Honorable Chairpersons and Members of the CGA Environment Committee:

I am a retired physical biochemist and have published my Global Warming Blog since retiing. I'm a member of the New Haven Energy Task Force and of the New Haven Environmental Advisory Council, an adjunct of the Board of Alders.

I urge the Committee to approve HB 5363, An Act Establishing A Carbon Price For Fossil Fuels Sold In Connecticut.

Summary of this testimony:

Carbon dioxide is a principal greenhouse gas (GHG) contributing to global warming. There is no natural mechanism for removing it from the atmosphere once emitted, so it keeps accumulating to ever higher concentrations, thereby warming the planet more and more. Here I draw an analogy between GHG accumulation and the speedometer in our cars that may be helpful.

To minimize the further increase in temperature humanity must bring emission rates to near zero as soon as possible. The carbon fee mandated in HB 5363 would represent an important contribution by the state of Connecticut to accomplish this goal.

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When we speak of emissions we are actually talking about an emission ***rate***, the amount of a GHG emitted into the atmosphere ***per year***. This resembles the speedometer in our cars, which tells us the rate we are traveling at in ***miles per hour***.

The odometer, on the other hand, measures ***total miles traveled***, or in this analogy, the total accumulated amount of GHGs in the atmosphere. If we let the speed decrease slowly toward zero, the odometer would still register the additional distance travelled while slowing down. But if we step sharply on the brake pedal, the car will stop abruptly and the odometer will register a lower number of miles. By analogy with GHG production from fossil fuels, humanity must step on the brake to aggressively lower emission ***rates*** to near zero as soon as we can to keep the ***total accumulated amount of GHGs in the atmosphere as low as possible***.

Why care about GHG levels, anyway? Greenhouse-active gases trap heat that would otherwise escape to space. Below are the historical record to 2010 (***in black***) combined combined with model projections between CO2 amount added since 1870 and the atmospheric temperature increase since that period, in °C, up to 2100.

Adapted from the Intergovernmental Panel on Climate Change 5th Assessment Report; http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf

The **red line and legend** show "business as usual", with emission rates continuing on present trends to 2100. The temperature increase is projected to be about 9°F by the end of the century. On the other hand, the **blue line and legend** show projected results to 2100 if emission rates fall to zero around 2030. The temperature increase is now kept below about 3°F by 2100.

We conclude that humanity must aggressively lower emission ***rates*** to near zero as soon as we can to keep the ***projected temperature increase as low as possible***. Passage of HB 5363 would promote this goal.

Respectfully,

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