Carbon Pricing: 
From Theory to Reality

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The theory behind carbon pricing goes back to Pigou’s 1920 book, *The Economics of Welfare*, which first made the case for using environmental taxes to internalize externalities.

In the nearly 100 years since Pigou’s book, his prescription has been widely endorsed by economists and just as widely ignored by policymakers. There have been a few successes—the SO₂ trading program in the 1990 Clean Air Act Amendments, the British Columbia carbon tax, greenhouse gas trading programs in Europe (the EU Emissions Trading System), in a collection of East Coast states (RGGI), and in California (AB32)—but by and large climate policy has either been avoided entirely or handled through traditional regulations.

It is a credit to Robert Stavins that there have been any successes at all. He has played a pivotal role in many of the existing policies, including as Director in the late 1980s of Project 88 (Stavins 1988), a report that catalyzed the SO₂ trading program. More recently, Stavins has studied a variety of climate policies through his work with the Harvard Project on Climate Agreements, and the IPCC.

In this paper, I aim to complement Stavins’s work by providing more of a bottom-up perspective, one that is perhaps more akin to the view that Stavins himself may have had as a newly minted PhD in 1988. (I hasten to add that in 1988 Stavins was already an assistant professor at Harvard working with national leaders, so my “bottom-up perspective” is from a much lower bottom!) As befits a bottom-up perspective, my focus in this paper will be quite narrow: on carbon pricing efforts on the west coast of North America in general and in Washington State in particular.

Before pursuing that focus, however, a bit of perspective is in order.

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1. Think Globally, Act Locally

To grasp the international challenge, consider what I call the “5 Chinas” theory of the world (Bauman 2014a), which divides the world population of about 7 billion people into 5 China-sized chunks that each have about 1.4 billion people:

- China
- India
- Other developing Asia: Indonesia, Bangladesh, Pakistan, Vietnam, the Philippines, etc.
- The rich world: North America, Europe, Japan, South Korea, etc.
- Everyone else: Principally Africa and South America.

At the beginning of this century the rich world—just one of these “5 Chinas”—accounted for about half of world CO$_2$ emissions (IEA 2010). A simplistic but illustrative projection would feature “catch up” from the other 4 Chinas by 2100, plus the addition of at least two more China’s worth of people to the planet. (Current UN projections [UN 2012] show a peak of 10-11 billion towards the turn of the next century.) If each of these Chinas produces as much CO$_2$ as the rich world currently produces, world CO$_2$ emissions would increase by 250% over the course of this century. (If rich world CO$_2$ emissions are $x$, emissions will rise from $2x$ to $7x$.) As an illustrative example, China passed the U.S.A. as the top carbon emitter in the world in 2006 and is likely to reach roughly double U.S. emissions by 2016, but even at double U.S. emissions China’s emissions per capita will be about half of the level in the U.S.A. because China has about four times more people than the USA.

What then is the point of local climate policies? Opponents of local climate action in Washington State often emphasize that the state accounts for about one-third of one percent of global CO$_2$ emissions, but of course, the point of action in Washington State is not to “solve” climate change in Washington State, but to influence action at larger scales. In particular, state-level action can serve as a “laboratory of democracy” to influence national action. (A reasonable model, for better or worse, is how the Massachusetts health care law, aka Romneycare, influenced the Affordable Care Act, aka Obamacare.)

State-level action is especially important at the moment given the poor political prospects for climate action in the U.S. Congress; hopefully, state-level action can inspire national action. And hopefully, national action can inspire interna-
tional action, perhaps through an international agreement on carbon taxes or an international cap-and-trade system. Given the growing importance of China, India, Africa, and the rest of the developing world, international action will be necessary to stop the growth of world carbon emissions. (I will note, however, that international action may not require an international agreement. Indeed, the easiest “solution” that I can see is for the U.S.A. and other rich countries to use carbon pricing and/or government research funds to pursue clean-energy research and development (R&D); if that R&D miraculously leads to the development of clean energy options that are cheaper than fossil fuels, the rest of the world will adopt them simply because they are cheap, without the need for any sort of global treaty.)

The remainder of this paper will therefore focus on the west coast of North America, and in particular on Washington State, as a case study for progress on carbon pricing. In addition, I believe that there is a decent chance that what happens in this region will drive national and international climate policy in the years ahead. That is because Washington (like Oregon, which could play a similar role) is sandwiched between two jurisdictions that represent two paths forward on carbon pricing: British Columbia, which has a carbon tax, and California, which has a cap-and-trade system.

2. West Coast Background:
   British Columbia’s Carbon Tax, California’s Cap-and-Trade

In February 2008, the government in British Columbia (BC) adopted what many economists consider to be the best climate policy in the world. There are many oddities about the BC carbon tax, not least of which is that the policy closely approximates what might appear in an economics textbook.

Another oddity is that the policy was passed by a right-of-center government, the confusingly named Liberal Party. (The reference is to classic or European-style liberalism, or what in the U.S.A. we would call libertarianism.) According to the conversations and readings (Durning 2008) I’ve been privy to, the driving force was Premier Gordon Campbell, who personally pushed the carbon tax into existence despite opposition or ambivalence from just about everybody in BC except for economists (Green 2007). Indeed, at the election that came a year after the carbon tax was introduced, the left-of-center New Democratic Party campaigned against the carbon tax, arguing that it was unfair. (This prompted some environ-
mental groups to endorse the Liberal Party, which won re-election; in the end, the carbon tax probably ended up playing a relatively small role in tilting the election in either direction [Lorinc 2009].

The BC carbon tax (see Durning and Bauman 2014) applies to almost all fossil fuels burned in the province of British Columbia. (“Process emissions” from industries such as aluminum and cement manufacturing are excluded, as are fuels loaded onto planes and ships heading beyond the province’s borders; the carbon tax also does not apply to “carbon by wire”, i.e., the carbon content of imported electricity.) The tax started at $10 per ton CO$_2$ in July 2008 and increased by $5 per ton per year through July 2012, when it plateaued at $30 per ton. (All figures for the BC carbon tax are in Canadian dollars and in metric tonnes, which fortunately are nearly at parity with American dollars and short tons, respectively, but note that throughout this paper “tons” means “metric tons”.) For context, $30 per ton CO$_2$ is approximately $0.30 per gallon of gasoline, $0.03 per kilowatt-hour of coal-fired power, and half that for natural gas.

In short, the BC carbon tax can be summed up with a haiku:

Fossil CO$_2$
Thirty dollars for each ton
Revenue neutral

If British Columbia is a haiku, California is *War and Peace*. That’s not necessarily bad—*War and Peace* is considered one of the greatest novels ever written—but it makes it difficult to provide a concise overview. I’m going to try anyway.

California’s Global Warming Solutions Act of 2006, often referred to as AB32, includes a host of provisions that aim to return the state to 1990 emissions levels by 2020. What happens after 2020 depends on whether and how the state government extends the program, e.g., to enforce a (currently non-binding) executive order to reduce emissions to 80 percent below 1990 levels by 2050.

Although attention often focuses on the cap-and-trade component of AB32, this focus may be unwarranted. According to the Electric Power Research Institute (EPRI 2013), the latest estimate from the California Air Resources Board (ARB) suggests that 80 percent of the promised emissions reductions will come from “complementary policies” such as a Low Carbon Fuel Standard, Advanced Clean Car standards, and a Renewable Portfolio Standard. The cap-and-trade program “cleans up the rest.” Economists tend to dislike this type of complementarity—the underlying philosophy of cap-and-trade is for the market to identify low-cost
carbon-reduction activities, not the government, and Robert Stavins (2009) has been a prominent critic of California-style complementarity—but we'll leave for another time a broader discussion of market failure versus government failure.

Having noted that a focus on cap-and-trade may not be warranted, I would now like to focus on cap-and-trade because that's the innovative part of the policy.

The first permit auction took place in November of 2012 (ARB 2014a). The program currently covers greenhouse gas emissions from electric utilities and industrial facilities with annual emissions greater than 25 million metric tons of CO₂ equivalent (ARB 2011). Other fossil fuels—notably transportation fuels—will come under the cap in 2015, at which point the program will cover 85 percent of California's greenhouse gas emissions. (The policy covers a number of important greenhouse gases and sources, not just fossil CO₂.)

So far most of the revenue associated with cap-and-trade permits has gone back to electric utilities and their customers. Pacific Gas and Electric (PGE), for example, will be providing $30-$40 “climate credits” for residential customers twice a year (O'Mara 2014, CPUC 2014). In theory, this should offset the cost of carbon pricing for the average customer, and if the credit is provided as a fixed benefit that is not tied to power consumption, then consumers should still have the appropriate marginal incentives to reduce their power usage. (A numerical example may help, so let's say that carbon pricing raises PGE power prices by 2 cents per kWh, costing customer Joe $5 a month. If PGE sends Joe a flat $30 credit twice a year, he doesn't take a hit to his pocketbook but he still has an extra 2-cent-per-kWh incentive to reduce his power usage because the $30 credit comes regardless of how much power he uses.)

Recent data, from an auction in August 2014 (ARB 2014a), shows a permit price of about $11.50 per ton CO₂, just above the minimum “reserve price” of $11.34. (The reserve price started at $10 per ton in 2013 and goes up annually by inflation plus 5%.) As noted above in the context of the BC carbon tax, a ballpark estimate is that $10 per ton CO₂ is about $0.01 per kWh of coal-fired power or about $0.10 per gallon of gasoline, except of course note that gasoline doesn't come under the cap until 2015.

For comparison's sake, the BC carbon tax is $30 per ton CO₂. But as noted below the California system may be more comprehensive after the 2015 expansion.

Transportation fuels will enter the cap-and-trade system in 2015. The state intends to auction off these permits and place the revenues in a Greenhouse Gas
Reduction Fund (ARB 2014b). (Assembly Bill 1532 from 2012 requires that 25% of the proceeds benefit disadvantaged communities.) How much revenue will come into the fund depends on the market-clearing price of permits, but the state expects to raise $850 million in the next fiscal year (Gutierrez 2014) and that amount could increase to more like $2 billion a year for the rest of the decade. That’s a lot of money, even for a big state like California. With 38 million people, revenues of $1 - $2 billion a year equals $25 - $50 a year for every man, woman, and child in the state.

So let’s not beat around the bush: Starting next year, a large portion of AB32 will function like a gas tax in excess of $0.10 per gallon that will fund low carbon transportation, sustainable infrastructure, energy efficiency, natural resource protection, and waste diversion. This may or may not be your cup of tea, but in any case it’s obvious that a lot will be riding on the success of the state’s investment plan. (The governor wants to use $250 million this year for a controversial high-speed rail project; he also wants the state General Fund to start repaying a $500 million loan that went from the Greenhouse Gas Reduction Fund into the General Fund in 2012 [State of California 2013, Gutierrez 2014].)

A few additional details: First, AB32 specifically includes “carbon by wire”, i.e., the carbon emissions associated with electricity generated out-of-state but consumed in California. (Note that the BC carbon tax does not cover carbon by wire. However, both BC and California will mostly exempt fuels for planes and ships: jet fuel, for example, is only included in BC’s tax for flights that both begin and end in BC, and the same is true of California’s cap-and-trade system.)

Second, AB 32 was upheld by California voters in 2010 and appears to be surviving legal challenges. Proposition 23 offered voters a chance to suspend AB 32 “until unemployment drops to 5.5 percent or less for a full year.” By a 62-38 percent margin, voters decided to keep AB 32. And in the courtroom, Marten Law (2013a) notes that the program “has withstood the many challenges it has faced” (see updates from Marten Law [2013b] and Whetzel [2014]) but still faces “a possible dormant Commerce Clause challenge from industry [that] could completely derail [the] cap and trade program.” And of course there may be political push-back from voters once gas prices go up.

Finally, note that California’s cap-and-trade system is linking with Quebec Province, which has also adopted a carbon cap-and-trade system (ARB 2013), enabling carbon allowances and offset credits to be exchanged between participants in the two jurisdictions’ programs. This link will be one of the few remnants of
the Western Climate Initiative, an ambitious attempt to create a multi-jurisdictional carbon price across North American states and provinces. A similar effort called the Pacific Coast Collaborative is now in the works, with California’s cap-and-trade system battling BC’s carbon tax in a friendly competition for regional dominance.

3. Carbon Pricing in Washington State

Significant efforts are underway in Washington State (and in Oregon) to put a price on carbon, either through a BC-style carbon tax or through a CA-style cap-and-trade system. The economics of the two policies are similar—for example, an auctioned cap-and-trade system with a permit price of $30 per ton \( \text{CO}_2 \) is in most respects identical to a carbon tax of $30 per ton \( \text{CO}_2 \)—so I will describe the relevant issues by focusing on a policy that I have been advocating through the CarbonWA.org campaign to bring a BC-style carbon tax to Washington State.

The gist of our proposal for Washington State is to impose a BC-style carbon tax and use the revenues to reduce sales taxes by a full percentage point, eliminate business taxes for manufacturers, and fund the Working Families Rebate for low-income households. For most households, this will amount to paying a few hundred dollars a year more for fossil fuels and a few hundred dollars a year less for everything else.

Here are some details of the latest iteration of the CarbonWA.org proposal:

- The carbon tax covers fossil fuels burned in Washington State. This is similar to BC, but unlike BC we will include all jet fuel and we will also include the “carbon by wire” associated with imported electricity. (Our policy includes a 40-year phase-in for diesel fuel used on farms and for public transportation fuels; there were no similar features in BC’s original measure, but more recently the government has added exemptions for agriculture.) All told this will generate about $1.7 billion a year, about 10-15% of state tax revenue.
- The policy will be phased in over time. In Year 1 the carbon tax will be $15 per ton \( \text{CO}_2 \), accompanied by a 0.5 percentage point reduction in the state sales tax (from 6.5 to 6.0 percent); in Year 2 the carbon tax will be $25 per ton \( \text{CO}_2 \), accompanied by an additional 0.5 percentage point reduction in the state sales tax (from 6.0 to 5.5 percent). The Working Families Rebate and the elimination of the B&O business tax will occur
immediately in Year 1.

- The carbon tax rate will increase by about 5% per year after Year 2. This is necessary in order to maintain revenue stability (and to provide additional incentives for carbon reductions). With emissions falling at 2% per year and nominal economic growth of 3% per year, a carbon tax increasing at 5% per year will keep pace with sales tax receipts, which increase with nominal economic growth.

The intent of the policy (as with the BC carbon tax) is to combine an “entrée” that provides tax relief broadly across the economy with “side dishes” that provide additional tax relief to highly impacted groups, which in our proposal means low-income households and manufacturers. We also provide a “side dish” for agriculture by providing a 40-year phase-in of the carbon tax for on-farm diesel.

The “entrée” in our proposal is a reduction in the state sales tax from 6.5% to 5.5%. The state sales tax is the largest source of tax revenue in Washington State, generating about $7.2 billion a year. (City and county sales taxes bring the total sales tax rate to something approaching 10% across much of the state.) Note that Washington State has no income tax, so it is impossible to adopt a policy that is exactly like BC’s because BC’s tax swap focused on reductions in personal and corporate income taxes. (Oregon, which in a mirror image of Washington has an income tax and no sales tax, can come closer to adopting a BC-style policy.)

According to the Washington State Department of Revenue, businesses pay approximately 30% of the state sales tax, so a reduction in sales taxes will provide direct benefits to businesses as well as households to help offset the cost of the carbon tax. (Of course, businesses are likely to pass most of these taxes along to consumers.)

One “side dish” in our policy involves funding the Working Families Rebate to benefit low-income households. This “side dish” is warranted because low-income households may be especially vulnerable to a carbon tax swap: they are likely to spend a disproportionate share of their income on fossil fuels, and some key purchases (such as food and gasoline) are exempt from the sales tax.

The Working Families Rebate (WFR) is a program that has been on the books in Washington State for a few years but has never been funded. It is a state-level version of the Earned Income Tax Credit (EITC), the largest anti-poverty program in the United States. The EITC is something like a Milton Friedman-style negative income tax: if you are low-income and you are working, the Federal government sends you a check to supplement your earned income.
Approximately half of the states have state-level versions of the Federal EITC, meaning that if you get (say) $2,000 from the Federal government, then the State gives you an additional top-up of (say) $500. These state programs are typically connected to state income taxes, but since Washington State does not have a state income tax, the Working Families Rebate is designated as a “sales tax rebate” for low-income households. In practical terms, however, the WFR is designed to operate in the same way as in other states: low-income families that receive an EITC from the Federal government will receive a top-up from the state. Estimates from the Washington Budget & Policy Center indicate that the WFR will provide up to $1,500 a year for up to 400,000 low-income households in Washington State.

The second “side dish” in our policy is effective elimination of the business tax for manufacturers. This “side dish” is warranted because some manufacturers are energy-intensive, trade-exposed (EITE) industries. A steel mill in Washington State, for example, has to compete in a global market with steel mills in other states and other countries. Imposing a carbon tax in Washington State without any additional measures would put EITE businesses at a disadvantage relative to competitors outside the state who are not subject to the carbon tax. For non-EITE businesses this is unlikely to be a problem because one or more of the following are true: (1) energy costs are not a substantial share of firm costs; (2) what energy costs there are will be mostly if not entirely offset by reductions in sales taxes; and (3) the carbon tax will affect all firms in the industry, meaning that they will all have to increase prices and no firm will be at a competitive disadvantage. None of these three statements is true for EITE manufacturers.

The business tax in Washington State is a gross-receipts tax called the B&O tax – the Business and Occupation Tax. We believe that most manufacturers in the state will be better off as a result of the tax swap, i.e., they currently pay more in B&O taxes than they would pay in carbon taxes under our proposal. However, B&O tax information is proprietary in Washington State and so we are trying to find businesses that are willing to serve as case studies. So far the case studies we have done have been promising, but of course we cannot guarantee that a carbon-for-B&O tax swap will benefit all businesses.

Finally, we provide a 40-year phase in of the carbon tax for on-farm diesel used by agricultural operations. This can be thought of as an additional “side dish” and, in part, it is motivated by the same concerns described above for manufacturers: farmers operate in a global market and for the most part will not be able to pass cost increases along to consumers. Although we address this issue by
exempting on-farm diesel from the carbon tax, we would much prefer to do with farmers what we did with manufacturers, i.e., reduce other taxes in order to keep the incentive to reduce carbon emissions. Unfortunately, we were unable to find other taxes to reduce: farmers already pay no B&O taxes, no sales taxes on pesticides and fertilizers, and pay reduced property taxes. Providing a long phase-in for on-farm diesel seemed like the best way to address this concern.

For concluding thoughts, I offer up three lessons plus an invitation to join the movement towards carbon pricing.

4. Lesson #1: Pareto Improvements Are Hard

Lessons from Washington State are relevant for other carbon pricing efforts across the country and around the world. One key lesson is about Pareto improvements, which are in many ways the Holy Grail of economic policy. A Pareto improvement is a policy that makes at least one person better off without making anybody worse off, i.e., a policy that might plausibly be adopted by unanimous consent.

Many of the features of our policy are designed with Pareto improvements in mind. Because a carbon tax will impose costs on households and businesses, our proposal provides a reduction in sales taxes that aims to offset those costs. Because a carbon tax will disproportionately affect low-income households and manufacturers, our proposal includes a Working Families Rebate and business tax reductions that aim to offset those disproportionate costs. Because we were unable to find offsetting tax reductions for agriculture, our proposal provides a 40-year phase-in for on-farm diesel.

Despite our best intentions, however, our policy—like almost all economic policy proposals—is unlikely to yield a Pareto improvement in real life. There are always exceptions: people or businesses that engage in a lot of airplane travel, for example, will likely be worse off. More importantly, there are geographic disparities, but the geographic disparities in Washington State are minor compared to those at the national and international levels.

Many observers think that the greatest geographic disparity produced by our proposal will involve transportation fuels, with rural households using more gasoline than urban households. I would argue that this issue is somewhat overstated, with suburban households in particular likely to use just as much gasoline as rural households, if not more.
There is, however, a much more important kind of geographic disparity, and it involves electricity. In Washington State, approximately half of all households are served by public utilities such as Seattle City Light; these public utilities get almost all of their power from hydroelectric dams and consequently would pay almost nothing in carbon taxes. The other half of households are served by investor-owned utilities (IOUs), and in Washington State the three IOUs (Puget Sound Energy, PacifiCorp, and Avista) have a much more carbon-intensive electricity mix than public utilities. Overall, it is likely that our carbon tax proposal will raise the cost of electricity by about 1 cent per kWh for IOU customers and by only 0.1 cents per kWh for public utility customers. (Average power prices in Washington State are around 6-10 cents per kWh, much below the national average.)

Complicating matters even further is that different households use different methods for heating their homes and their hot water: some use electric heat, some use natural gas, some use home heating oil, and some use wood pellets. These disparities are not necessarily geographic, but they do interact with geographic disparities. In particular, a household served by a public utility that uses electric heat will pay almost nothing in home-related carbon taxes; a household using natural gas heating will pay about $100 a year in home-related carbon taxes if served by a public utility and $200 a year if served by an IOU.

5. Lesson #2: Politics is Hard

One could reasonably ask whether $200 a year is a big deal given that average household income in Washington State is about $50,000. A reasonable answer would be that $200 a year could be a big deal for low-income households but is otherwise not that big of a deal for an average household that already pays something like $15,000 a year in Federal and State taxes. But politics is a difficult business, and the appearance of unfairness can be qualitatively important even if it is quantitatively minor.

Polling shows that all carbon-pricing efforts are an uphill battle: not impossible, but an uphill battle. The good news for carbon taxes is they do not appear to be at a disadvantage compared to cap-and-trade systems. The bad news is that voters are hesitant to adopt any kind of economic instruments to address climate change. (They look much more favorably on regulatory instruments like fuel-economy standards even though economists argue that these command-and-control
policies have higher costs per unit of emissions reduction than economic instruments.)

Revenue-neutral carbon taxes face an additional political challenge: voters tend not to believe that revenue-neutral carbon taxes will remain revenue-neutral, i.e., they think that “the government” will simply not provide the offsetting tax reductions or will reverse the tax reductions after a year or two, with the net result being an increase in taxes. This problem is not unique to revenue-neutral carbon taxes—voters also do not believe that they will see any money from “dividend” systems that promise to distribute carbon pricing revenue on a per-capita basis to all households—but it certainly threatens the very heart of revenue-neutral carbon taxes, and it does so in a way that is incredibly difficult to respond to. A significant part of the difficulty here is that facts are of limited use. You can say you are going to reduce existing taxes, but voters may not believe you; you can also point out that federal, state, and local taxes as a percentage of GDP have been roughly unchanged for decades (Bauman 2014b), but again voters may not believe you. It is cold comfort that all tax reform proposals run into this skepticism.

6. Lesson #3: Hope Springs Eternal

Despite the challenges, I am still happy to devote what resources I have—time and energy, plus a bit of money—to pushing for a revenue-neutral carbon tax in Washington State.

One reason is that I see a political path forward, and the fact that it is a narrow path does not dissuade me. Revenue-neutral carbon taxes hold the promise of bipartisan support, and in fact are supported by economists across the political spectrum, from Paul Krugman on the left to both of Mitt Romney’s chief economic advisors on the right. Revenue-neutral carbon taxes are also supported by many public intellectuals across the political spectrum, including some unlikely advocates like Washington Post columnist George Will, who does not even believe in anthropogenic climate change.

(George Will came to one of my classes a few years ago, and I asked him if he would support replacing part of the payroll tax—the employment tax in the USA—with a carbon tax. He said he was all for it, because he hates the payroll tax. And with high unemployment, I hate the payroll tax, too. Al Gore also hates the payroll tax, saying that we should “tax what we burn and not what we earn.” So I asked George Will what he thought about the fact that he and Al Gore agreed on
this particular issue. He replied, “Well, an idea should not be held responsible for the people who believe in it!”) There are also conservative climate champions like former South Carolina Congressman Bob Inglis, who are leading the charge on the right for revenue-neutral carbon taxes.

An additional source of hope for me is that climate action is becoming more of an inevitability, and so the alternative to revenue-neutral carbon taxes is not nothing but rather regulatory approaches (as with the Obama EPA power plant regulations) and/or cap-and-trade systems as in California. I am optimistic that businesses and conservatives will favor revenue-neutral carbon taxes over these alternatives, and I hope that they join the carbon-tax coalition before it is too late.

Finally, I am hopeful because I see very little alternative. To quote Yale economist William Nordhaus from his book *A Question of Balance* (2008), “To a first approximation, raising the price of carbon is a necessary and sufficient step for tackling global warming. The rest is at best rhetoric and may actually be harmful in inducing economic inefficiencies.” Revenue-neutral carbon taxes are strongly favored by economic theory and by many economists and thinkers across the political spectrum. As the pressure for climate action builds, a revenue-neutral carbon tax may prove to be the way forward in the United States and across the world. British Columbia has shown the way, Washington State can spread the word, and I am lucky to have an opportunity to do what I can to advance the cause. As we near the 100th anniversary of Pigou’s *Economics of Welfare*, the time for pollution pricing to move from theory to reality may be at hand.

And so, I close on an optimistic note, with an homage to Abraham Lincoln’s Gettysburg address that I call the Beloitiesburg Address, respectfully offered as a tribute to Robert Stavins and to others who are part of the carbon pricing movement:

**Beloitiesburg Address**

Four score and seven months ago brave political leaders brought forth on this continent some new climate policies, conceived in economic liberty and dedicated to the proposition that all external costs should be internalized.

Now we are engaged in a great political war, testing whether those policies, or any policies so conceived and so dedicated, can long endure.

We are met on a potential battlefield of that war, and we have come to dedicate a portion of our lives to honor the work of one who is devoting his life to putting a price on pollution.

The world will little note, nor long remember what we say here, but it can
never forget what he has done here.

It is rather for us to be here dedicated to the great task remaining before us—that we here highly resolve that these economic theories shall not have been scribbled in vain—that this nation, under God, shall have a new birth of economic freedom and environmental protection—and that the governments and peoples on this earth, of this earth, and—whether we like it or not—over this earth, shall not perish from this earth.
References


