Transportation Work Group

Transportation Emission Targets, Policy Recommendations and Potential Effectiveness

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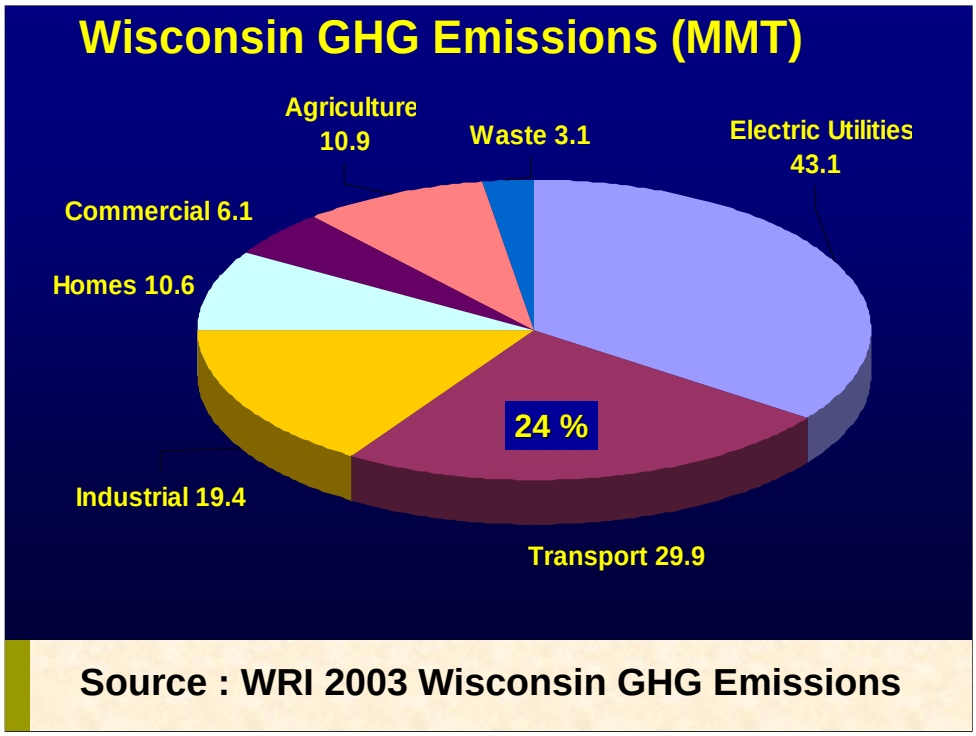
GWTF Emission Targets

On-Road GHG Benchmarks

- **Stabilize emissions at 2005 levels (29 MMt)**
- **2020 emissions equal to 1990 levels (23 MMt)**
- **2050 emissions 60-80% below 1990 levels (5 - 9 MMt)**

The Transportation Work Group (TWG) developed 11 policy recommendations. Three major policy initiatives were forwarded for Energy 2020 modeling – California Car, Low Carbon Fuels and Energy Efficient Communities (EEC). These three policies provide over 80% of the proposed emission reductions.



Transportation emissions come from cars, light trucks, heavier trucks and a variety of off road activities including rail, marine and air emissions. The Transportation Work Group focused it's effort on emissions from on-road sources.

Significant Policy Interactions

- **>18 MMT reduction for all Transportation policies**
- **<13 MMT reduction when interactions removed (> 35% reduction TWG analysis)**
- **ICF modeling indicates 40-50% reduction**
- **Failure to implement or limited implementation will substantially affect reductions**

Supply side policies assessed vehicles, fuels and technologies
Demand side policies addressed mobility/accessibility options

Supply Templates	***Reduction***
California Car	**3.1 MMt**
Low Carbon Fuel	**3.3 MMt**
E85 infrastructure and subsidy	**NA**
Off-Road Equipment	**1.8 MMt**
Freight Idle Reduction	**0.2 MMt**
PHEV, EV, ZEV, Micro Car	**0.3 MMt**
PHEV Fleet Initiative	**NA**
Total Supply Side	***8.7 MMT***

Demand Templates	***Reduction***
Energy Efficient Community Design	**6.2 MMt**
Carbon Audited Transportation	**1.7 MMT**
Coordinated Transit Enhancements	**1.3 MMT**
Speed Reduction and Eco-Driving	**0.4 MMt**
Total Demand Side	***9.6 MMT***

Note : Ten of the eleven TWG policies focused on On-road Transportation. Off-road and other transport (air, rail and marine) emission sources either are either not regulated or are controlled by federal/international laws. One off-road policy was developed, but it focuses on voluntary activities, education and contracting standards. The Low Carbon Fuel policy is similar in scope and purpose to the biofuels policy developed by the Ag and Forestry group. The Low Carbon Fuel policy could impact emissions from both on and off road transport activities.

Revised CAFE Standards

- **part of Energy Independence Security Act - Dec. 2007**
- **35 mpg fuel economy fleet average (cars/trucks) by 2020**
- **2011-2015 fuel economy targets proposed April 2008**
  by 2015 cars 35.8 mpg and trucks 28 mpg
- **Effective in all states;**
  states that adopt CARB supersede CAFE
- **CAFE is the baseline (reference case in ICF model)**

Vehicle fuel economy targets set by US DOT - NHTSA

2015 new vehicle fuel economy standards

CAFE ~ 35.7 mpg for cars / 28.6 mpg for light trucks

CARB Pavley 1 ~ 41.6 mpg for cars/ 26.0 mpg for light trucks.

2020 new vehicle fuel economy standards

CAFE ~ 39 mpg for cars / 31 mpg for light trucks

CARB Pavley 1 ~ 43.2 mpg for cars/ 26.7 mpg for light trucks.

Proposed CARB Pavley 1 and 2 ~ 49 mpg for cars/ 33.5 mpg for light trucks

California Car

- **California and 12 states have adopted CARB rules**
- **EPA denied California's waiver request; California has appealed this ruling**
- **Emission reductions achieved through improved vehicle fuel economy and other measures**
- **California Car rules**
  - **Pavley 1 affects Model Years 2009-2016**
  - **Pavley 2 under development (MY2017-2020)**

CARB = California Air Resources Board

CAFE v California Car in 2020

	CAFE	California Car
MPG	**35 Overall (39 cars/ 31 trucks)**	**49 cars/ 33 trucks** **Pavley 1 and 2**
Start date	**Model Year 2011**	**Two years after a state adopts CARB rules**
Emissions	**32.8 MMT**	**29.7 MMT Pavley 1&2** **30.3 MMT Pavley 1**
Application	**Fleet average**	**Fleet average**

California Car Vehicle Prices

CARB staff cost estimates

- **$300 /vehicle in 2012**
- **$790 /vehicle in 2016**

Alliance of Automobile Manufacturers

- **estimate cost at $3000/vehicle in 2016**

There is a fundamental disagreement between the Alliance of Automotive Manufacturers and California Air Resources Board (CARB) on Pavley 1 new vehicle prices and the potential for payback over the life of the vehicle.

CARB staff estimate 2009-2012 regulations would increase the average retail prices of passenger cars/small trucks from $16 to $292, and large trucks from $36 to $308. Between 2013-2016 CARB staff estimate the price increases for cars/small trucks from $330 to $626, and large trucks from $382 to $955. CARB estimates the higher vehicle prices for Pavley 1 will be offset by potential fuel savings of $24/month in 2012 and $20/month in 2016.

The Alliance does not believe the potential monthly fuel savings will effectively offset the initial high price of Pavley 1 compliant vehicles.

CAFE Vehicle Prices – (2015)

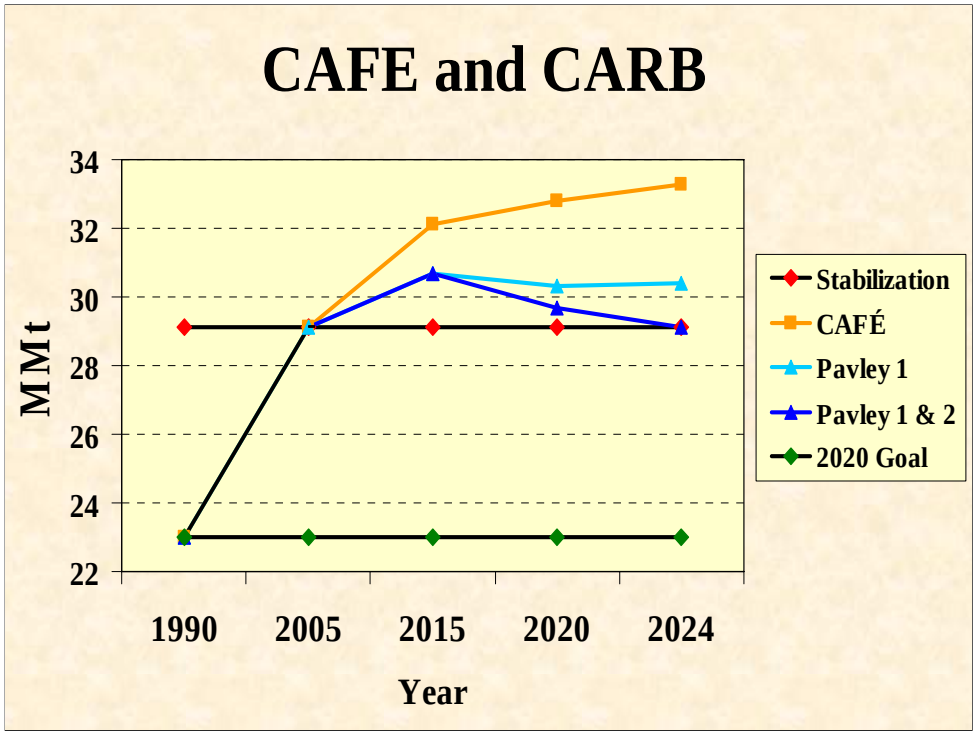
US DOT - NHTSA estimates average passenger car price will increase about $649

Sierra Research (for the Alliance of Automobile Manufacturers) estimated average fleet price will increase about $2,000

US DOT National Highway Transportation Safety Agency estimated new passenger vehicle prices would increase by about $649 because of the revised CAFE regulations (December 2007 Energy Independence and Security Act (EISA)).

Sierra Research Inc conducted an analysis on behalf of the Alliance of Automotive Manufacturers an indicated the EISA 2007 CAFE rules would add about $2,000 in 2015 and $3,500 in 2020 to the price of a new vehicle.

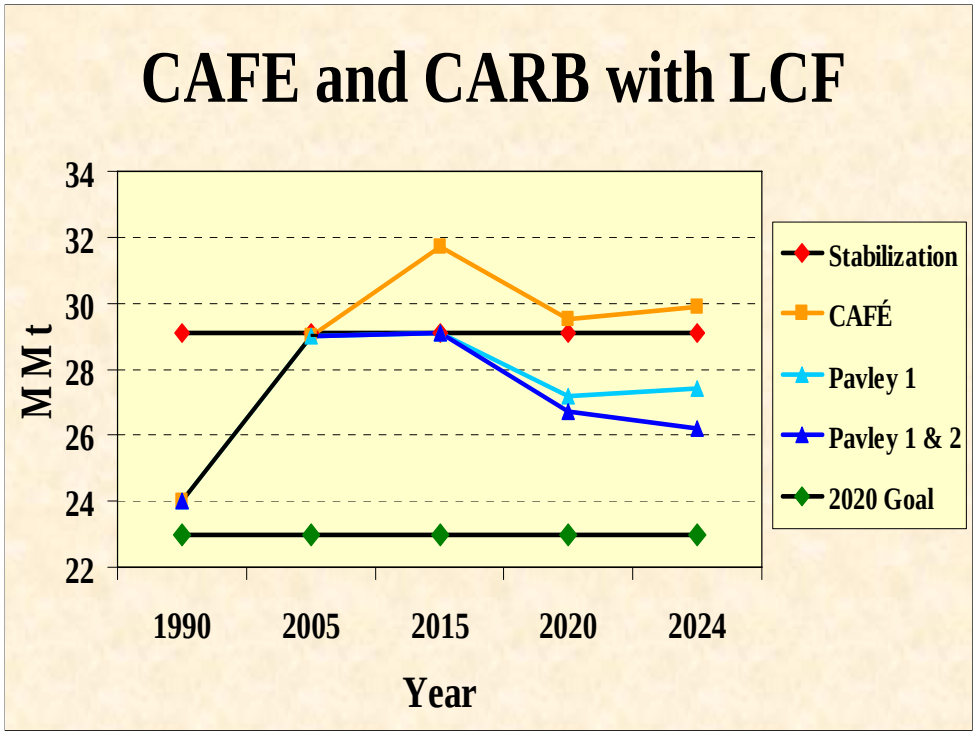
Similar to the CARB analysis, the Alliance does not believe NHTSA accurately captures the production costs and that the potential payback through fuel savings will not offset the initial high price of CAFE compliant vehicles.



This chart displays the estimated emission reductions for vehicle technology changes only (CAFE v CARB).

The variance or margin of error associated with the annual emission estimates were not calculated. The actual emissions for a given year will depend on the fleet mix, vehicle miles traveled, life cycle emissions of the transportation fuels and other variables. Estimates slightly above or below an emissions target should not be assumed to have achieved or failed to achieve that annual target. The trend line for these policies is more indicative of potential policy effectiveness.

This concept of margin of error also applies to slides 10 and 12.

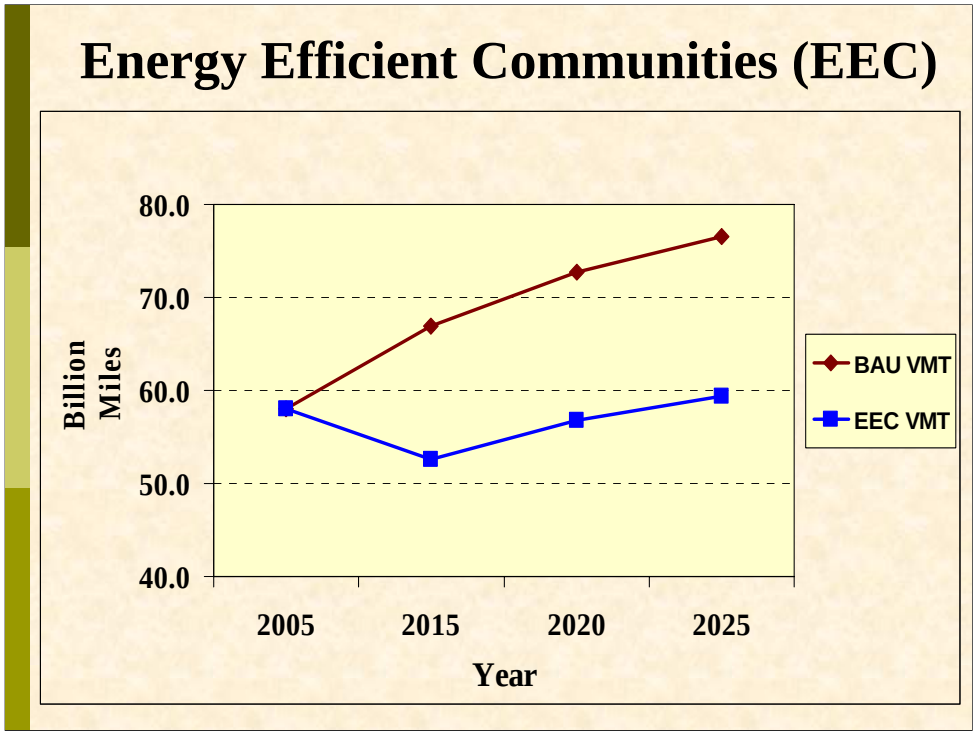


Low carbon fuels (LCF) policy is modeled after the California LCF rules, but the Transportation Work Group policy indicates the carbon reduction is to be achieved almost entirely through biofuel substitution for gasoline and diesel.

The LCF policy assumes a progressive decrease in carbon input per unit energy output for ethanol primarily and secondarily for biodiesel. The LCF policy is consistent with state energy independence strategies and renewable energy initiatives. This policy assumes by 2012 that 3% of the fuel stock meets the 10% less C input per energy output goal. By 2015 a minimum of 5% of the fuels and in 2020 and 2024 a minimum of 10% of the transportation fuels are assumed to meet the 10% LCF target.

LCF is based on Life Cycle Analysis values > 1.2 similar to the December , 2007 Energy Independence and Security Act (EISA) biofuels legislation targets. It will require breakthroughs in cellulosic and biodiesel production between 2010 and 2020 if these targets are to be achieved. 10% low carbon ethanol (mixed product ranging from E5 - E85) and biodiesel were assumed to have widespread availability by 2015 and beyond.

If the EISA targets are met the TWG analysis suggests the anticipated LCF emission reductions should be achievable for ethanol. Biodiesel production will have to be substantially expanded to meet the LCF goal.



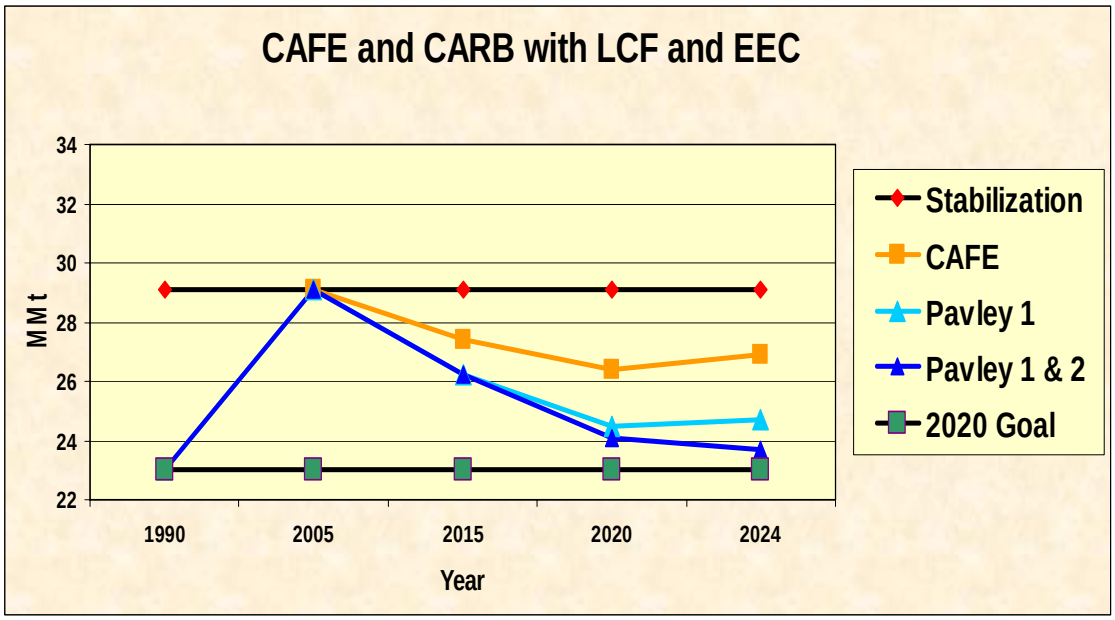
Vehicle miles traveled (VMT) significantly affects transportation emissions. VMT is driven by population growth, economic activity, driving habits and land development patterns. Growth in VMT can reverse the gains achieved through technology and fuel based initiatives.

The “Business As Usual” (BAU) values are based on Wis DOT vehicle miles traveled projections for passenger and freight vehicles.

The EEC scenario assumes vehicle miles traveled are reduced by 50% in new developments and 25% in existing developments.

A “might not happen” scenario was also considered in which VMT is reduced by 25% in new growth and 12.5% in existing developments. The net effect of the “might not happen” scenario is to diminish the effectiveness of the EEC policy by 50%.

The state can develop policies and initiatives to promote EEC, but significant reductions will depend on city/county actions.



This chart displays the emission reductions achieved through the combined implementation of three transportation policies = CAFE/CARB + LCF + EEC

1. vehicle technology (e.g., CAFE or CARB)
2. low carbon fuels (i.e., 10% less C input per energy output of transport fuels by 2020)
3. Energy Efficient Communities.

These three policies provide the most significant reduction in the on-road vehicle sector and were included in the ICF Energy 2020 modeling. The potential interaction between these three policies has been removed to the extent feasible so they represent the Transportation Work Group's best estimate of their combined emissions reductions.

Note : Additional emission reductions can be achieved through policies not modeled including **on-road** (e.g., driver behavior and idling reduction), **off-road** (e.g., ag/forestry/construction, rail, marine and air equipment fuel economy changes), **LCF** use by off-road fleets. In addition **LCFs** that exceed the 10% C reduction target (e.g., 15-20% LCF) could contribute reductions.

CARB

Pros

- **Greater emission reduction, meets stabilization goal**
- **Lower criteria and toxic pollutant emissions**
- **13 states have adopted, over 30% of US population/vehicles**

Cons

- **Cedes regulatory authority to California**
- **Legal status unclear, Pavley 2 not approved**
- **Alliance of Automobile Manufacturers opposed**
- **May limit consumer choice**

Manufacturers testified compliance not technically feasible absent product restrictions (BMW, Ford, GM, Honda, Nissan, Toyota, VW).

Pavley 2 rules are still under development.

CAFE

Pros

- **Provides 40% increase in car/truck fleet fuel economy**
- **Provides one fuel economy standard for US**
- **No legal challenges to the basic premise of the law**
- **Supported by automobile manufacturers**
- **Does not cede Wisconsin regulations to California**

Cons

- **Fuel economy lower than CARB (NHTSA test standard)**
- **Substantial increase in E85 needed to meet GHG targets**
- **Requires additional policies to meet stabilization goal**
- **No additional air quality benefits**

Energy Efficient Communities

Fix It First
focus on existing roads and roads serving denser infrastructure

TIF Changes
Refocus to developed areas

Compact/Infill Development Incentives
Smart growth Dividends

Additional discussion and action will be needed at the state and local level to implement these recommendations. Further deliberation between stakeholders is anticipated to address specific topics and craft recommendations.

Transit Enhancement

Regional Transit Authority
1/2 cent sales tax to fund RTA

Intercity Rail
$200 M state trust fund for rail links

Transit Improvement Fund
$200 M revolving loan fund for transit

Technology choices – buses, light rail, trolley,

Critical variables

- **Land use patterns**
- **Fuel prices**
- **Inter-modal transit options in region**
- **Human behavior and preferences**

Transit and EEC Funding Options

- General Revenue funds
- Potential Cap and Trade funds
- Gas Tax or a Public Benefits Fee
- Carbon Tax on Mobile Sources
- Registration Fees
- Polluter Pays accounting
- General Obligation Bonds

The Public Benefits Fee option for mobile sources would derive revenue from energy consumption purchases other than the existing electric users Public Benefits fee.

Open Discussion

Next Steps ?