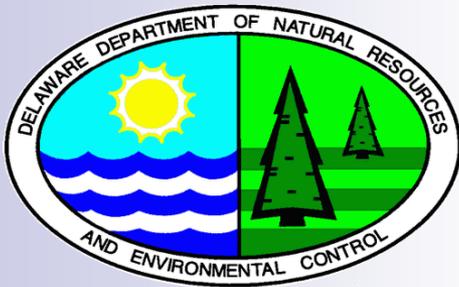


# *Delaware's Low Emission Vehicle Program*



Division of Air Quality  
July 31, 2013

*Blue Skies Delaware; Clean Air for Life*

# ***Outline for Low Emission Vehicle Program***

- Tailpipe Requirements
  - Exhaust
  - Evaporative
  - Label requirement
- Greenhouse Gas Requirements (MY 2017-2025)
  - PC/LDT & MDPV Standards
  - Air Conditioning Requirements
  - Fleet Average
- Program Benefits to Delaware



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# ***7 DE Admin Code 1140 – “Delaware Low Emission Vehicle Program”***

- Improve air quality and Public Health by reducing vehicle exhaust emissions.
- Adopted CA LEV Vehicle Emission Standards in Dec 2010.
- These amendments set more stringent fleet average non-methane organic gas (NMOG) requirements and established a new more stringent SULEV standard.



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# State of the Air



High Ozone Days	County	Grade	Wgt. Avg	Orange Days	Red Days	Purple Days
	Kent	D	2.7	8	0	0
	New Castle	F	9.7	26	2	0
	Sussex	F	5.3	13	2	0

Particle Pollution	County	Grade	Wgt. Avg	Orange Days	Red Days	Purple Days	Grade (Annual)	Design Value
	Kent	A	0.0	0	0	0	Pass	9.4
	New Castle	D	3.2	8	1	0	Pass	10.7
	Sussex	A	0.0	0	0	0	Pass	9.4

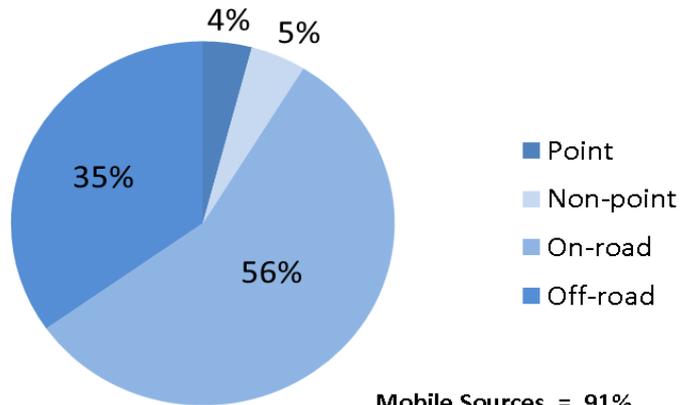
Groups at Risk	County	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	COPD	CV Disease	Diabetes	Poverty Estimate
	Kent	164,834	40,343	22,891	3,450	12,260	6,448	45,946	11,889	23,941
	New Castle	541,971	123,789	67,894	10,587	41,396	20,963	150,622	38,601	62,874
	Sussex	200,300	40,527	42,724	3,466	15,035	9,527	67,267	18,185	24,361
	Total	907,135	204,668	133,464	17,503	68,691	36,938	263,835	68,675	111,176



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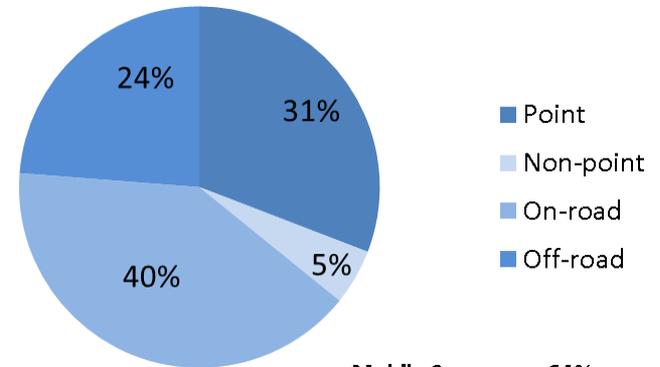
# Delaware Emissions

### 2008 CO Emissions



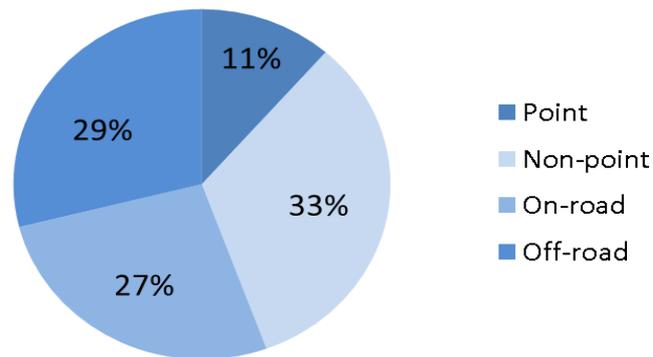
Mobile Sources = 91%

### 2008 NOx Emissions



Mobile Sources = 64%

### 2008 VOC Emissions



Mobile Sources = 56%



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# ***Low Emission Vehicles***

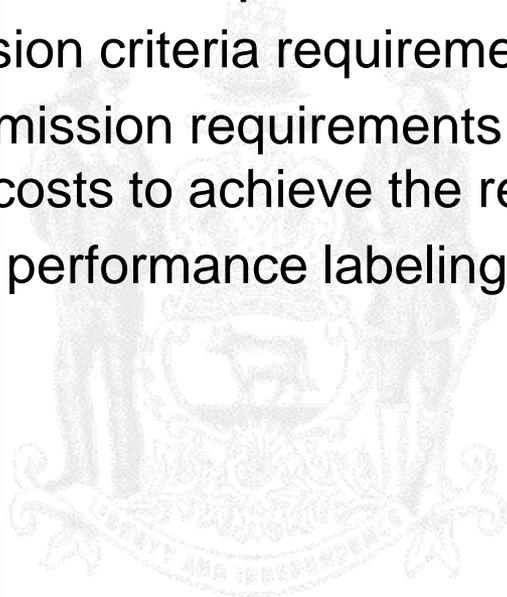
- Clean, efficient vehicles are needed to meet Delaware's air quality, public health, and climate change goals
- The LEV III standards will drive the development of the cleanest cars that use diesel, gasoline, or gasoline-electric hybrid internal combustion engines.



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# ***Low Emission Vehicles***

- The technology for controlling vehicle emissions consist of three distinct parts:
  - Exhaust emission criteria requirements;
  - Evaporative emission requirements and the technical feasibility and costs to achieve the requirements; and
  - Environmental performance labeling requirements.



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# ***LEV III Standards: 2015 – 2025 Passenger Cars***

- Stricter pollution standards for model years 2015 to 2025
- In 2025 smog-forming pollutants from the average new car will be 75% lower than pollutants from today's new car
- Increased emissions control durability from 120,000 miles to 150,000 miles
- Further pollutant reductions from the heavier trucks and vans in the medium-duty vehicle class
- Reductions achieved at low costs through ongoing improvements to conventional emission control systems



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# ***Exhaust Emission Requirements***

- Reduce fleet average emissions of new PCs, LDTs and MDPVs to SULEV levels by 2025;
- Replace separate NMOG and NO<sub>x</sub> standards to combined NMOG + NO<sub>x</sub> standards;
- Increase full useful life durability requirements from 120,000 miles to 150,000 miles;
- Provide a backstop to assure continued production of SULEV;



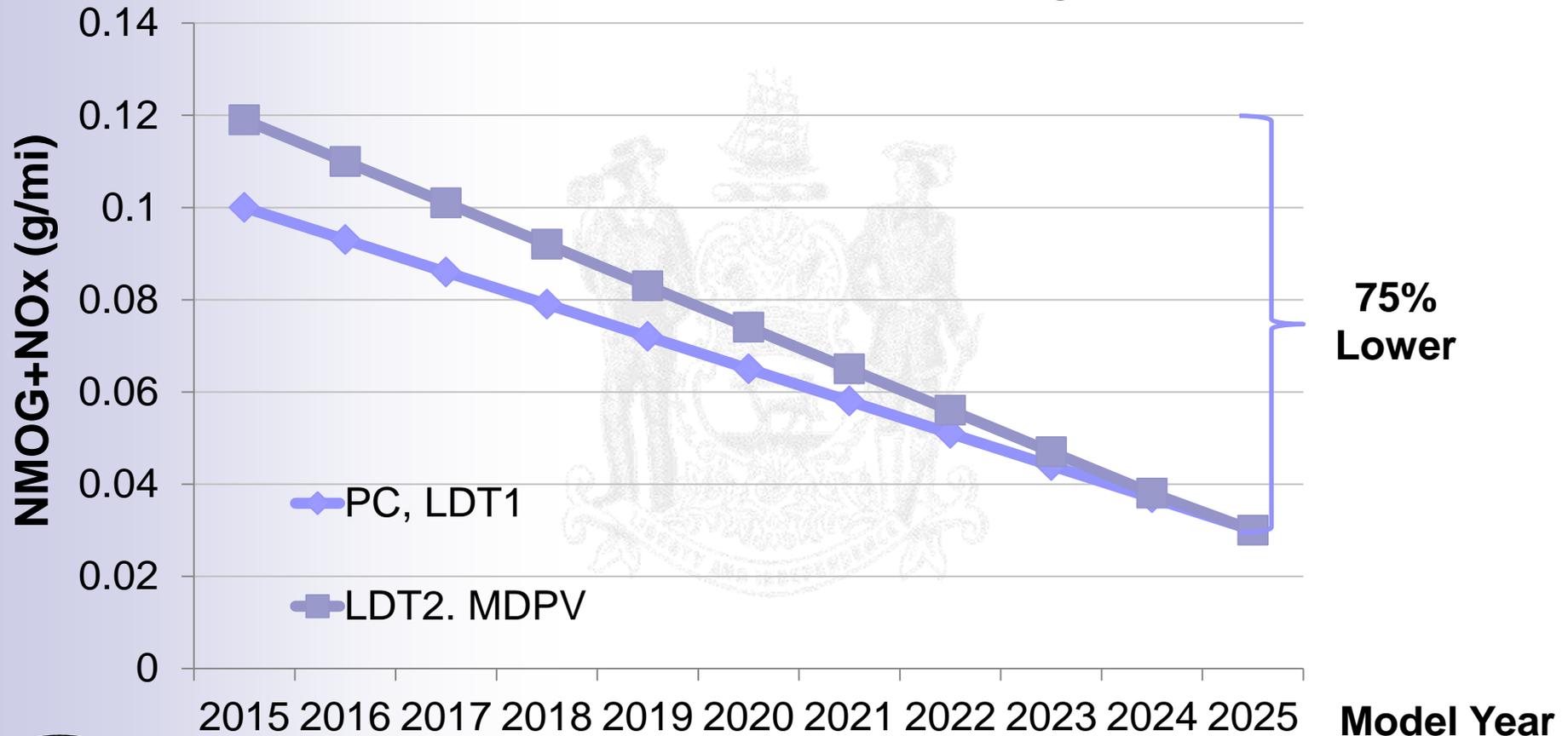
# ***Exhaust Emission Requirements***

- Establish more stringent PM standards for LDTs and MDPVs;
- Establish more stringent SFTP standards for PC and LDTs and require MDPVs to meet SFTP standards; and
- Allow pooled fleet average NMOG + NO<sub>x</sub> emissions from CA and Section 177 States that adopt the LEV III program.



# LEV III Criteria Pollutant Fleet Average

150,000-mile New Vehicle Fleet Average Emissions



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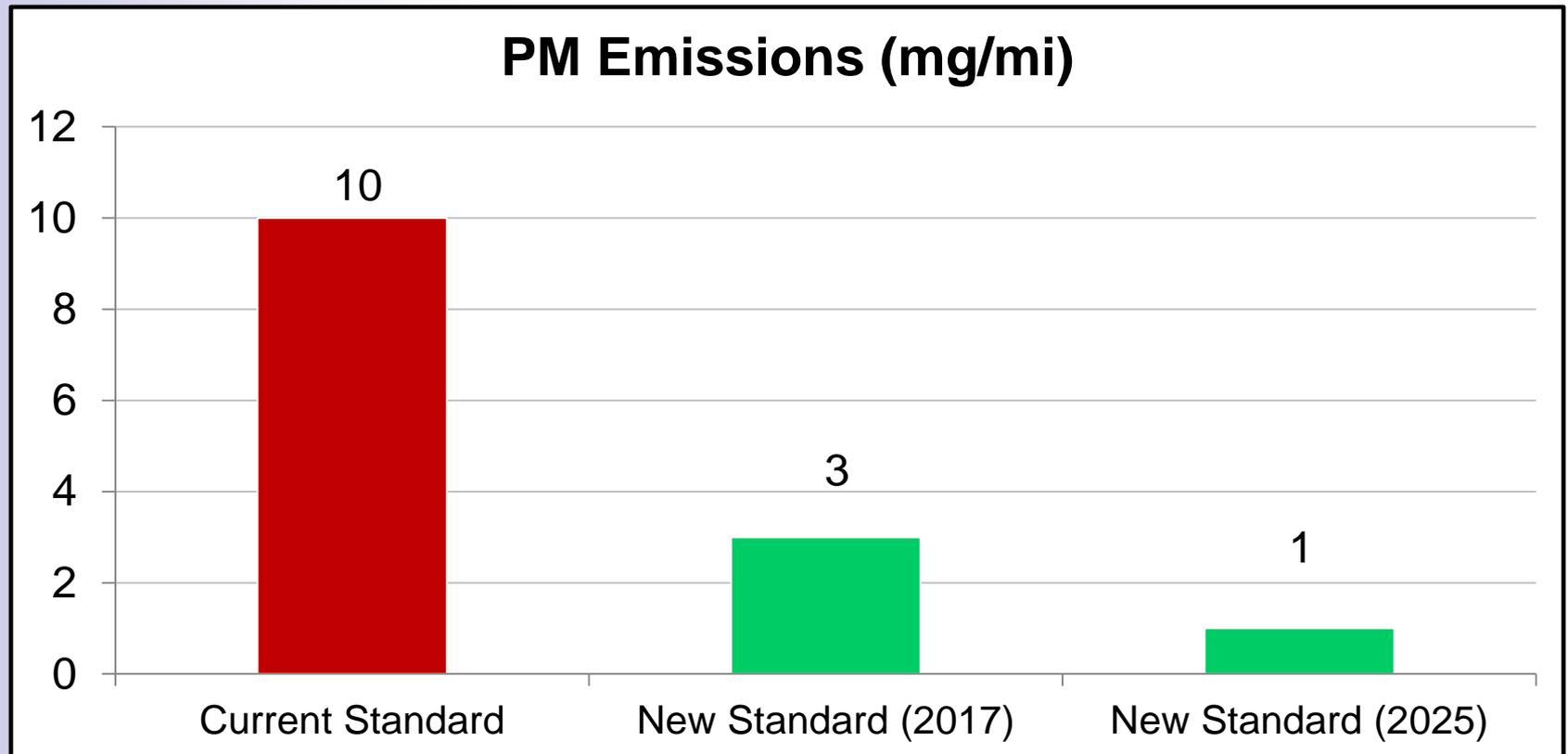
# ***Fleet Average Emission Standard***

- Combine NMOG + NO<sub>x</sub> standards to enable manufacturers to more cost-effectively tailor emission control systems;
- Emission standards to which manufacturers may certify their vehicles, as long as fleet average emissions meet declining fleet average requirement; and
- Extended phase-in period for manufacturers to incorporate improved emission control systems.



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# ***LEV III Particulate Matter Standard***



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# Federal Fuel Economy and Environment Label



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# ***Greenhouse Gas Standards: Impacts on Fuel Economy***

With annual greenhouse gas improvements of 3% to 6% per year

- Consumers would see an average real world fuel economy between 37 MPG and 50 MPG\* by 2025
- Real world fuel economy is typically about 20% lower than the fuel economy measured on the official test cycles.

\* MPG estimates simplistically assume that all emission reductions come from tailpipe improvements and that GHG reduction and MPG increases correlate absolutely.



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# ***Greenhouse Gas Standards: 2025 Technologies***

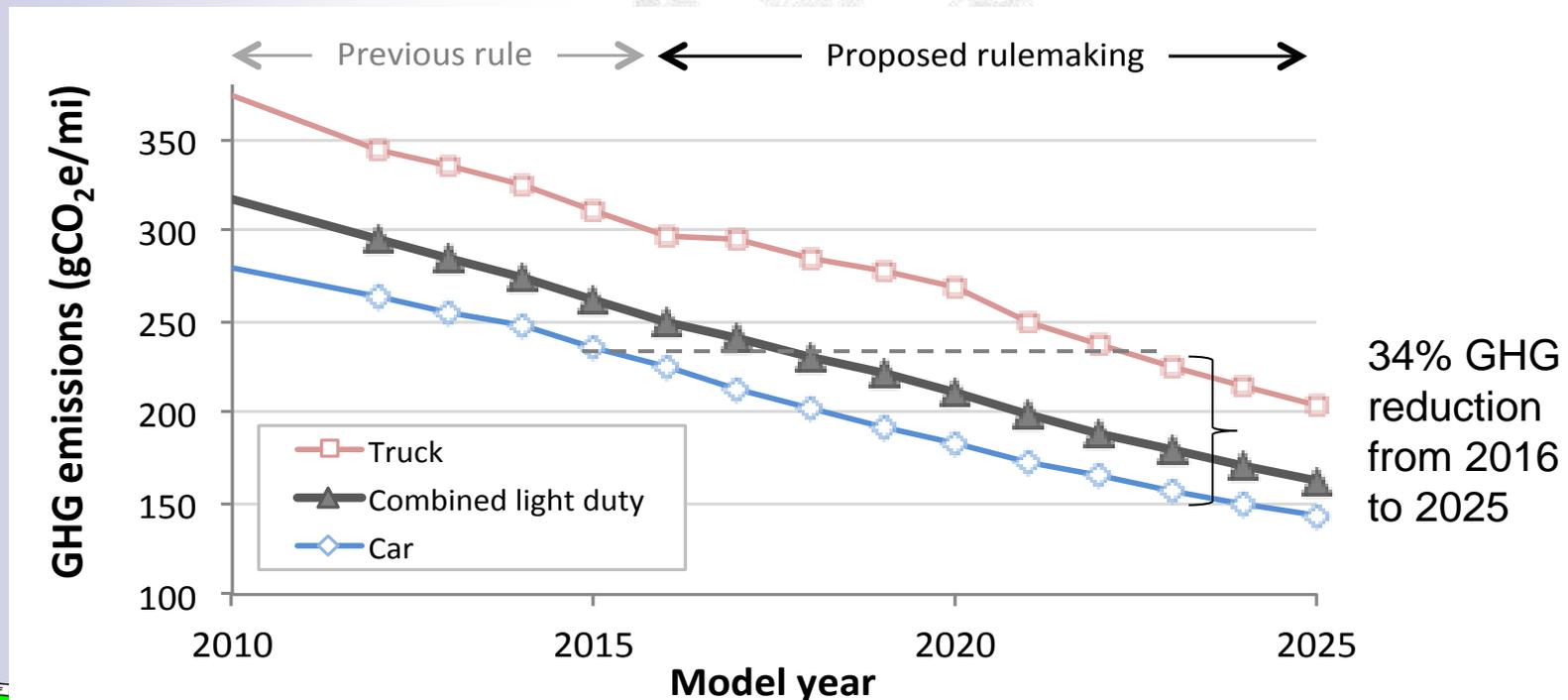
- More efficient engines
- More efficient transmissions
- Improved aerodynamics
- Wider choice of affordable hybrids
- More plug-in vehicles
- Advanced lightweight materials



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# Lower GHG Standards

- Proposal target: 166 gCO<sub>2</sub>e/mile by 2025
  - GHG reduction of 4.6%/year for 2017-2025 model years
  - GHG reduction of 34% from 2016 to 2025

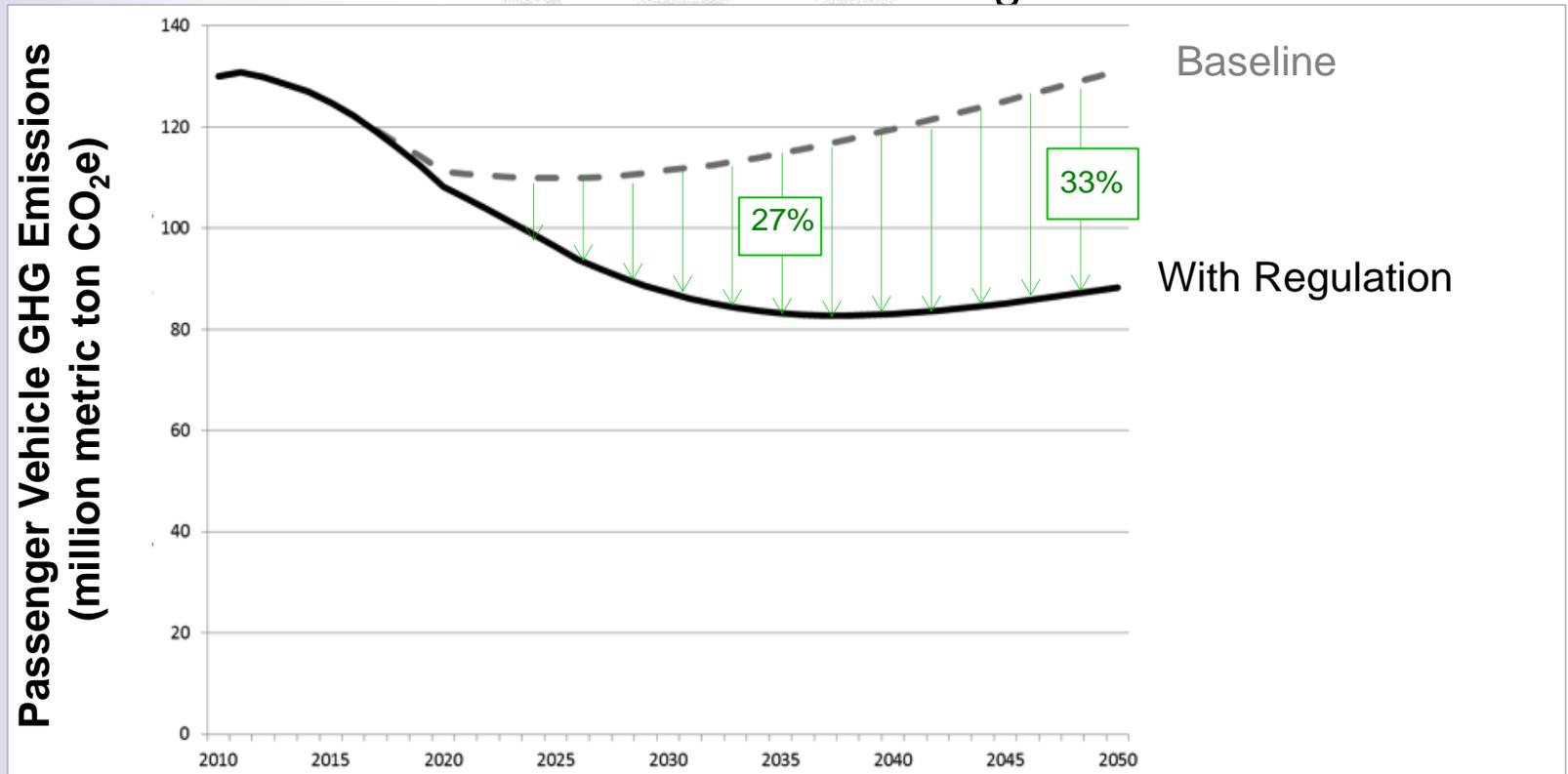


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# Substantial GHG Reduction

- Major impact as low-GHG vehicles replace older vehicles
  - GHG reduction in Delaware: 27% in 2035 and 33% by 2050
  - Cumulative: 870 million metric tons through 2050



# *Summary of Economic Impacts*

- Lifetime fuel savings far exceed new vehicle price increase
- First owner breaks even on net cost
  - 3 ½ years or less
- Lifetime benefits of used cars far exceed the increased purchase price



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# Consumer Impact

- Average 2025 vehicle consumer impact:
  - Consumer savings greatly outweigh the cost (by 3-to-1 margin)
  - “Off the lot” savings from the first month
  - Overall payback within first vehicle purchaser

<b>Lifetime effect per vehicle</b>	Incremental technology price	\$1,900
	Lifetime savings	\$5,900
	Net lifetime savings	\$4,000
	Payback period	3 years
<b>Monthly effects for financed vehicle purchase</b>	Increased monthly payment	\$35
	Monthly fuel savings	\$48
	Net monthly savings	\$12

*Note: values may not match due to rounding*



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# ***Alternatives for deploying zero emission vehicles***

- EV incentive based program
  - encourage the use of low emission vehicles
- Establish Public and Private Partnerships
- Consumer based Survey towards EV deployment sponsored by CARB and UC Davis



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# ***Path Forward***

- Public Workshop – 8/14/13 Kent County Complex (6 pm Room 220)
- Delaware Register Publication – 9/1/13
- Public Hearing – 9/23/13 R&R (6 pm Auditorium)
- Incentive Program Announced – 4<sup>th</sup> QTR 2013
- Delaware Register Publication – 4<sup>th</sup> QTR 2013
- Final Regulation – 4<sup>th</sup> QTR 2013



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