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JOINT COMMITTEE ON TELECOMMUNICATIONS, UTILITIES AND ENERGY

S.1747, "AN ACT COMBATTING CLIMATE CHANGE"

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Thank you Chairman Downing, Chairman Golden, and members of the Committee for inviting me here today. My name is Christopher Knittel. I am the William Barton Rogers Professor of Energy Economics in the Sloan School of Management at the Massachusetts Institute of Technology, I am also the Director of the Center for Energy and Environmental Policy Research also at the Massachusetts Institute of Technology, and Co-Founder of the E2e Project, a joint research project between the Center for Energy and Environmental Policy Research and the University of California Energy Institute and the Energy Policy Institute of the University of Chicago to study the economics behind energy efficiency.

I. Introduction

I believe climate change to be one of the most important, if not the most important, challenges faced by human kind. My testimony will focus on three major points: (1) A price on carbon, through a carbon fee, is the most efficient way to reduce greenhouse gas (GHG) emissions, (2) a price on carbon is essential for the Commonwealth to reach both its medium- and long-term goals for reducing greenhouse gas emissions, and (3) the co-benefits alone from a price on carbon—coming from reductions in local pollutants such as nitrogen oxides, smog, particulate matter, carbon monoxide, etc.—outweigh the costs of a carbon fee. Therefore, even setting aside issues surrounding climate change, the price on carbon is good for the Commonwealth.

II. A Price on Carbon is the Most Efficient Way To Reduce GHG Emissions

The joke about economists, at least one of the jokes, is that they never agree. I believe it goes something like: if you laid all economists end-to-end, they would never reach a conclusion.

On the issue of the best way to reduce greenhouse gas emissions, economists have reached a conclusion. Economists are essentially unanimous as to the most efficient way to reduce greenhouse gas emissions: it is through a price on carbon. Economists may differ as to whether a carbon fee, a carbon tax, or a cap-and-trade system is marginally better in terms of putting a price on carbon, but there is little, if any, disagreement on the need for a price on carbon.

The fundamental problem with greenhouse gas emissions, as with all pollution, is that the consumers and firms operating in these markets do not face the true cost of their decisions. It is a basic principle of economics that markets are efficient when consumers and firms face the true social costs and benefits of their decisions. In markets that lead to greenhouse gas emissions—such as electricity and fuel markets—this is not the case. When I burn a gallon of gasoline, I pay the cost of the oil, the cost of refining that oil, and the transportation and marketing costs associated with the gasoline. I do not, nor do any of the firms involved, pay for the costs associated with the 20 pounds of carbon dioxide that are emitted into the atmosphere from burning that gallon of gasoline.

Because of this, I will consume too much gasoline. When it comes time to purchase a new vehicle, I will also under-purchase fuel economy because I will benefit from only a portion of the increased fuel economy. The same inefficiency exists when I purchase electricity or natural gas.

How do we "fix" the market? It turns out that we have known the answer to this since the British economist Arthur Pigou wrote about this topic in 1920. The solution is to put a price on the pollution equal to the social cost of that pollution. This corrects the inefficiency inherent in the marketplace and will necessarily be the most efficient and cost effective way to reduce pollution.

III. A Price on Carbon is Essential to Meet the Commonwealth's Goals

I do not have to tell this committee that the Commonwealth of Massachusetts has put in place important medium- and long-term GHG reduction targets. These targets should be commended and a model for other states. A price on carbon is essential to meet these goals of a 25 percent reduction, relative to 1990 levels, by 2020 and an 80 percent by 2050.

No other policy has the same breadth as a price on carbon in terms of wide range of beneficial behavioral changes. Consumers have the incentive to use fossil-fuel-based products more efficiently, such as driving more efficiently and paying more attention to wasting energy. Firms have the incentive to produce products that use fossil-fuels more efficiently—such as offering more efficient vehicles and furnaces. Consumers and firms have more of an incentive to invest in energy efficiency—for example, investing in more efficient lighting or automobiles. And, firms have an added incentive to innovate—that is, invest in research and development to lower the cost of low-carbon technologies. There is no other policy that leads to all of these beneficial changes.

A price on carbon may not be enough. That is we may still need additional policies such as the Renewable Portfolio Standard, subsidies for low-carbon technologies, and the like. But what is clear is that the starting point should always be a price on carbon.

IV. A Price on Carbon Makes Sense Even if We Ignore Climate Change

Burning fossil fuels does more than just emit greenhouse gas emissions into the atmosphere. When you burn gasoline, coal, and natural gas local pollutants such as nitrogen oxides, particulate matter, carbon monoxide, and even mercury are emitted into the atmosphere. These pollutants cause a host of health problems focused on Commonwealth residents. These health problems include respiratory problems, oxygen deprivation, and cardiovascular problems. A long literature in both economics and epidemiology has shown a causal relationship between these pollutants and infant mortality, emergency room admissions, and more.

My own academic work finds that even if we ignore the climate change benefits the benefits from reducing health problems caused by local pollution warrant a sizable

price on carbon.[1] A recent paper out of the IMF finds that a US carbon price of over $30 per ton of CO2 is justified from so-called co-benefits alone.[2] As such, even if we were to sweep aside climate change, which we shouldn't, a price on carbon would still be a good thing.

IV. Summary

To summarize, climate change is one of the great challenges faced by society and time is running out. The Commonwealth has put in place historic goals for reducing greenhouse gas emissions that will not only benefits its citizens, but the rest of the country and world. To efficiently meet those goals, a price on carbon is essential. S. 1747 puts a price on carbon while guaranteeing the revenues from that price go back to the people. I have rarely in my career explicitly supported a single piece of legislation, but this is one very important exception. S. 1747 is the right policy, at the right time, for the right reasons.

I would like to thank the entire committee once again for inviting me to participate in this important discussion. Let me stress that I would be more than happy to discuss these issues with any of the members after this hearing concludes. I will now gladly respond to any questions.

[1] Knittel, Christopher and Ryan Sandler. "The Welfare Impact of Indirect Pigouvian Taxation: Evidence from Transportation." MIT CEEPR Working Paper WP-2013-011. Available at: http://web.mit.edu/knittel/www/papers/cobenefits_latest.pdf.

[2] Parry, Ian, Chandara Veung, and Dirk Heine. "How Much Carbon Pricing is in Countries' Own Interests? The Critical Role of Co-Benefits." IMF Working Paper 14/174. Available at: https://www.imf.org/external/pubs/ft/wp/2014/wp14174.pdf.