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# New Wavelength - Carbon Tax, Cap & Trade, and Market Adaptation, A

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## A NEW WAVELENGTH? CARBON TAX, CAP & TRADE, AND MARKET ADAPTATION

*Session Chair - Cyndee Todgham Cherniak*  
*Canadian Speaker - Michal C. Moore*  
*United States Speaker - Jonathan H. Adler*

### INTRODUCTION

*Cyndee Todgham Cherniak*

MS. TODGHAM CHERNIAK: Hello. My name is Cyndee Todgham Cherniak,<sup>1</sup> and I am a trade lawyer with McMillan LLP in Toronto. I am also a sales tax lawyer, but in this room, I will say “other than income tax” lawyer is my second hat.

So rather than me taking up much more time, I will leave my prepared marks seeing that we can segue in from the last panel. We have two speakers on this panel.

The first speaker is Michal Moore,<sup>2</sup> a Professor of Energy Economics and Senior Fellow at the University of Calgary. He is a former Energy Commissioner for the State of California and was Chief Economist for the United States. He is also a part of the National Renewable Energy Laboratory in Golden, Colorado.<sup>3</sup> He directs a research program on energy markets and is currently developing a regulatory risk evaluation model for the Marcellus shale in collaboration with colleagues at Cornell University,<sup>4</sup> and he will be speaking first.

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<sup>1</sup> *Cyndee Todgham Cherniak—Biography*, MCMILLAN, <http://www.mcmillan.ca/CyndeeTodghamCherniak> (last visited Jan. 25, 2012). Ms. Todgham Cherniak is a Canadian trade and tax lawyer and owner of Cyndee Todgham Cherniak Professional Corporation, which provides services to McMillan LLP.

<sup>2</sup> *Michal C. Moore—Biography*, INST. FOR SUSTAINABLE ENERGY, ENV'T AND ECON., <http://www.iseec.ca/about-iseec/contact-us/directory/michal-c-moore/> (last visited Jan. 25, 2012).

<sup>3</sup> *Id.*

<sup>4</sup> See Al George et al., *Energy Transitions: A Systems Approach Including Marcellus Shale Gas Development*, ATKINSON CTR. FOR A SUSTAINABLE FUTURE (August 2011), <http://www.cce.cornell.edu/EnergyClimateChange/NaturalGasDev/Documents/PDFs/Systems>

After Michal Moore, Jonathan Adler<sup>5</sup> will give his remarks. Jonathan is a Professor of Law and Director of the Center for Business Law and Regulation at Case Western Reserve University School of Law.<sup>6</sup> Professor Adler is the editor of four books on environmental policy and over a dozen book chapters.<sup>7</sup> His articles have appeared in publications ranging from the Harvard Environmental Law Review and the Supreme Court Economic Review to the Wall Street Journal and the Washington Post. He is also a regular commentator on environmental and legal issues and has appeared on numerous radio and television programs ranging from the PBS News Hour with Jim Lehrer and NPR's "Talk of the Nation" to Fox News channel's "The O'Reilly Factor," and "Entertainment Tonight" even.<sup>8</sup>

So without further ado, I will pass the microphones over to the speakers and to Michal Moore:

### CANADIAN SPEAKER

*Michal C. Moore*

PROFESSOR MOORE: Thank you very much for inviting me and to Dan for having me back. I have enjoyed it very much and very much appreciate the forum you conduct here. It is interesting. I never thought I would be the only one on a panel who had not been on Fox News, but I am.

So I will just say that my remarks are going to address the issues on the outline in three ways, and to start, I am going to go back to some remarks that were made earlier, one by Chris that said the gap between what we know and what we do is all about carbon policy. I am going to add to that and say they will do the right thing.

I am going to go back to something that John Felmy said earlier, and that is that there is a great distortion and a gap between transportation energy and electricity. I think that the failure to close that gap, the failure to address the fact that they are different, even though they use the small "e" energy, is not helpful, not accurate, and it sets appropriate regulation back at least a decade. Now, there are good reasons why groups do maintain that gap, do distort the

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[%20Research%20-%20Energy%20Transitions%20\\_v1%208%2025%2011a.pdf](#).

<sup>5</sup> *Jonathan Adler—Biography*, CASE W. RES. U. SCH. L., <http://law.case.edu/OurSchool/FacultyStaff/MeetOurFaculty/FacultyDetail.aspx?id=83> (last visited Jan. 25, 2012).

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

difference, and I think these will become apparent just in the nature of my comments.

So there is an issue here that overlies everything I want to say, and that is that this is all about this issue of how to deal with carbon, is all about risk, but there is a very fundamental issue that distorts our perception about what risk is all about. No outcomes that we can describe, either academically or scientifically, are truly deterministic in this discussion.

They are all probabilistic and relative, and yet, the decisions that we have to make regarding those tend to change, sometimes pretty rapidly for individuals and firms, and that means that, at least for me as an economist, the rule sets ought to be those that allow the most flexible decisions and closest to the decision themselves.

I am going to try, if I get enough time to do this, to discuss three things. First, this whole topic is about carbon, carbon mitigation, and market adaptation. So I am going to discuss the problem, why is carbon an issue? Is it the only issue?

If we solve it, can we declare victory and just go back to the beach without any SPF 90? What are the main tools that are talked about today to solve the problem? Cap and trade, carbon taxes, some sort of uber regulation? What are they? Do they work? Should we pick a winner? Should we be in the business of picking a winner? And finally, will energy markets and their consumers adapt? Is there room for a carbon market in all of this?

So first off with the problem, and I will say that the question is not real in a sense, seems pretty silly to me, but I will go ahead and attempt it anyway. If it is not real, something is happening out there. We are getting bigger, wider swings in weather behavior.<sup>9</sup> We are getting a sea level rise that is unmistakable.<sup>10</sup> We are getting melting of fresh water out of glaciers.<sup>11</sup> A lot of things are changing that are due to something. Is it anthropogenic forcing?<sup>12</sup> Probably.

Is anthropogenic forcing speeding it up?<sup>13</sup> Undoubtedly. It would be pretty hard to deny that. So it is a big deal. Most everyone agrees that it is

<sup>9</sup> See Robert Lee Hotz, *The Warming Earth Blows Hot, Cold and Chaotic*, WALL ST. J. (Jan. 2, 2009), <http://online.wsj.com/article/SB123085070980447477.html> (illustrating recent anomalies in the global weather patterns).

<sup>10</sup> See *Coastal Zones and Sea Level Rise*, U.S. ENVTL. PROT. AGENCY, <http://epa.gov/climatechange/effects/coastal/index.html> (last modified Apr. 14, 2011) (stating “[s]ea level is rising along most of the United States coast, and around the world.”).

<sup>11</sup> *Id.* (explaining that the sea levels are expected to continue rising because of melting mountain glaciers and small ice caps).

<sup>12</sup> See Sydney Levitus, *Anthropogenic Warming of Earth’s Climate System*, 292 SCI. 267, 267-70 (2001) (suggesting that human influences are responsible for climate change).

<sup>13</sup> *Id.* (presenting evidence of increasing radiative forces in the later half of the twentieth century).

real.<sup>14</sup> I do not know how much cyclicity there is to it or how persistent it is likely to be, but I will simply say that like any other market activity, to say, “I do not believe it, and therefore, I will not change my behavior, I will not invest in it,” is not just silly, it is foolish.

And if you were a money market manager or an investor, you are not going to do that. You are going to do what economists call “hedging.”<sup>15</sup> You are going to bet part of your money that it might be right because if you lose, you lose wholly, and if you win, you win big. And if it is wrong and you bet against it, then all you have done is to redistribute capital around the economy a little bit.

So the right strategy then is to hedge, and if that hedge is wrong and there is still an investment in the economy and there are some shifts, firms that are ossified, that have been around for a long time, probably did not deserve to have the market share that they have got anyway. But they got it because they stole land from the Indians or because they got a grant from the government early on.

Guess what? They are going to fail. And too bad because the economy is not going to get more robust, is not going to grow unless they do. So part of the hedge strategy, if it is effective, is to devise some combination of policies, incentives, programs, research and development that change behavior and change outcomes so as to minimize risk, so as to equitably distribute costs, and to adjust by reacting to changing conditions to minimize imbalance and/or disruption in the economy.

The business-as-usual scenario of the existing firm structures, as I said, or stranded capital are not necessarily left on the table, but they may be, and that is a risk in business generally. So I said that behavior, or I hinted that behavior, here in the world of energy and carbon production has to change, and there are two good reasons why.

First, there is a real, as well as a distributional, shortfall coming in terms of what we have available to us in energy, at least energy as we knew it.<sup>16</sup>

Second, from what I already said, climate change is a likely event,<sup>17</sup> and that is going to change the dynamic, the calculus, the real calculus of how

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<sup>14</sup> See Marci R. Culley et al., *Sun, Wind, Rock and Metal: Attitudes toward Renewable and Non-renewable Energy Sources in the Context of Climate Change and Current Energy Debates*, 30 CURRENT PSYCHOLOGY 215, 215 (2011) (arguing that the vast majority of scientists agree that global climate change is the result of human activity).

<sup>15</sup> See generally Murillo Campello, *The Real and Financial Implications of Corporate Hedging*, 66 J. FIN. 1615, 1615-1643 (2011) (discussing hedging in the corporate context).

<sup>16</sup> See P.E. Hodgson, *Nuclear Power and the Energy Crisis*, 50 MOD. AGE 238, 238 (2008) (discussing the inadequacies of traditional energy sources to meet rising demand).

<sup>17</sup> Culley et al., *supra* note 14, at 215.

energy is produced.<sup>18</sup> There are a couple of reasons why behavior has not changed already.

First of all, we subsidize inefficient behavior.<sup>19</sup> We have done that for a long time. We do it under the guise of getting things market ready or market competitive, and then we just forget to take the subsidy off.<sup>20</sup>

Second, we have pretty opaque pricing,<sup>21</sup> and as any good economist will tell you, no market works when good pricing is not relatively transparent,<sup>22</sup> when the consumers do not know what they are getting, or when. Let us just take an example. An electricity company bundles their rates so you cannot determine what you are spending it on: executive jets, vacations, billing offices, or something else that you cannot use to change your own behavior.

On the public side, the perceived risks of energy development biases the choices for the current mix to known relatively safe technologies and fuels. But that behavior tends to increase the cost, the risk, and the shape of future investment in the system gets hard to change. It delays change. It diminishes the reliability of the system overall because we do not bring in new technology where it is needed.

And, in fact, we reward the same ossified and old 1910 design of the electric system that we have today; we just do not make any changes.<sup>23</sup> The on-demand model<sup>24</sup> that we live with, and I heard someone say this earlier today, one of the environmental representatives, in order to protect the model that we have where everyone can have all the energy they want when they want it, is that not just stupid? That is the on-demand model.

That is when we go to the switch, and I pull the switch, and I expect the lights to come on. If you were living in Iraq today, you would not do that.

<sup>18</sup> *Id.*

<sup>19</sup> See UNITED NATIONS ENVIRONMENT PROGRAMME, REFORMING ENERGY SUBSIDIES: OPPORTUNITIES TO CONTRIBUTE TO THE CLIMATE CHANGE AGENDA 32 (2008), available at <http://www.unep.ch/etb/publications/Energy%20subsidies/EnergySubsidiesFinalReport.pdf> (indicating the negative consequences of fossil fuel subsidies).

<sup>20</sup> *Id.* at 25 (suggesting that subsidies should be for a limited period of time).

<sup>21</sup> See David Kocientewski, *As Oil Industry Fights a Tax, It Reaps Subsidies*, N.Y. TIMES, July 3, 2010, <http://www.nytimes.com/2010/07/04/business/04bptax.html> (indicating that the oil and gas industries spent \$340 million between 2008 and 2010, a cost which inevitably comes out of the consumer's pocket).

<sup>22</sup> See generally D. ANDREW AUSTIN & JANE G. GRAVELLE, CONG. RESEARCH SERV., RL 34101, DOES PRICE TRANSPARENCY IMPROVE MARKET EFFICIENCY? IMPLICATIONS OF EMPIRICAL EVIDENCE IN OTHER MARKETS FOR THE HEALTH SECTOR CRS-3 (2008) (providing examples of financial markets that suggest transparency lowered prices).

<sup>23</sup> See Richard F. Hirsch & Adam H. Serchuk, *Momentum Shifts in the American Electric Utility System: Catastrophic Change—or No Change at All?*, 37 TECH. & CULTURE 280, 280 (1996) (criticizing the proposition that the American electric system has substantially changed).

<sup>24</sup> See MICHAEL J. GRAETZ, THE END OF ENERGY 1 (2011) (arguing that the United States takes energy for granted when its citizens expect an unlimited supply).

You would flip the switch and wait for something to come on and then have it do work for you.<sup>25</sup> The on-demand model implies spinning reserves, surpluses, and a lot of excess production.<sup>26</sup> It is not a smart model and we are not going to be able to live with it very much longer. We need to change that.

So if we admit that there is a problem and we need to change somehow, what about the tools? What do we have available to us in our toolbox? We could close down all the offending generators, the cars that we do not like, that offend us, all the tuna clippers that should have been shipped to Mexico so they can continue polluting while we pretend they do not exist anymore.

We can change power plants. We can over-regulate and redesign power plants and tell them what they ought to look like. We can regulate business by business or across the board such as a cap and trade plant. We can target offenders using a tax of some kind, a Pigovian tax<sup>27</sup> that penalizes or changes bad behavior.

Like Mr. Nordhaus proposed recently, we can create an energy tax that raises revenue for the rest of the government,<sup>28</sup> another source of revenue. Like British Columbia, we could redistribute our carbon collection out to other parts of the economy.<sup>29</sup> Like Alberta, we could use the fifteen dollar a ton tax on oil sands generation and fund research and demonstration projects,<sup>30</sup> and in California with the AB 32 fuel standard.<sup>31</sup> We could, in fact, start to push off bad events or bad behavior and keep it out of the state because, after all, California is an island and doesn't really need to do anything that anyone else does.

We can get groups together to posit regional behavioral changes so we can get the Western Climate Initiative<sup>32</sup>—a nice group of friends that work

<sup>25</sup> *Id.* (“We take for granted that when we come home at night and flip on the light switch, the bulb will illuminate. We assume that when we turn up the thermostat, the heat will come on.”).

<sup>26</sup> *Id.* (illustrating the United States’ expectation for unlimited fuel sources).

<sup>27</sup> Donatella Baiardi & Mario Menegatti, *Pigouvian Tax, Abatement Policies and Uncertainty on the Environment*, 103 J. ECON. 221, 222 (2011) (“The so-called ‘Pigouvian tax,’ first proposed by Pigou . . . who argues that negative externality due to pollution can be internalized in a competitive market by introducing a tax equal to the social marginal damage caused by environmental degradation.”).

<sup>28</sup> See WILLIAM NORDHAUS, *A QUESTION OF BALANCE* 156 (2008) (suggesting that energy taxes can raise government revenues).

<sup>29</sup> See *We Have a Winner*, *ECONOMIST*, July 23, 2011, at 35 (describing the carbon tax in British Columbia and its impact on the economy).

<sup>30</sup> *Muck and Brass*, *ECONOMIST*, Jan. 22, 2011, at 81 (stating “Alberta’s own carbon tax is just C\$15 per tonne”).

<sup>31</sup> See *Low Carbon Fuel Standard*, CAL. ENERGY COMM’N, [http://www.energy.ca.gov/low\\_carbon\\_fuel\\_standard/](http://www.energy.ca.gov/low_carbon_fuel_standard/) (last modified Mar. 27, 2009).

<sup>32</sup> See *History*, W. CLIMATE INITIATIVE, <http://www.westernclimateinitiative.org/history> (last visited Nov. 21, 2011) (providing a brief history of the Western Climate Initiative).

together well until they decide they do not want to work together anymore and so they stop—or we could have a nice objective of gas initiatives that do not take into account shifts in technology, shifts in prices, or, in fact, the long embedded time for changing technology.<sup>33</sup>

So we have got choices, and the two that were determined that we would talk about today are cap and trade, and I am going to speed through these, and then I am going to hopefully end on what it takes to get a market to adapt.

So what about cap and trade? It is an administrative approach used to control emissions by capping gross levels of some pollutant and allowing companies that can more efficiently comply with a regulation to share, trade, or sell a fraction of their compliance credits to firms that are older, less nimble, and allow them to stay in business.<sup>34</sup>

We can use auctions, sales, trades, grants, and you know what? It turns out that it works in very special conditions. It started down in the South Coast Air Basin in Los Angeles where you have got a very closed basin and it was used to regulate criteria pollutant, SO<sub>x</sub>, NO<sub>x</sub>, and particle sizes.<sup>35</sup>

You could dial down to every industry by inventory that was producing any quantity of these. You could then ratchet down your bubble as it were, or your cap, and get very targeted compliance. When you try to expand that concept out, though, and deal with something that is as easy to miss as carbon dioxide, you have more trouble because you cannot pin down exactly where it is coming from.<sup>36</sup>

In addition, the vast bulk of it is coming from two sources that are hard to see. One is transportation,<sup>37</sup> and the other is all the range of power plants

<sup>33</sup> See generally Mireya Navarro, *Christie Pulls New Jersey From 10-State Climate Initiative*, N.Y. TIMES (May 26, 2011), [http://www.nytimes.com/2011/05/27/nyregion/christie-pulls-nj-from-greenhouse-gas-coalition.html?\\_r=1](http://www.nytimes.com/2011/05/27/nyregion/christie-pulls-nj-from-greenhouse-gas-coalition.html?_r=1) (providing criticism of the Regional Greenhouse Gas Initiative associated with the New Jersey withdrawal).

<sup>34</sup> René Carmona et al., *Market Design for Emission Trading Schemes*, 52 SIAM REVIEW 403, 404 (2010) (providing an introduction to the cap and trade tax system).

<sup>35</sup> EPA's Evaluation of the RECLAIM Program in the South Coast Air Quality Management District, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/region9/air/reclaim/index.html> (last updated June 6, 2011) ("The Regional Clean Air Incentives Market . . . program, adopted by the South Coast Air Quality Management District . . . in October 1993, set an emissions cap and declining balance for many of the largest facilities emitting nitrogen oxides (NO<sub>x</sub>) and sulfur oxides (SO<sub>x</sub>) in the South Coast Air Basin.").

<sup>36</sup> Corinne Le Quere et al., *Trends in the Sources and Sinks of Carbon Dioxide*, 2 NATURE GEOSCIENCE 831 (2009), available at <http://www.nature.com/ngeo/journal/v2/n12/full/ngeo689.html> ("Progress has been made in monitoring the trends in the carbon cycle and understanding their drivers. However, major gaps remain, particularly in our ability to link anthropogenic CO<sub>2</sub> emissions to atmospheric CO<sub>2</sub> concentration on a year-to-year basis; this creates a multi-year delay and adds uncertainty to our capacity to quantify the effectiveness of climate mitigation policies.").

<sup>37</sup> Oyewande Akinnikawe & Christine Ehlig-Economides, *Reducing the Green House Gas*



that it is hard to tie it to,<sup>38</sup> especially if you use some sort of life cycle analysis that uses different ratios of accountability for carbon dioxide for every different technology.

Cap and trade, at least from an economist standpoint is, although it is not really implemented except in a couple places where it has faltering starts, just a non-starter, again a silly approach. It is bureaucratic. It is slow. It is artificial in setting goals and prices and compliance; it tends to change with political whims.<sup>39</sup>

If you are betting in the financial industry, you are going to bet on the future. You are going to look for something that has certainty and a return and lowers your risk. You are not going to bet on cap and trade because you are not going to know what bureaucrat is going to be in charge, and you are not going to know what political system is going to ratchet down or change levels over time. It is a political horse-trading foil, and for that, unfortunately, it is absolutely perfect.

What about taxes? Typically, we all know about taxes. It is just about that time. Five o'clock today or midnight today. And so we know what a tax is. We know how it gets administered. We know how to pay it. We know how to account for it.

Some taxes are designed to prevent events.<sup>40</sup> Some taxes are designed just to create revenues, and some are designed to change behavior.<sup>41</sup> They can be used to target exactly the element that we are after. In the case of carbon taxes, we can dial in very, very specifically to some offending constituent,<sup>42</sup> in this case what ought to be targeted, and I can talk about this, I suppose, in questions perhaps more easily.

And that is, the carbon atom gets back down to the most upstream element of what it takes to banish pollution or to fight it in the most efficient

*Emissions from the Transportation Sector*, 8 J. SYSTEMICS, CYBERNETICS & INFORMATICS 14, 14 (2010) (“In the United States . . . one third of carbon dioxide emissions come from the transportation sector.”).

<sup>38</sup> Katherine V. Ackerman & Eric T. Sundquist, *Comparison of Two U.S. Power-Plant Carbon Dioxide Emissions Data Sets*, 42 ENVTL. SCI. & TECH. 5688, 5689 (2008) (illustrating that the Energy Information Administration and the Environmental Protection Agency agree that there are at least 2,900 power plants in the contiguous United States emitting carbon dioxide).

<sup>39</sup> See GRAETZ, *supra* note 24, at 244-45 (illustrating the political obstacles associated with passing cap-and-trade legislation).

<sup>40</sup> *Id.* at 149 (discussing a tax designed to prevent carbon emissions).

<sup>41</sup> *Id.* at 133 (“The National Energy Conservation Act of 1978 required electric and gas utilities to engage in ‘energy audits’ and other activities . . . to encourage energy conservation by their customers.”).

<sup>42</sup> *Id.* at 162-64 (arguing for global carbon tax that would make individual countries responsible for their carbon emissions).

way. So what I will suggest to you is that a tax in the end is the right way to think about this.

Of course, there are good reasons why we do not think about it very much, but it is certainly something that allows us to get the most efficient application of a charge or a change in behavior if that is what we are really after.

So we are dealing with the energy system here. It is a non-negotiable system. We cannot do without it. We use it in the primary ways that I indicated before: one, transportation, and second, in an electricity system and energy that small is also available in the heating system.

We use natural gas for constituent products like fertilizer or plastics, but we also use it for heating and in chillers and things for cooling.<sup>43</sup> Access for that good, small “e” energy, depends on very capital-intensive investments, which depend on good signals and consistent use. Remember most of the energy industry has a life span that is greater than about fifty years, but it is not always the same machines.<sup>44</sup>

The only ones that keep producing efficiently over those long periods of time are things like coal burners and turbines, not foils on wind turbines. They have got a life span of about twenty to twenty-five years,<sup>45</sup> if that. Not solar, not solar photovoltaic (“PV”), not solar thermal; they have got limited life spans under about twenty years.<sup>46</sup>

You are constantly replacing that capital, but in each case, you are reminded that this is an extremely capital intensive business, which means that in the market for energy, writ large or by technology, that we have got to have a rule or set of rules that respect the way markets want to behave. Markets want to reward.

Let us go back a half step and ask what is a market anyway? We have all gone the safe way. We probably did not pick up a wind turbine while we were back there, but we had a place where we could have an exchange that took place, with goods and services, clear at some price for some consideration. They work best when there is a clear rule set, when there is a consistent trading characteristic, when there is transparency in the pricing, when there is enforcement, and when there is equivalency in goods. In other words, when

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<sup>43</sup> See *Uses of Natural Gas*, FOSSIL FUEL, <http://fossil-fuel.co.uk/natural-gas/uses-of-natural-gas> (last visited Nov. 23, 2011) (highlighting the various uses for fossil fuels).

<sup>44</sup> INT’L ENERGY AGENCY, ENERGY TECHNOLOGY PERSPECTIVES 183 (2006) (coal-fired plants have a “lifespan of 40 to 60 years”).

<sup>45</sup> See Carol McLaren, *Small-Scale Wind Farming*, 145 FARMERS WEEKLY 14, 14-15 (2006) (“The turbines have an expected life-span of 25 years before refurbishment is required.”).

<sup>46</sup> See MARCEL JEUCKEN, SUSTAINABLE FINANCE & BANKING 76 (2001) (“Most PV systems have a life span of about 20 years.”).

they are efficient, when they are equitable, and when they are effective, especially for a good like energy that we intend to treat not just as a private good but as a public good.

We try and make sure that everybody has access to energy whenever they want or need it. So with that in mind and thinking about energy as a set of technologies, as a set of fuels, as a geopolitical agreement between nations or even between sub-nations like provinces and states, then we have got a good that can only clear and can only be regulated when it is predictable, when it provides some sort of choice, and for electricity dispatch, that choice implies that you have got a range of technologies that satisfy a base load component.<sup>47</sup>

It is running all the time at a low cost, something that is capable of again being ramped up and down that is load following and something that has got a peaking characteristic.<sup>48</sup> Guess what? They all cost a different amount.<sup>49</sup> They all generate carbon at different amounts,<sup>50</sup> and it means that in order to regulate them effectively, you have got to give not just the public but the dispatcher, the owner, or those who invest in the technology a clear choice about what their characteristics are.

That means you have got to climb higher and higher and higher up into the stream to get to the more basic product—that is, the offending product in energy generation. That means that you have got to get to a point where you can be agnostic about how carbon prices get set. That is not a cap and trade system. It is something that identifies the offending element and allows the market to put a price on it and allows the consumer to make a choice about whether or not to consume something that shows up with a higher carbon price versus a lower carbon price or that has a more effective role in not creating the hazard that we want.

So let me just recap by saying that in all of this carbon is clearly an issue. Climate change is real, and if it is not real, the hedge strategy that any of us ought to be adopting in order to imagine the obvious tells us that we ought to treat it as a real event. Carbon is real. We can price it. We can regulate it.

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<sup>47</sup> GRAETZ, *supra* note 24, at 1 (arguing the United States assumes that energy may be increased on demand).

<sup>48</sup> *Id.*

<sup>49</sup> See U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY REVIEW 2010 74 (Oct. 2011), available at <http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf> (illustrating the varying costs of energy in the United States).

<sup>50</sup> See generally Joseph Fargione et al., *Land Clearing and the Biofuel Carbon Debt*, 319 SCI. 1235 (2008) (arguing that biofuels, although a low-carbon energy source, may not reduce carbon debt depending on how they are produced); see also *U.S. Carbon Dioxide Emissions from Energy Sources 2008 Flash Estimate*, U.S. ENERGY INFO. ADMIN. (May 2009), <http://www.eia.gov/oiaf/1605/flash/flash.html> (highlighting carbon emissions by energy source in the United States).

But we cannot if we always chase the price and intervene through a bureaucratic or a politically adjusted compensation mechanism.

And, finally, markets can and will adjust if they are given clear signals, transparency, and a real role in allowing a choice by consumers at every level for how regulation regulates and delivers the product that we consider.

Thank you very much.

#### UNITED STATES SPEAKER

*Jonathan H. Adler*

PROFESSOR ADLER: Good afternoon. It is a pleasure to be here. I hope it is not too late in the day to welcome you all to Case Western. I know you have been welcomed many times already today. It is certainly an honor to join you and to talk about a very important topic.

In climate policy in the United States-Canada context, and especially in the United States context, it is a bit of a sobering subject. It is a tremendous challenge, and it is a policy area that I think many people are not too sanguine about given the way it has been handled politically in the United States.

But I am hoping that I can give some remarks that might give us cause for some optimism and some reason for thinking that climate policy—not simply in the United States but internationally—would benefit from taking the opportunity to rethink how we approach this very important issue.

I am going to start, as I said, with looking a little bit at the United States. We have a stated policy goal in the United States of what we refer to as eighty-by-fifty: eighty percent reduction and CO<sub>2</sub> equivalent by the year 2050.<sup>51</sup>

We have not enacted that policy into law.<sup>52</sup> To the contrary, Congress rejected anything of that sort,<sup>53</sup> and I think it is fair to say that the new Congress, the current Congress, is far more hostile to that target and a cap and trade bill to achieve that target than its predecessor. Both the stated policy goal and the dominant Congressional approach are in their own ways divorced from reality.

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<sup>51</sup> See *The Obama-Biden Plan*, CHANGE, [http://change.gov/agenda/energy\\_and\\_environment\\_agenda/](http://change.gov/agenda/energy_and_environment_agenda/) (last visited Nov. 23, 2011) (“The Obama-Biden comprehensive New Energy for America plan will . . . [i]mplement an economy-wide cap-and-trade program to reduce greenhouse gas emissions 80 percent by 2050.”).

<sup>52</sup> See Darren Samuelsohn & Coral Davenport, *Democrats Pull Plug on Climate Bill*, POLITICO (July 22, 2010, 1:01 PM), <http://www.politico.com/news/stories/0710/40109.html>.

<sup>53</sup> *Id.*

The Congressional approach is unfortunately divorced from the reality that climate change is a serious problem that we should address, that even if one believes it is not catastrophic, it is not the sort of thing we should ignore. Read some of the books by so-called skeptics closely, and you will see the debate is not humans affecting the climate. The debate is about how much and what the consequences are and what is it worth to try and stop it?<sup>54</sup>

But the stated policy goal is a bit divorced from reality, too, because it is divorced from the reality of the sort of transformation economically, environmentally, and energy wise, that a goal like eighty-by-fifty would require.<sup>55</sup> And even more divorced from reality of the real climate challenge, which is not emission reductions in the United States or emission reductions in Canada or in Europe, but atmospheric stabilization which requires far more than what would be necessary to achieve eighty by fifty.<sup>56</sup> It is further divorced from reality because the idea that a one thousand page cap and trade bill of the sort that was passed by Congress could ever meet that goal as a first step is a bit fanciful as well.

We need to address climate change. The United States and Canada and other nations need to develop approaches that actually have some likelihood of mitigating the threat posed by climate change and dealing with carbon emissions and increasing concentrations in the atmosphere. The traditional approach that we have taken in environmental policies of creating yet another regulatory super structure this time, not on the domestic level but on the international level, is not an approach that is likely to get us very far. It is a mistake. It is an approach, even if we were willing to adopt it, we would not be willing to adopt it with a level of stringency that is necessary to actually achieve the goals that we have set out for ourselves.

We need to step back and understand the nature of the problem a little bit more before we can have any chance of solving it, but if we do, and I think there are opportunities to do just that, we might actually be able to do so now.

Let me say a little bit more about the politics of this, and I will talk about the United States because I know the United States politics a bit more, but after the elections in 2008, you had significant Democratic majorities in both

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<sup>54</sup> GRAETZ, *supra* note 24, at 167 (illustrating the concern of many United States citizens revolves around what environmental policy will cost them personally).

<sup>55</sup> *Id.* at 166 (“Shifting away from petroleum-powered vehicles and coal-powered electricity are Herculean tasks facing enormous technical, political, economic, and cultural challenges.”).

<sup>56</sup> See Bjorn A. Sanden & Christian Azar, *Near-Term Technology Policies for Long-Term Climate Targets—Economy Wide Versus Technology Specific Approaches*, 33 ENERGY POL’Y 1557, 1558 (2005) (arguing that emissions in developed countries will need to decline “by a factor of ten or more on a per capita basis”).

houses of Congress.<sup>57</sup> You had a Democratic president that had campaigned on action and on climate change.<sup>58</sup>

There was a lot of enthusiasm. There was great expectation. There was a bill in the House, a bill that barely passed, a bill that got 219 votes despite extensive arm twisting, despite loading the bill up with all kinds of pork and lard and set-asides and special treatment (special treatment that, incidentally, guaranteed that the bill would not reach its stated emissions reduction target but additions that certainly made it more politically attractive) and it still could only get 219 votes.<sup>59</sup> It still could not get the votes of every Democrat and it was dead on arrival in a Senate that had almost a filibuster proof Democratic majority.<sup>60</sup>

Indeed, in our last election cycle, a Democratic candidate for Senate ran an advertisement in which he literally shot a version of the bill.<sup>61</sup> For the Canadians who are not aware of this, literally, he was out on a range. A copy of the bill was tacked up on the target. He stood there with a gun and shot it. He was elected. He is now a Democratic senator.<sup>62</sup>

So the politics are exceedingly hostile to cap and trade, not simply because it would increase energy prices, not simply because it would have dramatically expanded the regulatory authority of the Environmental Protection Agency (“EPA”) and by some estimates would have required the EPA to conduct one hundred and fifty separate rule makings,<sup>63</sup> but also because it was seen as filled with special interest giveaways. It was seen as something that was written, in large part, by certain very politically influential utilities.<sup>64</sup>

<sup>57</sup> Elana Schor & Ewen MacAckill, *Congress: Big Democratic Gains Put Party in Firm Control After 16 Years*, THE GUARDIAN (Nov. 5, 2008), <http://www.guardian.co.uk/world/2008/nov/06/democrat-gains-congress-senate-elections> (“It is the first time since Bill Clinton headed the party’s ticket in 1992 that the Democrats have been in firm control of the White House, the Senate and the House of Representatives.”).

<sup>58</sup> See generally *The Obama-Biden Plan*, *supra* note 51 (providing a general overview of President Obama’s plan to address the energy challenges in the United States).

<sup>59</sup> See FINAL VOTE RESULTS FOR ROLL CALL 477, H.R. 2454, 111th Cong. (2009), available at <http://clerk.house.gov/evs/2009/roll477.xml> (record of final vote on American Clean Energy and Security Act in the House of Representatives).

<sup>60</sup> Samuelsohn & Davenport, *supra* note 52.

<sup>61</sup> See Katy Steinmetz, *Joe Manchin’s Dead Aim*, TIME (Oct. 19, 2010), [http://www.time.com/time/specials/packages/article/0,28804,2012290\\_2012286\\_2026496,00.html](http://www.time.com/time/specials/packages/article/0,28804,2012290_2012286_2026496,00.html).

<sup>62</sup> See *Joe Manchin—Biography*, U.S. SEN. FOR W. VA., <http://www.manchin.senate.gov/public/index.cfm/biography> (last visited Nov. 23, 2011).

<sup>63</sup> See generally John M. Broder, *House Panel Voted to Strip E.P.A. of Power to Regulate Greenhouse Gases*, N.Y. TIMES (March 10, 2011), <http://www.nytimes.com/2011/03/11/science/earth/11climate.html> (highlighting hostilities toward cap and trade initiatives and the EPA).

<sup>64</sup> See Steven F. Hayward & Kenneth P. Green, *Waxman-Markey: An Exercise in Unreality*, AEI ENERGY & ENV’T OUTLOOK 6 (July 2009), available at

It was seen as something that would dramatically increase the size and scope of government without any clear environmental gain.<sup>65</sup>

So what is the fallback? Legally, the fallback in the United States right now is regulation by the EPA under the Clean Air Act.<sup>66</sup> A decision by our Supreme Court in 2007 called *Massachusetts v. Environmental Protection Agency* held that the Clean Air Act as written in 1970, and amended in 1990 adopted a definition of air pollutant that was sufficiently broad to encompass greenhouse gases.<sup>67</sup> So the EPA is moving ahead at implementing that mandate and has adopted regulations from mobile sources and is in the process of adopting regulations for stationary sources.<sup>68</sup>

There is a problem, though, and this is a problem that the Supreme Court did not pay much attention to: by the EPA's own estimates, it cannot do what it has been told to do.<sup>69</sup>

That is to say, when one actually applies the letter of the law that Congress passed to greenhouse gas emissions, it becomes unadministerable. The permitting requirements, in particular for stationary sources, are such that by the Obama Administration's EPA estimate, the Agency would essentially grind to a halt, as would the state agencies that implement air pollution permits.<sup>70</sup>

Why do I say this? The number of permits required for something called the Prevention of Significant Deterioration Program<sup>71</sup> currently are about two hundred and eighty per year.<sup>72</sup> Applying the statutory threshold on emissions

<http://www.aei.org/files/2009/07/10/EEO-03-July-09-g.pdf> (suggesting that the true motive behind the Clean Air Act was the creation of a "vast energy bureaucracy").

<sup>65</sup> Broder, *supra* note 63 (demonstrating a mentality among some Republicans that efforts by the EPA are superfluous).

<sup>66</sup> See Jonathan H. Adler, *Heat Expands All Things: The Proliferation of Greenhouse Gas Regulation Under The Obama Administration*, 34 HARV. J.L. & PUB. POL'Y 421, 422 (discussing President Obama's use of the Clean Air Act to address climate change concerns).

<sup>67</sup> *Mass. v. EPA*, 549 U.S. 497, 532 (2007) ("[G]reenhouse gases fit well within the Clean Air Act's capacious definition of 'air pollutant' . . .").

<sup>68</sup> Adler, *supra* note 66, at 422 ("The Obama Administration has not resisted this new-found authority. To the contrary. The EPA and other agencies have embraced their opportunity to extend regulatory authority into new fields and have rejected legislative proposals to cabin their newfound power.").

<sup>69</sup> See Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31514, 31537 (June 3, 2010) (to be codified at 40 C.F.R. pts. 51, 52, 70 & 71) (arguing that the EPA does not have the capacity to meet the proposed thresholds).

<sup>70</sup> *Id.* at 31563 ("Adding some 6.1 million permit applications to the 14,700 that permitting authorities now handle would completely overwhelm permitting authorities, and for all practical purposes, bring the title V permitting process to a standstill.").

<sup>71</sup> See *Prevention of Significant Deterioration (PSD) Basic Information*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/NSR/psd.html> (last updated July 22, 2011) (providing a basic overview of Prevention of Significant Deterioration).

<sup>72</sup> Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75

to greenhouse gases requires Prevention of Significant Deterioration permits for forty thousand facilities.<sup>73</sup> For Title V, another permitting portion of the Act, applying the numerical thresholds that Congress wrote into the Act increases the number of facilities that need permits from fifteen thousand to six million.<sup>74</sup>

According to this Administration (this is not a Republican administration trying to get out of regulating), the cost to regulatory agencies alone to simply fulfill these permitting requirements is over \$250 million dollars.<sup>75</sup> This is not going to happen.

Now, the EPA has decided to try and rewrite the Act, and it is being challenged.<sup>76</sup> In almost all likelihood, the EPA will lose because we have never had a federal court opinion that allowed an agency to do something like rewrite a numerical threshold that Congress enacted into a statute. But maybe a court will not decide that.

The House has already passed multiple resolutions or provisions stripping the EPA of this regulatory authority and has said it may do so in the near future as well.<sup>77</sup> So this is an option that may not go forward. But neither this clean air approach nor Waxman-Markey,<sup>78</sup> the House cap and trade bill, achieve the eighty-by-fifty target. The Regional Greenhouse Gas Initiative<sup>79</sup> has mentioned it is not on a glide path to come anywhere close to that target.<sup>80</sup>

Fed. Reg. at 31535 (“We stated that at present, 280 sources are subject to PSD each year . . .”).

<sup>73</sup> *Id.* at 31535 (“[O]ver 40,000 sources . . . would become subject to PSD due to their GHG emissions.”).

<sup>74</sup> *Id.* at 31540 (providing a chart that illustrates the number of facilities that need permits based on the applicable threshold).

<sup>75</sup> *Id.* at 31540 (providing a chart of the costs associated with implementing the permitting requirements).

<sup>76</sup> Adler, *supra* note 66, at 435-44 (highlighting the EPA’s attempts to tailor its enforcement of the Clean Air Act and a recent petition by the Center for Biological Diversity).

<sup>77</sup> Broder, *supra* note 63 (highlighting efforts by Republicans to strip the EPA of its power to regulate greenhouse gases).

<sup>78</sup> See generally *Waxman-Markey*, WASH. POST (June 26, 2009), <http://www.washingtonpost.com/wp-dyn/content/article/2009/06/25/AR2009062503469.html> (providing a general overview of the Waxman-Markey bill).

<sup>79</sup> See *RGGI, Inc.*, REG’L GREENHOUSE GAS INITIATIVE, <http://rggi.org/rggi> (last visited Nov. 23, 2011) (describing the Regional Greenhouse Gas Initiative and its mission statement).

<sup>80</sup> See MARYLAND COMMISSION ON CLIMATE CHANGE, COMPREHENSIVE GREENHOUSE GAS AND CARBON FOOTPRINT REDUCTION STRATEGY 10 (2008), *available at* <http://www.mde.state.md.us/assets/document/air/climatechange/chapter4.pdf> (“Our ‘glide path’ to leveling off and staying below the 450 ppm threshold in these time frames may simply become too steep to travel.”).



California's cap and trade program and proposal may be a bit more aggressive,<sup>81</sup> but it has been, at least temporarily, set aside in the courts due to challenges by environmental justice groups.<sup>82</sup> When we look around the world, while we do see, as Michal mentioned, some examples of cap and trade programs that work for certain types of pollutants in certain contexts,<sup>83</sup> we do not see a cap and trade program anywhere that has set any part of the world on a path towards the level of decarbonization necessary to achieve a target like eighty-by-fifty, let alone an atmosphere of stabilization. It has not happened.

Just look at, again, some United States numbers. If we think about eighty-by-fifty and get a sense of what we are talking about, we could replace all of the coal in the United States with natural gas. We would not get an eighty percent reduction in the electricity sector, let alone economy wide, if we would have snapped our fingers tomorrow and said all the coal is replaced by natural gas.

If we want to replace just ten percent of existing energy consumption with completely non-emitting sources, what are we talking about? To replace ten percent of United States consumer energy with nuclear power would require close to one hundred and fifty nuclear power plants.<sup>84</sup> We have not permitted this number or permitted a new nuclear facility in the United States for close to thirty years.<sup>85</sup> It would require thirty-three thousand solar plants.<sup>86</sup> It would require over a hundred thousand wind turbines.<sup>87</sup>

You could mix and match other ways, and certainly nuclear, solar, and wind are all important technologies, all things we need to have part of our energy mix, but the numbers I just gave you are what it would take to replace just ten percent of the United States' energy consumption. We are talking about reducing CO<sub>2</sub> emissions by eighty percent by 2050 as a down payment on atmospheric stabilization.

<sup>81</sup> See Bob Egelko, *Cap and Trade Wins California Supreme Court Ruling*, SFGATE (Sept. 29, 2011), [http://articles.sfgate.com/2011-09-29/bay-area/30227947\\_1](http://articles.sfgate.com/2011-09-29/bay-area/30227947_1) (stating the proposed law "requires the state to reduce emissions of carbon dioxide and other greenhouse gases to 1990 levels by 2020").

<sup>82</sup> *Id.* ("[T]he state Supreme Court voted Wednesday to let California air-quality regulators go ahead with a market-oriented cap-and-trade system of pollutions credits . . .").

<sup>83</sup> Graetz, *supra* note 24, at 201-16 (highlighting various cap-and-trade programs throughout the world).

<sup>84</sup> See Generally U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY REVIEW 2010 (2011), available at <http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf> (highlighting energy usage in the United States).

<sup>85</sup> GRAETZ, *supra* note 24, at 65 ("Only another 15 plants, however, were ordered in the second half of the decade, and none after 1979.").

<sup>86</sup> U.S. ENERGY INFO. ADMIN., *supra* note 84.

<sup>87</sup> *Id.*

And we need to not only do the down payment in the developed world but we need to do it in a way that can enable us to help the developing world to achieve the economic prosperity that they seek in a way that does not increase atmospheric concentrations globally. We need to do this at a time when millions upon millions of people still lack access to cheap energy, something that we take for granted.<sup>88</sup>

As Michal noted, we expect that we turn on a switch and energy comes on. An approach to climate change that does not give those people of the world some hope of having economic prosperity and cheap and affordable electricity—that is a non-starter. And we have to recognize it is especially a non-starter because even the developed countries—even Europe—have been far better at announcing goals and announcing targets than in actually adopting policies to achieve the level of decarbonization necessary to achieve targets.

Here is another way to think about eighty-by-fifty to see what we are talking about, again I will use the United States as a benchmark: the last time the United States emitted eighty percent or when CO<sub>2</sub> emissions in the United States were eighty percent below what they are today was about 1910.<sup>89</sup>

There are two things to know about 1910. The population of the United States was only ninety-two million people.<sup>90</sup> Per capita income was approximately sixty-two hundred dollars.<sup>91</sup> In the year 2050, we will probably have over 400 million people in the United States.<sup>92</sup>

So, per capita CO<sub>2</sub> emissions needs to be somewhere on the order of where they were in the United States around 1875. I say “around” because, as you might expect, our data that far back is not so good. But that is an idea of the ballpark we are talking about. We are talking about a radical transformation of the energy sector.

Now, we have seen radical transformations economically and otherwise, so it is not that transformation is impossible but it is that we have to recognize what is required. We have to be a bit sober and humble about the fact that while we have seen those sorts of transformations, we cannot really think of many that we have been able to have on demand or that we have been able to orchestrate by government fiat.

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<sup>88</sup> See *Poverty, Energy and Society*, BAKER INST. ENERGY FORUM, [http://www.rice.edu/energy/research/poverty&energy/index.html#\\_ftnref2](http://www.rice.edu/energy/research/poverty&energy/index.html#_ftnref2) (last visited Dec. 16, 2011) (“[R]oughly 1.6 billion people, which is one quarter of the global population, still have no access to electricity and some 2.4 billion people rely on traditional biomass, including wood, agricultural residues and dung, for cooking and heating.”).

<sup>89</sup> Hayward & Green, *supra* note 64, at 3.

<sup>90</sup> *Id.*

<sup>91</sup> *Id.*

<sup>92</sup> *Id.*

Fiber optics did not displace copper to a tremendous environmental benefit because we developed a plan to do it.<sup>93</sup> Wireless is not replacing fiber optics.<sup>94</sup> Again, it is a tremendous environmental benefit because we had a plan to do it. Certainly, government policy affects the rate at which those sorts of things can happen.

But we do not have a lot of experience at successfully mandating this sort of thing happening. In fact, a lot of the mandates that we have tried in these sorts of areas that have been far more modest have also been far less successful.

California had to rewrite its zero emission vehicle regulations five, six, seven times because the mandates they put forward could not be met at a cost acceptable to the people of California.<sup>95</sup> And we have done things like cap and trade plans for things like SO<sub>2</sub> emissions limits;<sup>96</sup> the acid rain program under the Clean Air Act was written based on what we knew existing technology could do.<sup>97</sup> These were not written to drive technological change. This is a real tough problem.

And it is made tougher because underlying all this is what Roger Pielke<sup>98</sup> at the University of Colorado calls an “iron law climate policy” (which I think is ever amply demonstrated by our experience): if we pit economic growth against emissions reduction, economic growth will win.<sup>99</sup> Politically, economic growth will win.

So we need not only to think about transforming the energy sector and transforming those aspects of our economy, we also need to recognize that

<sup>93</sup> See JOHN CRISP & BARRY ELLIOTT, *INTRODUCTION TO FIBER OPTICS* 204 (3rd ed., 2005) (“Optical fiber has never displaced copper cables to the extent predicted by the pundits twenty years ago.”).

<sup>94</sup> See JIM HAYES & PAUL ROSENBERG, *DATA, VOICE, AND VIDEO CABLING* 114 (Larry Main ed., 3rd ed., 2009) (“So replacing a wired network with a wireless one does not mean you do not need cabling; you may, in fact, need more when you consider the power needs of the APs.”).

<sup>95</sup> See John O’Dell, *Rewrite of Emissions Rule May Roll Out More Hybrids*, L.A. TIMES (Apr. 7, 2003), <http://articles.latimes.com/2003/apr/07/business/fi-emissions7> (“But over the years the ZEV mandate has been rewritten four times to keep up with changing technologies and automaker objections. Now, with the auto industry successfully fighting the board in court, there’s about to be a fifth rewrite.”).

<sup>96</sup> NORDHAUS, *supra* note 28, at 153-56 (describing the EPA’s SO<sub>2</sub> cap-and-trade plan).

<sup>97</sup> See generally *Reducing Acid Rain*, U.S. ENVTL. PROT. AGENCY, [http://www.epa.gov/airquality/peg\\_caa/acidrain.html](http://www.epa.gov/airquality/peg_caa/acidrain.html) (last visited Nov. 8, 2011) (providing an overview of the EPA’s efforts to reduce acid rain via the Clean Air Act).

<sup>98</sup> See Roger A. Pielke, Jr.—*Biography*, U. COLO. AT BOULDER, [http://envs.colorado.edu/people/Cxx/faculty\\_details/pielke\\_jr\\_roger/](http://envs.colorado.edu/people/Cxx/faculty_details/pielke_jr_roger/) (last visited Dec. 16, 2011).

<sup>99</sup> See generally *Book Excerpt: The Iron Law of Climate Policy*, FIN. POST (Oct. 4, 2010, 10:41 PM), <http://opinion.financialpost.com/2010/10/04/book-excerpt-the-iron-law-of-climate-policy/>.

we need to do so in a way that is compatible with economic growth, not simply here but around the world. And that requires expanding our tool kit, especially given the fiscal constraints that so many developed nations now face.

And basically what we need to be doing is developing an overall set of policies that are far friendlier to innovation so that we at least have some chance of having a sort of transformation that we need. But what would we do if we were serious about innovation? One thing we would do is recognize that our regulatory structure is not always a very hospitable innovation.

There has been some talk about wind. I certainly look forward to the day when there are wind turbines on Lake Erie.<sup>100</sup> I used to have an apartment overlooking Lake Erie. I thought I might still be there when they finally went up, but lots of people have had lots of expectations about when we would see wind, especially offshore wind.

In 2002, the federal government told the folks behind Cape Wind that they would have full regulatory approval in eighteen to thirty-six months.<sup>101</sup> Today we know that if things go according to the current plan, construction might begin before the end of this year.<sup>102</sup>

Why? Because we have a regulatory litigation environment that is not very hospitable to new technologies and not very hospitable to trying to do things in a new way. Regulatory structures developed to constrain nuclear power may not be that much friendlier to solar power if we need large spans of undeveloped land that may have other environmental values.

Offshore regulatory permitting regimes designed for offshore oil and gas might not be the friendliest things for offshore wind. The Federal Energy Regulatory Commission,<sup>103</sup> a regulatory structure designed for hydropower and hydroelectric dams, may not be the best regulatory agency for tidal power and so on. We need to recognize that if we want people to invest, if we want people to try things that are new and that have the potential of being

<sup>100</sup> See *Wind Turbines to be Built in Lake Erie by 2012 Group Says*, CLEVELAND.COM, (Mar. 29, 2012, 6:51 PM), [http://www.cleveland.com/business/index.ssf/2010/03/wind\\_turbines\\_to\\_be\\_built\\_in\\_lake\\_erie\\_by\\_2012\\_group\\_says.html](http://www.cleveland.com/business/index.ssf/2010/03/wind_turbines_to_be_built_in_lake_erie_by_2012_group_says.html) (discussing the possibility of placing wind turbines on Lake Erie by 2012).

<sup>101</sup> Shannon Mayer, *Cape Wind: A Public Policy Debate for the Physical Sciences*, 36 J.C. SCI. TEACHING 24, 25-26 (2007) (highlighting the approval process necessary before Cape Wind could begin construction).

<sup>102</sup> See Beth Daley, *US Gives Green Light to Cape Wind Project*, BOSTON, (Apr. 20, 2011), [http://articles.boston.com/2011-04-20/news/29451876\\_1\\_cape-wind-project-offshore-wind-audra-parker](http://articles.boston.com/2011-04-20/news/29451876_1_cape-wind-project-offshore-wind-audra-parker) (“The controversial Cape Wind project now has every federal permit it needs to start construction in the fall . . .”).

<sup>103</sup> See generally *What FERC Does*, FED. ENERGY REG. COMM’N, <http://www.ferc.gov/about/ferc-does.asp> (last updated Dec. 3, 2010) (providing general information about the Federal Energy Regulatory Commission).

real breakthroughs, we have to make it possible that they can succeed. We certainly have not done much of that here or elsewhere.

I think also that if we want breakthroughs, we must recognize that what we need technologically is not five percent here and eight percent there but dramatic breakthroughs. Then we need to reward breakthroughs and we need to recognize those in any environmental context. A lot of the things we typically use to reward breakthroughs like intellectual property, such as the patent system, are insufficient. If environmental externalities, if emissions are not priced, if they are not internalized, it is impossible for a would-be innovator to capture the benefit of their pollution-reducing or emission-reducing innovation.

The patent system is insufficient, and I think while I agree we need to price carbon and I will say something about that in a minute, we are not going to have the level of carbon price that actually would drive this sort of thing. So we need to think about other ways of providing rewards for dramatic innovation.

My own view is that we need to do a lot more with technology inducement prizes and, thankfully, the Obama Administration and folks like McKenzie<sup>104</sup> and elsewhere have begun to pay a lot of attention to the use of inducement prizes as a way of paying super competitive rewards for true breakthroughs.<sup>105</sup> That is something that has historically proven quite beneficial and something that has historically not been as subject to the same sort of rent-seeking that lots of other types of funding technological innovation have been.<sup>106</sup>

Related to that and for those that are interested, I have an article that has just been published in the Harvard Environmental Law Review that goes into some detail on prizes.<sup>107</sup> But prizes would not be enough. We need to not only care about innovation but also diffusion; diffusion domestically and internationally, finding ways of making sure once something is developed, that it actually gets to market rather quickly.

The Defense Department actually has a fair amount of experience with using procurement for that sort of thing.<sup>108</sup> You can actually structure pro-

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<sup>104</sup> See MCKENZIE-MOHR & ASSOCIATES, <http://www.cbsm.com/public/world.lasso> (last visited Feb. 7, 2012) (providing biographical information).

<sup>105</sup> See *Virgin Earth Challenge*, VIRGIN, <http://www.virgin.com/subsites/virginearth/> (last visited Feb. 7, 2012) (illustrating an example of a large inducement prize).

<sup>106</sup> See generally Brian D. Wright, *The Economics of Innovation Incentives: Patents, Prizes, and Research Contracts*, 73 AMER. ECON. REV. 691 (1983).

<sup>107</sup> Jonathan H. Adler, *Eyes on a Climate Prize: Rewarding Energy Innovation to Achieve Climate Stabilization*, 35 HARV. ENVTL. L. REV. 1, 1-45 (2011) (advocating for the United States federal government to reallocate funds appropriated for green technology research and development towards providing economic incentives, "prizes," to encourage innovation).

<sup>108</sup> See SUZANNE SCOTCHMER, *INNOVATION AND INCENTIVES* 2 (2006).

curement rules so that they provide a prize-like reward guaranteeing certain levels of procurement if certain things can be delivered at certain costs.

But we also need to be looking at how we can diffuse technology globally because if we reduce emissions here but then parts of Africa and large parts of Asia simply build lots of coal plants without any type of carbon sequestration, it is not clear we have actually solved the problem. So diffusion is something we need to pay attention to as well.

I also agree with Michal that pricing carbon is directly what we need to do. It is not very often that you hear Americans say there are things to learn from Canadians, and growing up in Philadelphia and given my views of hockey, I certainly feel that after the 1970s I felt that way about those of you from Montreal.

But in the area of pricing carbon, we actually can learn quite a bit from Canada. In the United States, we have done a lot of cap and trade. It took us five years to develop the rules for the sulphur dioxide trading program under the Clean Air Act.<sup>109</sup> That was a trading program that only covered four hundred facilities.<sup>110</sup> It still took five years to write the rules.<sup>111</sup>

As I understand it, British Columbia was able to adopt what was supposed to be a revenue neutral carbon tax in five months.<sup>112</sup> If we are worried about hitting the ground running, a simple program that can be implemented quickly certainly makes a lot of sense. Moreover, if we are at a time when we are talking about completely reforming the tax system and reorienting because of our fiscal troubles, what better time to talk about things that a lot of conservatives have talked about for a long time, which is not taxing income and wealth creation but taxing consumption, doing so in a revenue neutral manner. Simpler than cap and trade, a revenue neutral plan is more transparent and does not produce the sustainability of price volume utility.

If rebated on a per capita basis, as folks like James Hansen<sup>113</sup> had proposed, it is not as regressive.<sup>114</sup> It is easier to harmonize cross-border. It

<sup>109</sup> Clean Air Act, 42 U.S.C. §§ 7651(b)-(d) (sulfur dioxide requirements and trading parameters).

<sup>110</sup> See, e.g., Letter from Lisa P. Jackson, Adm'r., EPA, to Sen. Rockefeller et al., (Feb. 22, 2010) (on file with the EPA), available at [http://www.epa.gov/air/pdfs/LPJ\\_letter.pdf](http://www.epa.gov/air/pdfs/LPJ_letter.pdf) (last visited Dec. 6, 2011) (providing responses to Senator Rockefeller and seven other Senators' questions pertaining to the EPA's policy towards complying with the Court's holding in *Mass. v. EPA*).

<sup>111</sup> See Clean Air Act, *supra* note 109.

<sup>112</sup> See Carbon Tax Act, S.B.C. 2008, c. 40, s. 2 (Can.); see also Notice, Ministry of Small Bus. & Revenue, B.C., British Columbia Carbon Tax (Feb. 2008), available at [http://www.bcenergyblog.com/uploads/file/British\\_Columbia\\_Carbon\\_Tax.pdf](http://www.bcenergyblog.com/uploads/file/British_Columbia_Carbon_Tax.pdf) (releasing notice by British Columbia's government explaining the British Columbia Carbon Tax Act).

<sup>113</sup> James E. Hansen—*Biography*, COLUMBIA UNIV., <http://www.columbia.edu/~jeh1/> (last visited Dec. 6, 2011).

<sup>114</sup> See Letter from James Hansen, Head, Goddard Inst. for Space Studies: Nat'l Aeronau-

does not require the same sort of regulatory superstructure that would be required for harmonizing cap and trade programs. It is less prone to rent-seeking.

Yes, our income taxes are a mess, but our excise taxes and our sales taxes—in fact, consumption taxes around the world for whatever reason and political economy folks do not really understand this yet—are not chopped up and poked through with holes the way income tax regimes are.<sup>115</sup>

There is something about consumption type taxes—I believe it is probably their simplicity and transparency—that on the margin makes them more immune to the sort of rent-seeking we have come to expect in the legislative process.

And if the carbon tax is fully rebated, there are reasons to believe that it would not have the economic impact of increasing taxes.<sup>116</sup>

Let me talk about one other thing where cross-border cooperation and international cooperation is really important and where we need to overcome our taboo that we seem to have in climate policy discussions, and that is adaptation because the reality is the political process does not move as fast as we might like.

Mitigation strategies are not going to move as fast as we might like, even if they began tomorrow, and some degree of climate change is hard wired into the system. Some degree of climate change is inevitable based on what we have already emitted and what we know we will emit, and that is going to have effects.

It is going to have effects on water.<sup>117</sup> Certainly in the United States and Canada, we care about water, and that certainly affects our relationship. It is going to affect demand for water resources and the distribution of water resources.<sup>118</sup> It is going to affect how we view the Great Lakes. It is going to affect ecosystems and species.<sup>119</sup> It is going to affect the way we deal with

tics and Space Admin., to President Barack Obama, U.S. President (Dec. 29, 2008), available at [http://www.columbia.edu/~jeh1/mailings/2008/20081229\\_Obama\\_revised.pdf](http://www.columbia.edu/~jeh1/mailings/2008/20081229_Obama_revised.pdf) (advocating for policy changes regarding carbon taxation and returning one hundred percent of the dividends to United States citizens).

<sup>115</sup> See, e.g., Boris I. Bittker, *Income Tax “Loopholes” and Political Rhetoric*, 71 MICH. L. REV. 1099, 1123-26 (1973) (discussing the attempts made to close some of the many income tax loopholes in the Internal Revenue Code).

<sup>116</sup> See Bob Inglis & Arthur B. Laffer, *An Emissions Plan Conservatives Could Warm to*, N.Y. TIMES, Dec. 27, 2008, at WK10 (describing how the government can offset the carbon tax increase by decreasing income taxes).

<sup>117</sup> See generally ENVTL. PROT. AGENCY, NATIONAL WATER PROGRAM STRATEGY: RESPONSE TO CLIMATE CHANGE, KEY ACTION UPDATE FOR 2010-2011 (2010).

<sup>118</sup> *Id.* at 7-8, 42.

<sup>119</sup> See, e.g., RACHEL HAUSER ET AL., THE EFFECTS OF CLIMATE CHANGE ON U.S. ECOSYSTEMS (2009), available at <http://www.usda.gov/img/content/EffectsofClimateChangeonUSEcosystem.pdf>.

lots of problems and those problems are not going to know borders. When you share as large a border as the United States and Canada do,<sup>120</sup> we need to recognize that some degree of adaptation is something we need to prepare for.

And if preparing for adaptation is not failure, it is recognizing that the world we live in is changing, and it is changing at this point whether we like it or not. If we do not prepare for that, we and our children are much worse off. So our challenge is, as I see it, to rethink our approach to climate policy, and hopefully, this is something that no one country does alone but that many countries and eventually the world community can do because climate change is a sufficiently important problem that global cooperation is required.

Thank you very much.

#### DISCUSSION FOLLOWING THE PANELISTS' REMARKS

MS. TODGHAM CHERNIAK: Now, we have time for questions.

MR. CRANE: I think that this was a very good session. Both the speakers had something useful to take away. So I thank them for that. We do not often look at the intergenerational aspect of this issue, but the more we delay in doing anything, the greater the problems we are creating for future generations as we have for our fiscal debt, and those debts are incurred just to maintain consumption levels for existing generations, and I think that has to be made a larger part of the message.

The thing I took out of this session more than anything else, and which we heard in other sessions, is the complexity of the issue and the fact that there is no single solution. But I am glad to hear that people have zeroed in on the faults of the cap and trade system. It truly is the second best system. You look at the problems the Europeans are having with this,<sup>121</sup> and we look at all the rent-seeking that occurs. The law firms, banks, accounting firms, traders, they all love this stuff.

Carbon tax, which I think you moved to, is so transparent. There is no rent-seeking middleman in there writing contracts or trying to find an eccentric or anything else like this, so as part of the solution, is it fair for us to conclude that both of you favor a carbon tax of some sort?

PROFESSOR ADLER: I certainly do.

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<sup>120</sup> See U.S. CENSUS BUREAU, 2012 STATISTICAL ABSTRACT: TABLE 363, U.S.-CANADA AND U.S.-MEXICO BORDER LENGTHS (2011), available at <http://www.census.gov/compendia/statab/2012/tables/12s0363.pdf>.

<sup>121</sup> See, e.g., Martin Livermore, *Cap and Trade Doesn't Work*, WALL ST. J. (June 25, 2009), <http://online.wsj.com/article/SB124587942001349765.html>.



PROFESSOR MOORE: And I certainly do, and I just want to add one thing to the remark that you made, and that is that thanks to a fair amount of work that we have been doing, for instance at the University of Calgary,<sup>122</sup> we know what it takes in terms of an investment or a monetary cost to neutralize a carbon molecule in the form of CO<sub>2</sub>.<sup>123</sup>

We are less clear what it takes to neutralize a methane gas molecule.<sup>124</sup> We are less clear what it takes to come to some stable situation with regard to the ozone.<sup>125</sup> But the bottom line is that we can approximate what I will call a “neutral cost” or something that neutralizes that atom to where it is not generating harm in one form or another.

If you know that or if you can calculate that, even if you recalculate it later on, then you can assign an equivalency value to that carbon atom. Then you have something because now at the up end of the stream you have got the ability to, and I will go back to what Jonathan referred to in terms of value added taxes, now you can dial in and look at every stage of production. You either add or use the same amount of carbon as the process just before use so when you liberate a carbon atom, make it do some work for you, you release part of that either as heat or as a waste product. You know what it takes to neutralize it if you are going to fully utilize it.

So the tax in a sense is some fraction of what it costs to make it neutral. You can accept no neutralization. That is a political choice, but you can then assume a regulatory standard or a standard of harm that will not be a bridge and simply charge for it. The firms that can produce the product at something under that cost, i.e., they are very efficient, will do that, and the consumer will reward them by picking that because it will cost less. It will have less of a carbon tax embedded in it.

So that is a long answer to say that a carbon tax is an efficient method to get there. We have both alluded to the idea of why it does not get used and, of course, it does not get used. The reason is it has the word “tax” associated with it.

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<sup>122</sup> *CCS Projects*, UNIV. OF CALGARY: INST. FOR SUSTAINABLE ENERGY, ENV'T & ECON., <http://www.iseec.ca/researchers/carbon-capture-and-storage-grant-program/ccs-projects/> (last visited Dec. 8, 2011).

<sup>123</sup> See Klaus S. Lackner, *A Guide to CO<sub>2</sub> Sequestration*, 300 SCI. 1677, 1677-78 (2003) (discussing the least expensive way to neutralize CO<sub>2</sub>).

<sup>124</sup> See K.A. Beauchemin & S.M. McGinn, *Methane Emissions from Beef Cattle: Effects of Fumaric Acid, Essential Oil, and Canola*, 84 J. ANIMAL SCI. 1489, 1489-1496 (2006) (discussing alternative methods to neutralizing methane gas molecules by feeding cattle, a major methane contributor, varied diets yet finding no feasible way to neutralize the methane gas once released).

<sup>125</sup> See, e.g., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SAFEGUARDING THE OZONE LAYER AND THE GLOBAL CLIMATE SYSTEM: ISSUES RELATED TO HYDROFLUOROCARBONS AND PERFLUOROCARBONS 5 (Bert Metz et al. eds., Cambridge Univ. Press 2005).

And so I guess that must stem from a whole group of people thinking that every public good or service just comes for free. So we do not actually pay for lighthouses. We do not pay for roads. We do not pay for armies, and therefore, we should not have to have a tax. How silly is that?

MR. CRANE: May I make a comment? Remember Justice Oliver Wendell Holmes,<sup>126</sup> and in 1904 he said that taxes are the price we pay for civilization;<sup>127</sup> perhaps in this case for survival. What I never understood is why conservatives, in particular, who are so much in favor of markets would be the ones most hostile to a tax system, which really leaves everything else up to market responses once you have a price on carbon. I just do not understand why conservatives in particular would be so hostile.

PROFESSOR ADLER: There are a couple reasons for hostility. One is, in the United States, most conservatives do not believe that the overall tax burden is too low and do not believe that the overall level of governmental intervention in the economy is too low. And so the idea of a tax on top of what is already being done or a massive regulatory program on top of what is already being done is a non-starter.

What is interesting is that the idea of a fully rebated tax, a tax that is essentially shifting tax and incidents from income to carbon does not necessarily present those problems. And so, for example, people like Steven Moore,<sup>128</sup> who was an economics editorial writer for the Wall Street Journal and was one of the folks instrumental in founding the Club for Growth,<sup>129</sup> which is a very conservative political action committee that primarily challenges liberal or moderate Republicans in primaries, is in favor of a revenue neutral carbon tax.<sup>130</sup>

Arthur Laffer,<sup>131</sup> the founder of Supplies and Economics,<sup>132</sup> is in favor of a revenue neutral carbon tax. Exxon Mobil has come out saying they would support a revenue neutral carbon tax.<sup>133</sup> Some other fairly conservative

<sup>126</sup> See, e.g., OLIVER WENDELL HOLMES & EDWARD J. BANDER, JUSTICE HOLMES, EX CATHEDRA (William S. Hein Publ'g 1991).

<sup>127</sup> *Id.* at 462.

<sup>128</sup> *Stephen Moore—Biography*, WALL ST. J., <http://topics.wsj.com/person/M/stephen-moore/5675> (last visited Dec. 9, 2011).

<sup>129</sup> CLUB FOR GROWTH, <http://www.clubforgrowth.org/> (last visited Dec. 1, 2011).

<sup>130</sup> Press Release, Club for Growth, Club for Growth Unveils Ad Campaign to Combat Economy Crushing Climate Change Legislation (May 27, 2008), available at <http://www.clubforgrowth.org/news/pr/?id=508>.

<sup>131</sup> *Arthur Laffer—Biography*, THE LAFFER CTR. FOR SUPPLY-SIDE ECON., <http://www.laffercenter.com/arthur-laffer/> (last visited Dec. 1, 2011).

<sup>132</sup> *Supply-Side Economics*, THE LAFFER CTR. FOR SUPPLY-SIDE ECON., <http://www.laffercenter.com/supply-side-economics/> (last visited Dec. 1, 2011).

<sup>133</sup> Rex W. Tillerson, Remarks at the Economic Club of Washington, D.C.: Promoting Energy Investment and Innovation to Meet U.S. Economic and Environmental Challenges (Oct. 1, 2009), available at

members of Congress have said so,<sup>134</sup> but the key for them is to think of this as shifting the tax burden away from wages and away from wealth creation towards consumption, which is also something conservatives historically have said that they very much support.

And so the question is: is there anyone willing to take the stand to say this is actually something that people have said is a good idea, whether or not we are worried about climate, and let us do it because some people care about climate and because other people think it is a way to have a more efficient taxation system?

I think a deal like that cannot be any less politically viable than a Waxman-Markey style cap and trade bill. I believe it will be more politically viable, but until someone actually tries, we do not know. I think people tend to misunderstand the sources of the hostility to carbon taxation as anything labeled a “tax” as opposed to the hostility to increasing the tax burden, which I think do different things.

PROFESSOR MOORE: I am going to elaborate on that and just suggest one other reason, and I will refer back to a book that was published maybe three years ago by Robert B. Reich, the former Labor Secretary.<sup>135</sup> It is called *Supercapitalism*.<sup>136</sup> In a brief part of the middle of the book, he addresses the question of the role, and I am going to paraphrase what he said, by suggesting the words “morality of a corporation.”<sup>137</sup> So we treat corporations for tax purposes as an individual, as a human.

But in fact, corporations are not, and they have every incentive to be perverse about decisions that any one of us might make on a moral basis: that is, doing the right thing. There is no right thing for a corporation. Very often they go out of business because they are anticompetitive themselves, so it could be that the conservative interests are framing their constituency as that dominated by corporate interests and trying to imagine that the decisions or the behavior, the incentives that benefit that group are, in fact, outside something that includes taxes.

Now, that is a relatively simplistic view of how to proceed, but you can imagine that if you, in fact, change the tax structure that corporations were faced with, especially as far as environmental or social goods, it might change that behavior somewhat. So I offer that as a potential parallel path to what Jonathan has said to us.

MS. TODGHAM CHERNIAK: And I just have a follow-up question seeing that I am not an income tax lawyer. In regards to this discussion on the

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[http://www.exxonmobil.com/Corporate/news\\_speeches\\_20091001\\_rwt.aspx](http://www.exxonmobil.com/Corporate/news_speeches_20091001_rwt.aspx).

<sup>134</sup> See Inglis & Laffer, *supra* note 116, at WK10.

<sup>135</sup> ROBERT REICH, <http://robertreich.org/> (last visited Dec. 14, 2011).

<sup>136</sup> ROBERT B. REICH, *SUPERCAPITALISM* (Vintage Books 2007).

<sup>137</sup> *Id.* at 175.

carbon taxes, how do you go about auditing from a government perspective to make sure the right amount of carbon tax is paid?

And on the flip side, seeing that a carbon tax is something that gets pushed on to the ultimate consumer and, in the United States at least, there are class action lawsuits relating to the incorrect collection of tax,<sup>138</sup> how do you audit this from both perspectives to make sure whoever is charging the tax is doing it correctly?

Do you have any ideas on that, or is that the hard part of this?

PROFESSOR ADLER: It is no harder than anything else we propose. If you have a cap and trade system, you need a way to audit the emissions, and you need to audit offsets, which is far more complicated and difficult to do in a reliable way than figuring out energy consumption or carbon-based energy consumption for purposes of a tax.

Any regulatory system requires it as well. So it is not a problem of carbon taxation, it is a problem of controlling carbon and it requires the government to be better at knowing where the emissions are coming from and from whom. But that is a problem that is inherent in any effort to control carbon. There are beliefs that other approaches such as cap and trade require additional things on top of that which are more complex than the initial things that are required with a carbon tax. I think the one little thing that I mentioned that tries to encapsulate all this was that it was easier for British Columbia to impose a broad-based carbon tax than it was for a very sophisticated federal regulatory agency in the United States to design a cap and trade program that initially only covered a hundred very large facilities and would only ever cover four hundred facilities.

Cap and trade for a tiny sector took a really long time. Carbon tax across the board took relatively little time, and that encapsulates, I think, the different level administrative complexities when you compare the two.

PROFESSOR MOORE: Let me just add one thing to that, and this is an accounting matter. So if you take something like gasoline, a derivative of crude oil, we know what the carbon content and the waste is at every step along the way in terms of production.<sup>139</sup> By analogy, if I stretched it out, if I did the “Crime Scene Investigator” example for you, and I started at the gas pump and then I went back up the pump and straight up into the producing field, I can identify the carbon added.

So this is my substitution for what Jonathan was saying of value added taxes, so think of this as a carbon added analogy. So each time you proceed

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<sup>138</sup> See, e.g., *Sorenson v. Sec’y of Treasury of U.S.*, 752 F.2d 1433 (9th Cir. 1985) (holding that Sorenson and other similarly situated persons owed tax refunds for not receiving child support payments were properly met).

<sup>139</sup> See JAMES T. BARTIS ET AL., PRODUCING LIQUID FUELS FROM COAL: PROSPECTS AND POLICY ISSUES 125 (Rand Corp. 2008).

down in terms of refining, you had to put energy in to transform something that involved more carbon. So the good at the end represents a lot of inputs that had carbon added.

I do not want to belittle the effort involved but it is a carbon-added accounting mechanism and it is doable. We know how to do that.

MS. FICKLING: I agree with and I appreciate everything that you pointed out about the immense challenges involved in transitioning to a lower carbon economy, and I also agree with a lot of the advantages that you pointed out regarding carbon tax services cap and trade.

But one thing I would like to pushback on a little bit is the notion that cap and trade is vulnerable to rent-seeking where carbon tax is pure policy.

I have two things to say about Waxman-Markey. One, a lot of the rents that were allocated to certain entities within the bill were allocated in terms of emissions and allowances.<sup>140</sup> Basically, the way it worked out was that they were not giveaways in terms of the amount of economy wide emissions. Reductions were required.<sup>141</sup> They basically just reallocated the rents from that.

The second point is that Robert Stavins<sup>142</sup> has published a paper that shows that a surprising amount of the rents allocated under the Waxman-Markey bill actually did go to consumers either in the form of direct giveaways, such as the fifteen percent associated with low-income consumers, or in terms of reducing prices in some fashion.<sup>143</sup> So those are just two things on Waxman-Markey, and probably nitpicking considering that bill is dead.

But this is a broader question on cap and trade. In regards to the carbon tax, what prevents Congress from publishing a thousand-page tax bill that includes the same giveaways of the revenues from that tax as Waxman-Markey quoted?

PROFESSOR ADLER: A couple things. One thing is imposing a cap and trade system will essentially have the effects of a carbon tax in terms of increasing energy prices. If you give away the allowances, then it is a carbon tax plus corporate welfare. And that is one of the ways Waxman-Markey was attacked, and I think correctly so. Giving the allowances away to certain

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<sup>140</sup> American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. §§ 285(c)(5), 285(j) (2008).

<sup>141</sup> *Id.* at §§ 128, 222, 311, 321, 401, 531, 702, 703, 704, 753, and 841.

<sup>142</sup> Robert N. Stavins—*Biography*, HARV. KENNEDY SCH., <http://www.hks.harvard.edu/fs/rstavins/> (last visited Dec. 1, 2011).

<sup>143</sup> Robert N. Stavins & Robert W. Hahn, *The Effect of Allowance Allocations on Cap-and-Trade System Performance* 9, 12, 21-22 (Harv. Kennedy Sch. Faculty Research, Working Paper No. RWP10-010, 2010). See also Robert N. Stavins, *The Wonderful Politics of Cap-and-Trade: A Closer Look at Waxman-Markey*, AN ECON. VIEW ON THE ENV'T BLOG (May 27, 2009), <http://www.robertstavinsblog.org/2009/05/27/the-wonderful-politics-of-cap-and-trade-a-closer-look-at-waxman-markey/>.

groups on anything but a neutral basis, I think, is fairly characterized as rent-seeking.

I think Stavins' paper makes some fairly unrealistic assumptions about the efficiency of some of the government programs that were designed to ensure the consumer's benefit from the revenues, and I think that is common in these sorts of analyses. It is not something that I would say he is uniquely guilty of and there have been other such analyses out there.

The Congressional Budget Office has a report from 2008 suggesting that a carbon tax is far more efficient than available alternatives and as likely to be implemented.<sup>144</sup> There are other parts or aspects of rent-seeking in the Waxman-Markey bill. Some of the regulatory provisions in it have rent-seeking aspects to it. The way the offset provisions were designed made them exceedingly agricultural friendly in ways that would have made it very difficult for them to achieve their goals.

And the question about why would that not happen with taxes is a good question, but the interesting thing is, when we look at non-income taxes, so we look at taxes that are equivalent to a carbon tax, consumption type taxes and excise type taxes, we do see some rent-seeking, but we do not see the level of rent-seeking and carve-outs that we see in income taxes or that we see in cap and trade.

And there has not been enough research into explaining why that is. I believe that the transparency and the simplicity of it make it less vulnerable because the way to think about this every time you must make an arbitrary administrative judgment about how to implement something, you are creating an entry point for rent-seeking.

And so the more such judgments you have to make, the more complex a scheme is, all else equal. Your system is more vulnerable in rent-seeking. And so the question is why would we not expect a carbon tax to be like the vast majority of consumption and excise taxes we see in developed countries around the world, which involves rent-seeking?

And so I think that is something we should look at. The other thing is, politically, carbon tax is only viable if it is revenue neutral. That is to say, if you hardwire the legislation so all that money is given back, not that it is given to programs that subsidize something else, not that the Department of Energy gets it, but that is actually given back in cash and especially if that is the underlying design, I think rent-seeking then becomes a whole lot more difficult because you are not deciding whether or not the benefit goes to First Energy or Washington Gas or the corn lobby. It becomes, then, do you allow

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<sup>144</sup> Peter R. Orszag, Dir. of the Cong. Budget Office, Testimony Before the 110th Cong., Implications of a Cap-and-Trade Program for Carbon Dioxide Emissions Before the Committee on Finance (2008).

rent-seekers to take something that comes out of the check of every American?

And that creates a very different dynamic than when you are deciding who among a bunch of insiders and interest groups are getting the rents. So that would be another reason I would think you would get less.

PROFESSOR MOORE: Two things on that. One is, let us keep the goal posts in mind. Goal posts are not what Rob Stavins is trying to do; he is trying to redistribute income and make everybody whole.<sup>145</sup>

That is not the game; the game is to lower the amount of carbon getting into the atmosphere, and to do that, you have got to have a source of money to fund the technology that actually accomplishes that. So in a sense, you are doing two things with a carbon tax. You are sending a signal that says change your behavior, and pick the thing that generates less carbon.

And for the things that do generate carbon and have to pay the tax, then you have to get to the point where that tax is allocated specifically to carbon neutralization technologies or techniques. So that gets you away from this issue of whether or not somebody is going to be able to gain the system by some other rent-seeking activity that distorts the market. Keep the goal posts in mind.

MR. CUNNINGHAM: Dick Cunningham, Steptoe & Johnson. First, I think you misjudged Republicans and why they do not like taxes. It is hard to observe the current incarnation of the Republican Party without thinking that their motivation for wanting no tax increases and, indeed substantial reductions in taxes, is that they want to starve the government. They want to reduce the government if they could to eliminate everything but military and police, maybe nothing else. That is what they want. End of comment.

Two questions. First, and you are going to object to this hypothetical, but as my law professor would say in class, it is my hypothetical. If you assume there will be neither a carbon tax nor cap and trade, and your options are input tariffs, substantial subsidies to the production, design, development, and production of green technologies, substantial subsidies to efficiency, like when you get new windows and they are more efficient, keeping the cold in and reduces your heating bill, or do nothing, what is your choice?

PROFESSOR MOORE: Those are all second order derivatives, and in fact, you are left with what Jonathan said early on. You have only one choice in that hypothetical: not to embrace it and that is adaptation to some of these things that actually can do something all the second order derivatives do not.

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<sup>145</sup> See Robert N. Stavins & Sheila M. Olmstead, *Comparing Price and Non-Price Approaches to Urban Water Conservation* 12, 14, 18 (Harv. Envtl. Econ., Discussion Paper No. 2009-01, 2009).

MS. TODGHAM CHERNIAK: I know the answer to that one. None of the above, and get a new group of people to think up the options.

MR. CUNNINGHAM: Second, I would like you to comment on feed-in taxes.

PROFESSOR MOORE: You want feed-in tariffs?

MR. CUNNINGHAM: Feed-in tariffs,<sup>146</sup> yes. You do not like them, right?

PROFESSOR MOORE: They do not last. They bankrupt the system, and they are distortionary in terms of economic behavior, and they do promote rent-seeking that is non-equitable in the industry.<sup>147</sup> Do you need more reasons why they fail?

PROFESSOR ADLER: I am not sure I can understand the argument that if cap and trade is dead, a carbon tax would have to be dead as well. I am not convinced of that, but I understand that. I am not sure why, if they are dead, a feed-in tariff would be viable.

MR. CUNNINGHAM: A feed-in tariff does work. For example, China has used it masterfully to develop wind power in industry, but the country couples feed-in tariffs with discriminatory procurement and does not allow for wind turbine manufacturing to sell.<sup>148</sup> I agree it is a can of worms.

PROFESSOR ADLER: But politically, they operate under different constraints than the United States and Canada do.<sup>149</sup> If I am allowed to decide how the subsidies for green technologies are to be implemented, then that would be my pick. And the way I would do it is, I would take—and my friends in the engineering school should close their ears—take half of the Department of Energy's budget for climate-related technologies and convert it from grants to technology inducement prizes, which, based on our experience, would probably produce a private investment multiplier somewhere in the neighborhood of ten to one, if not more.

And if our goal is really to develop the sort of technologies that we need, we need that level of investment: that is a level of investment greater than any federal government is going to do. And so if that is the way we can subsidize it, I would do that because, not to guarantee its success, but it is a role of the dice.

MR. CUNNINGHAM: It is a positive thing to do.

PROFESSOR ADLER: It is a positive thing to do. It is a way of generating a lot more investment at much lower cost.

<sup>146</sup> See RICHARD A BARCLAY, FEED-IN TARIFFS: ARE THEY RIGHT FOR MICHIGAN? 4 (Mich. Elec. Coop. Ass'n, 2009) (defining feed-in-tariffs).

<sup>147</sup> *Id.* at 15.

<sup>148</sup> See generally GLOBAL WIND ENERGY COUNCIL, THE DEVELOPMENT OF WIND POWER TARIFFS IN CHINA (2009) (evaluating and analyzing China's implementation of feed-in-tariffs).

<sup>149</sup> See, e.g., YANG ZHONG, LOCAL GOVERNMENT AND POLITICS IN CHINA: CHALLENGES FROM BELOW (2003).



MR. CUNNINGHAM: One more quick question: if you have a carbon tax or cap and trade system and Congress says, "We will only do this without . . . ," would you put on a border tax against imports from countries that do not impose those costs on their competitors to United States industries?

HON. JAMES PETERSON: No, not on Canada.

MR. CUNNINGHAM: Then I would ask Cyndee to bring the World Trade Organization<sup>150</sup> case for Canada against the United States when they did that.

MS. TODGHAM CHERNIAK: I would be more than happy to.

PROFESSOR ADLER: There are other folks that have looked at this far more than I have but certainly the literature that I have seen on this suggests that you could do border adjustments similar to the way you do border adjustments for value-added taxes, and in that, you could adopt a carbon tax in a way that is completely compatible with the World Trade Organization and do so more easily than you could with cap and trade, unless you believe that you are going to have some international superstructure.

MR. CUNNINGHAM: That is a discussion for another day, but I beg to differ with you.

MR. ROBINSON: Michael Robinson from Fasken Martineau in Toronto. I knew Dick would bring it back down to around a trade dispute that he could get involved in, and Cyndee, too.

This is not a question but it is a very short, and I think interesting, wrap-up to the concept of feed-in tariffs, subsidies for alternative energy financing thereof, and cross-border energy concerning the United States and Canada, all in a couple little paragraphs here. Some of you may have noticed this.

In a trade magazine that I get called *International Project Finance*, there was an announcement last month of the first United States XM bond guaranteed by the United States Export Credit Agency for First Solar, a United States company, to raise money to take advantage of Ontario's feed-in tariffs and build and sign a twenty-year feed-in tariff guaranteed. Contracts like AAA guaranteed contract, of course, because it is guaranteed by the government that just closed.

First Solar is set to use a bond guaranteed by United States XM to finance \$450 million forthcoming solar photovoltaic portfolio in Ontario.<sup>151</sup> The deal would be the first use of a United States XM backed bond for a renewables project and only the second ever by an export credit agency.<sup>152</sup>

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<sup>150</sup> WORLD TRADE ORGANIZATION, <http://www.wto.org/> (last visited Dec. 1, 2011).

<sup>151</sup> *Id.*

<sup>152</sup> See News Release, Export-Import Bank of the United States, Ex-Im Bank Announces of \$455 Million in Project Financing for First Solar's Exports to Canada (Sept. 2, 2011), available at <http://www.exim.gov/pressrelease.cfm/830B629B-023E-5C34-5863BEEA2A634632/>.

And then the writer observes, “[t]he bonds would benefit from the highly long-term” contracts, with the Ontario Power Authority and First Solar's use of its own equipment and construction capabilities.

And I will not belabor that last sentence, but as we all know, that brings the other trade aspect in that Richard was mentioning because the Ontario Green Energy Law<sup>153</sup> requires that the equipment used be sourced in Ontario.<sup>154</sup> It is probably illegal. It is being challenged by Japan, the United States, and the European Union.<sup>155</sup> The way Canada and Ontario is going to get around it is stall and drag out that World Trade Organization action for two or three years.

By then, Ontario will have brought in all the energy, equipment manufacturers, and then it will say, “We should not have done that. We will repeal that part.”

So there we have got everything all wrapped up in one little bond. That is a lot of money, \$450 million guaranteed by the United States Government. So a United States manufacturer building equipment in Ontario to take advantage of these hugely generous feed-in tariffs may be the way to the future.

MS. TODGHAM CHERNIAK: I would like to thank Michal Moore and Jonathan Adler for a very interesting, thought provoking discussion, and I actually think there are a number of sound bites that we all can use for whatever position we want to take on this topic when talking with clients or politicians or whomever. We have been provided with a number of quotations. We have to rethink the approach to carbon policy.

Energy is a public good. These things are divorced from reality and both speakers used the phrase “this is a non-starter.”

So I think that this particular presentation, when transcribed, will be useful to many of us in the room. So thank you very, very much.

MR. SANDS: Ladies and gentlemen, it is my great honor to adjourn this session. Thanks very much.

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<sup>153</sup> See Green Energy and Green Economy Act, R.S.O. 2009, c. 12 (Can.).

<sup>154</sup> *Id.*

<sup>155</sup> See Cyndee Todgham Cherniak, *The U.S. and EU Join Japan's WTO Complaint Against Ontario's Green Energy Act*, TRADE LAWYERS BLOG (Oct. 1, 2010, 8:28 AM), available at <http://www.tradelawyersblog.com/blog/article/the-us-and-eu-join-japans-wto-complaint-against-ontarios-green-energy-act/>.

