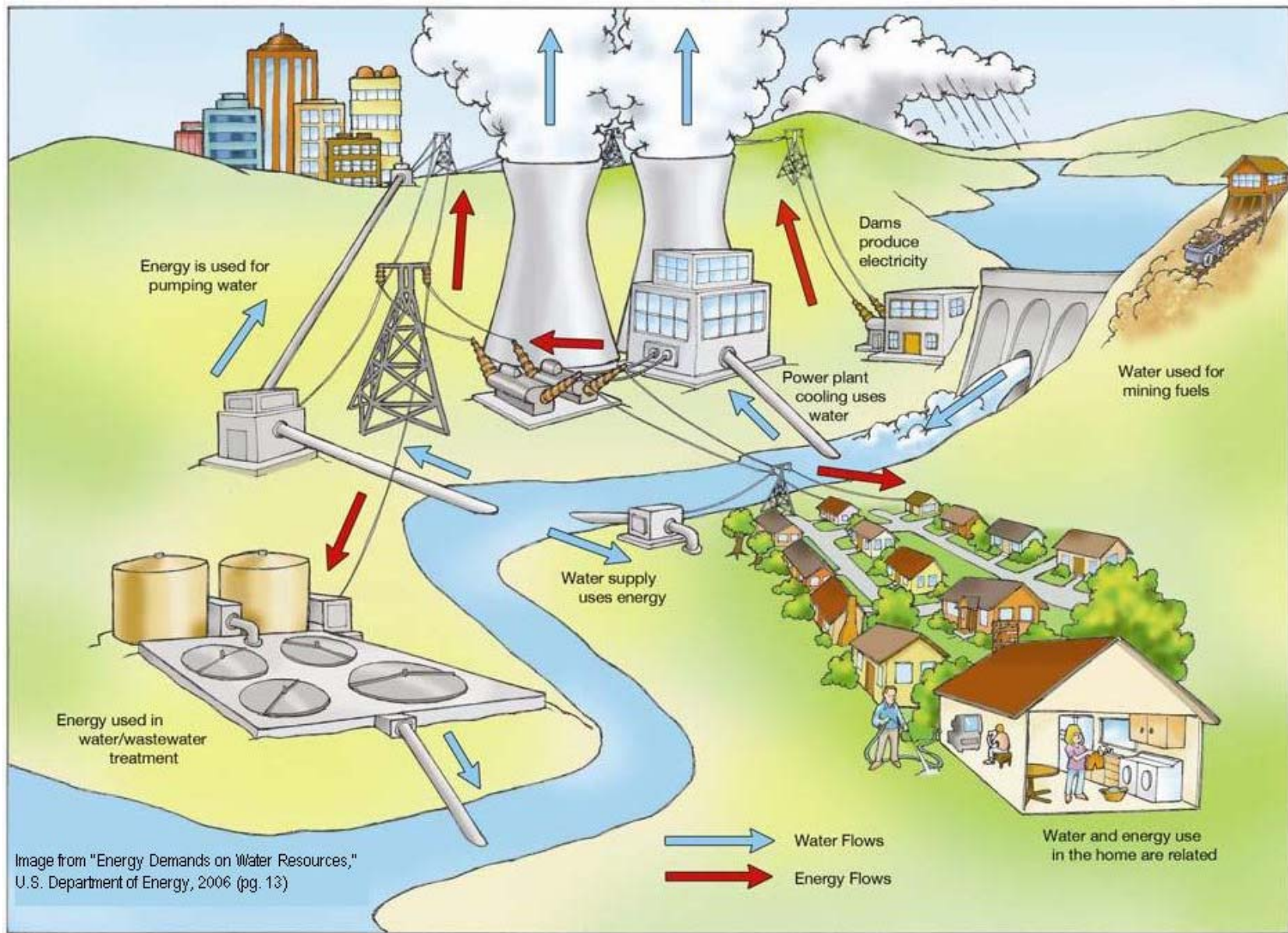


Image from "Energy Demands on Water Resources,"
U.S. Department of Energy, 2006 (pg. 13)

Using Water, Uses Energy

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- Think about reducing water use as conserving energy too!
- On average each kilowatt-hour generated consumes about 0.2 to 0.3 gallons of water
- Washing clothes in cold water:
 - Two loads a week
 - Save \$12 a year
 - 122 lbs of CO₂
 - 1.4 tree seedlings growing for 10 years
 - 2.3 propane cylinders used in a home BBQ

Water Energy Nexus & Food

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- One hamburger: 680 gallons of H₂O
 - Majority is to grow grain for cattle feed
- One cup of coffee: 35 gallons of H₂O
 - Two pounds of roasted coffee: 5,500 gallons H₂O
 - One cup of tea: 8 gallons of H₂O



The Wall Street journal, *Yet Another 'Footprint' to Worry About: Water*, February 17, 2009

WaterSense Labeled Products

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- Use less water than conventional products
 - Toilets, faucets, showerheads, & homes!
- Landscaping
 - Irrigation control technologies (coming soon!)
 - Consult a WaterSense irrigation partner

www.epa.gov/watersense

Products and landscape
Irrigation Services

Rebate Finder

The screenshot shows the WaterSense website interface. On the left is a vertical navigation menu with links such as 'WaterSense Home', 'Find A Product', 'Partner With Us', 'Save Water', 'WaterSense Awards', 'Basic Information', 'Where You Live', 'What You Can Do', 'Newsroom', 'Related Links', 'Publications', 'En Español', and 'Frequent Questions'. The main content area features a search bar at the top, a descriptive paragraph about the WaterSense program, and a section with three columns: 'Find a Product' (listing categories like Bathroom Sinks/Faucets, Dishwashers, High-Efficiency Toilets, Landscape Irrigation Services, New Homes, Showers, Weather- or Sensor-Based Irrigation Control Technologies), 'Partner With Us' (listing links for Join WaterSense, Promotional Partners, Landscape Irrigation Professionals, Manufacturers, Retailers & Distributors, Meet Our Partners, Product and Program Rebate Finder), and 'Save Water' (listing links for Test Your WaterSense, Why Water Efficiency?, Benefits of Water Efficiency, Use Your WaterSense For Teachers—Educational Materials, WaterSense Partner Status, Calculate Your Water Savings). A 'Highlights' box on the right contains news items. At the bottom, there is a footer with 'EPA Home | Privacy and Security Notice | Contact Us' and 'Last updated on Thursday, April 23rd, 2009 URL: http://www.epa.gov/watersense/index.htm'.

Where to Start?

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www.epa.gov/climatechange

Climate Change | U.S. EPA - Microsoft Internet Explorer provided by ICF International

U.S. ENVIRONMENTAL PROTECTION AGENCY

Climate Change

Contact Us Search: All EPA This Area Go

You are here: EPA Home » Climate Change

Quick Finder

GHG Emissions Inventory GHG Emissions Calculator GHG Equivalency Calculator 30 Actions to Reduce GHGs Science State of Knowledge	ENERGY STAR Non-CO2 Voluntary Programs Methane to Markets Program Transportation Voluntary Programs Climate Change and Waste	Climate Leaders Clean Energy State and Local Governments Regional Information Geologic Sequestration
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EPA's Climate Change Site offers comprehensive information on the issue of climate change in a way that is accessible and meaningful to all parts of society – communities, individuals, business, states and localities, and governments.

Basic Information

Frequent Questions

Science

- Past Climate Change
- Recent Climate Change
- Future Climate Change
- State of Knowledge

Greenhouse Gas Emissions

- Greenhouse Gas Overview
- Greenhouse Gas Inventories
- Projections

Health and Environmental Effects

- Health
- Agriculture and Food Supply
- Forests
- Ecosystems and Biodiversity
- Coastal Zones and Sea Level Rise
- Water Resources
- Energy Production and Use
- Public Lands and Recreation

EPA Regulatory Initiatives

- Proposed Endangerment Finding
- Proposed Mandatory Greenhouse Gas Reporting Rule
- Geologic Sequestration of Carbon Dioxide
- Advance Notice of Proposed Rulemaking

U.S. Climate Policy

- Current and Near-Term Reduction Initiatives
- Climate Change Technology Program
- Climate Change Science Program
- International Cooperation

What You Can Do

- At Home
- On the Road
- At the Office
- At School
- State and Local Governments
- Businesses
- Waste
- Agriculture and Forest Land

Climate Economics

- Economic Analyses

News

New! (5/27/09): Bulgaria Becomes 29th Member of International Partnership to Reduce Methane Emissions. More information.

New! (5/13/09): U.S. EPA and Japan's Ministry of Environment Hold Workshop on Climate Change Efforts. More information.

(4/22/09): Announcing the new Climate Change, Wildlife and Wildlands Toolkit for Formal and Informal Educators.

(4/21/09): EPA Preliminary Analysis of the Waxman-Markey Discussion Draft. More information.

(4/17/09): Proposed Endangerment Finding. More information.

What You Can Do

What You Can Do

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The screenshot shows the EPA website's 'What You Can Do' page. A yellow box highlights the 'Personal Greenhouse Gas Emissions Calculator' link, with a red arrow pointing to the 'Related Links' sidebar. Another yellow box highlights the 'Action Steps' section, with a red arrow pointing to the 'Action Steps' sidebar. The page includes a search bar, navigation menu, and various informational sections.

Personal Greenhouse Gas Emissions Calculator

Action Steps

Related Links

- Greenhouse Gas Emissions
- Personal Greenhouse Gas Emissions Calculator
- Voluntary Programs Database
- Teens Can Learn, Act and Lead to Create a New Climate for Action

Did You Know?

By replacing the five most frequently used lights in your home with ENERGY STAR qualified lighting, you can save more than \$60 each year in energy costs. If every US household replaced their five highest-use fixtures, or the bulbs in them, with ENERGY STAR qualified models, the change would prevent the greenhouse gas emissions equivalent to the annual emissions from more than 8 million cars.

Action Steps

- Actions you can take to reduce greenhouse gas emissions
- Actions you can take at home
- Actions you can take at the office
- Actions you can take on the road
- Actions you can take at school

AT HOME **AT THE OFFICE**
ON THE ROAD **AT SCHOOL**

Use EPA's [personal greenhouse gas emissions calculator](#) and your household energy bills to estimate your household's annual emissions and identify ways you can cut your emissions.

Detailed information and resources are also available for [state and local governments](#) and [businesses](#) interested in learning what steps they can take to reduce greenhouse gas emissions. State and local governments and businesses play an important role in reducing greenhouse gas intensity.

The ways in which we dispose of our waste and manage our land for agriculture and other purposes can have a profound impact on greenhouse gas emissions.

- [Waste](#)
Reducing, reusing and recycling solid waste can decrease the amount of heat-trapping greenhouse gases you release.
- [Agriculture and Forest Land](#)
Different management practices for agricultural land areas and forest lands can affect greenhouse gas emissions. Find out more about practices and programs to help reduce greenhouse gas emissions related to these sectors.

FRONTLINE: Online Programs

www.frontline.org

Personal Choices
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Two programs: HEAT & Poisoned Waters

Click "Watch Online"

The screenshot shows the FRONTLINE website interface. At the top, there is a navigation bar with links: PBS HOME, PROGRAMS A-Z, TV SCHEDULES, WATCH VIDEO, SUPPORT PBS, SHOP PBS, and SEARCH PBS. Below this is a secondary navigation bar with the FRONTLINE logo and links: WATCH ONLINE, ABOUT FRONTLINE, TEACHER CENTER, E-MAIL US, and FRONTLINE/WORLD. A search bar is also present. The main content area features a large banner for "WATCH FRONTLINE ONLINE" and a featured program "The War Briefing" with a description and a "Flash Video" link. Below this is a grid of program thumbnails. A red arrow points to the "WATCH ONLINE" link in the navigation bar. A red box highlights the "Poisoned Waters" and "HEAT" thumbnails in the grid. On the right side, there is a "NEXT ON FRONTLINE" section with a "Breaking the Bank" preview and a "SEARCH VIDEO" section with a search bar. At the bottom right, there is a "STORIES BY CATEGORY" section with various categories listed.

Extra Slides

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- Waxman-Markey bill
- Global warming potential

Waxman-Markey Bill

(H.R. 2454, as amended)

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- GHG emission reduction timetable (below 2005 levels)
 - Three percent by 2012
 - 17 percent by 2030
 - 83 percent by 2050
- Bill needs to pass through eight more committees before a House floor vote

Global Warming Potential

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Table 1-2: Global Warming Potentials and Atmospheric Lifetimes (Years)

Gas	Atmospheric Lifetime	GWP ^a
CO ₂	50-200	1
CH ₄ ^b	12±3	21
N ₂ O	120	310
HFC-23	264	11,700
HFC-32	5.6	650
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
CF ₄	50,000	6,500
C ₂ F ₆	10,000	9,200
C ₄ F ₁₀	2,600	7,000
C ₆ F ₁₄	3,200	7,400
SF ₆	3,200	23,900

Source: (IPCC 1996)

Source: 2009 U.S. Greenhouse Gas Inventory Report, April 2009