SHORTENED VERSION

Transcript of February 7th Panel Discussion
at the Ann Arbor District Library
"A Carbon Price is Right:
Harnessing the market to bring down carbon emissions"

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Barry Rabe
Lisa Del Buono
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Note that in the interest of creating a shorter document, many comments have been cut or paraphrased, with the permission of the speakers. For the full-length transcript and video of the panel, go to: http://annarborccl.org/

Knute: This is not a forum to discuss the science. This is a forum, rather, to discuss confronting the problem by exploring market-based solutions for driving down carbon emissions. I'm pleased to work with this group. Professor Sam Stolper is an assistant professor in the newly established School of Environment and Sustainability at U of M. Dr. Lisa Del Buono is a physician and an active member of the Grand Traverse Area Citizens' Climate Lobby. Dr. Barry Rabe is a U of M political scientist who examines the political feasibility of policy innovation.

Barry, "What is carbon pricing specifically and what is carbon tax versus cap and trade?"

Barry: [00:04:25] The idea of a carbon tax is to use a taxation or a fee mechanism, adding a direct cost to fossil-fuel energy that is then borne by those who choose to use it. The presumption is that by driving that cost higher, you might discourage or deter that energy use and thereby encourage greater use of other kinds of energy alternatives.

The idea behind cap and trade is that government makes a decision on a total cap on the amount of emissions. It allows for some negotiation and flexibility, including the idea that money may change hands between parties. In effect you're creating a price through this cap and trade system. It's a little different approach and a little different model, but at the end of the day you're moving toward a strategy that does not involve a strict, strident government regulation, instead relying or a market based approach to drive down emissions related to fossil fuel usage.

Knute [00:08:28] Lisa, you have been working with the Citizens' Climate Lobby for quite a while and you've been taking a deep dive into carbon fee and dividend so could you please explain to us what that is.

Lisa [00:08:43] Carbon fee and dividend is a proposal that's put forth by a non-partisan grassroots organization called Citizens' Climate Lobby. It is a type of carbon tax and it's one which we like to describe as a three-legged stool.

The first leg of the stool is the fee, and it's placed directly on fossil fuels, as far upstream as possible. So that's when the oil or the coal or the gas is coming out of the ground or into the country. It starts low at about fifteen dollars per ton and then it increases yearly by ten dollars per ton. It covers not only CO2 but other greenhouse gases as well. This fee then creates a very transparent and predictable market signal to businesses and entrepreneurs so that they can know that it's time to transition to the low carbon economy.

[00:10:54] The second leg, and what distinguishes carbon fee and dividend from your typical carbon tax, is what is called the "dividend." Our proposal suggests that rather than the government

keeping the money, it would return all of net revenues equitably back to US households in the form of an equal monthly dividend. That makes it a revenue neutral type of carbon tax.

The third leg of the stool is a carbon border adjustment that's applied to businesses trading manufactured goods between countries: one country with a fee or a price on carbon and the other country without an equivalent price. And it does three things: It protects U.S. businesses from being undercut by foreign manufacturers, by placing a tariff on imported goods based on the amount of carbon content of the product. It discourages U.S. companies from relocating to a country where they can emit more CO2, so it prevents leakage by rebating through an equivalent price difference for all products except for fossil fuels. And it encourages other countries to adopt similar carbon pricing policies thereby generating, hopefully, a global price on carbon.

Knute: [00:13:14] Sam, why do economists favor the market based approach of carbon pricing versus relying on regulation to reduce carbon emissions?

Sam: [00:13:27] There are several reasons why carbon pricing is often touted as superior to the more prescriptive "command and control" regulatory approaches. It's all about minimizing the cost of climate action. We have a lot of different policy levers at our disposal and in theory the most potential for cost savings, for cost minimization, comes through carbon pricing. And the reason for that is the flexibility of carbon pricing. The regulator, the policy maker, or even a researcher, doesn't actually know what is the cheapest course of action. There's a lot of uncertainty and over the long haul. So we put the price on the thing that does the damage and we let the actors in the market decide for themselves. The benefits we think of keeping the planet from overheating are pretty self-evident. They're going to outweigh the costs. But there are costs, and we might as well try and minimize them.

Knute: [00:16:28] Barry, what are some of the political challenges to carbon pricing?

Barry: [00:16:39] This is not an easy lift in political terms. If one looks at the track record of governments in North America, carbon pricing out of a galaxy of different options is among the least likely to be adopted. It is less likely to sustain high levels of support in public opinion polls than many other alternatives. And it is among the most likely to be reversed if launched and adopted. For instance, Michigan was part of a regional Midwestern Greenhouse Gas Initiative that was started around 2007 and 2008, including five other Midwestern states and one Canadian province. It has collapsed, with all of the original members walking away from the original agreement.

What are some of the specific challenges? One is the fact that fossil fuels have a considerable economic impact in many states and communities. The dislocations from transition away from fossil fuels could be quite significant in economic terms.

Secondly there is the challenge of making the case that we should take this perfectly legal commodity of fossil fuels and increase the cost, perhaps substantially, so that in future generations there could be a broader benefit, a benefit that's going to be hard to measure and hard to fully understand. Politically that's a hard argument to make and sustain, especially if you're in a democratic system and want to win election and re-election. This is where the issue of revenue allocation is significant in terms of how you build and sustain a political coalition. Can political support from the distribution of the new revenue from a carbon price help offset the opposition to price increases?

Finally, although there are alternatives which are not nearly as effective on economic grounds and are most costly per unit of reduction, they're much more popular on political grounds. To mandate increases in renewable energy, to mandate some of those scrubbers or other kinds of technologies,

are clearly problematic from an economic standpoint. Politically, however, it's much easier to disguise the costs.

The challenges are not insurmountable, but should not be taken lightly in any jurisdiction, regardless of partisan composition, and regardless of nation state.

[00:22:42] Knute: Lisa, since we're talking about political challenges let's talk about opportunities. What are some examples of ways that carbon fee and dividend appeals across the aisle?

[00:22:58] Lisa: That is our mission: to create the political will for effective climate policies. We believe that through educating and empowering everyday citizens to exercise their civic rights, we can in fact engage our members of Congress on both sides of the aisle. For instance, through our work and the work of the Friends Committee on National Legislation, in February of 2016 Republican Carlos Curbelo, joined forces with Democrat Ted Deutch, to form what's now called the Bipartisan Climate Solutions Caucus. This caucus has grown steadily and currently is at 70 members.

Let's take a look at how carbon fee and dividend does appeal to both sides of the aisle:

Progressives are correctly concerned for people who are most economically disadvantaged, who are suffering the greatest climate impacts right now, and who will feel the pressures of a rising cost of a carbon tax when it's instituted. Several studies have demonstrated that by rebating revenues directly back to the consumer in the form of a dividend check, a regressive tax becomes a progressive fee, meaning that the most economically challenged will come out ahead.

Conservatives appreciate that carbon fee and dividend is a market rather than a regulatory approach. It is revenue neutral, doesn't grow the government, and allows for all forms of energy to compete on the market without subsidies or regulations, once the fee is placed. In fact, a group of Republican elders, in conjunction with some prominent businesses and environmental groups, are calling for a plan that's very similar to ours. They are the Climate Leadership Council and their plan is called the “Carbon Dividend Plan”.

[00:27:27] Knute: Sam, if a carbon tax is revenue neutral, what are the options for ensuring that everyone is treated fairly, including poor people and those in frontline communities?

[00:28:04] Sam: There're actually a lot of competing interests for the revenue. But IF it is indeed decided we're going to use these revenues for redistribution, then in order to try and ensure fairness, there are a couple of key questions: One of them is, what's the formula for determining how much a household gets back? And the second is, what is the vehicle through which the transfer is made? If you knew the impact of the carbon pricing initially on each family you could base the size of the check, on that. But you could also use income or wealth, or you could use family size.

I actually like CCL's proposal, which is to give the dividend back to each household purely as a function of how many adults there are in the household and how many children there are in the household. There is a clear simplicity to that and there's also a clear sense of absolute fairness. But there isn't really one definition of fairness here. There're a lot of different options.

As far as the vehicle for the transfer, that could be a check in the mail, an electronic deposit, tax credits of a variety of kinds, such as we've seen in British Columbia for instance. Or you could make investments targeted in certain communities for improved environmental quality, further improvements in infrastructure or education, any number of things. I think that probably the check in the mail is the best way to do it because the family gets to decide what's the best use for the

money. And the IRS already sends checks in the mail through the tax code, so there's no added administrative complexity.

The last thing I want to address are concerns that the poor and frontline communities might actually see rises in pollution as a result of carbon pricing. The idea is that the flexibility of carbon pricing ensures only that a cap is met or that reductions overall in emissions are made but not where the reductions come from. And so we're at risk of having hot spots of pollution. CO2 is often emitted along with carbon monoxide, carbon, sulfur dioxide, nitrogen oxide, and particulate matter, which all can be very polluting to a local area. So when we enact our carbon pricing we might need another instrument as well, to prevent local pollution. Otherwise if the policy reduces overall emissions but increases inequality, to me that's a failed policy.

[00:33:34] Knute: Barry, what are some examples of carbon pricing elsewhere in the world?

Barry: [00:35:03] A great many governments around the world have within the last three or four years adopted some form of a carbon policy: South Africa, Chile, South Korea. China formally launched its cap and trade program in January of this year; they're about a month in. Many of these are very small. Many are experimental. But it is interesting to note on multiple continents, not just North America, not just Europe, this idea has had some degree of traction and moving forward, literally within the last four or five years.

One outside the U.S. that's especially interesting to think about involves our Canadian neighbors. About 10 years ago British Columbia—a government which was a politically represented by a center right party—decided to do something about growing concern about climate change and actually outflanked opposition on its political left. And political support for that tax has grown to the point where there is no opposition to that tax in British Columbia among any party. And now the party that originally opposed the carbon tax is now in power and proposing to elevate that tax from 30 dollars a ton to 50 dollars a ton. A big part of the strategy and recipe there is immediate and total transparency about how the revenue is used. There the proposition was not a dividend, but revenue neutrality through other tax cuts and reductions as well as an initial rebate dividend of about one hundred dollars per family.

Alberta, Quebec, and Ontario are also experimenting with carbon pricing in other provinces. And now the Trudeau government, a Liberal Party government, is proposing creating a pan-Canadian carbon price, which basically says to every Canadian province and territory: you have to create a price but you get to set the terms. You get to keep the revenue and decide how that revenue is going to be utilized. I do think it's quite interesting to note that you can drive over to the Ambassador Bridge tonight and be in a jurisdiction that's embraced carbon pricing. Even though so much of the focus and attention understandably is on these experiments in Asia, Africa, and other places, just in our own backyard there are some very, very interesting models.

[00:40:19] Knute: Lisa, going back to the question of economic fairness and social justice, what are the benefits the Citizens' Climate Lobby sees in returning the revenue by equal dividends to individuals?

[00:40:38] Lisa: We commissioned two studies to be done. *(Note, she is referring to: https://citizensclimatelobby.org/remi-report/ https://citizensclimatelobby.org/household-impact-study/)*

The first is one that we call REMI. (This stands for Regional Economic Modeling Inc., a company that works on the federal, state, and local levels with government and state institutions, including the University of Michigan, National Gas Association, the Nuclear Energy Institute, etc.) The study was designed to evaluate a variety of economic metrics, over a 20-year period of time, introducing

carbon fee and dividend legislation, holding all other parameters the same, and comparing those metrics to baseline.

REMI did demonstrate that with carbon fee and dividend we would see a significant reduction in emissions. In fact, carbon fee and dividend can do in just four years, in terms of emission reductions, what the Clean Power Plan would take 15 years to do. The REMI study also demonstrated that the plan would create jobs: 2.1 million new jobs over baseline in 10 years, 2.8 million new jobs in 20 years, with a slight increase in GDP of 0.5 percent above that baseline.

The key lies in the dividend check. Several studies--only one of which was commissioned by CCL--have demonstrated that directly rebating the net revenues back to the consumer is the most progressive form of revenue return. These studies include the CCL-commissioned "Household Impact Study," and studies by the Office of Tax Analysis for the Department of Treasury, and by an independent research institution that's located in D.C. called Resources For the Future. According to the Household Impact Study, with carbon fee and dividend almost 90 percent of those below federal poverty level would come out ahead. Similarly people of color would tend to do better than white people. People in rural areas did about the same as the national average and slightly better than suburban areas. Many of these findings are related to the fact that in general the wealthier one is, the more one consumes, and the bigger one's carbon footprint.

Why do we see job creation? The answer to that lies in what people do when they have more money in their pockets, especially those who are more economically challenged. Many of them would go take care of their health, go shopping, go out to eat, fix up their home. And that's where we see the job growth according to the REMI report. So the bottom line is that the equal dividend check is critical to the equation because it protects the most economically vulnerable during the transition, while at the same time stimulating the economy.

Knute: [00:44:49] Sam, how do large corporations look at carbon pricing?

Sam: [00:45:02] Obviously it's a cost that firms didn't have to pay before the prospect of carbon pricing. But there may be more than a single bottom line for some firms to the extent that social impact, for instance keeping the planet from overheating, is something that shareholders care about.

The second is regulatory certainty. It's hard to strategically plan for the future when you don't know what the regulatory environment is going to be like in the future. So sometimes a modest cost actually is preferable to regulatory uncertainty.

Third, if you know there is going to be some form of regulation of greenhouse gas emissions, then for sure without question corporations are going to prefer carbon pricing. That's the one that stands the best prospect of allowing them to minimize costs. It also gives them the most power, the ball's in their court how they are actually going to comply with this policy. If there's going to be policy, firms want it to be carbon pricing, not necessarily because they want to game the system or because they want to take advantage of consumers (though that may happen in cases, we have to be careful of that), but because they're actually trying to minimize costs.

Fourth, a show of support for carbon pricing could be good for branding, for marketing, PR, reputation. And fifth, is competitive advantage. Businesses with less emission-intensive processes can gain an advantage over those that are more CO2 intensive. Similarly there could be a first mover competitive advantage as well. If you show your support early, you can invest in figuring out ways to lower your compliance cost curve and that can give you an advantage.

Knute: [00:48:10] There is a carbon cap and dividend bill proposed by Senator Chris Van Hollen from Maryland, Democrat, and Representative Don Beyer, Democrat from Virginia. They plan to introduce a so-called Healthy Climate and Family Security Act. Could you tell us what you think about that and maybe a little bit about what it is?

Barry: [00:49:10] The bill proposes reducing emissions by 80 percent from 2005 levels by 2050 with a quarterly dividend return. Note that over a period of 15 or so years we've routinely seen legislators introduce some version of a carbon price bill into the house or the Senate. This signifies that there is continuing interest from at least some members in Congress. But, there are no Republican cosponsors to this bill, and there are relatively few Democratic cosponsors thus far. We all know that with the current president and vice president, this is not an environment that suggests much political likelihood of any kind of a carbon price being adopted during their terms in office. But there is an ongoing discussion and debate in Congress with proposals moving forward, with counterparts to this legislation moving forward in a number of states as well, although very little indication of this to date in the Midwest.

Lisa: [00:51:03] Yes, we are really thankful for the bipartisan Climate Solutions Caucus because we see this as an opportunity for them to talk about bills like this. And we're really thankful to both Senator Van Hollen and Representative Beyer for introducing the bill because we do think that it can build momentum especially because it's a bicameral bill. We prefer a fee over a cap because we feel that a fee is more transparent and simple. But we love the fact that they they're using a progressive system of dividends. So I think any time legislation like this is introduced it keeps the discussion going in the right direction.

Knute: [00:52:03] Regarding the House Climate Solutions Caucus, what is the possibility or the likelihood that there might be a parallel bipartisan Senate caucus? Is there any reason something similar in the Senate couldn't go forward?

Lisa: Not that I know of.

Barry: [00:53:50] I'd only note that I think it's so interesting to hear that one of Senator Sheldon Whitehouse's favorite lines. He says, 'it's amazing how many members of the United States Senate are willing to talk about this as long as the door is closed.' We have had significant changes in the Senate over the last 10 years. It wasn't that long ago that legislators like John McCain from Arizona, Norm Coleman from Minnesota, John Warner from Virginia—all Republicans—not only said they would support but actually cosponsored cap and trade legislation. So bipartisanship is gone. And yet there are legislators, with a little bit of crossover into the Republican side, that do periodically engage these conversations. What form that takes, how that moves forward, it's not clear, but I wouldn't rule that out entirely some kind of alliance across partisan lines.

Knute: [00:56:09] Oftentimes states are laboratories for national policy. How can we lobby for carbon pricing at a state level? And, should we? Is that a stimulus or is that a hindrance if states all do their own carbon pricing policies?

Lisa: [00:56:41] From CCL's point of view, we are focused on federal legislation. But where there are CCLers who are interested in leading state initiatives, to whatever extent that we have the reserve, we've tried to support those states and those people working on States' initiatives.

Barry: [00:59:00] I wouldn't underestimate what individual states or groups of states can do, not only by making dents in emissions, but also the learning and modeling that comes when we take something like carbon pricing and move it from theory into real world practice. We can actually say now, which we could not say ten years ago, what is involved in sustaining a multi-state coalition on

carbon pricing such as the ten-state Regional Greenhouse Gas Initiative on the east coast. And I think what's going on along the west coast, not just with California, but California looking to other partners, does become significant. I mentioned earlier Ontario and Quebec. There's also the possibility within the next three months that both Washington state and Oregon will join. There's a kind of momentum there. If we get into real world situations and for whatever reasons they flop, that's another story.

Knute: [01:01:20] Why not give a higher dividend or amount of money to families most impacted by CO2 emissions?

Sam: [01:01:40] I think there's a compelling argument for doing that. I think really it's just a difficult political terrain to navigate. But I like the idea of using revenues for redistribution or reducing poverty, reducing inequality, and the more that we can get to do that the better, personally.

Lisa: [01:02:50] Yes, personally I would love to give it in a non-equal fashion but I think politically at least, the reason CCL supports equal dividend checks is two-fold: First, it's very clear it's very transparent, there's no question who's getting what. There's no ability to shuffle the deck or to do something sleight of hand. Secondly, according to the REMI study, the average family of four, after ten years would be bringing home a check just shy of 300 dollars a month, and it goes up from there. That's a lot of money.

Knute [01:04:16]: Is it possible that a carbon tax could get it wrong, or carbon fee and dividend, get it wrong by trading regulations for the tax of fee and dividend? Could we create conditions for worse pollution because of dismantling regulations?

Lisa: [01:05:38] As a physician I am very concerned about regulations that protect our health. Anything we do that reduces greenhouse gas emissions is going to be excellent for our health AND address climate. For instance, there are huge health concerns about fracking and water quality. Our proposal does not say that there should be an end to any regulations. While the REMI report shows that Carbon Fee and Dividend reduces greenhouse gas emissions quicker than the Clean Power Plan, we're not advocating for a rollback or anything like that.

Sam: [01:06:45] I don't see a possible way that carbon pricing could increase overall emissions. It just depends on the levels that you actually choose for these things. If you set a tax level high enough, or if you set a cap, and a cap and trade tight enough, then you're going to accomplish the same things, hopefully at lower cost than the regulations that we may be trading off. I think we have to be really careful about not using multiple policy instruments for the exact same outcome, because that policy interaction actually is not good for costs. But there are some regulations that we really do want to keep. For a case in point, what I described earlier about making sure to maintain air quality in local hot spots. But a carbon tax or a cap and trade, as a replacement for more prescriptive regulation of carbon dioxide, that is a good idea and can easily accomplish the same outcomes at reduced cost.

Barry: [01:08:30] Often in policy discussions involving carbon pricing the only focus is carbon dioxide. I tend increasingly to think not only are we underestimating the impact of methane but that it belongs in these discussions. Methane is intriguing not only because of its greenhouse gas impact but because it represents the permanent loss of a natural resource that is non-renewable. And yet for the most part it completely escapes the orbit of taxation at the state level. I think states are actually only beginning to wake up to this issue and look at this question.

This also is emerging beyond the government taxation issues and in the question of when individual land owners and ranchers are asking, "Wait that's a flare, that's revenue, I should be getting a royalty payment when drilling occurs on my property." And so I've actually found myself

in fascinating conversations with politicians, including state legislators in oil producing states such as North Dakota. They wouldn't be caught dead adopting a carbon price in all likelihood, but tend very, very proud of having one of the most robust oil production taxes in the country as well as royalty provisions. Increasingly, I think we may see methane loss as part of that discussion.

One last point in this regard. British Columbia has a carbon tax but they also produce a lot of fossil fuels. They produce a lot of natural gas. They're hoping to not only maintain and expand their carbon tax regime but also expand LNG production (liquefied natural gas production). For the first time, B.C. is now looking at how you might expand that carbon tax to include methane.

Lisa: [01:11:36] Just so you know, our policy proposes that, whatever the price of CO2 is, for any methane leakage, it'll be twenty five times that per ton, because methane is 25 times, on average, a greenhouse gas.

Knute: [01:12:30] How much did the Scandinavian countries that have various carbon taxes or fees, how much have they reduced their emissions? And could that model be applied in the US?

Barry:[01:13:27] These are countries that generally have been able to achieve a fairly significant level of greenhouse gas reductions. The one country that has struggled the most to meet their targets is Norway. The issue there is Norway is an extraordinary producer of oil and natural gas. In general, carbon taxes in Scandinavia have been fairly popular politically and have proven generally fairly durable despite many partisan shifts in control of governments..

Knute: [01:15:05] Is there any way to measure causality? If a carbon tax or carbon fee and dividend process is put in place and emissions go down, is there a way to measure how much of that downward movement in emissions is a result of a carbon fee and dividend or a carbon tax?

Sam: [01:15:37] It's not easy. With a cap, the cap is supposed to actually make sure that you hit a certain target so you know the outcome. But it's hard to know what it would have been in the absence of the cap, and the same is true with a tax. You may see how emissions changed from before to after you implemented the tax, but other things are happening at the same time.

Knute: [01:17:23] Many people believe CO_2 pricing is considered a regressive tax, due to the fact that poorer families do not have the extra resources to pay for alternative energy sources. How will carbon tax address this regressive aspect?

Lisa: [01:18:05]] Regarding carbon fee and dividend, the dividend can actually make it progressive, and more than offset the cost of living increases that would occur because of the fee. But I think the other thing that's often not factored into it is the fact that direct health impacts that occur often with families that are living very close to processing plants, or live in urban areas, that have to deal with the burning of fossil fuels. We're talking about ozone and fine particulate matter that lead to hundreds of thousands of premature deaths every year. Right here in the US we have hundreds of thousands of E.R. visits due to asthma, missed school days and hundreds of billions of dollars in health care costs every year.

In fact there's an MIT study that says that just the improvements from air quality that would occur when transitioning from fossil fuels would offset the cost of implementation of the carbon pricing policy by up to 10 times. So if we can transition, we are—by improving air quality—helping those people who are suffering most from the burning of fossil fuels.

Sam: [01:19:58] To the extent that the poor devote more of their income to energy, then that component of carbon pricing is going to be regressive. The first line of defense against that is what we have been talking about the whole time: the dividend. That's really the main vehicle for making

something regressive versus progressive. I also think that the benefits of the avoided climate damages are, if anything, more likely to accrue to poorer folks. They live closer to the pollution, they're less able to adapt because of their shorter incomes.

Barry: [1:21:53] I just would note that I think it's extremely important to be looking at issues like regressivity and fairness. If I would go back 10 years ago and critique how we framed a lot of the discussions on carbon pricing in the U.S. and beyond, many of these issues were really not taken seriously.

We've had these conversations in coal, in some very raw ways in American politics in the last year. How do we achieve a major transition and not punish workers from declining energy production industries. This issue will eventually emerge in oil and gas. This will have really significant consequences in some states, some families. It's not going to be easy and these issues have been ignored for too long.

Lisa: [01:24:10] It's essential for CCL that we make sure low and middle income families are not suffering during the transition. That has to be the criteria before we are going to support any plan.

Knute: [01:25:15] Who will administer the dividend? Will this become another bureaucracy?

Lisa: [01:25:33] Alan Lehrman, who worked for the Department of Treasury, has worked out for CCL that we could use the existing infrastructure of the IRS and the Department of Treasury and it would be a direct deposit for most people. After about six years the administrative costs are considered to be less than 2 percent. I think that people feel that Carbon Fee and Dividend is a fairly simple plan that is fairly easy to administer, in the big scope of things.

Sam: [01:27:11] One of the advantages of a carbon tax is that we have a tax system already. And so we have agencies who have experience already dealing with this sort of policy.

CONCLUDING REMARKS

Sam: [01:27:47] We need policy that is going to minimize costs and is also going to be fair to everybody, whether it's the people who are going to lose their jobs from fossil fuel sector or poor families. And you know that's just as important as the overall win of carbon pricing.

Lisa: [01:28:38] For us to change what's happening right now in our democracy, we have to learn to talk to each other. We have to learn to listen to each other, and that's really been the key to the movement that we've seen with CCL. And so don't give up hope, because we are truly seeing changes.

Barry: [01:29:34] In some circles the idea has been you gather people to the left of center and find some way to win an election and jam through a bill or regulation. And hope it sticks. What we've seen, including the United States and around the world, is that this recipe really tends not to work very well. I would argue there are lessons in carbon pricing that suggest unusual coalitions do emerge, often during unusual times and moments that emerge that make new policy possible. It often follows really quirky unusual unpredictable paths.

The first government in North America to adopt a carbon price through legislation was not California in 2006. Instead, it was New Hampshire in 2002, the state where license plates say “Live Free or Die.” They are now part of known as ReGGI, the Regional Greenhouse Gas Initiative. It can happen.

In the case of British Columbia it was very simple. They did not create a bureaucracy, as the issue was not handed over to the environment minister. Instead, it was given to the Minister of Finance. She worked within the existing tax structures and systems, and within six months you had an operational tax, a clear benefit program, and a website you could go to in order to figure out whether you were a net winner or loser. It was as transparent as you can imagine—and remains so after 10 years of operation.

It's interesting to think in the case of Alaska that the policy that called for creating a dividend for every citizen of Alaska to receive a dividend check was put together largely by a Republican governor and a coalition at a point where Alaska knew it was going to be sitting on a massive bounty of revenue. They were very concerned that they would blow that revenue, as they had before for other natural resources. Try in Alaska politics, regardless of your political persuasion, to touch the dividend--it's hard to do! It's clear, it's clean, it endures over generations.

Even the University of Michigan has talked about a carbon price, including a great proposal put forward by a student a few years ago. It was not adopted, in part due to opposition from some faculty, but Yale has led the way on this. I look forward to the day when UM catches up and moves beyond our Ivy League counterpart, setting a model for other universities and colleges.

We all can do it. Wouldn't it be great if the next time we come together there are multiple jurisdictions that we can really talk about—real world cases and examples, building on the kinds of ideas all my colleagues have suggested and your questions have brought forward. So thank you all very much.

Knute: [01:34:40] Thanks to the Citizens' Climate Lobby and League of Women Voters and all the other organizations and people who made this possible. There are huge costs to the climate crisis, and they're only going to get higher if we don't attenuate it. It's really encouraging to see our panelists with their great expertise in policy, economics, medicine and citizen activism, here talking in a very informative way with you all about potential solutions. I'm optimistic. So thank you for coming.

This program was recorded on February 7th 2018 at the Ann Arbor District Library.