A Comparison Of This Year's Carbon Tax Proposals: Part 1

By Noah Kaufman (December 5, 2018, 6:26 PM EST)

Last month, three Republicans and three Democrats in the House of Representatives led by Rep. Ted Deutch, D-Fla., proposed the Energy Innovation and Carbon Dividend Act, the first bipartisan carbon pricing proposal in Congress in nearly a decade. The proposed legislation would establish a national carbon tax, which would achieve reductions in greenhouse gas emissions at a lower cost than approaches that focus on specific sectors, regions or technologies. Proceeds from the carbon tax would be returned to Americans in the form of monthly rebate checks.

Three other prominent federal carbon tax proposals have been released or modified in 2018: (1) by congressional Democrats led by Sen. Sheldon Whitehouse of Rhode Island, (2) by congressional Republicans led by Rep. Carlos Curbelo of Florida and (3) by the Climate Leadership Council, authored by former Secretary of State James A. Baker III, with former Secretary of State George P. Shultz.

The purpose of the Carbon Tax Research Initiative of the Center on Global Energy Policy at Columbia University is to enable the thoughtful design and consideration of federal carbon tax policies in the United States. To that end, this paper describes how the Deutch proposal resembles and differs from the other prominent carbon tax proposals of 2018.

The remainder of this section provides a high-level summary of the paper’s findings. Then, the following two sections describe the major design elements of the Deutch proposal and compare them to the other prominent federal carbon tax proposals. Finally, no detailed and comprehensive analysis of the Deutch proposal has been completed to date, but the last section draws various preliminary conclusions about the policy’s likely impacts on emissions, energy markets and the economy using analyses of other federal carbon tax scenarios.

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The Deutch proposal is similar to the other plans in several ways. For example, the carbon tax is imposed primarily on producers of fossil fuels near where the fuels enter the economy, which keeps the number of regulated entities at manageable levels. It covers nearly all carbon dioxide emissions from the U.S. energy system. Importantly, the proposal includes a border carbon adjustment to avoid harming the competitiveness of U.S. industries in international markets.

Like the Curbelo proposal, the Deutch proposal would suspend certain U.S. Environmental Protection Agency regulations that are redundant with a carbon tax — regulations of stationary sources of emissions covered by the tax — and it would leave in place EPA regulations of CO2 emissions from motor vehicles and greenhouse gases not covered by the tax. The Deutch proposal would not eliminate fuel excise taxes (as in the Curbelo proposal) or tort liability for emitters (as in the Baker proposal).

The carbon tax rates in the Deutch proposal start relatively low ($15 per ton) but increase rapidly to levels that far exceed the rates in other carbon tax proposals. Carbon tax rates rise to nearly $100 per ton (in inflation-adjusted terms) by 2030 and potentially higher if the emissions targets stipulated in the bill are not met.

While a more detailed review of the Deutch proposal is needed to understand its likely impacts on emissions, energy markets and the economy, analyses of other federal carbon taxes enable the following general and preliminary conclusions:

- The higher carbon tax rates of Deutch proposal would lead to larger emissions reductions, carbon tax revenues and impacts on energy markets by the late 2020s compared to the other carbon tax proposals. By 2030, carbon tax rates under the Deutch proposal would be at least 60 percent higher than under the Whitehouse and Baker proposals and at least two times higher than under the Curbelo proposal.

- The Deutch proposal would likely cause emissions to fall below the targets the plan lays out through at least 2030. The legislation targets emissions reductions of 45 percent below 2015 levels by 2030 — 52 percent below 2005 levels. Analysis of the Whitehouse proposal shows emissions falling 65 to 90 percent of the way to that 2030 target with significantly lower carbon tax rates than the Deutch proposal’s.[1]

- The Deutch proposal would rapidly decarbonize the U.S. power sector. The carbon tax rates in the Deutch proposal would provide a substantial boost to low carbon generation sources including solar, wind and nuclear energy, and virtually eliminate the use of coal in the U.S. electricity system by 2030.[2]

- Under the Deutch proposal, low- and middle-income households would receive more in rebates than they pay in taxes, while high-income households would pay more in taxes than they receive in rebates. A relatively small share of carbon tax payments would come from low- and middle-income households. If these households are given an equal share of the carbon tax revenues, as they would be under the Deutch proposal, the rebates received by the average low- and middle-income households would exceed the additional expenditures of these households due to the higher prices caused by the carbon tax.[3]

**Ways the Federal Carbon Tax Proposals Are Similar**

**Which Emissions Are Taxed**
A carbon tax with a broader scope will achieve more emissions reductions because the financial incentive to reduce emissions covers additional mitigation opportunities. However, covering certain emissions sources — like those from crops or methane leaks from fossil fuel systems — is difficult for administrative (and perhaps also political) reasons.

The Deutch proposal covers virtually all of the U.S. energy system’s CO2 emissions,[4] which account for about 90 percent of the country’s net greenhouse gas emissions and 80 percent of gross GHGs.[5] Proposals with this degree of coverage are colloquially referred to as “economywide” carbon taxes. The Whitehouse, Curbelo and Baker proposals are economywide carbon taxes as well.

Carbon tax proposals often add a few additional percentage points of coverage by applying the policy to some non-CO2 GHGs and CO2 emissions from industrial processes. The Deutch proposal puts a separate fee on hydrofluorocarbons, or HFCs, emissions but does not cover industrial processes or methane emissions.[6]

Where Emissions Are Taxed

Similar to other prominent federal carbon tax proposals, the Deutch proposal is structured to minimize the number of taxed entities: coal is taxed at the mine, natural gas at the processing plant, and petroleum at the refinery. The tax is imposed on imported fuels when they enter the country.

Regardless of where the tax is imposed, firms will attempt to pass these costs on to consumers in the form of higher prices. Therefore, while the point of taxation matters to individual businesses and sectors, it is not a major determining factor of the overall energy market, emissions, or economic outcomes of a carbon tax.

Border Carbon Adjustment

Unilaterally implementing a carbon tax raises various concerns for producers of products that are heavily carbon intensive and traded in international markets. First, companies may be put at a disadvantage compared to foreign competitors whose products are not taxed at comparable rates. Second, if U.S. producers relocate their operations to places without similar or equivalent regulations, the carbon tax would not reduce their greenhouse gas emissions, it would just move their place of origin.

To lessen these concerns, the Deutch proposal and the three other prominent carbon tax proposals have all proposed a border carbon adjustment, or BCA, requiring importers of carbon-intensive goods to pay a fee and providing a rebate to exporters of the same products.

While simple in theory, designing a BCA is complex in practice. It is difficult to track the carbon intensity of some products, particularly when they are produced abroad. Imports from countries that have comparable regulations should arguably be treated differently than imports from countries without such regulations. Finally, scholars have long debated the compatibility of a BCA with international trade law. Countries in the World Trade Organization in general are not allowed to selectively tax products from other WTO countries, although there are exceptions (e.g., for environmental protection) for which a well-designed BCA would arguably qualify.[7]

The Deutch proposal makes a set of choices to overcome these challenges associated with its BCA: The
mechanism will apply only to products that exceed a certain level of carbon intensity, and the fee differs across trading partners based on a “foreign cost of carbon” that will be defined for each major trading partner. The other prominent proposals make somewhat different choices. These details are likely to be subject to refinement and negotiation in any carbon tax legislation that receives serious attention in Congress.

Ways the Federal Carbon Tax Proposals Differ

Carbon Tax Rates

A carbon tax requires policymakers to define the schedule of prices for carbon dioxide emissions, typically on an annual basis. Tax rates that are too low risk failing to accomplish the goals of the policy, which may be a combination of emissions reductions, revenue and a price signal for investors. Tax rates that rise too high too quickly risk disrupting the energy system and economy. One recent study identified carbon tax rates of $40 to $80 per metric ton by 2020 and $50 to $100 per metric ton by 2030 as consistent with the Paris goals of limiting warming to well below 2 degrees Celsius.[8]

Under the Deutch proposal, the tax starts at $15 per ton of CO2 emissions in 2019 and increases by $10 per ton per year, which means the tax rate rises to $125 per ton by 2030. This figure includes the effects of inflation, so the inflation-adjusted carbon tax levels are lower — perhaps a bit less than $100 per ton in 2030. The Deutch proposal also makes the tax rate increases dependent on emissions outcomes: The tax rate increases by $15 per ton per year if the emissions targets stipulated in the proposal are not met.

Figure 1 shows that the Deutch proposal’s carbon tax rates are far higher than the other federal carbon tax proposals by 2030. The Whitehouse proposal starts at a higher level but increases at a much slower rate. The Curbelo proposal’s carbon tax rates are about half as large as those in the Whitehouse proposal, although they could rise by an additional $2 per ton annually if emissions targets are not achieved. Under the Deutch proposal, the carbon tax rates continue to increase rapidly after 2030.

Figure 1: Carbon Tax Rates in Prominent Federal Proposals
Notes on Figure 1:

- Assumes an annual inflation rate of 2 percent per year.
- The Baker proposal has not been formally proposed. A 2018 Climate Leadership Council report designated the carbon tax rates displayed above as its “mid-point” pathway.[9]

**What is Done with the Revenue?**

Carbon tax payments become additional government revenue. Like other government resources, no consensus exists on how carbon tax revenue should be spent.

The Deutch proposal’s plan for revenue use is simple: Divide the revenue into equal portions and send monthly payments to all Americans. The Baker proposal is similar. The other two proposals use the revenue for multiple purposes. The Whitehouse proposal allocates most of the revenue to cut the employee portion of the payroll tax, whereas the Curbelo proposal allocates most carbon tax revenue to government spending (primarily on transportation infrastructure). Both proposals also allocate funds to protect low-income Americans from energy price increases.

Figure 2: Carbon Tax Revenue Uses in Prominent Federal Proposals

Notes on Figure 2:
• The Deutch proposal allocates an equal share of rebates to all American adults with a social security number or a tax identification number, with minors receiving a half-share each. A small percentage is also to be allocated to administration expenses required to run the program.

• The Whitehouse proposal provides American workers with an offset to their payroll taxes equal to the lesser of a $800 refundable tax credit or 6.2 percent of earned income to offset payroll taxes paid, with comparable payments for Social Security and veterans beneficiaries, and at least $10 billion annually in grants to states for a range of purposes, including helping low-income and rural households, workers transitioning to new industries and communities battling the effects of climate change. Figure 2 assumes that 75 percent of the revenue is allocated to payroll tax cuts, but the actual amounts could differ significantly.

• Under the Curbelo proposal, 72.6 percent of revenue is allocated to infrastructure, primarily to the Federal Highway Trust Fund, 16.5 percent is allocated to vulnerable Americans, including for low-income households and displaced workers, 8.1 percent is allocated for programs related to climate change adaptation, and 2.3 percent for programs related to energy research and development.[10]

• The Baker proposal allocation is based on preliminary statements from the Climate Leadership Council that all the proceeds will be returned to the American people on an equal and quarterly basis via dividend checks, direct deposits or contributions to their individual retirement accounts.[11]

**Regulatory Changes**

A carbon tax is not a panacea: It will not cover all sources of greenhouse gas emissions and it does not address nonprice-related barriers to reducing emissions, such as underinvestment in research and development and behavioral barriers to energy efficiency. Additional climate policies are warranted. Yet policymakers are also justified in reconsidering the need for and stringency of existing policies with similar or overlapping objectives with a carbon tax.

Therefore, carbon tax proposals commonly include additions, subtractions, or changes to other policies. The Deutch proposal amends the Clean Air Act so that the same sources of greenhouse gas emissions covered by the carbon tax are not subject to separate regulations by the EPA. For example, it would suspend regulations of CO2 emissions from power plans, such as the Trump administration’s proposed Affordable Clean Energy Plan that would replace the Obama administration’s Clean Power Plan. The carbon tax would reduce power plant CO2 emissions by far more than either of these regulations. It would also suspend regulations of CO2 from energy use by industrial sources — the EPA has had the authority to regulate these emissions since 2009, but it has not done so. Under the Deutch proposal, if actual emission exceed the emissions targets by 2030, the EPA is instructed to impose regulations to fill this emissions gap.

The Deutch proposal carves out an exception for regulations of GHG emissions from vehicles under the Clean Air Act, which could continue. The Clean Air Act would also continue to cover GHG sources not covered by the tax (e.g., methane leaks) and all other non-GHG regulations, and the EPA would retain authorities related to monitoring and reporting of GHGs covered by the tax.

Table 1 shows how these changes compare to the significant additions, subtractions and changes contemplated in the other carbon tax proposals. The Whitehouse plan is unique among the four
proposals in not modifying or eliminating any existing policies. While the Baker proposal has not been finalized, the reports released by the Climate Leadership Council have made various assumptions about regulatory changes that are reflected in the table.

Table 1: Regulatory Changes in the Prominent Federal Carbon Tax Proposals

<table>
<thead>
<tr>
<th>Modifications to existing policies:</th>
<th>Deutch</th>
<th>Whitehouse</th>
<th>Carbelo</th>
<th>Baker (indications)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA regulations of GHGs from stationary sources covered by the carbon tax</td>
<td>Moratorium(^1)</td>
<td>Retained</td>
<td>Moratorium(^1)</td>
<td>Eliminated</td>
</tr>
<tr>
<td>EPA regulation of motor vehicle GHGs</td>
<td>Retained</td>
<td>Retained</td>
<td>Retained</td>
<td>Retained</td>
</tr>
<tr>
<td>EPA regulations of emissions not covered by the tax</td>
<td>Retained</td>
<td>Retained</td>
<td>Retained</td>
<td>Retained</td>
</tr>
<tr>
<td>Fuel excise taxes</td>
<td>Retained</td>
<td>Retained</td>
<td>Eliminated</td>
<td>Retained</td>
</tr>
<tr>
<td>Payments of state-level carbon prices</td>
<td>Retained</td>
<td>Retained</td>
<td>Temporary credit(^2)</td>
<td>Retained</td>
</tr>
<tr>
<td>Tax liability for emitters</td>
<td>Retained</td>
<td>Retained</td>
<td>Retained</td>
<td>Eliminated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policies in addition to the carbon tax:</th>
<th>Deutch</th>
<th>Whitehouse</th>
<th>Carbelo</th>
<th>Baker (indications)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFCs / other fluorinated gases</td>
<td>Fee on HFCs</td>
<td>Separate fee</td>
<td>Contingent(^3)</td>
<td>May be added(^4)</td>
</tr>
<tr>
<td>Methane and other GHGs from fossil fuel production</td>
<td>No</td>
<td>Separate fee</td>
<td>No</td>
<td>May be added(^4)</td>
</tr>
</tbody>
</table>

Notes on Table 1:

- The Baker proposal has not released formal legislation; the information above is based on preliminary indications and assumptions made in the reports released by the Climate Leadership Council.[12]
  - Regulations are eliminated as long as emissions targets stipulated in the proposed legislation are achieved.
  - A temporary and declining credit against any carbon price paid at the state level, as in California or the RGGI states, that phases out after five years.[13]
  - The carbon tax covers HFC emissions if the United States has not ratified the Kigali Amendment to the Montreal Protocol.
  - The Climate Leadership Council has indicated that it intends to propose measures that cover non-CO2 greenhouse gas emissions.

Part 2 of this article, publishing tomorrow, will focus on likely impacts of carbon tax scenarios on emissions, energy markets and the economy.

Update: This article has been updated to include footnotes.

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[4] “Virtually all” because, for example, the Deutch proposal exempts CO2 emissions from energy use by farm equipment and from U.S. territories.

[5] Net emissions are calculated by taking all sources of GHG emissions (gross emissions) and subtracting the carbon dioxide that is absorbed by U.S. lands (i.e., the “land sink”).

[6] The three other proposals would cover CO2 emissions from industrial processes (e.g., cement production), which account for about 2 percent of total emissions. The Whitehouse proposal includes a separate fee on HFC emissions and a supplementary fee on emitters to account for methane emissions from venting, carbon dioxide from flaring and other greenhouse gas emissions that escape throughout fossil fuel supply chains. The Curbelo proposal covers emissions from certain sources of biomass and covers HFC emissions only if the United States does not ratify the Kigali Amendment to the Montreal Protocol.

[7] The Deutch proposal is designed to qualify under the World Trade Organization rules, going as far as to borrow language from the WTO regarding acceptable exemptions when describing the purpose of the BCA in the legislation: “To protect animal, plant, and human life and health, to conserve exhaustible natural resources by preventing carbon leakage, and to facilitate the creation of international agreements.”


