Federal and California Vehicle Efficiency and GHG Standards (CAFE/Pavley)

Policy Summary: Beginning with model years (MY) 2009-2011, Massachusetts adopted California light-duty vehicle GHG emission standards. Subsequently, the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) have set harmonized standards for light-duty vehicle miles per gallon (MPG) and GHG emissions in two phases, for MY 2012 through 2016 and MY 2017 through 2025 vehicles. The standard is raised from 27.5 MPG in 2011 to 35.5 MPG in 2016, and then to 54.5 MPG in 2025, if the automotive industry were to meet EPA's requirement entirely through fuel economy improvements. California has harmonized its standards with the federal standards through 2025, and Massachusetts law requires the Commonwealth to adopt and implement the California motor vehicle emission standards as long as those standards are at least as protective as the federal standards. In combination, the EPA and California standards are forecast to yield a 34 percent reduction in GHG emissions in 2025 (primarily from lower gasoline consumption, but also with some reduced emissions from vehicle air conditioning systems), resulting in a fleet wide average decrease from about 251 grams of carbon dioxide per mile (gCO_2/mi) for MY 2016 to about 166 gCO_2/mi in 2025.

	Savings from full policy implementation	**% of 1990 level**
Economy-wide GHG reductions in 2020	3.7 $MMTCO_2e$	3.9%
Phase 1 for MY 2012-2016: Cumulative net benefits discounted, 2012-lifetime of vehicles (fuel savings and other social benefits, less increased vehicle costs)	$8.0 billion	
Phase 2 for MY 2017-2025: Net lifetime fuel savings for consumers	$12 billion	

Note: benefits are calculated over the lifetimes of vehicles purchased from 2012 through 2020, which extend beyond 2020.

Clean Energy Economy Impacts: The vast majority of spending on motor fuel goes out of Commonwealth, so reducing those expenditures by billions of dollars means more money can be spent on in-state businesses, stimulating the economy and creating jobs.

Rationale: The Federal Corporate Average Fuel Economy (CAFE) standards were first enacted in 1975 but have been relatively stagnant since the 1980s. Federal law raised the standards in 2007, but the Obama administration proposed an accelerated schedule through 2025 by establishing a joint EPA/NHTSA National Program to harmonize its rules with the California Air Resources Board's rules. California amended its regulations and adopted the key elements of the National Program. Improving the fuel economy of vehicles is one of the most effective tools to reduce energy consumption and GHG emissions.

Design Issues: The federal regulations continue the practice of having different standards for cars and light trucks, although two-wheel drive SUVs have been reclassified as cars. As a result, in MY 2011, approximately 1.5 million 2WD SUVs formerly classified as light trucks have been classified as passenger automobiles, which are estimated to produce an average increase of 0.3 MPG in the combined passenger car and light truck standards for MY 2011. However, specific fleet differences are such that this change leads to more lifetime fuel consumption of approximately 0.03 billion gallons and more carbon dioxide emissions of approximately 0.06 million metric tons than under the standards that would apply under the former definitions. This is due to the fact that the reassignment of vehicles changed the shapes of the passenger car and light truck target curves, which caused different results for different manufacturers depending on their fleet mixes.

GHG Impact: Reductions in GHG emissions is estimated to be 2.5 $MMTCO_2e$ in 2025 for Massachusetts for the second phase of standards, based on California projections. The first and second phase standards combined are expected to reduce GHG emissions by 3.7 $MMTCO_2e$ in 2020.

Other Benefits: EPA's benefit calculations include lower air pollution from vehicles, less time spent refueling, security benefits of lower petroleum imports, and the social value of lower carbon emissions.

Costs: About $8.5 billion in additional vehicle costs through 2025, far outweighed by $28.5 billion in reduced fuel costs (all in net present value).

Equity Issues: Both higher initial capital costs and subsequent fuel savings will accrue first to purchasers of new vehicles. Lower income drivers more commonly buy used vehicles, and will only be affected in later years as the new models are sold on the used car market.

Experience in Other States: The federal regulations are required in all states. Massachusetts and a number of other states have adopted California's stricter standards in the past, with no implementation problems.

Legal Authority: The federal government has authority over vehicle efficiency and air emissions. However, there is an exemption under the 1970 Clean Air Act (CAA) for California to adopt standards stricter than EPA's (if awarded a waiver by EPA) and for other states to adopt California's standards under Section 177 of the CAA.

Implementation Issues: None.

Uncertainty: See discussion under the Design Issues section above concerning the distribution of sales between cars and light trucks.