

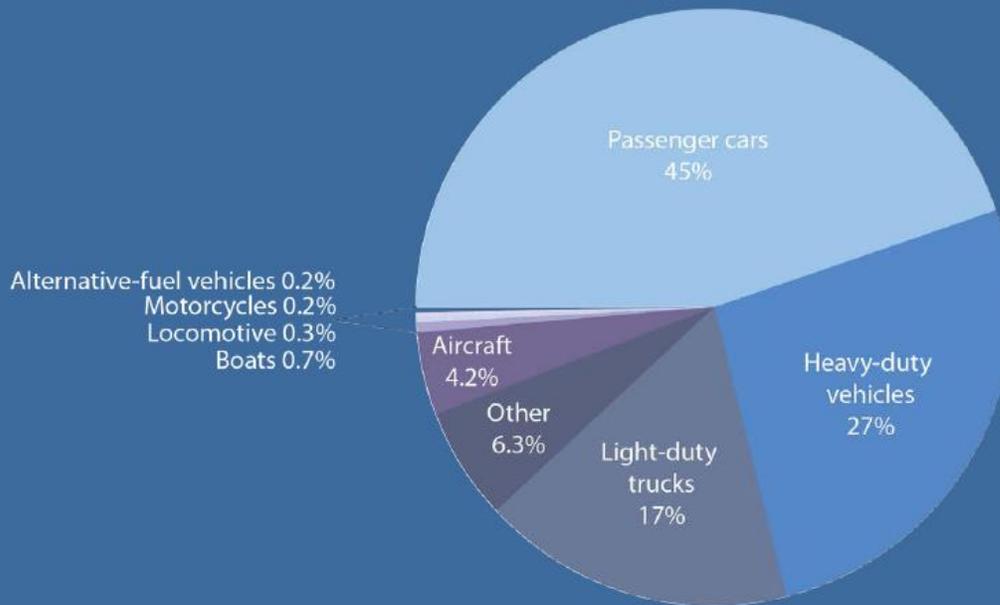
## **Response to March 10, 2016 Governor's Council on Climate Change (GC3) Analysis, Data and Metrics Working Group Meeting.**

My comments are focused on the transportation sector of this meeting. During the meeting a "Technology/Measure by Sector" handout was passed out with Estimated CO<sub>2</sub> Reduction Potential and Estimated Cost columns. It appears the assumption is that focus is on replacing fossil fuel vehicles with so called zero emission vehicles mostly electric and fuel cell vehicles. First I do not believe we will stop using fossil fuels for transportation, and most likely will still be depending on the fuel for the majority of our transportation needs. The first transportation Description at the bottom of page three has E85 but not biodiesel as Expanded Advanced Vehicles. Biodiesel is an Advanced Biofuel with an approx. 80% GHG reduction. The primary feedstock for hydrogen production is natural gas (over 90%), and natural gas as a feed stock is on par with nuclear for electricity production in this state. I don't see any major changes in the near term, and no one knows what the primary fuel or fuel feed stocks will be in 2050.

On page 4 the transportation sector continues, Low-carbon biofuels has a high cost estimate. In heavy-duty biofuels only biodiesel exists, which is a drop-in blended (B20) fuel and costs are equal to or less than regular USLD diesel. They should be even less in years to come. This has one of the largest GHG reductions of all the fuels. There is no section for propane, which is a cheap fuel with a significant GHG reduction for vehicles all the way from light duty up to 33,000 GVW. The propane engines will most likely be able to power Class 8 loads in the near future. The cost without tax is on the order of 60 cents a propane gallon here in Connecticut. Natural gas either as compressed natural gas (CNG) or liquefied natural gas (LNG) will be the cleanest fuel replacement for Class 8 diesel power. I do not see hydrogen or electricity powered Class 8 vehicles in the future.

It appears that most of the assumptions are based on electricity and hydrogen power being the primary fuels, but it is not known when these will actually be the case. Currently there are not powertrains other than fossil fuel ones that will move most commercial loads from the 1500 series pickups - light commercial trucks - to Class 8 vehicles. Slide 17 from the November 13, 2015 GC3 meeting presentation shows GHG emissions in the transportation sector with passenger cars making up 45%, heavy-duty vehicles at 27%, and light-duty trucks making up 17%. As of now, electric vehicles only have options for passenger cars leaving out the heavy-duty vehicles and light-duty trucks which according to the chart is 44% of GHG emissions. There are alternative fuel options that exist and are viable now for this segment. There are natural gas, propane, and advanced biofuel powertrains that are all cleaner burning than diesel and gasoline. These fuels are all application specific meaning they don't all work best for all fleets, but based on duty cycle and application there is a fuel that will work. A major issue is when will electric and hydrogen vehicles move the cost comparative curve up to where they are viable?

# CT Transportation Sector, 2012



\*\*Non-road sector includes aviation, marine, rail, construction, etc.

Source: EPA SIT Tool

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