

# Fuel Economy Guide and Fueleconomy.gov Website

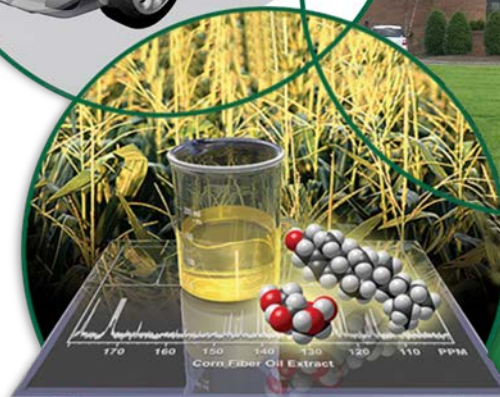
## Bo Saulsbury

Janet Hopson, Rick Goeltz, Robert Gibson,  
Bob Boundy, W.T. Wilson, Jackie Richardson,  
Lisa Li, Debbie Bain, and Kerry Hake  
*Oak Ridge National Laboratory and  
The University of Tennessee*

DOE Management Team:  
Dennis Smith, Linda Bluestein  
*Vehicle Technologies Office  
U.S. Department of Energy*

2015 DOE Vehicle Technologies Office  
Annual Merit Review  
June 9, 2015

This presentation does not contain any proprietary, confidential, or otherwise restricted information.



# OVERVIEW

## Timeline

- Annual, FY project
- *Fuel Economy Guide* published annually since 1975
- Fueleconomy.gov started 1999

## Budget

- VTO
- FY14: \$1.9M
- FY15: \$1.85M
  - ~ \$1.5M for FE.gov and *FEG* activities
  - ~ \$350K for FE related outreach, interactions with mainstream and auto media, partnership with PBS/MPT, other activities

## Barriers Addressed

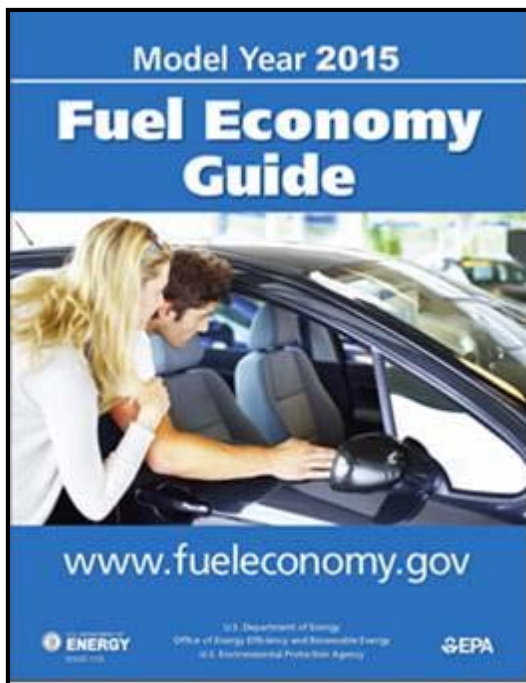
- Availability of AFVs, electric drive vehicles, and fuel efficient vehicles
- Consumer reluctance to purchase new technologies
- Consumers lack confidence in official MPG estimates and undervalue potential savings associated with fuel efficient vehicles
- When gas prices are low, consumers and the media pay less attention to FE—but it becomes critical when gas prices are high

## Partners

- DOE Clean Cities
- ORNL (Project Lead)
- University of Tennessee
- EPA, NHTSA, and Edmunds.com
- NREL and ANL
- NADA
- PBS/MPT (*MotorWeek*)

# PROJECT RELEVANCE

- Fulfills DOE's statutory responsibility to provide FE information to the public (49 USC 32908, 2006).



- Objectives (FY15 AOP):
  - Promote consumer interest in FE and advanced vehicle technologies to reduce dependence on petroleum and promote use of clean energy alternatives.
  - Update, improve, and promote FE.gov and FE.gov/m and produce/distribute *FEG*.

# PROJECT RELEVANCE

**Addresses specific barriers identified in *VTO's Multi-Year Program Plan 2011–2015*:**

- **FE estimates, fuel cost estimates, GHG emissions, safety ratings, and other data for all AFVs and electric drive vehicles available in the U.S. since MY 1984.**
- **“How it works” descriptions and animations address consumers reluctance to purchase new technologies.**

**And other barriers:**

- **Consumers lack confidence in official MPG estimates and undervalue potential savings associated with fuel efficient vehicles.**
- **When gas prices are low, consumers and the media pay less attention to FE—but it becomes critical when gas prices are high.**





# PROJECT APPROACH: MILESTONES

## FY14

- Published/distributed 2014 *FEG*
- Updated FE.gov with new vehicle models and other data for 2014 vehicles and early 2015 vehicles
- Implemented “responsive design” on FE.gov to enhance appearance, usability, and function across platforms (computers, tablets, and mobile devices)
- Coordinated production/distribution of six full-length MotorWeek segments

## FY15

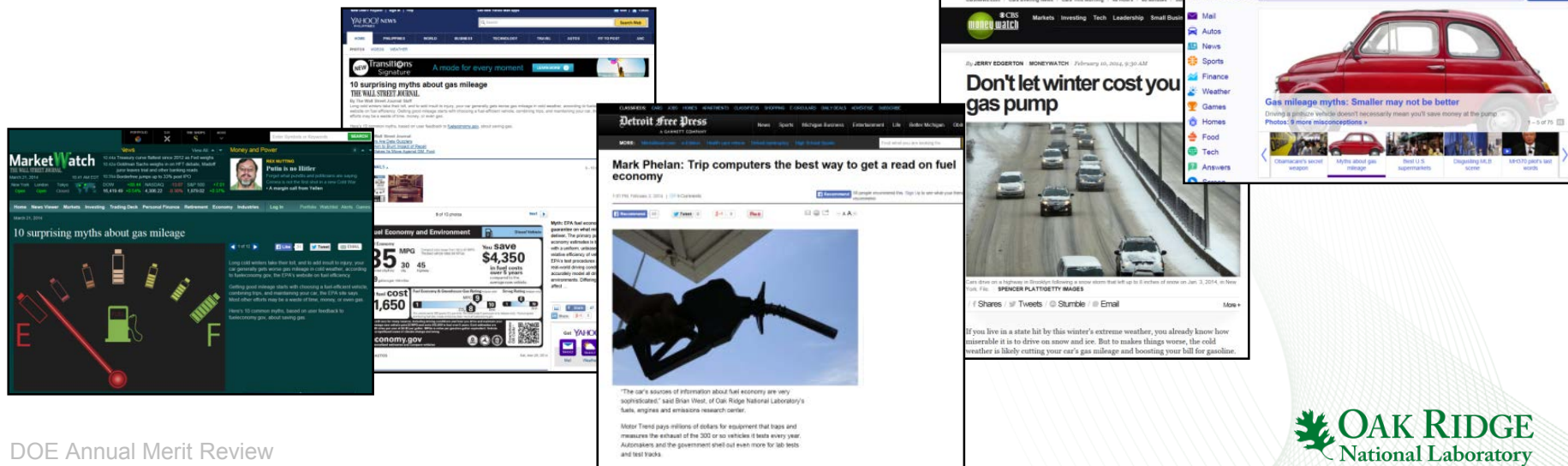
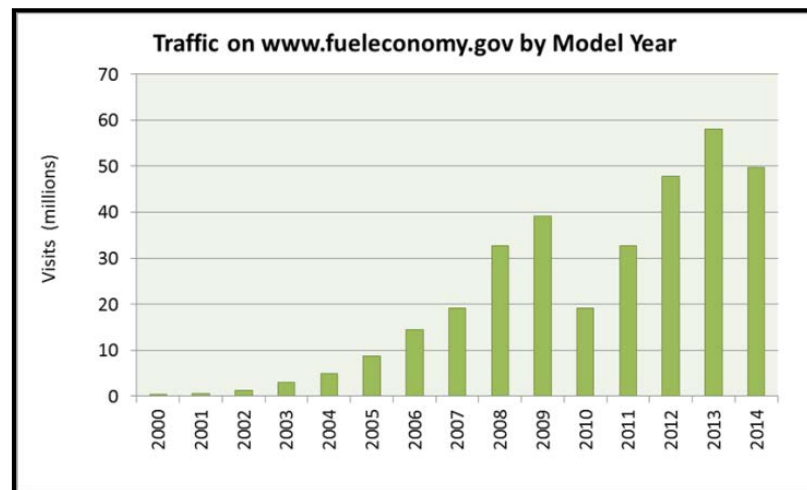
- Published/distributed 2015 *FEG*
- Updated FE.gov with new vehicle models and other data for 2015 vehicles and early 2016 vehicles
- Implementing mobile device app for Find-a-Car
- Coordinating production/distribution of six full-length MotorWeek segments

# PROJECT APPROACH

- **Develop/publish annual *FEG***
- **Continually maintain/update FE.gov**
- **Continually upgrade existing tools, develop new tools, and update gas mileage tips on FE.gov**
- **Provide web developers access to FE.gov database through “Web Services” feature and widgets**
- **Conduct focus group research and usability testing to improve FE.gov**
- **Promote FE.gov to automotive and consumer media**
- **With PBS/MPT, produce *MotorWeek* segments on FE, AFVs, electric drive vehicles, and other topics relevant to Clean Cities**

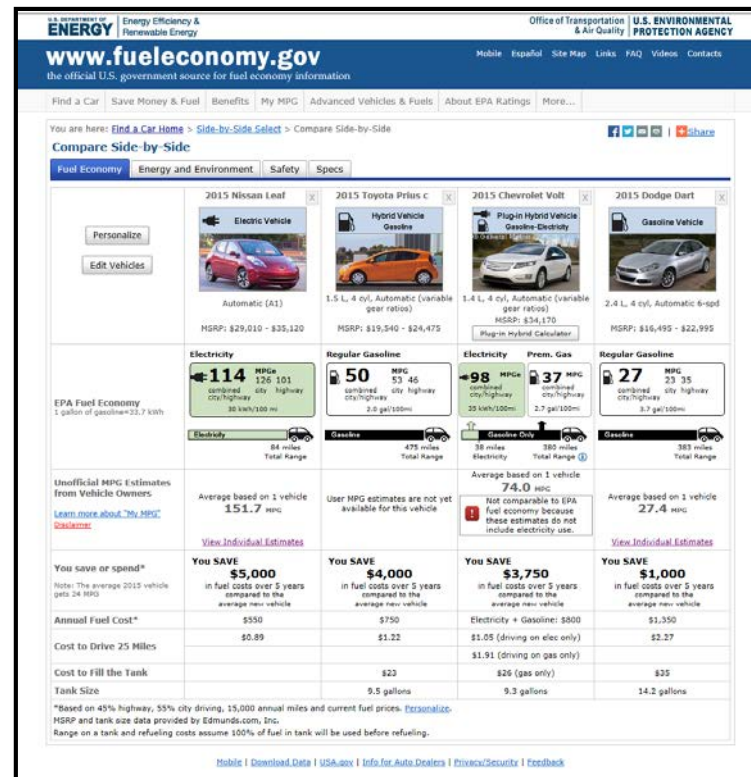
# ACCOMPLISHMENTS AND PROGRESS

- 2015 *FEG*: to >33,000 new car dealers, >20,000 public libraries, and >20,000 credit unions; 125,000 copies to GPO for distribution; available on-line at FE.gov.
- FE.gov hosted >49.7M user sessions in MY14, second highest ever (MY13 still highest with >58 million). Hosted >350 million users sessions since 1999.
- FE.gov cited in >2,500 media articles/blog posts since 2013.



# ACCOMPLISHMENTS AND PROGRESS

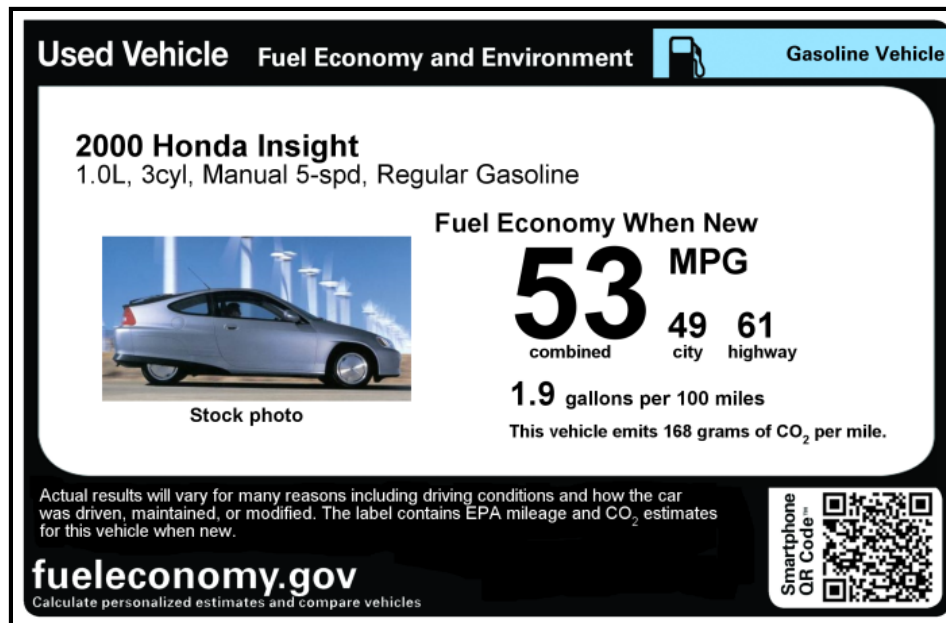
- “Find And Compare Cars” most popular section on FE.gov
- Consumers looked up FE and GHG emissions for >200M vehicles in 2014.
- Updated “Compare Side-by-Side” to be more like EPA/DOT label and better address electric drive vehicles.
- Driving range now available for all vehicle types and calculated to be consistent EPA’s range values
- PHEV MPG values tied to the range graphic





# ACCOMPLISHMENTS AND PROGRESS

- Implemented “Used Car MPG Label”
  - User creates electronic graphic for on-line ads and paper label for vehicle window sticker. Available for all cars and light trucks sold in the U.S. since 1984.
  - Shows EPA FE estimate (city, highway, and combined) and CO<sub>2</sub> emissions for vehicle when new.



# ACCOMPLISHMENTS AND PROGRESS

- Update “My MPG”
- Users calculate, track, and view their real-world MPG
- >32,000 drivers have shared data for >45,000 vehicles
- Users compare their MPG with EPA MPG and MPG shared by other drivers
- Enter My MPG data from home or at the pump with smartphone



The screenshot shows the homepage of the **www.fueleconomy.gov** website. The header includes the U.S. Department of Energy logo, the text "Energy Efficiency & Renewable Energy", and the U.S. Environmental Protection Agency logo. Below the header is a navigation bar with links: "Find a Car", "Save Money & Fuel", "Benefits", "My MPG", "Advanced Vehicles & Fuels", "About EPA Ratings", and "More...". The main content area is titled "Welcome to My MPG!" and contains the following sections:

- Welcome to My MPG!**: A paragraph explaining the purpose of the site and how users can share their MPG data.
- Benefits of Registering**: A paragraph explaining the benefits of creating a user account, such as saving and sharing MPG data.
- We Can Help You...**: A section with links for "Calculate Your MPG" and "Maintain a Fuel Purchase Record".
- Other Useful Tools**: A section with links for "Our Printable Form for Recording Fuel Purchases" and "MPG Estimates from Drivers Like You".
- Tracking Your MPG Just Got Easier**: A section with a paragraph explaining how users can enter their MPG data from a mobile device.
- New User**: A section with links for "I want to register!" and "I want to enter as a guest."
- Registered User Login\***: A login form with fields for "User Name:" and "Password:", a "Remember me" checkbox, and a "Login" button. Below the form is a link for "I forgot my password" and a note: "\*User name and password are case sensitive."

At the bottom of the page, there is a footer with links: "Download Data", "Find and Compare Cars", "USA.gov", "Info for Auto Dealers", "Privacy/Security", and "Feedback".

# ACCOMPLISHMENTS AND PROGRESS

- Hybrid and PHEV calculators and animations
- “Can a Hybrid Save Me Money?” and “My Plug-in Hybrid Calculator”
- Users can personalize information (will a hybrid or PHEV save me money?)
- “How” Animations

**How Hybrids Work**

Hybrid-electric vehicles (HEVs) combine the benefits of gasoline engines and electric motors and can be configured to obtain different objectives, such as improved fuel economy, increased power, or additional auxiliary power for electronic devices and power tools.

Some of the advanced technologies typically used by hybrids include:

- Regenerative braking.** The electric motor applies resistance to the drivetrain causing the wheels to slow down. In return, the energy from the wheels turns the motor, which functions as a generator, converting energy normally wasted during coasting and braking into electricity, which is stored in a battery until needed by the electric motor.
- Electric Motor Drive/Assist.** The electric motor provides additional power to assist the engine in accelerating, passing, or hill climbing. This allows a smaller, more efficient engine to be used. In some vehicles, the motor alone provides power for low-speed driving conditions where internal combustion engines are least efficient.
- Automatic start/stop.** Automatically shuts off the engine when the vehicle comes to a stop and restarts it when the accelerator is pressed. This prevents wasted energy from idling.

For fuel economy information on these vehicles, please visit the [Compare Side-by-Side](#) section.

**How Plug-in Hybrids Save Money**

Plug-in hybrids reduce fuel costs by:

- Using high-capacity batteries that allow them to operate on electricity from the outlet for significant distances—operating on electricity typically costs less than half as much as operating on gasoline.
- Using a larger electric motor that typically allows the vehicle to use electricity at higher speeds than regular hybrids.
- Using regenerative braking to recover energy typically wasted when you apply the brakes.

Plug-in hybrids design other, and your driving habits, especially the distance you drive between recharging, can have a big effect on your fuel bill. My Plug-in Hybrid Calculator estimates gasoline and electricity costs for any available plug-in hybrid using your driving habits and fuel costs.

Watch the video below to learn more about how plug-in hybrids save money.

[View Plug-in Hybrid Save Money](#)

plug-in hybrid

hybrid

**Can a Hybrid Save Me Money?**

This tool compares the costs of a selected hybrid with a comparably equipped non-hybrid from the same manufacturer.

2015 Ford Fusion Hybrid S

**Vehicle Comparison**

Hybrid	Non-hybrid
2015 Ford Fusion Hybrid S	2015 Ford Fusion FWD S
2.0 L, 4 cyl, Automatic (variable gear ratios)	2.5 L, 4 cyl, Automatic (56)
Combined MPG	26
42	26
MSRP	\$22,010
\$26,085	
The hybrid vehicle's MSRP is \$4,075 more.	
<b>Fuel Cost Savings with Hybrid</b>	
Weekly	Monthly
\$10.33	\$44.83
Yearly	
\$538	
Payback Period	
7.6 years	

What if I add the extra cost to my loan?

**Notes:** This tool compares vehicles based on fuel cost and vehicle price only. Other factors, such as insurance, maintenance, or resale value, are not considered since they can vary widely. [More...](#)

View manufacturer details for [these two vehicles](#).

To select different vehicle pairs including non-hybrid models or to consider additional cost factors, visit the [Vehicle Cost Calculator](#) at the U.S. Department of Energy's Alternative Fuels Data Center.

**My Plug-in Hybrid Calculator**

Car: ☐ Driving ☒ Charging ☐ Prices ☐ Results

**BMW i3 REX**

	Gasoline	Electricity	Total
<b>Costs</b>	\$94	\$361	\$455
<b>Miles</b>	1,304	13,696	15,000
<b>Fuel Used</b>	33 gallons	4,006 kWh	—

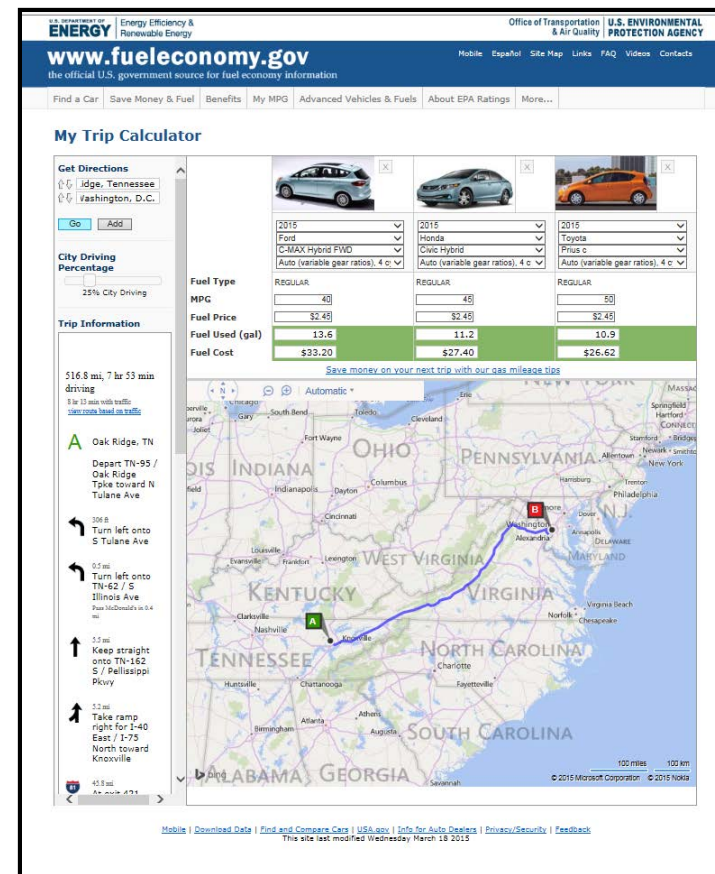
Estimated number of gas station visits per year: **about 19**

**Disclaimer:** Your actual electricity and gasoline consumption will vary based on your driving habits, traffic conditions, charging habits, and other factors.

[Recalculate](#) [Start Over](#)

# ACCOMPLISHMENTS AND PROGRESS

- Update “My Trip Calculator”
- User sets city/highway % and selects up to 3 cars for comparison.
- Calculator displays EPA MPG estimate (or user’s MPG estimate), national average fuel price (or user’s actual fuel price), amount of fuel used, and cost of fuel used.
- Future upgrades could include PHEVs and EVs.





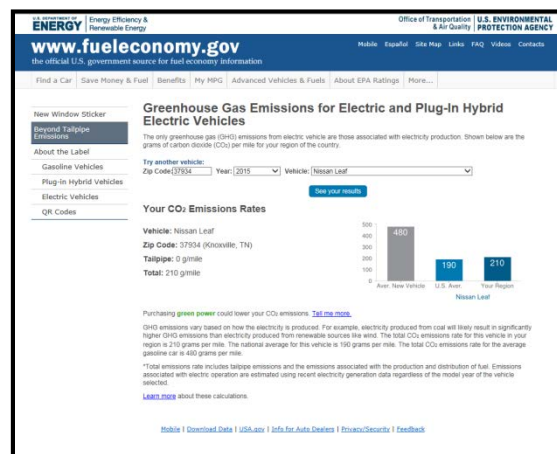
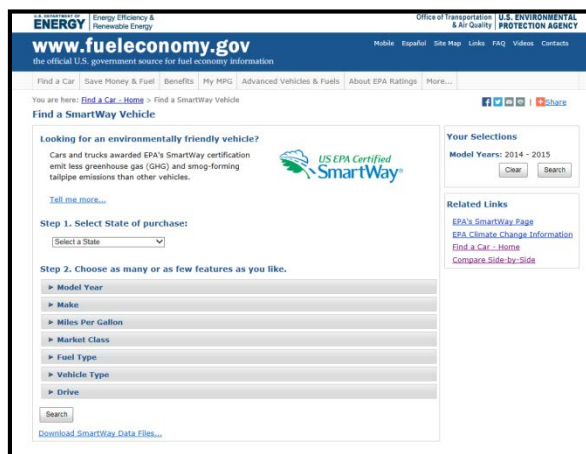
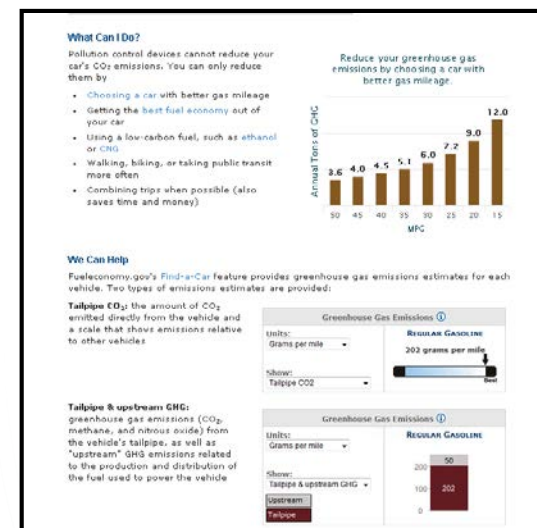
# ACCOMPLISHMENTS AND PROGRESS

- Add/update “Gas Mileage Tips” especially for hybrids, PHEVs, and EVs
- Drive more efficiently (including Speed vs. Fuel Economy “speed penalty” calculator)
- Keep your car in shape
- Plan and combine trips
- Choose a more efficient vehicle
- Tips for hybrids, PHEVs, and EVs
- Tips for cold and hot weather



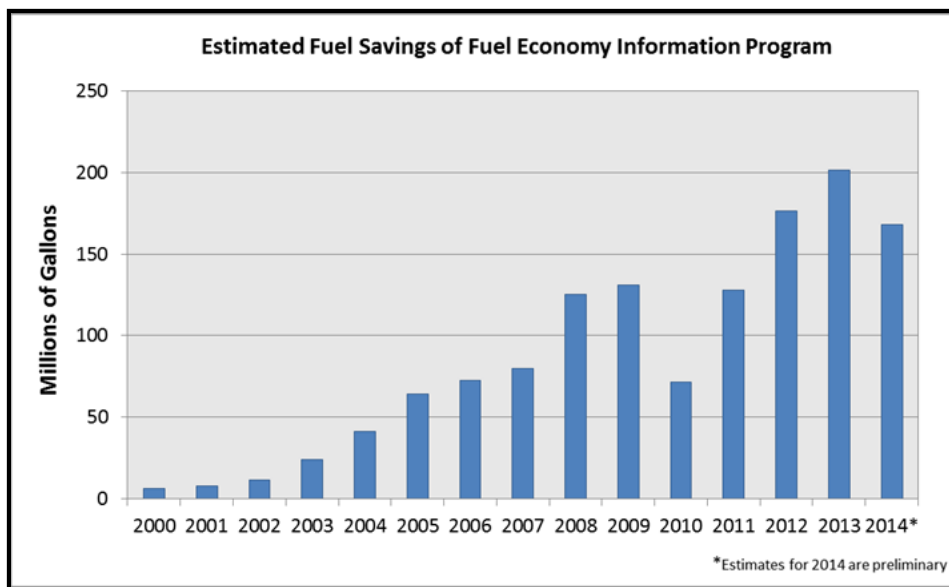
# ACCOMPLISHMENTS AND PROGRESS

- Update information on GHG emissions and climate change
- Reduce Climate Change page
- Find-a-Car provides both tailpipe and upstream GHG emissions estimates
- “Beyond Tailpipe” GHG Emissions Calculator for EVs/PHEVs
- Find-a-Car features EPA SmartWay Vehicles



# ACCOMPLISHMENTS AND PROGRESS

- Estimating impact on petroleum consumption: begin with visits to FE.gov and *FEGs* distributed; supplement with data on media coverage (number of stories, distribution, etc.).
- Apply conservative assumptions about how use of FE.gov and *FEG* and media coverage affects consumer behavior and outcomes (because we lack complete information needed to link activities to petroleum consumption).
- We estimate that *FEG*, FE.gov, media coverage, etc. have helped consumers save >1B gallons of petroleum (preliminary estimate: 168M gallons for 2014).



# RESPONSES TO PREVIOUS YEAR REVIEWERS' COMMENTS

**This project was not reviewed in 2014**



# COLLABORATION AND COORDINATION AMONG PROJECT TEAM



- DOE Clean Cities: funding, project guidance and oversight, suggestions and feedback on new products and tools
- ORNL and UT: develop, publish, and distribute *FEG*. EPA provides FE data. NADA distributes *FEG* to new car dealers
- ORNL and UT: maintain and update FE.gov. EPA provides FE and emissions data. NHTSA: safety ratings. Edmunds.com: MSRP and tank size data. NREL: information from AFDC. ANL: information related to GREET model and idle reduction
- ORNL and PBS/MPT collaborate on *MotorWeek* segments; posted on YouTube by NREL and distributed by Clean Cities



# PETROLEUM REDUCTION POTENTIAL AND PROPOSED FUTURE ACTIVITIES

- Continue *FEG*, FE.gov, media outreach, *MotorWeek*, etc.
- Develop “Fuel Economy Tool Kit” with existing tools on FE.gov and AFDC and new tools as developed
- Public service ad campaign (Ad Council?) on FE? Reach much larger and more diverse consumer audience
- U.S. market for used vehicles much larger than market for new vehicles (~ 42M used sold vs. ~15.3M new sold in 2013 per *Ward’s Automotive* 2015)
  - Expand efforts to provide used car FE data (1984 to present) and Used Car MPG Label to auto dealers and on-line car sites (eBay Cars, AutoTrader.com, CarMax.com, etc.)

# PETROLEUM REDUCTION POTENTIAL AND PROPOSED FUTURE ACTIVITIES

- **Consumers lack confidence in official MPG estimates.**
  - **Develop “Personalized MPG Calculator” for estimates based on actual drive cycle data recorded using on-board diagnostic (OBD) systems.**
- **Consumers still rely on FE.gov, but increasingly access it via mobile devices.**
  - **Continue “responsive design” on FE.gov to improve appearance and function on all devices, especially smartphones and tablets.**
  - **Develop mobile apps for most popular sections, starting with Find-a-Car and My MPG.**

# PETROLEUM REDUCTION POTENTIAL AND PROPOSED FUTURE ACTIVITIES

- **When gas prices are low, consumers and media pay less attention to FE—but it becomes critical when gas prices are high.**
  - **Illustrate benefits of FE in context of volatile oil prices. Construct (1) “expected” fuel prices over lifetime of a vehicle and (2) illustrative future fuel price paths to illustrate potential for volatility.**
- **Continue to update driving and maintenance tips, especially for hybrids, PHEVs, EVs, and other advanced technology vehicles.**



# SUMMARY

- Fulfills DOE's statutory responsibility to provide FE information to the public (49 USC 32908, 2006)
- >350M FE.gov users since 1999 (49.7M in MY 2014)
- >1B gallons of petroleum reduction since 1999 (168M gallons in MY 2013)
- Continue efforts with *FEG*, FE.gov, media outreach, *MotorWeek*, etc.
- Expand efforts with FE Tool Kit, PSA campaign, used car tools, "Personalized MPG," new tools for mobile devices, and updated tips for advanced technology vehicles

