Testimony of Ted Halstead
Chairman and CEO
Climate Leadership Council

The Economic and Business Case for Bipartisan Climate Policy

The Committee on Ways and Means
U.S. House of Representatives

May 15, 2019

Chairman Neal, Ranking Member Brady, and members of the Committee, thank you for the opportunity to speak with you today about the economic consequences of climate change and the growing calls from the business community for a bipartisan national climate solution.

I am the Chairman and CEO of the Climate Leadership Council, based here in Washington DC. The Climate Leadership Council was founded in collaboration with a who's who of business, opinion and environmental leaders to promote a much-needed bipartisan climate breakthrough. We launched two years ago with the release of the Baker-Shultz Carbon Dividends Plan, co-authored by former Secretaries of State James A. Baker, III, and George P. Shultz, among other senior statesmen. Since then, we have built the broadest coalition in U.S. history to advance a national climate solution.

Any climate solution should be grounded in sound economic principles. Economists have long agreed that the most cost-effective way to reduce carbon emissions is to put a direct price on the carbon content of fossil fuels. We refer to this as a carbon fee.

To highlight the remarkable economic consensus behind this approach, the Climate Leadership Council recently organized the largest and most prominent public statement in the history of the economics profession (Attachment B). The Economists' Statement on Carbon Dividends was first published in *The Wall Street Journal* on January 17, 2019.[i]

Its original co-signatories include all four former chairs of the Federal Reserve, 27 U.S. Nobel laureates in economics and 15 former chairs of the President's Council of Economic Advisers, representing the largest-ever number of signatories to a public statement in all three categories. More than 3,500 U.S. economists from all 50 states subsequently signed on, representing another record.[ii] Most remarkable is the bipartisan nature of this statement: for example, the original co-signatories include all eight former Republican CEA chairs, alongside seven former Democratic CEA chairs.

This statement begins by affirming that "global climate change is a serious problem calling for immediate national action." Markets have failed to account for the social and

environmental costs of carbon emissions, and economists believe that this, above all else, is to blame for our current climate predicament. The statement identifies a revenue-neutral carbon fee as "the most cost-effective lever to reduce carbon emissions at the scale and speed that is necessary." It continues: "By correcting a well-known market failure, a carbon tax will send a powerful price signal that harnesses the invisible hand of the marketplace to steer economic actors towards a low-carbon future." The statement goes on to outline a carbon dividends framework similar to the Baker-Shultz Carbon Dividends Plan.

This bipartisan climate solution, underpinned by sound economic principles, has enabled the Climate Leadership Council to assemble the broadest coalition in U.S. history ever to advance a national climate solution.

The Founding Members of the Climate Leadership Council (Attachment A) include top corporations (AECOM, Allianz, AT&T, General Motors, Johnson & Johnson, MetLife, Microsoft, Procter & Gamble, PepsiCo, Santander, Schneider Electric, and Unilever), energy industry leaders (BP, ConocoPhillips, Exelon, ExxonMobil, First Solar, Shell, and Total), top environmental groups (Conservation International, The Nature Conservancy, World Resources Institute, and World Wildlife Fund) and opinion leaders (Ben Bernanke, Steven Chu, Ray Dalio, Martin Feldstein, Stephen Hawking, N. Gregory Mankiw, Paul Polman, Klaus Schwab, Tom Stephenson, Lawrence Summers, Ratan Tata, Rob Walton, Christine Todd Whitman, and Janet Yellen).

The 19 corporate Founding Members of the Climate Leadership Council employ 2.2 million people and represent $3.4 trillion in market capitalization. They include the largest U.S. oil company, auto manufacturer, utility, life insurer, solar company, food and beverage company as well as the world's largest telecom company, health care company, and technology company. As the remarkable diversity in this coalition suggests, America's business community wants a bipartisan climate solution that all sides can support. More so than ever, the time is ripe for federal legislation that is pro-environment, pro-business, pro-innovation, pro-American worker, and pro-competitiveness.

The Business Case for Bipartisan Climate Action

America's business leaders are growing more vocal about the need to break the current climate impasse. Companies in a wide range of sectors want to improve their environmental impacts, and increasingly, their customers, workers, and shareholders expect them to. Companies also understand that mounting climate risks, if left unaddressed, will harm their businesses.

In the absence of a federal climate solution, many companies are taking action on their own to shrink their carbon footprints. These include 553 companies who have set science-based corporate emissions targets in line with limiting global warming to below 2 degrees Celsius[iii]; 1,400 companies that factor an internal carbon price into their business plans[iv]; and 175 companies who have committed to using 100% renewable energy[v]. These efforts are encouraging and commendable, but the only way to achieve emissions reductions at the

scale and speed necessary to address our climate challenge is through a unified federal policy. Businesses understand this, and that's why more and more are supporting a climate breakthrough at the national level.

Beyond their commitments to sustainability, there are four other key factors driving the business community's desire for a federal climate solution: policy certainty, flexibility, competitiveness, and innovation. These factors are all interrelated, and together they serve as important criteria for lawmakers working on climate policy solutions.

Policy Certainty*:* It would be much easier for companies to develop new technologies and make job-creating investments if they had a clear sense of the policy landscape going forward. Unfortunately, the current U.S. approach to addressing climate is not predictable and therefore does not serve the best interests of business or of our shared environment. On the one hand, the Trump administration is initiating the slow and uncertain process of rolling back most Obama-era climate regulations. Many of the administration's proposed rule changes are likely to be tied up in courts for years. Even if completed, a future administration may reverse course and impose new, more stringent regulations covering more sectors of the economy. In the absence of federal climate policy, many states and cities are attempting to fill the void by pursuing their own mandates, regulations and programs. This will result in an ever-growing patchwork of sub-national and likely conflicting regulations. Business interests and climate protection would both be better served by a uniform national policy that is predictable, durable and cost-effective.

Flexibility*:* Once federal climate goals are set, companies want the flexibility to achieve them in the most cost-effective manner. A market-based approach allows companies to respond nimbly to new technologies and consumer demands as the economy transitions in a low-carbon direction. The alternative is to have the government pick winners and losers through regulations or subsidies, a more costly and less effective approach to cutting emissions. There is still a proper role for government support, such as in funding research into promising technologies or helping finance needed new infrastructure. And in some cases, government regulation is appropriate. But a solution centered on subsidies and mandates isn't going to transition us quickly enough, or cheaply enough, to a low-carbon future.

Competitiveness: By not pursuing a national climate policy, the United States is missing an opportunity to promote the competitiveness of American firms. American companies are more carbon efficient than many of their overseas competitors, and they are more capable of responding quickly to changing market demands. An optimal climate policy would therefore benefit many American businesses, especially those who have already made substantial investments and progress to lower their emissions. That is why a key priority for businesses is adopting a climate solution that would level the international playing field and incentivize all producers to become more efficient. In other countries, competitiveness concerns have weakened climate policy efforts. But in the United States, the opportunity to enhance competitiveness while reducing emissions is driving the business community's call for action.

Innovation: America's business and technology innovators want to be at the forefront of developing the clean energy technologies of the future. But this can only happen at the necessary scale and speed if we have the right policies in place to unlock our greatest asset: the power of American ingenuity. The opportunities for technological innovation are endless. In the energy sector alone, they include cheaper solar and wind, long-duration battery storage, next generation nuclear power, more efficient energy production and use, carbon capture and storage, and much more. Companies that deliver cleaner technologies at more affordable prices will set up a win-win for both consumers and industry. Business leaders know this, which is why such a wide range of companies support a national climate solution that would harness, not suppress, American innovation. As former PepsiCo CEO Indra Nooyi put it, "Industry action must be supported by climate policy that creates clear price signals and incentives to accelerate clean technology and needed innovation."[vi]

The Four Pillars of the Baker-Shultz Carbon Dividends Plan

For all the reasons mentioned above, the corporate Founding Members of the Climate Leadership Council are working together with our environmental NGO and opinion leader Founding Members to develop the policy details of the Council's carbon dividends plan. While the Founding Members of the Climate Leadership Council do not necessarily agree on all policy details, they agree that "America needs a consensus climate solution that bridges partisan divides, strengthens our economy and protects our environment." They further agree that the Council's carbon dividends plan "offers an equitable, popular and politically viable way forward, paving the way for a much-needed bipartisan climate breakthrough."

The Climate Leadership Council's Baker-Shultz Carbon Dividends Plan is based on four, interdependent pillars.

A Gradually Rising and Revenue-Neutral Carbon Fee. The first pillar of our plan is a gradually rising fee on carbon dioxide emissions, to be implemented where carbon-based fuels enter the economy. This pillar is grounded on the economic principle that a carbon price is the most cost-effective way to reduce carbon emissions. A sensible carbon fee should begin at $40 a ton and increase steadily over time, sending a powerful signal to businesses and consumers, while generating revenue to reward Americans for decreasing their carbon footprint.

Carbon Dividends for All Americans. The second pillar of our plan is to return all the money raised from a carbon fee directly to all Americans in the form of equal, quarterly payments. In the example above of a $40/ton carbon fee, a family of four would receive approximately $2,000 in "carbon dividend" payments. This amount would grow over time as the carbon fee per year increases, creating a positive feedback loop: the more the climate is protected, the greater the individual dividend payments to all Americans.

***Regulatory Simplification*.** The third pillar of our program is the streamlining of regulations that are no longer necessary upon the enactment of a robust and rising carbon

fee, whose longevity is secured by the popularity of dividends. "Substituting a price signal for cumbersome regulations will promote economic growth and provide the regulatory certainty companies need for long-term investment in clean-energy alternatives," according to the 3,500 signatories of the Economists' Statement on Carbon Dividends.

Border Carbon Adjustments. The fourth and final pillar of our program is a border carbon adjustment system to protect and enhance American competitiveness and push other nations to adopt similar carbon pricing of their own. Under a border carbon adjustment system, exports to countries without comparable carbon pricing systems would receive rebates for carbon fees paid, while imports from such countries would face fees on the carbon content of their products. This pillar of the plan is groundbreaking because it provides a whole new strategy to reach the necessary level of global climate ambition.

The Benefits of a Carbon Dividends Plan

The reason this four-part framework is backed by the economic establishment and the broadest climate coalition in U.S. history is because it addresses the legitimate concerns of all key stakeholders in the climate debate and enables each to realize an important victory. That is why it offers the best hope for a bipartisan climate breakthrough.

Allow me to review the benefits.

Pro-Environment: A carbon fee starting at $40 per ton, as we propose, would exceed the U.S. Paris commitment by a wide margin and achieve far greater emission reductions than all prior climate regulations combined.[vii] Indeed, the Baker-Shultz Carbon Dividends Plan would achieve 32% greenhouse gas emissions reductions (from a 2005 baseline) by 2025, far exceeding the 26%-28% reductions the United States agreed to in the Paris agreement. Based on recent modeling from Resources For the Future, the plan (if enacted in 2021 and as compared to a 2005 baseline) would achieve 47-53% energy-related CO2 emissions reductions by 2035, depending on the carbon fee escalation rate chosen.[viii] It would also continue to reduce emissions well beyond that, putting the U.S. on a low-carbon pathway. To ensure that key climate benchmarks are met, an environmental assurance mechanism would increase the carbon fee escalation rate faster if emissions reductions fall short.

Pro-Business: The plan's environmental ambition justifies a "grand bargain" that trades a robust and rising carbon price for regulatory streamlining. This offers businesses the regulatory certainty they need to innovate and make long term investments in low-carbon technologies, as well as the flexibility to meet climate goals in the most cost-effective manner. Past efforts have often pitted climate activists against the business community, to no one's benefit. Under our plan, companies would be able to invest and innovate in a stable regulatory environment, while competing on a level international playing field, thereby boosting the competitiveness of energy-efficient American firms.

Equitable: A common concern is that a carbon fee can be regressive, imposing a disproportionate burden on those who can least afford it. Pairing a carbon fee with

dividends solves this problem and ensures that the vast majority of American families, including the most vulnerable, come out economically ahead. The U.S. Department of the Treasury found that the bottom seven income deciles, representing approximately 223 million Americans, would receive more in dividends than they would pay in any increased energy prices.[ix] This policy is also equitable in another way: since costs increase in direct proportion to one's carbon footprint, and all Americans receive identical dividends, everyone is rewarded equally for reducing their carbon footprint. By putting the American people front and center in this policy design, the carbon dividends approach is distinct from past climate efforts and can unlock new levels of popularity. Indeed, polling shows that the most popular use of revenue from a carbon fee – by a ratio of 3 to 1 – is returning the proceeds directly to all Americans in the form of dividends.[x]

Revenue Neutral: Another common concern is that solving climate change may be costly, requiring significant increases in taxes and deficits. The Baker-Shultz Plan, by contrast, is revenue neutral and would entail no increase in federal deficits, debt or the size of government. Many other climate plans require adding to the federal deficit or increasing the size of government. As history has shown, neither approach has been successful in generating sufficient bipartisan support. By contrast, the carbon dividends approach would "finance" the transition to a low-carbon economy by incentivizing individual and corporate behavior. This is why our revenue-neutral carbon fee was called the "most cost-effective lever" to reduce emissions by the more than 3,500 economist signatories of the Economists' Statement on Carbon Dividends.

Pro-Competitiveness: The border carbon adjustment component of our plan would level the economic playing field and end today's implicit subsidization of dirty manufacturing overseas. It would do so by internalizing the cost of carbon emissions in traded goods and by properly accounting for the gains in efficiency and productivity made by American firms. Under a border carbon adjustment system, the United States would assess a fee on the carbon content of imported goods. Economists overwhelmingly support such a border carbon adjustment approach. According to the Economists' Statement on Carbon Dividends: "The system would enhance the competitiveness of American firms that are more energy-efficient than their global competitors."

Compels India and China to Act: Our carbon dividends plan would put America in the driver's seat of global climate policy and compel other leading emitters such as India and China to reduce their emissions. In the past, there have been legitimate concerns that U.S. efforts to act on climate change won't matter if China and India don't move to cut their own emissions. Our plan addresses this by applying market pressure on them to fall in line with a similar policy or face a loss of competitiveness. Economists agree this would push other countries to increase their carbon efficiency or adopt similar carbon pricing systems in order to maintain their competitiveness in the U.S. market. A border carbon adjustment system would "create an incentive for other nations to adopt similar carbon fees," according to the signatories of the largest public statement in the economics profession.

Popular and Durable: No national climate policy in the United States has achieved sufficient popularity to become both politically viable and durable. Carbon dividends can

buck this trend due to its popular appeal: more than two-thirds of American households would be financial winners. The Alaska Permanent Fund (APF) provides a compelling case study on the popularity and durability of dividends. This program was enacted in the 1970s to ensure Alaska residents receive a portion of the revenue from energy production. It remains in place to this day, with residents typically receiving more than $1,000 per year. Just like the Alaska program, carbon dividends have great popular appeal. Recent polling reveals that Americans favor a carbon dividends plan by a 2 to 1 margin, including 3 to 1 support among Republican voters. Among 18-35-year-olds – the cohort that will determine the future of both parties – support reaches 4 to 1.[xi] For climate policy to be effective, it must be capable of withstanding the political test of time.

Conclusion

As the risks of climate change continue to mount, our national climate debate remains largely deadlocked, with Democrats and Republicans, environmentalists and industry, all too often pitted against one another. We need a bipartisan way forward that is pro-environment, pro-business and pro-American worker. In other words, we need a climate breakthrough where all sides can win.

The Baker-Shultz Carbon Dividends Plan offers just that. The reason the broadest climate coalition in U.S. history and the U.S. economic establishment are coalescing around this framework is because it offers a bipartisan pathway forward in the climate debate.

At the heart of the Baker-Shultz Plan is a "grand bargain" that trades a robust and rising carbon fee for regulatory streamlining, thereby appealing to both environmentalists and businesses. For environmentalists, this plan stands out for its environmental ambition, offering a politically viable way to exceed the U.S. Paris commitment by a wide margin and achieve far greater emissions reductions than all prior climate regulations combined. For businesses, it offers regulatory streamlining and the certainty and flexibility they need to innovate and invest in the low-carbon technologies of the future.

The Baker-Shultz Plan offers a free-market climate solution that is consistent with the conservative principles of limited government. It also offers an equitable and environmentally ambitious national climate solution. Moreover, it offers a pro-competitive U.S. climate solution that will ensure that other leading emitters, such as China and India, are compelled to do their part.

The greatest winners under a carbon dividends plan would be the American people, as the vast majority of American families, including the most vulnerable, would come out financially ahead from solving climate change. The payment of quarterly dividends is a true game-changer because it would align, for the first time, the economic interests of hardworking Americans with climate progress. The popularity of dividends, in turn, is what ensures the political viability and durability of our bipartisan plan.

Thank you very much for your time and consideration. The Climate Leadership Council and its diverse coalition of Founding Members stand ready to work with Members of this Committee and all members of Congress on both sides of the aisle to achieve a much-needed bipartisan climate breakthrough. Once again, thank you, and I look forward to answering your questions and assisting in any way we can.

[i] "The Economists' Statement on Carbon Dividends." *The Wall Street Journal*. January 16, 2019. https://www.wsj.com/articles/economists-statement-on-carbon-dividends-11547682910
[ii] "The Economists' Statement on Carbon Dividends." https://www.clcouncil.org/economists-statement
[iii] "Companies Taking Action." https://sciencebasedtargets.org/companies-taking-action
[iv] "Companies Are Moving Faster Than Governments on Carbon Pricing." *The Economist*. January 11, 2018. https://www.economist.com/business/2018/01/11/companies-are-moving-faster-than-many-governments-on-carbon-pricing
[v] "Companies, RE100." http://there100.org/companies
[vi] "Founding Member Statements." https://www.clcouncil.org/statements
[vii] "A Winning Trade." The Climate Leadership Council. September 2018. https://www.clcouncil.org/media/A-Winning-Trade-1.pdf
[viii] Marc Hafstead. "Analysis of Alternative Carbon Tax Price Paths for the Climate Leadership Council Carbon Dividends Plan. Resources For the Future Issue Brief 18-07. June 2018. https://www.rff.org/publications/issue-briefs/analysis-of-alternative-carbon-tax-price-paths-for-the-climate-leadership-council-clc-carbon-dividends-plan
[ix] Horowitz et al. "Working Paper 115: Methodology for Analyzing a Carbon Tax." The Department of the Treasury, Office of Tax Analysis. January 2017. https://www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/WP-115.pdf
[x] "National Survey Results on the Baker-Shultz Carbon Dividends Plan." Hill+Knowlton. September 2018. https://www.clcouncil.org/media/Baker-Shultz-Carbon-Dividends-Plan-Survey-Results.pdf
[xi] Ibid; "National Survey Results on the Baker-Shultz Carbon Dividends Plan." Yale Program on Climate Change Communication, George Mason University Center for Climate Change Communication, Nexus Polling. October 2018. https://www.clcouncil.org/media/YaleGMU-Poll-October-2018.pdf

Attachments

A. Founding Members List and Sector Leader Statistics
B. Economists' Statement on Carbon Dividends
C. Climate Leadership Council Prominent Op-Eds
    a. George Shultz and James Baker in the *Wall Street Journal*
    b. Lawrence Summers and George Shultz in the *Washington Post*
    c. Ted Halstead in the *Washington Post*
    d. Janet Yellen and Ted Halstead in *Fortune*
    e. Greg Mankiw, Martin Feldstein, and Ted Halstead in the *New York Times*
    f. George Shultz and Ted Halstead in *Wired*
D. Exceeding Paris report
E. The Conservative Case for Carbon Dividends
F. Dividend Advantage report
G. Resources For the Future Issue Brief 18-07

Corporate Founding Members

AECOM
Allianz
AT&T
GM
Johnson & Johnson
MetLife
Microsoft
P&G
PepsiCo
Santander
Schneider Electric
Unilever

Energy Founding Members

bp
ConocoPhillips
Exelon
ExxonMobil
First Solar
Shell
Total

NGO Founding Members

Conservation International
The Nature Conservancy
World Resources Institute
WWF

Individual Founding Members

Ben Bernanke
Steven Chu
Ray Dalio
Martin Feldstein
Ted Halstead
Stephen Hawking
N. Gregory Mankiw
Paul Polman
Klaus Schwab
Thomas Stephenson
Lawrence Summers
Ratan Tata
Rob Walton
Christine Todd Whitman
Janet Yellen

Distinguished Co-Authors

James A. Baker, III
George P. Shultz

Climate Leadership Council

CLIMATE LEADERSHIP COUNCIL

FOUNDING MEMBER STATISTICS (AS OF 4/16/19)

TOTAL # OF COMPANIES:	**19**	**MARKET CAP:**	**$3.4 TRILLION**
FORTUNE 100 COMPANIES:	**10**	**ANNUAL REVENUE:**	**$2.0 TRILLION**
GLOBAL 150 COMPANIES:	**13**	**WORKFORCE:**	**2.2 MILLION**

SECTOR LEADERS

- Five oil and gas supermajors (BP, ConocoPhillips, Shell, Total and ExxonMobil)
- Largest automobile manufacturer in the U.S. (GM)
- Largest utility in the U.S. (Exelon)
- Largest telecommunications company in the world (AT&T)
- #1 and #2 largest household products companies in the world (P&G and Unilever)
- Largest insurance company in the world (Allianz) and largest U.S. life insurer (MetLife)
- Largest energy company (ExxonMobil) and solar company (First Solar) in the U.S.
- Second largest technology company in the world (Microsoft)
- Largest food and beverage company in the U.S. (PepsiCo)
- Largest health care company in the world (J&J)
- Largest engineering firm in the world (AECOM)
- Three of the largest environmental NGOs in the U.S. (CI, TNC and WWF)

As Appeared In

THE WALL STREET JOURNAL.

THURSDAY, JANUARY 17, 2019

Original Co-Signatories Include (full list on reverse):

3500+ U.S. Economists

4 Former Chairs of the Federal Reserve (All)

27 Nobel Laureate Economists

15 Former Chairs of the Council of Economic Advisers

Economists' Statement on Carbon Dividends

Global climate change is a serious problem calling for immediate national action. Guided by sound economic principles, we are united in the following policy recommendations.

I. A carbon tax offers the most cost-effective lever to reduce carbon emissions at the scale and speed that is necessary. By correcting a well-known market failure, a carbon tax will send a powerful price signal that harnesses the invisible hand of the marketplace to steer economic actors towards a low-carbon future.

II. A carbon tax should increase every year until emissions reductions goals are met and be revenue neutral to avoid debates over the size of government. A consistently rising carbon price will encourage technological innovation and large-scale infrastructure development. It will also accelerate the diffusion of carbon-efficient goods and services.

III. A sufficiently robust and gradually rising carbon tax will replace the need for various carbon regulations that are less efficient. Substituting a price signal for cumbersome regulations will promote economic growth and provide the regulatory certainty companies need for long- term investment in clean-energy alternatives.

IV. To prevent carbon leakage and to protect U.S. competitiveness, a border carbon adjustment system should be established. This system would enhance the competitiveness of American firms that are more energy-efficient than their global competitors. It would also create an incentive for other nations to adopt similar carbon pricing.

V. To maximize the fairness and political viability of a rising carbon tax, all the revenue should be returned directly to U.S. citizens through equal lump-sum rebates. The majority of American families, including the most vulnerable, will benefit financially by receiving more in "carbon dividends" than they pay in increased energy prices.

Original Co-Signatories

George Akerlof
Nobel Laureate Economist

Robert Aumann
Nobel Laureate Economist

Martin Baily
Former Chair of CEA

Ben Bernanke
Former Chair of Federal Reserve
Former Chair of CEA

Michael Boskin
Former Chair of CEA

Angus Deaton
Nobel Laureate Economist

Peter Diamond
Nobel Laureate Economist

Robert Engle
Nobel Laureate Economist

Eugene Fama
Nobel Laureate Economist

Martin Feldstein
Former Chair of CEA

Jason Furman
Former Chair of CEA

Alan Greenspan
Former Chair of Federal Reserve
Former Chair of CEA

Austan Goolsbee
Former Chair of CEA

Lars Peter Hansen
Nobel Laureate Economist

Oliver Hart
Nobel Laureate Economist

Bengt Holmström
Nobel Laureate Economist

Glenn Hubbard
Former Chair of CEA

Daniel Kahneman
Nobel Laureate Economist

Alan Krueger
Former Chair of CEA

Finn Kydland
Nobel Laureate Economist

Edward Lazear
Former Chair of CEA

Robert Lucas
Nobel Laureate Economist

N. Gregory Mankiw
Former Chair of CEA

Eric Maskin
Nobel Laureate Economist

Daniel McFadden
Nobel Laureate Economist

Robert Merton
Nobel Laureate Economist

Roger Myerson
Nobel Laureate Economist

Edmund Phelps
Nobel Laureate Economist

Christina Romer
Former Chair of CEA

Harvey Rosen
Former Chair of CEA

Alvin Roth
Nobel Laureate Economist

Thomas Sargent
Nobel Laureate Economist

Myron Scholes
Nobel Laureate Economist

Amartya Sen
Nobel Laureate Economist

William Sharpe
Nobel Laureate Economist

Robert Shiller
Nobel Laureate Economist

George Shultz
Former U.S. Treasury Secretary

Christopher Sims
Nobel Laureate Economist

Robert Solow
Nobel Laureate Economist

Michael Spence
Nobel Laureate Economist

Lawrence Summers
Former U.S. Treasury Secretary

Richard Thaler
Nobel Laureate Economist

Laura Tyson
Former Chair of CEA

Paul Volcker
Former Chair of Federal Reserve

Janet Yellen
Former Chair of Federal Reserve
Former Chair of CEA

CLIMATE
LEADERSHIP
COUNCIL

THE WALL STREET JOURNAL.

WEDNESDAY, FEBRUARY 8, 2017 ~ VOL. CCLXIX NO. 31

A Conservative Answer to Climate Change

By George P. Shultz And James A. Baker III

Thirty years ago, as the atmosphere's protective ozone layer was dwindling at alarming rates, we were serving proudly under President Ronald Reagan. We remember his leading role in negotiating the Montreal Protocol, which continues to protect and restore the delicate ozone layer. Today the world faces a similar challenge: the threat of climate change.

Just as in the 1980s, there is mounting evidence of problems with the atmosphere that are growing too compelling to ignore. And, once again, there is uncertainty about what lies ahead. The extent to which climate change is due to man-made causes can be questioned. But the risks associated with future warming are so severe that they should be hedged.

The responsible and conservative response should be to take out an insurance policy. Doing so need not rely on heavy-handed, growth-inhibiting government regulations. Instead, a climate solution should be based on a sound economic analysis that embodies the conservative principles of free markets and limited government.

We suggest a solution that rests on four pillars. First, creating a gradually increasing carbon tax. Second, returning the tax proceeds to the American people in the form of dividends. Third, establishing border carbon adjustments that protect American competitiveness and encourage other countries to follow suit. And fourth, rolling back government regulations once such a system is in place.

The first pillar, a carbon tax, is the most cost-effective way to reduce emissions. Unlike the current cumbersome regulatory approach, a levy on emissions would free companies to find the most efficient way to reduce their carbon footprint. A sensibly priced, gradually rising tax would send a powerful market signal to businesses that want certainty when planning for the future.

A "carbon dividend" payment, the second pillar, would have tax proceeds distributed to the American people on a quarterly basis. This way, the revenue-neutral tax would benefit working families rather than bloat government spending. A $40-per-ton carbon tax would provide a family of four with roughly $2,000 in carbon dividends in the first year, an amount that could grow over time as the carbon tax rate increased.

A carbon dividends policy could spur larger reductions in greenhouse-gas emissions than all of President Obama's climate policies. At the same time, our plan would strengthen the economy, help working-class Americans, and promote national security, all while reducing regulations and shrinking the size of government.

The third pillar is a border adjustment for carbon content. When American companies export to countries without comparable carbon pricing systems, they would receive rebates on the carbon taxes they have paid. Imports from such countries, meanwhile, would face fees on the carbon content of their products. Proceeds from such fees would also be returned to the American people through carbon dividends. Pioneering such a system would put America in the driver's seat of global climate policy. It would also promote American competitiveness by penalizing countries whose lack of carbon-reduction policies would otherwise give them an unfair trade advantage.

Enacting a carbon tax would free up private firms to find the most efficient ways to cut emissions.

The eventual elimination of regulations no longer necessary after the enactment of a carbon tax would constitute the final pillar. Almost all of the Environmental Protection Agency's regulatory authority over carbon emissions could be eliminated, including an outright repeal of President Obama's Clean Power Plan. Robust carbon taxes would also justify ending federal and state tort liability for emitters.

With these principles in mind, on Wednesday the Climate Leadership Council is unveiling "The Conservative Case for Carbon Dividends." The report was co-authored by conservative thinkers Martin Feldstein, Henry Paulson Jr., Gregory Mankiw, Ted Halstead, Tom Stephenson and Rob Walton.

This carbon dividends program would help steer the U.S. toward a path of more durable economic growth by encouraging technological innovation and large-scale substitution of existing energy sources. It would also provide much-needed regulatory relief to U.S. industries. Companies, especially those in the energy sector, finally would have the predictability they now lack, removing one of the most serious impediments to capital investment.

Perhaps most important, the carbon-dividends plan speaks to the increasing frustration and economic insecurity experienced by many working-class Americans. The plan would elevate the fortunes of the nation's less-advantaged while strengthening the economy. A Treasury Department report published last month predicts that carbon dividends would mean income gains for about 70% of Americans.

This plan will also be good for the long-term prospects of the Republican Party. About two-thirds of Americans worry a "great deal" or "fair amount" about climate change, according to a 2016 Gallup survey. Polls often show concern about climate change is higher among younger voters, and among Asians and Hispanics, the fastest-growing demographic groups. A carbon-dividends plan provides an opportunity to appeal to all three demographics.

Controlling the White House and Congress means that Republicans bear the responsibility of exercising wise leadership on the defining challenges of our era. Climate change is one of these issues. It is time for the Grand Old Party to once again lead the way.

Mr. Shultz was secretary of state (1982-89) and Treasury secretary (1972-74). Mr. Baker was secretary of state (1989-92) and Treasury secretary (1985-88).

The Washington Post

TUESDAY, JUNE 20, 2017

The inevitable climate solution

BY GEORGE P. SHULTZ AND LAWRENCE H. SUMMERS

President Trump's decision to withdraw the United States from the Paris climate accord has induced a fateful pessimism about what can be expected of the country on this critical issue. Yet our long experience in Washington has taught us that the transition from the inconceivable to the inevitable can sometimes be very rapid.

The pressure on the administration to find an alternative to Paris will only mount, and its foundations have already been laid in the reasons the president cited for withdrawing. That is, any viable climate solution must promote growth and jobs, be fair to ordinary Americans and prevent other economies from taking advantage of us. It must also meet the broader test of American politics: the ability to appeal to the general public, corporate America and leaders in both parties.

Such a climate plan is not only feasible but is now gaining traction. On Tuesday, the Climate Leadership Council announced its founding members, a group of companies, opinion leaders and nongovernmental organizations who have joined forces to promote a consensus climate solution based on carbon dividends. We are proud to be part of this distinguished group.

The companies involved represent a cross section of industries: BP, ExxonMobil, General Motors, Johnson & Johnson, PepsiCo, Procter & Gamble, Santander, Schneider Electric, Unilever, Total and Shell. Two top environmental organizations are also involved, as are other opinion leaders from across the political spectrum.

We are convinced that the carbon dividends approach first put forward by one of us (Shultz) along with former secretary of state James A. Baker III a few months ago can strengthen the U.S. economy in ways highly valued by both the left and right and simultaneously spur global efforts to address climate change. Adopting a carbon dividend approach would pay huge dividends for the global climate, the U.S. economy and U.S. leadership in the world.

Our carbon dividend strategy has four interrelated elements that account for its strength: a gradually rising and revenue-neutral carbon tax; carbon dividend payments made equally to all Americans, to be funded using all the carbon-tax revenue; rollback of costly command-and-control regulations that were implemented because the environmental costs of carbon fuels have not been incorporated into their price; and border adjustment to ensure a level playing field and U.S. competitiveness.

A carbon tax set at $40 per ton would achieve substantially greater reduction in greenhouse-gas emissions than all of the regulation now on the table. The application of a border carbon adjustment that levied a tax on the carbon content of imported products would incent other countries to adopt carbon pricing, increasing its impact and preventing free-riders. So the carbon dividend approach is best for the environment.

It would also be best for economic growth, which explains why prominent companies are backing it. The alternative to a carbon tax is not the application of the free market. It is the current extensive regulatory apparatus in which government judges the products and production techniques that businesses employ and mandates particular business practices. The enactment of a significant carbon tax justifies the removal of these regulations, thus taking a burden off the economy. And unlike regulation, carbon dividends are consistent with border adjustment, assuring that U.S. firms are not disadvantaged against foreign exporters and carbon-intensive products.

The carbon dividend also represents an important innovation in social policy. Unlike many advocates of carbon taxes, we do not believe this revenue should be earmarked for any form of government spending or for the reduction of other taxes. Rather, we believe it should be rebated as a monthly dividend equally to all Americans.

This approach ensures that working-class Americans benefit financially. Because energy use rises with income and the dividend would be equal for all, the Treasury Department estimates that the bottom 70 percent of Americans would be better off with a carbon dividend plan in a direct sense. At a time when uncertainty about technology and trade looms large for many workers, assuring every American a basic benefit of citizenship with no need to go through an income test or qualification process is desirable.

Finally, there is the question of alternatives. We do not believe the American people will for long wish to stand apart from the global effort to limit the damage from climate change. Nor do we believe that an ever-growing web of government regulation or a proliferating program of subsidies is in our national economic interest. And we share the president's conviction that in approaching international economic policy, we need to ensure that other nations do not free-ride on the United States.

Only the carbon dividend approach is consistent with these convictions. What we said at the outset here bears repeating: Our experience is that the transition from inconceivable to inevitable can be surprisingly rapid.

George P. Shultz, a former U.S. secretary of labor, treasury and state, is a distinguished fellow at the Hoover Institution. Lawrence H. Summers, a professor at and past president of Harvard University, was treasury secretary from 1999 to 2001 and an economic adviser to President Barack Obama from 2009 through 2010.

The Washington Post

MONDAY, DECEMBER 10, 2018

Here's How to Win on Climate-Change Policy

By Ted Halstead

As the United Nations climate conference enters the home stretch, a sense of gloom is setting in. Not only are global greenhouse gases projected to increase by 2.7 percent in 2018, but the solution that economists have long considered the most cost-effective — a carbon tax — just suffered two blows. Its recent defeat in France and Washington state is leading to a mistaken narrative that carbon taxes are a political dead end.

The real lesson to learn from these setbacks is that the political prospects of carbon taxation depend on how the revenue is used. As long as the public perceives a carbon tax as an increase in its energy costs and, therefore, a reduction in its living standards, chances of success are low. By contrast, a winning carbon tax strategy would return all the money raised directly to citizens, making the majority of families better off.

Whereas France and Washington state illustrate the problem, two recent counterexamples — one in Canada and the other, of all places, in Congress — point the way forward.

President Emmanuel Macron's recent fuel tax increase set off widespread public demonstrations throughout France, ultimately forcing him to back down. These "yellow jacket" protests highlight that climate policies that increase the cost of living for ordinary people can trigger strong public opposition. Macron was in effect asking French citizens to bear the costs of climate action now for benefits that will accrue to other people in other countries at some point in the future.

Now consider the Canadian plan recently put forward by Prime Minister Justin Trudeau. Four of the largest provinces in Canada — Ontario, Saskatchewan, Manitoba and New Brunswick — failed to adopt carbon pricing mechanisms as required by law, triggering a federal backstop. Trudeau shrewdly designed that backstop as a carbon dividends plan, under which 90 percent of the revenue from a carbon tax will be rebated directly to the citizens of each province.

Now consider the Canadian plan recently put forward by Prime Minister Justin Trudeau. Four of the largest provinces in Canada — Ontario, Saskatchewan, Manitoba and New Brunswick — failed to adopt carbon pricing mechanisms as required by law, triggering a federal backstop. Trudeau shrewdly designed that backstop as a carbon dividends plan, under which 90 percent of the revenue from a carbon tax will be rebated directly to the citizens of each province.

Washington state's carbon fee revenue, like France's, would not have been returned directly to citizens; rather it would have been dedicated to an array of green energy initiatives. The voting results were telling: Only three wealthier counties around Seattle (with a long track record of environmental support) voted in favor; all the more rural and suburban counties voted against.

But there is a deeper lesson to be drawn from the state's initiative. Unfortunately, it pitted environmentalists against some in the oil and gas industry. For a carbon tax to succeed in the political arena and last, it must not only be popular but also bipartisan and supported by key stakeholders in the debate. Imagine if environmentalists, the oil and gas industry, Republicans and Democrats could all be on the same side?

This may seem unlikely, but recent developments suggest otherwise. Two weeks ago, two Republicans and three Democrats introduced the first bipartisan climate bill in a decade in the U.S. House. It calls for a rising carbon fee and returning 100 percent of the revenue directly to American citizens. The bill would also open the door to replacing various carbon regulations with a carbon fee, which could appeal to conservatives and businesses. Of course, a bill introduced in a lame-duck session is only a starting point.

More encouraging is that a remarkably broad climate coalition is aligning behind a similar national solution that my organization developed, known as the Baker-Shultz Carbon Dividends Plan. While there are important differences with the bill recently introduced in the House, they are directionally consistent. Our plan is based on four pillars: a rising carbon fee starting at $40 per ton, with 100 percent of the money returning directly to citizens, regulatory relief and a border carbon adjustment.

This Republican-inspired plan could exceed the U.S. commitment under the Paris climate agreement, benefit the majority of Americans families, shrink the size of government and provide companies regulatory certainty. This time, environmentalists and industry are working together to develop the details. And already, the largest utility, oil and gas company, solar company and wind energy trade association in the United States is putting its money behind the plan.

The recent developments in France, Canada, Washington state and the District all point to the same conclusion: A carbon dividends framework is the winning climate solution we have been waiting for.

TED HALSTEAD *is chairman and chief executive of the Climate Leadership Council.*

FORTUNE

September 10, 2018

The Most Ambitious Climate Plan In History

By JANET L. YELLEN and TED HALSTEAD

At the 2015 Paris Climate Conference, the United States committed to reduce its net greenhouse gas emissions by 26% to 28% below 2005 levels by 2025. Even though the Trump administration has announced its intention to withdraw from the Paris agreement, it remains the benchmark by which any U.S. climate plan is judged.

But it is only a starting point. Even if all nations meet their Paris commitments, the best studies indicate that far greater emissions reductions will be necessary for the world to maintain global temperatures below the agreed-upon 2 degrees Celsius threshold. The goal of U.S. climate policy should therefore be to exceed Paris.

We believe the most politically viable way to accomplish this is a plan co-authored by former Republican Secretaries of State James Baker and George Shultz. The Baker-Shultz plan is based on a gradually rising fee applied to all carbon emissions, with all the revenue rebated directly to the American people. A family of four would receive approximately $2,000 per year in "carbon dividends."

The Baker-Shultz Carbon Dividends plan—starting with a carbon fee of $40 per ton—would be the most ambitious carbon price enacted by any major emitter nation.

A report entitled *Exceeding Paris*, released today by the Climate Leadership Council, quantifies the emissions reductions that could reasonably be expected. Its foreword is co-authored by former Secretary of State George Shultz, former Treasury Secretary Lawrence Summers, former EPA Administrator Christine Todd Whitman, and former Walmart Chairman Rob Walton, as well as the two of us.

All Obama-era climate regulations, had they remained in place, would have achieved approximately 18% in greenhouse gas reductions by 2025, according to the council's analysis. In comparison, the Baker-Shultz plan would achieve an approximately 32% reduction by 2025, thereby exceeding our Paris commitment by a wide margin.

As also discussed in our report, the nonprofit research organization Resources for the Future modeled the Baker-Shultz plan through 2035 based on a carbon tax starting in 2021 and a range of inflation-adjusted annual escalation rates from 3% to 6%. It found that U.S. energy-related CO2 emissions would decline to a level of 41% to 47% below 2005 levels by 2035, also raising the environmental bar substantially.

It's clear that the Baker-Shultz Carbon Dividends Plan is the most environmentally ambitious climate solution. It's also the most politically viable because it addresses the legitimate concerns of all key stakeholders in the climate debate and enables each to realize an important victory.

A broad coalition of business sector leaders supports the general outlines of the plan. Among them: BP, ExxonMobil, Shell, and Total, as well as AECOM, Allianz, AT&T, Exelon, First Solar, General Motors, Johnson & Johnson, Metlife, Procter & Gamble, PepsiCo, Santander, Schneider Electric, and Unilever. Each is a founding member of the Climate Leadership Council.

The Baker-Shultz framework also enjoys support from environmental organizations and opinion leaders from across the political spectrum. This is the broadest coalition in U.S. history to come together in support of a concrete federal climate solution, and it continues to grow.

The plan's broad appeal is based on a series of grand bargains, including trading a robust and rising carbon price for regulatory relief, thereby appealing to environmentalists, businesses, and conservatives at the same time. Just as important, it appeals to the American people by rebating all of the revenue raised directly to them in an equal per capita amount. This would allow the majority of American families to economically benefit from helping solve climate change.

At the heart of this grand bargain is the environmental ambition of the Baker-Shultz plan, which unlocks the political viability of its other components. Its effectiveness in reducing emissions justifies the phase-out of other carbon regulations that are far more intrusive. This provides a major draw for businesses. The plan's reliance on a market-based carbon tax also makes it—in the view of economists of all stripes—the most cost-effective solution.

To ensure that intended emissions reductions are met, the Baker-Shultz plan may include an environmental assurance mechanism under which the carbon fee would increase faster if key emissions reductions benchmarks are not met. And to protect the international competitiveness of American firms, it includes a border carbon adjustment.

The plan's popularity enhances its viability. A national poll by Hill+Knowlton, released in full today, finds that the American public supports the Baker-Shultz plan by a 2-1 margin, and by a 23-point margin among Republicans. Among millennials—soon to be the largest voting cohort—support exceeds 4-1.

All of this suggests that the Baker-Shultz plan is emerging as a consensus national climate solution, reflecting the sensible center of American politics. It also demonstrates that there is a realistic path for the United States to exceed its Paris climate commitment and restore its position as a global climate leader.

JANET L. YELLEN *is the former Chair of the Federal Reserve.* **TED HALSTEAD** *is the Chairman & CEO of the Climate Leadership Council.*

The New York Times

 WEDNESDAY, FEBRUARY 8, 2017

A Conservative Case for Climate Action

Martin S. Feldstein, Ted Halstead and N. Gregory Mankiw

CRAZY as it may sound, this is the perfect time to enact a sensible policy to address the dangerous threat of climate change. Before you call us nuts, hear us out.

During his eight years in office, President Obama regularly warned of the very real dangers of global warming, but he did not sign any meaningful domestic legislation to address the problem, largely because he and Congress did not see eye to eye. Instead, Mr. Obama left us with a grab bag of regulations aimed at reducing carbon emissions, often established by executive order.

In comes President Trump, who seems much less concerned about the risks of climate change, and more worried about how excessive regulation impedes economic growth and depresses living standards. As Democrats are learning the hard way, it is all too easy for a new administration to reverse the executive orders of its predecessors.

On-again-off-again regulation is a poor way to protect the environment. And by creating needless uncertainty for businesses that are planning long-term capital investments, it is also a poor way to promote robust economic growth.

By contrast, an ideal climate policy would reduce carbon emissions, limit regulatory intrusion, promote economic growth, help working-class Americans and prove durable when the political winds change. We have laid out such a plan in a paper to be released Wednesday by the Climate Leadership Council.

Our co-authors include James A. Baker III, Treasury secretary for President Ronald Reagan and secretary of state for President George H. W. Bush; Henry M. Paulson Jr., Treasury secretary for President George W. Bush; George P. Shultz, Treasury secretary for President Richard Nixon and secretary of state for Mr. Reagan; Thomas Stephenson, a partner at Sequoia Capital, a venture-capital firm; and Rob Walton, who recently completed 23 years as chairman of Walmart.

Our plan is built on four pillars.

First, the federal government would impose a gradually increasing tax on carbon dioxide emissions. It might begin at $40 per ton and increase steadily. This tax would send a powerful signal to businesses and consumers to reduce their carbon footprints.

Second, the proceeds would be returned to the American people on an equal basis via quarterly dividend checks. With a carbon tax of $40 per ton, a family of four would receive about $2,000 in the first year. As the tax rate rose over time to further reduce emissions, so would the dividend payments.

Third, American companies exporting to countries without comparable carbon pricing would receive rebates on the carbon taxes they've paid on those products, while imports from such countries would face fees on the carbon content of their products. This would protect American competitiveness and punish free-riding by other nations, encouraging them to adopt their own carbon pricing.

Finally, regulations made unnecessary by the carbon tax would be eliminated, including an outright repeal of the Clean Power Plan.

Our own analysis finds that a carbon dividends program starting at $40 per ton would achieve nearly twice the emissions reductions of all Obama-era climate regulations combined. Provided all four elements are put in force in unison, this plan could meet America's commitment under the Paris climate agreement, all by itself. Democrats and environmentalists may bemoan the accompanying regulatory rollback. But they should pause to consider the environmental value proposition.

These four pillars, combined, invite novel coalitions. Environmentalists should like the long-overdue commitment to carbon pricing. Growth advocates should embrace the reduced regulation and increased policy certainty, which would encourage long-term investments, especially in clean technologies. Libertarians should applaud a plan premised on getting the incentives right and government out of the way. Populists should welcome the distributive impact.

According to a recent Treasury Department study, the bottom 70 percent of Americans would come out ahead under a carbon dividends plan. Some 223 million Americans stand to benefit.

The idea of using taxes to correct a problem like pollution is an old one with wide support among economists. But it is our unique political moment, combined with the populist appeal of dividends, that may turn the concept into reality.

Republicans are in charge of both Congress and the White House. If they do nothing other than reverse regulations from the Obama administration, they will squander the opportunity to show the full power of the conservative canon, and its core principles of free markets, limited government and stewardship.

A repeal-only climate strategy would prove quite unpopular. Recent polls show that 64 percent of Americans are concerned about climate change, 71 percent want America to remain in the Paris agreement, and an even larger share favor clean energy. If the Republican Party fails to exercise leadership on our climate challenge, they risk a return to heavy-handed regulation when Democrats return to power.

Much better would be a strategy of "repeal and replace." This would be pro-growth, pro-competitiveness and pro-working class, which aligns perfectly with President Trump's stated agenda.

MARTIN S. FELDSTEIN *was the chairman of the Council of Economic Advisers under President Ronald Reagan and* **N. GREGORY MANKIW** *was the chairman under President George W. Bush.* **TED HALSTEAD** *is the founder and chief executive of the Climate Leadership Council.*

WIRED

BUSINESS 10.12.18 09:00 AM

TO CURB CLIMATE CHANGE, TAX CARBON— THEN GIVE AMERICANS THE MONEY

GEORGE P. SHULTZ AND TED HALSTEAD

MOST VOTERS WANT the government to limit carbon emissions, but at a time when half of all Americans own less than $500 in savings, climate ranks low on their priority list. Through our proposal, the Baker-Schultz Carbon Dividends Plan, the United States can address economic insecurity and climate risk at the same time. In essence, the plan divvies out cash to Americans in support of a low-carbon future. And it has the backing of Big Oil.

The guiding principle is that all revenue from a national carbon tax should be rebated directly to the American people in the form of equal cash "dividends," distributed on a quarterly basis. If passed, the plan would enable the United States to not only meet, but exceed its commitment under the Paris climate agreement.

Everyone agrees that we need to broaden economic opportunity, but the usual bromides—new entitlement programs, universal basic income—run into two profound obstacles. First, the income is invariably viewed as a giveaway. Second, there is no obvious funding mechanism. A carbon dividends program overcomes both obstacles and can provide the vast majority of Americans with a new measure of economic security.

Economists agree that the most cost-effective climate solution is to put a price on carbon emissions, which could yield hundreds of billions of dollars per year in new revenue. Our plan would start with a carbon fee of $40 per ton, which would raise approximately $200 billion in revenue in its first year. Rebating that money to the American people could revolutionize US environmental and economic policy.

Far too many Americans are living paycheck to paycheck, fearing that a sudden illness or car accident could turn into an economic calamity. By largely ignoring these pocketbook issues, past climate efforts have failed the most important test of American politics: mobilizing popular support. By our estimates, a family of four would receive approximately $2,000 a year in cash as part of this climate solution. These carbon dividends offer a practical way to alter the rules of the game in favor of the majority. For most Americans, any increase in energy costs would be more than offset by the carbon dividend. Over two-thirds of American families, including the most vulnerable, would benefit under the plan.

This is hardly a handout. Rather, these carbon dividends would incentivize socially beneficial behavior based on a formula that makes intuitive sense: the more you pollute, the more you pay; the less you pollute, the more you come out ahead. For families with under $500 in savings, receiving quarterly dividend payments could be transformative.

Likewise, the carbon dividends framework could overcome long-standing barriers to climate progress. The main obstacle thus far has been finding a solution that is popular with the American people and all key stakeholders in the debate.

But a carbon dividends plan is deeply popular. New polling indicates that the majority of Americans support the idea, with Republican voters in favor by a 3-1 margin and Democratic voters in favor by a 2-1 margin. Among 18 to 35 year-olds—the cohort that will determine the future of any party—support reaches 4-1. The carbon dividends framework is also popular among corporate America: The plan is being developed with the input of companies such as AT&T, P&G, Johnson & Johnson, GM, and PepsiCo. Financial support for the initiative spans a wide range of energy interests: oil, natural gas, solar, wind and nuclear. In fact, just this week, ExxonMobil pledged $1 million to promote the plan.

This breadth of support is essential for the system to work and to last. As the carbon price grows every year, so would the dividend to all Americans. This sets in motion a paradigm-shifting feedback loop: the more we protect our environment, the more the majority of Americans reap the rewards.

The system's popularity is also a necessary pre-condition to strike a nonpartisan bargain. It would simultaneously help the majority of American families get ahead and provide American businesses with regulatory certainty. A robust and growing carbon price would justify phasing out carbon regulations that are no longer necessary, such as the Obama-era Clean Power Plan.

Replacing such regulations with a more cost-effective market solution is attractive to businesses and conservatives. Simply put, we could reduce emissions and the size of government at the same time. This, in turn, would unleash American technological innovation and create incentives to secure our nation's position at the forefront of low-carbon goods and services.

Our climate and economic debate has been deadlocked for too long. Carbon dividends provide the key to unlocking these puzzles.

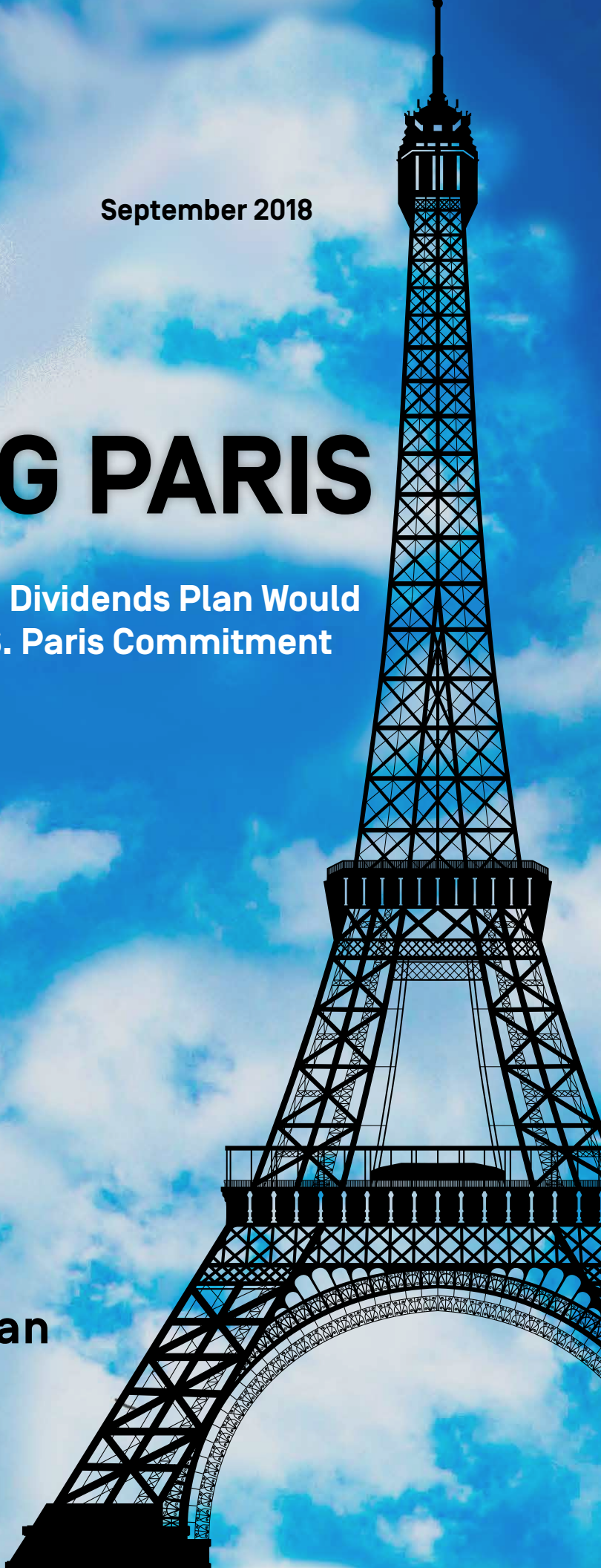
GEORGE P. SHULTZ *served as Secretary of Labor, Treasury, and State, and Director of the Office of Management and Budget. He is a Distinguished Fellow at Stanford University's Hoover Institution.* **TED HALSTEAD** *is Chairman & CEO of the Climate Leadership Council.*

CLIMATE LEADERSHIP COUNCIL

September 2018

EXCEEDING PARIS

How The Baker-Shultz Carbon Dividends Plan Would Significantly Exceed the U.S. Paris Commitment



Foreword by

Ted Halstead

George P. Shultz

Lawrence Summers

Rob Walton

Christine Todd Whitman

Janet Yellen

ABOUT THE AUTHORS

of Foreword

TED HALSTEAD is the founder, chairman & CEO of the Climate Leadership Council. Previously, he founded New America, a leading public policy think tank. He is co-author of *The Radical Center: The Future Of American Politics*.

ROB WALTON served as chairman of the board of Walmart from 1992 to 2015. He serves on the board of Conservation International and co-chairs the Board of the Julie Ann Wrigley Global Institute of Sustainability at ASU.

GEORGE P. SHULTZ served as Secretary of State under President Ronald Reagan, and as Secretary of Treasury and Labor under President Nixon. He is the Thomas W. and Susan B. Ford Distinguished Fellow at the Hoover Institution.

CHRISTINE TODD WHITMAN served as Administrator of the Environmental Protection Agency from 2001 to 2003 under President George W. Bush. She previously served as Governor of the State of New Jersey from 1994 to 2001.

LAWRENCE SUMMERS served as Secretary of the Treasury under President Clinton and Director of the National Economic Council under President Obama. He is President Emeritus and the Charles W. Eliot University Professor at Harvard University.

JANET YELLEN served as Chair of the Board of Governors of the Federal Reserve under Presidents Obama and Trump. She is a Distinguished Fellow in Residence at the Brookings Institution and is Professor Emerita at UC Berkeley.

TABLE OF CONTENTS

FOREWORD

By

Ted Halstead

George P. Shultz

Lawrence Summers

Rob Walton

Christine Todd Whitman

Janet Yellen

At the 2015 Paris Climate Conference, the United States committed to reduce its net greenhouse gas emissions by 26-28% below 2005 levels by 2025. Even though the Trump administration has announced its intention to withdraw from the Paris agreement, it remains the initial benchmark by which any U.S. climate plan is judged.

But it is only a starting point. Even if all nations meet their Paris commitments, the best studies[1] indicate that far greater emissions reductions will be necessary for the world to maintain global temperatures below the agreed-upon 2 degrees Celsius threshold. The goal of U.S. climate policy should therefore be to exceed Paris.

> **The Baker-Shultz plan would achieve approximately 32% in greenhouse gas reductions by 2025, thereby exceeding our Paris commitment by a wide margin**

The Baker-Shultz Carbon Dividends Plan, based on a gradually rising carbon fee, stands out as the most politically-viable pathway to not only meet but exceed the U.S. Paris commitment. It would also be the most ambitious carbon price enacted by any major emitter nation[2]. The following two charts illustrate the emissions reductions that could reasonably be expected.

The first chart compares the Baker-Shultz plan to other domestic pathways for meeting the U.S. Paris commitment. Whereas all Obama-era climate regulations, had they remained in place, would have achieved approximately 18% in greenhouse gas reductions by 2025, the Baker-Shultz plan would achieve approximately 32% in reductions by 2025, thereby exceeding our Paris commitment by a wide margin. For additional detail on the projections underlying this chart, please see the accompanying analysis by the Climate Leadership Council.

The second chart summarizes modeling of the Baker-Shultz plan through 2035 undertaken by Resources for the Future[3]. RFF modeled a carbon tax starting in 2021 at $43 per ton, with a range of inflation-adjusted annual escalation rates from 3% to 6%. They found this would reduce U.S. energy-related CO_2 emissions to a level of 34-36% below 2005 by 2025[4], and to 41-47% below 2005 by 2035. RFF's technical analysis of this modeling appears in the final section of this report.

To ensure that intended emissions reductions are met, the Climate Leadership Council may add an *Environmental Assurance Mechanism* to its overall plan, under which the carbon fee would increase faster if key emissions reductions benchmarks are not met.

The Baker-Shultz Carbon Dividends Plan is not only the most environmentally ambitious plan, but also the most politically-viable

The Baker-Shultz Carbon Dividends Plan is not only the most environmentally ambitious plan, but also the most politically-viable. Why? Because it addresses the legitimate concerns of all key stakeholders in the climate debate and enables each to realize an important victory.

The plan would accomplish this through a series of grand bargains, including trading a robust and rising carbon price for regulatory relief, thereby appealing to environmentalists, businesses and conservatives at the same time. Just as important, it appeals to the American people by rebating all of the revenue raised directly to them. This would allow the majority of American families to win economically from solving climate change.[5, 6]

At the heart of this grand bargain is the environmental ambition of the Baker-Shultz plan, which unlocks the political viability of its other components. The plan's effectiveness in reducing emissions substantially raises the environmental bar, while its reliance on a market-based carbon tax makes it – according to economists of all stripes – the most cost-effective climate solution.

The majority of American families would win economically from solving climate change

The encouraging conclusion is that there is a politically-viable path for the United States to exceed its Paris climate commitment and restore its position as a global climate leader.

---

[1] See, for instance, the UN Environment Emissions Gap Report 2017, which found that "The NDCs that form the foundation of the Paris Agreement cover only approximately one third of the emissions reductions needed to be on a least-cost pathway for the goal of staying well below 2 degrees C."

[2] World Bank and Ecofys. "State and Trends of Carbon Pricing 2018 (May)." World Bank, May 2018. DOI: 10.1596/978-1-4648-1292-7.

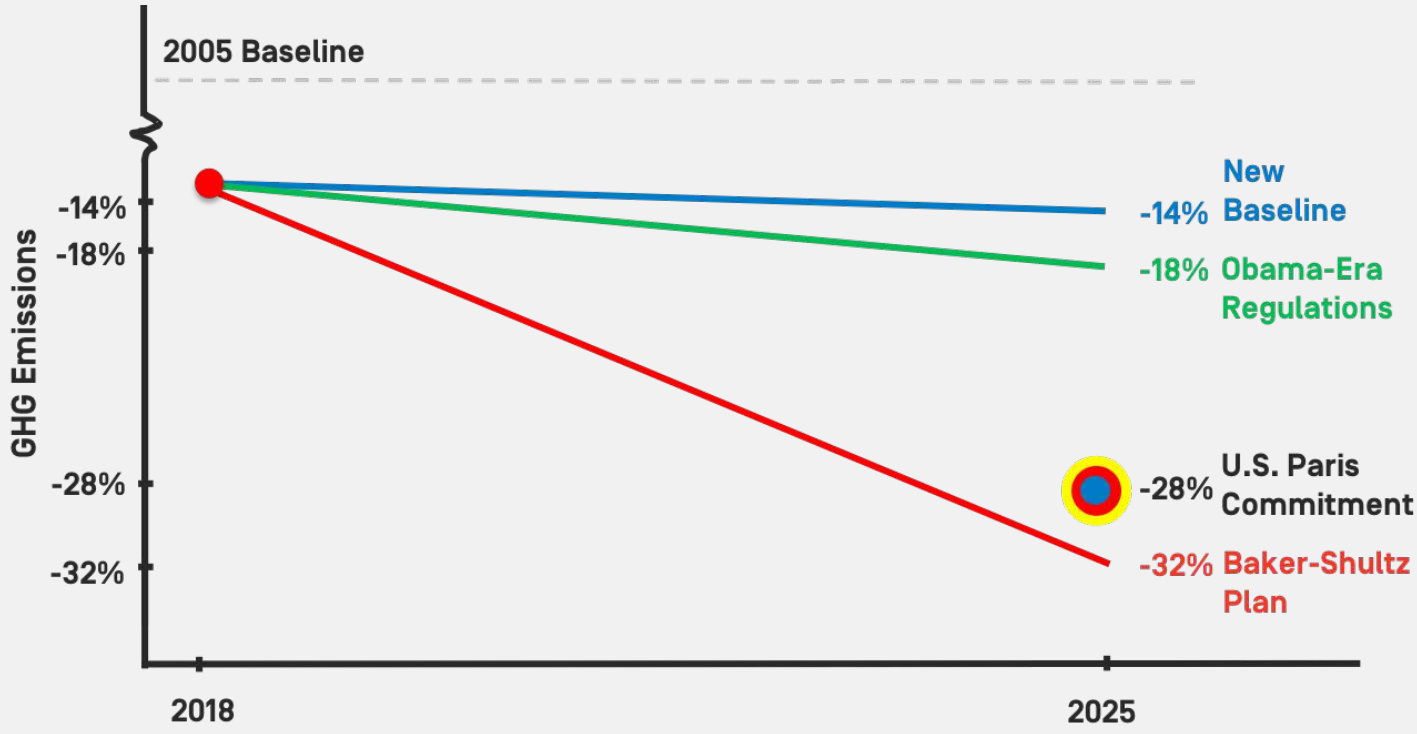
[3] Hafstead, Marc. "Analysis of Alternative Carbon Tax Price Paths for the Climate Leadership Council (CLC) Carbon Dividends Plan," *Resources for the Future Issue Brief 18-07.* June 2018.

[4] The slight divergence between the 2025 results in the first and second charts is because the former includes all greenhouse gases whereas the latter includes only CO_2 emissions.

[5] Horowitz, John, Julie-Anne Cronin, Hannah Hawkins, Laura Konda, and Alex Yuskavage. *Methodology for Analyzing a Carbon Tax.* Working paper no. 115. Office of Tax Analysis, US Department of the Treasury. January 2017.

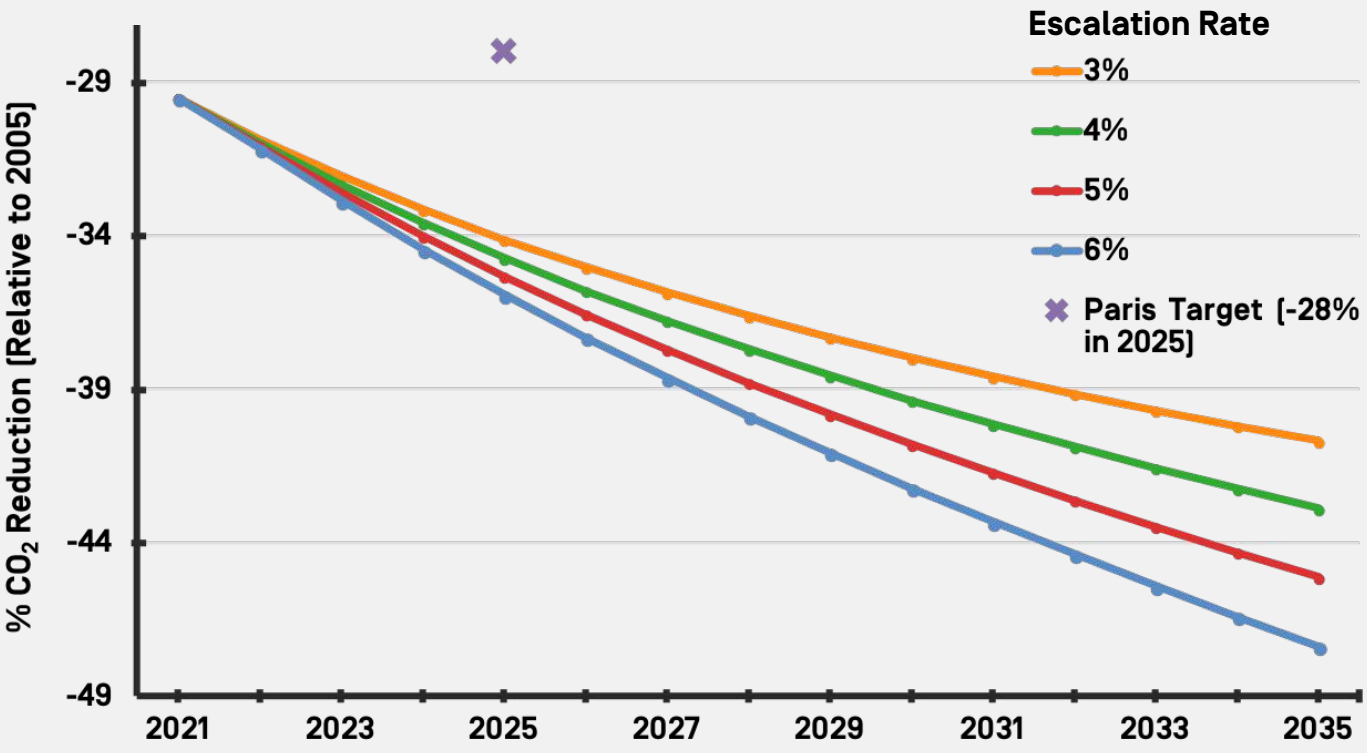
[6] Diamond, John W., and George R. Zodrow. *The Effects of Carbon Tax Policies on the US Economy and the Welfare of Households.* Report. Edited by Noah Kaufman. SIPA Center for Global Energy Policy, Columbia University. July 2018.

Chart 1: Emission Reductions of the Baker-Shultz Plan vs. Other Policy Paths



Source: Bailey, David, and Greg Bertelsen. *A Winning Trade.* Climate Leadership Council, June 2018.

Chart 2: Projected CO_2 Reductions from the Baker-Shultz Plan



Source: Hafstead, Marc. "Analysis of Alternative Carbon Tax Price Paths for the CLC Carbon Dividends Plan." *Resources for the Future Issue Brief 18-07.* June 2018.

CLIMATE LEADERSHIP COUNCIL

ANALYSIS OF THE BAKER-SHULTZ PLAN VS. OTHER POLICY PATHWAYS THROUGH 2025

By David Bailey and Greg Bertelsen*

EXECUTIVE SUMMARY

This report estimates the greenhouse gas (GHG) emission reductions of the carbon dividends plan put forward by the Climate Leadership Council compared to the reductions in 2025 that the U.S. committed to achieve under the Paris Agreement. It compares the Council's policy to two other policy paths: first, if all the Obama-era climate regulations had been left in place, and second, the current policies under President Trump, which assumes that most Obama-era regulations are repealed.

Based on the EIA's latest Energy Outlook, together with recent modeling by Resources for the Future (RFF) and the Rhodium Group, current policies would likely result in U.S. emissions being 14% below 2005 levels by 2025. This would represent a small reduction in current emission levels, which EPA estimated to be already 12.5% below 2005 levels in 2016.

Had all the policies in place at the end of the Obama administration been allowed to continue, we estimate these reductions would have been around 18% below 2005 levels by 2025. Both of these policy outcomes fall short of the U.S. Paris commitment of a 26-28% reduction in emissions by 2025.

Assuming the Council's carbon dividends plan – also known as the Baker-Shultz plan – were implemented in 2021 with a starting carbon tax rate of $40 per ton (2017$), modeling shows that U.S. emissions could reasonably be around 32% below 2005 levels by 2025. As illustrated in the summary Chart 1, this is more than three times the emission reductions from 2016 onwards than the Obama policies would have achieved.

This also means that the Council's proposal, on its own, would exceed the high-end of the U.S. 2025 commitment under the Paris Agreement by a wide margin and would continue to generate substantial reductions beyond 2025.

*David Bailey is Research Director and Greg Bertelsen is Senior Vice President at the Climate Leadership Council. This analysis was first published as part of *A Winning Trade*, Climate Leadership Council, June 2018.

The Climate Leadership Council Proposal

This study assumes that the Council's carbon dividends plan would be legislated in 2019 and implemented in 2021. It would start at the rate of $43/ton CO_2 in 2021 (which equates to a 2017 rate of $40 per ton, adjusted for expected inflation). From there, the carbon tax rate would increase annually based on a standard escalator rate plus inflation as measured by the Consumer Price Index (CPI).

For illustration purposes, the RFF modeling described here includes 3% and 5% real escalation rates, with the 4% mid-point used in Chart 1. The Council has not yet settled on a final escalation rate.

The carbon tax would apply to all domestic fossil fuels and non-fuel CO_2 emissions, as well as imported fossil fuels, fossil fuel products and imported energy-intensive manufactured products. The carbon tax would be rebated for exports of these fuels and goods. The proposal would return the revenue raised from the tax directly to households through flat-rate quarterly or monthly dividend checks, likely administered by the Social Security Administration. There would also be a significant phase-out of carbon regulations that are no longer necessary.

This analysis shows how the U.S. emission reductions arising from the Council's proposal compare to:

1. A 2025 current policy baseline, which assumes the repeal of many major Obama-era carbon regulations;

2. Our assessment of the 2025 outcome assuming all Obama-era policies had remained in place, including implementing the Clean Power Plan (CPP) as per EPA's original schedule; and

3. The U.S. Paris commitment of 26-28% reduction in net greenhouse gases from 2005 levels by 2025.

Scope of Analysis

As described above, the Council's proposal would tax CO_2 emissions only. While CO_2 emissions (mostly from burning fossil fuels) represent roughly 80% of greenhouse gas (GHG) emissions, for various reasons[1] a tax-based approach may not be as well suited or practical for the other gases such as methane and hydrofluorocarbons (HFCs). In this analysis we have sought to show how a range of assumptions about changes in the emission of the other GHG gases could affect the overall picture.

Basis for Projections Through 2025

Our analysis draws on EIA's latest Energy Outlook (AEO 2018)[2] as well as modeling by Resources for the Future[3] and the Rhodium Group's 2017 Taking Stock study[4]. The RFF model is one of the most widely-respected in the field. Rhodium's study is valuable in that it models the expected changes in non-CO_2 GHGs and sinks in a way few other studies have attempted. An RFF Issue Brief on its model appears on page 10, and some technical background on the Rhodium model is described in Annex 2.

The most comprehensive listing of current and historical GHG emission performance is the EPA's annual Inventory of Greenhouse Gas Emissions, the latest version covering emissions in 2016[5]. The previous administration's expectations for 2025 were contained in the U.S. government's last biennial report to the United Nations Framework Convention on Climate Change[6]. We have updated those projections for this study. The most recent data are summarized in Table 1, together with our assessment of the outlook for 2025 based on Obama-era policies and on current policy.

How Would the Council's Carbon Dividends Plan Reduce Emissions?

The carbon tax would increase the relative price of fossil fuels according to their CO_2 emissions. In 2021, bituminous coal without carbon capture technology, for example, would incur a tax of $96 per ton of coal (around 200% of the average 2017 price); each thousand cubic feet (MCF) of natural gas would be taxed about $2.28 (around 74% of the average 2017 Henry Hub wholesale price and around 20% of the average residential price); and

each barrel of crude oil taxed about $18 (around 35% of the 2017 average U.S. crude price)[7].

While some of these increased costs of the tax would be borne by the producers, most would likely be reflected in the prices paid by consumers (the 2021 $43/ton carbon tax could translate to approximately 38 cents per gallon of gasoline). These are substantial impacts at the wholesale level, and they would have three main effects:

1. The overall cost of fossil energy would increase, thereby encouraging **more efficient usage**.

2. The tax would encourage **fuel switching.** It would immediately increase the relative attractiveness of natural gas to coal in the power sector, and nuclear and renewables to all fossil fuel sources.

3. Over time, the most significant impact would be **increased investments** to reduce energy use and to replace facilities using higher carbon fossil fuels with those using lower- or zero- carbon fuels.

The relationship between reductions in emissions and the carbon tax rate is not linear. As the tax rate increases the percentage reduction for each additional dollar of tax is lower – mainly because the existing capital base becomes a bigger factor in changing fuel sources the greater the amount of emissions reduced. In addition, a much higher tax rate is needed to secure significant emissions reductions in the transport sector.

Impact on Emissions in 2025

To determine an indicative estimate of the impact of the Council's carbon dividends plan on emissions in 2025 (the Paris target year) we commissioned new modeling by RFF.

The RFF modeling covered a range of possible escalation rates for a $43/ton CO_2 ($40 2017$) tax taking effect in 2021. RFF only modeled a tax on energy-related CO_2 emissions. We show in Table 2 the results for escalation rates 3%, 4% and 5% above inflation each year.

In Chart 1 and the tables we use the 4% escalation rate emissions scenario as the basis for the overall assessment.

Other Emissions

In order to estimate the full effect of the Council's plan on overall U.S. emissions it is necessary to make assumptions about what will happen to non-energy CO_2 emissions and to the emissions of other GHGs. We propose two alternate scenarios of what to expect in these areas through 2025, one based largely on Rhodium estimates (essentially assuming President Trump continues to emphasize rollback of the Obama programs) and the other on application of comparable policies to the Council carbon tax to non-energy CO_2 emissions and other GHGs.

Non-Energy CO_2 Emissions

Rhodium forecast an increase in non-energy CO_2 emissions through 2025 from today's levels. In our first case in Table 3, we assumed these increases would occur.

The Council's carbon tax would also apply to non-energy CO_2 emissions. In our second case we therefore assumed that non-energy CO_2 emissions will be reduced from Rhodium's assumed higher 2025 levels at half of the rate of energy-related CO_2 reductions from 2016, reflecting pressure from both increased natural gas feedstock use and more expensive costs of emission reductions in this area.

Other Greenhouse Gases

The Rhodium study also developed estimates for the impact of the continuing Trump administration policy on other greenhouse gases, which we regard as credible. These gases are not currently addressed by the Council's tax proposal. The Council expects eventually to propose measures to cover other greenhouse gases. The nature of those proposals, whether tax, regulation or other means, has not yet been decided, and it is possible that they might not be implemented in time to have much impact in 2025.

In our first case in Table 3 we adopted the Rhodium Group estimates for 2025 methane, nitrous oxide and fluorinated gas emissions. As a relatively

Table 1: U.S. Greenhouse Gas Emissions, Actual and Projected

	2005 Actual (baseline for U.S. Paris pledges) as updated in EPA 2018 GHG Inventory	2016 Actual	Obama Policy 2025 (assumes all Obama-era policies remained)	Current Policy 2025 (assumes most Obama-era policies are repealed)[8]
Energy-related CO_2	5,747	4,966	4,922[9]	5,031
Non energy related CO_2	385	345	332[10]	444
Methane	689	657	608[11]	632
Nitrous Oxide	358	370	345[10]	345
Fluorinated Gases	143	173	90[12]	90
Total Emissions	7,322	6,511	6,297	6,542
Sinks (Land Use, Land Use Change & Forestry Sequestration)	-699	-717	-870[13]	-870
Total Net Emissions	6,623	5,794	5,427	5,672
Change from 2005		-829	-1,164	-951
% Change from 2005	n/a	-12.5%	-18.1%	-14.4%

(All figures are in Millions of Metric Tons (MMT) CO_2-equivalent.)

Table 2: RFF Modeling of Energy-Related CO_2 Emissions from Council Plan

Escalation Rate	3%	4%	5%
Energy-related CO_2 Emissions Reduction in 2025 (vs. 2005)	-34.1%	-34.7%	-35.3%

Table 3: Comparisons and Conclusions

The emissions "bottom lines" of these projections are summarized below.

	2025 Trump Baseline (Where We Are Headed)	Obama-Era Policies (Had They Remained)	Case 1: Council Plan[14] with Rhodium Non-Energy CO_2 and Other GHGs	Case 2: Council Plan[13] plus Council Non-Energy CO_2 Reductions and 10% Reduction in Other GHGs
Total Net 2025 Emissions	5,672	5,459	4,553	4,399
Change vs. 2005 Base	-14.4%	-18.1%	-31.3%	-33.6%
Change from 2016 Actual	-2.1%	-6.3%	-21.4%	-24.3%

Note - Sinks were standardized in each projection to the midpoint of the Rhodium estimates (see note 13)

conservative alternative, in the second case in Table 3 we assumed that the Council's proposal would reduce these other greenhouse gases by 10% of Rhodium's forecast values in 2025.

In our Findings and in Chart 1, we take the mid-point (roughly 32%) between these two cases - Council's plan with Rhodium's non-energy CO_2 assumptions and with the more aggressive impact on non-energy CO_2 and other gases. We believe this provides a reasonable estimate of what the Council's carbon dividends plan can achieve.

Findings

The impact of a carbon tax at around these levels has been well studied[15], making the findings of this report quite robust. The current analysis suggests that the effect of the Council's plan would be to deliver around a 32% reduction in overall emissions by 2025 from 2005 levels, well beyond the 28% high-end of the U.S. Paris commitment and more than three times what the regulatory policies as of the end of the Obama administration would have achieved from 2016 to 2025. It is also many times more than what can be expected under the Trump administration policies, even if several of the Obama-era regulations on non-CO_2 GHGs are retained.

Conclusions

Our analysis leads to the following conclusions:

1. If all Obama-era regulatory measures had remained in place, that would likely have resulted in an 18.1% reduction in greenhouse gas emissions from 2005 levels by 2025;

2. Current policies will likely result in a 14% reduction in emissions below 2005 levels by 2025;

3. Compared to 2016, emissions would be 2.1% lower in 2025 under the current policies approach and 6.3% lower under the Obama-era policies; and

4. The Council's plan – based on a $43/ton carbon tax, implemented in 2021 – would reduce emissions by around 32% compared to 2005 and about 23% compared to 2016, meaning the United States would exceed the upper end of its 2025 Paris commitment.

Notes

1. Some of these reasons are described in *Methodology for Analyzing a Carbon Tax,* Treasury OTA Working Paper 115, 2017., pp. 8-9.
2. https://www.eia.gov/outlooks/aeo
3. http://www.rff.org/blog/2017/introducing-e3-carbon-tax-calculator-estimating-future-co2-emissions-and-revenues
4. http://rhg.com/wp-content/uploads/2017/05/RHG_ENR_Taking_Stock_24May2017.pdf
5. https://epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2016
6. Our projection of the Obama policies starts from the *Second Biennial Report of the United States of America Under the United Nations Framework Convention on Climate Change*, U.S. Department of State, 2016; available at: https://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/2016_second_biennial_report_of_the_united_states_.pdf
7. Climate Leadership Council calculations, based on EIA data for carbon content at https://www.eia.gov/tools/faqs/faq.php?id=73&t=11 and 2017 average fuel prices for petroleum and gas at https://www.eia.gov/outlooks/steo/
8. The Trump baseline forecast is based on EIA AEO 2018 energy CO_2 estimates net of international bunker fuels (-116.6MT, the 2016 value) and U.S. territories (+41.4MT, the 2016 value). We also adjusted for the possible removal of the Federal 2022-2025 vehicle GHG standards (estimated at +54MT in 2025), discounting that reduction by 50% given the uncertainty of how this will turn out in practice. For all other sources we use Rhodium (2017).
9. Assumes energy CO_2 emissions in 2025 are in line with EIA AEO 2018 (including Clean Power Plan (CPP)) reference case, net of international bunker fuels (-116.6MT, the 2016 value) and U.S. territories (+41.4MT, the 2016 value).
10. Calculated from *Second Biennial Report* based on the split of total CO_2 between energy and non- energy sources in the latest data available when it was written, i.e. the 2014 EPA GHG inventory.
11. Rhodium (2017) forecast, reduced by expected impact of proposed Obama-era methane regulations (24MT)
12. We use the Rhodium (2017) numbers – which assume the Kigali Amendment and other HFC initiatives that remain in place will be effective. The Obama administration biennial report (in early 2016, pre-Kigali) expected a rapid increase in these emissions, to 264MTCO_2e by 2025.
13. The 2016 biennial report used a 2025 range of -908 to -1201 MT. This does not seem plausible. We took the midpoint of the range estimated by Rhodium (766 to 963MT) and held it constant in all our comparisons so it does not impact the conclusions. We are skeptical of the higher end of even this range. Since 1990 the actual sink number has varied between 685 and 830 MT.
14. In each case using RFF modeling for the 4% real escalation factor. As mentioned above, the Council has not arrived at a final conclusion on the escalation factor.
15. For example, as cited in the original *A Winning Trade*, *Using a Carbon Tax to meet U.S. International Carbon Pledges*, Chen & Hafstead, RFF 2016; *Analysis of the American Opportunity Carbon Fee Act of 2015*, Hafstead & Kopp, RFF 2016 and Treasury op cit (2017).

Annex 1 - Important Assumptions

2025
We confined our analysis in this paper to the impact in one year – 2025 – because that is the year to which the U.S. Paris commitments apply.

Border Adjustments
We also assumed for simplicity that the border adjustments in the Council's plan broadly negate each other in terms of emissions – i.e. emissions related to U.S. exports for which the carbon tax is rebated are matched by emissions related to U.S. imports that are taxed when they enter the country.

Acknowledgement: Our thanks to Marc Hafstead and RFF for their help with the modeling in this paper. We also thank David Bookbinder of the Niskanen Center and Kevin Kennedy of the World Resources Institute for their peer review. Errors and omissions are ours alone.

Annex 2 - Note On Models

RFF Model
See following RFF Issue Brief on page 10.

Rhodium Model
Rhodium models the impact of current policy on U.S. GHG emissions using RHG-NEMS, a modified version of the National Energy Modeling System used by EIA to produce its Annual Energy Outlooks augmented to project all GHG emissions, not just energy-related CO_2. For the Taking Stock Baseline Scenario, Rhodium uses the macroeconomic and oil and gas price assumptions from the EIA's AEO 2017 reference case, with updates to account for recently announced coal and nuclear power plant retirements. For renewable energy technology costs, Rhodium uses NREL's Annual Technology Baseline mid cost case.

For CO_2 emissions from sources other than fossil fuel combustion as well as all other GHG emissions contained in the baseline, Rhodium primarily relies on EPA best practice methods. Methane emission reductions from petroleum and natural gas systems from existing federal and state policy are derived from analysis conducted by the Clean Air Task Force. LULUCF sequestration projections are derived from the latest U.S. biennial report and calibrated to EPA's latest inventory.

Analysis of Alternative Carbon Tax Price Paths for the Climate Leadership Council (CLC) Carbon Dividends Plan

Marc Hafstead*

In February 2017, led by Ted Halstead and Republican statesmen George P. Shultz and James A. Baker III, the Climate Leadership Council (CLC) introduced "The Conservative Case for Carbon Dividends." In June 2017, the CLC announced its Founding Members, including economists Lawrence Summers, Martin Feldstein, and N. Gregory Mankiw, as well as business leaders such as Ratan Tata, Rob Walton, and Michael Bloomberg. Corporate Founding Members of CLC include oil companies BP, ExxonMobil, Shell, and Total; General Motors; consumer goods giants Johnson&Johnson, P&G, and Unilever; and other multinational firms. NGO Founding Members include The Nature Conservancy and Conservation International.

CLC's Carbon Dividend Plan rests on four pillars:

- **A Gradually Increasing Carbon Tax**: "A sensible carbon tax should begin at $40 a ton and increase steadily over time."
- **Carbon Dividends for All Americans**: "All the proceeds from this carbon tax would be returned to the American people on an equal and monthly basis."
- **Border Carbon Adjustments**: "Border adjustments for the carbon content of both imports and exports would level the playing field and promote American competitiveness."
- **Regulatory Simplification**: "The elimination of regulations that are no longer necessary upon the enactment of a rising carbon tax."

The purpose of this analysis is to assess the impacts of alternative carbon tax paths on US energy-related carbon dioxide (CO_2) emissions.[1] The sole focus is on the emissions impact of CLC's first pillar and this brief does not consider the impacts of any pillars on households or industry.

Economic Model of Carbon Emissions

We utilize the Goulder-Hafstead Energy-Environment-Economy E3 CGE Model, an economy-wide model of the United States with international trade. Production is divided into 35 industries, with particular emphasis on energy-related industries such as crude oil extraction, natural gas extraction, coal mining, electric power (represented by four industries), petroleum refining, and natural gas distribution. The model is unique in its detailed tax treatment, which allows for interactions of environmental policy and preexisting taxes on capital and labor, and its attention to capital dynamics, which are important for analyzing how policies impact the economy over time. The model utilizes 2013 benchmark data and solves for impacts at one-year intervals beginning in 2013. Baseline technology and preference forecasts are calibrated to the 2016 *Annual Energy Outlook* (AEO) from the US Energy Information Administration (EIA).

* Hafstead: Fellow, Energy and Climate Program, Resources for the Future; hafstead@rff.org.

Financial support for this analysis was provided by the Climate Leadership Council. The Climate Leadership Council (CLC) is an international policy institute founded in collaboration with a who's who of business, opinion, and environmental leaders to promote a carbon dividends framework as the most cost-effective, equitable, and politically viable climate solution.

[1] This analysis uses the EIA definition of energy-related CO_2 emissions. The Environmental Protection Agency's Inventory of Greenhouse Gas Emissions and Sinks reports levels of energy-related CO_2 emissions that exclude emissions from international bunker fuels and includes emissions from US territories.

In *Confronting the Climate Challenge: US Policy Options*, published by Columbia University Press (coauthored by Lawrence Goulder of Stanford University), the E3 model is used to evaluate carbon taxes, cap-and-trade programs, clean energy standards, and increases in the federal gasoline tax. The model has also been featured in three peer-reviewed journal publications, and it participated Stanford's Energy Modeling Forum (EMF) 32: Inter-model Comparison of US Greenhouse Gas Reduction Policy Options. For further analyses of a carbon tax using the E3 model, including a wider range of impact results, visit www.rff.org/carbontax.

Terms of Reference for the Analysis

The model analysis was structured by the specific elements below.

- The tax is imposed on all fossil fuels (coal, petroleum, and natural gas) combusted within the United States.
- The tax is based on the carbon content of these fuels.
- Only the effect of the tax on energy-related CO_2 emissions is modeled. Emissions of the other five greenhouse gases (methane, nitrous oxide, HFCs, PFCs, and SF6) and non-energy-related CO_2 emissions are not included in this analysis.
- The tax is initially imposed in 2021.
- The tax is applied at a rate of $43 per ton (in $2021) of CO_2 emitted through combustion. A fee of $43 is an increase from the original CLC proposal of $40 to account for inflation between 2018 and 2021.
- The tax increases annually at a rate of 3, 4, 5, or 6 percent above inflation.
- All of the proceeds from the carbon tax, net of reductions in preexisting taxes, are returned to the American people on an equal basis.
- Border adjustments are only considered in the model for imports and exports of secondary fossil fuels (such as gasoline).

Results

Table 1a displays projected E3 energy-related CO_2 emissions through 2035 across the four alternative growth rates and a baseline scenario without a federal carbon tax.[2] Table 1b reports emissions relative to 2005 emissions. *(See both tables on the next page.)*

In the absence of carbon pricing or other regulations, energy-related CO_2 emissions are expected to remain relatively flat through 2035, with slight growth between 2035 and 2050. In 2021, with the initial CLC carbon price of $43, emissions are projected to drop by about one billion metric tons, a 19 percent reduction relative to business as usual. Emissions after 2021 depend on the growth rate of the tax over time. In 2025, emissions vary between 3.8 and 3.9 billion metric tons (34–36 percent below 2005 energy-related CO_2 emissions).[3] By 2035, the difference in emissions levels across growth rates becomes more pronounced—a difference of 0.4 billion metric tons between the lowest and highest growth rate scenarios. Under the 5 percent growth rate, energy-related CO_2 emissions are 45 percent below 2005 levels in 2035.

Projections are not forecasts because they depend on values for a number of variables whose future values are uncertain. Projections in the E3 model represent central estimates of future outcomes conditional on a large number of parameter and model assumptions. Changes to any single assumption may alter projections. Key sources of uncertainty include both baseline forecasts and price elasticities. Chen, Hafstead, and Goulder (2018) evaluate the sensitivity of E3's projected emissions to baseline forecasts such as fossil fuel prices, economic growth and the rate of energy efficiency improvements in nonenergy sectors. In future work, we plan to evaluate the sensitivity of emissions to price elasticities to determine appropriate confidence intervals for long-run emissions projections.

[2] Emissions under the baseline scenario are derived from average rates of change in GDP and emissions intensity from EIA's AEO 2018. Emissions under the carbon tax are derived from multiplying the percentage change in emissions from the E3 model with a slightly different reference case to baseline emissions. As shown in Chen, Goulder, and Hafstead (2018), the percentage change in emissions from a carbon tax are approximately independent of reference case forecast assumptions.

[3] The Obama administration's US Paris Agreement commitment was to reduce net greenhouse gas emissions to 26-28% below 2005 levels. Energy-related CO_2 emissions account for about 78% of gross greenhouse gas emissions. Under conservative estimates for changes in non-energy-related CO_2 emissions, non-CO_2 greenhouse gas emissions, and forestry sequestration, energy-related CO_2 emissions need to be reduced by about 31% from 2005 levels to achieve the 2025 26% net greenhouse gas reduction target.

Table 1a. Sensitivity of Energy-Related CO_2 Emissions to Different Rates of Growth of the Carbon Tax (billion metric tons)

Year	Baseline Emissions	Growth Rate of Carbon Tax			
		3%	4%	5%	6%
2021	5.2	4.2	4.2	4.2	4.2
2022	5.2	4.1	4.1	4.1	4.1
2023	5.2	4.1	4.1	4.0	4.0
2024	5.2	4.0	4.0	4.0	3.9
2025	5.3	3.9	3.9	3.9	3.8
2026	5.3	3.9	3.8	3.8	3.8
2027	5.3	3.8	3.8	3.7	3.7
2028	5.3	3.8	3.7	3.7	3.6
2029	5.3	3.8	3.7	3.6	3.5
2030	5.3	3.7	3.6	3.5	3.5
2031	5.3	3.7	3.6	3.5	3.4
2032	5.3	3.6	3.5	3.4	3.3
2033	5.4	3.6	3.5	3.4	3.3
2034	5.4	3.6	3.5	3.3	3.2
2035	5.4	3.6	3.4	3.3	3.2

Table 1b. Energy-Related CO_2 Emissions (below 2005 levels), by Carbon Tax Growth Rate

Year	Growth Rate of Carbon Tax			
	3%	4%	5%	6%
2021	30%	29%	29%	29%
2022	31%	31%	31%	31%
2023	32%	32%	33%	33%
2024	33%	34%	34%	34%
2025	34%	35%	35%	36%
2026	35%	36%	37%	37%
2027	36%	37%	38%	39%
2028	37%	38%	39%	40%
2029	37%	39%	40%	41%
2030	38%	39%	41%	42%
2031	39%	40%	42%	43%
2032	39%	41%	43%	44%
2033	40%	42%	43%	45%
2034	40%	42%	44%	46%
2035	41%	43%	45%	47%

ABOUT THE CLIMATE LEADERSHIP COUNCIL

The Climate Leadership Council is an international research and advocacy organization founded in collaboration with a who's who of business, opinion and environmental leaders to promote a carbon dividends framework as the most cost-effective, equitable and politically-viable climate solution.

Find out more at **www.clcouncil.org**.

THE FOUR PILLARS OF THE BAKER-SHULTZ CARBON DIVIDENDS PLAN

1. **A GRADUALLY RISING AND REVENUE-NEUTRAL CARBON TAX**
2. **CARBON DIVIDEND PAYMENTS TO ALL AMERICANS, FUNDED BY 100% OF THE REVENUE**
3. **THE SIMPLIFICATION OF CARBON REGULATIONS THAT ARE NO LONGER NECESSARY**
4. **BORDER CARBON ADJUSTMENTS TO LEVEL THE PLAYING FIELD AND PROMOTE AMERICAN COMPETITIVENESS**

CLIMATE
LEADERSHIP
COUNCIL

CLIMATE LEADERSHIP COUNCIL

THE CONSERVATIVE CASE FOR CARBON DIVIDENDS

How a new climate strategy can strengthen our economy, reduce regulation, help working-class Americans, shrink government & promote national security

James A. Baker, III
Martin Feldstein
Ted Halstead
N. Gregory Mankiw
Henry M. Paulson, Jr.
George P. Shultz
Thomas Stephenson
Rob Walton

February 2017

ABOUT THE AUTHORS

JAMES A. BAKER, III, served as Secretary of State under President George H.W. Bush, Secretary of the Treasury under President Reagan and White House chief of staff under both. He is a senior partner in the law firm of Baker Botts.

HENRY M. PAULSON, JR., served as Secretary of the Treasury under President George W. Bush. Previously, he served as chairman and chief executive officer at Goldman Sachs. He is the founder and chairman of the Paulson Institute.

MARTIN FELDSTEIN served as Chairman of the President's Council of Economic Advisers from 1982 to 1984 under President Reagan. He is the George F. Baker Professor of Economics at Harvard University and President Emeritus of the NBER.

GEORGE P. SHULTZ served as Secretary of State under President Ronald Reagan, and as Secretary of Treasury and Labor under President Nixon. He is the Thomas W. and Susan B. Ford Distinguished Fellow at the Hoover Institution.

TED HALSTEAD is the founder, President & CEO of the Climate Leadership Council. Previously, he founded New America, a leading public policy think tank. He is co-author of *The Radical Center: The Future Of American Politics.*

THOMAS STEPHENSON is a partner at Sequoia Capital, a venture capital firm based in Silicon Valley. Stephenson previously served as the United States Ambassador to Portugal from 2007 to 2009 under President George W. Bush.

N. GREGORY MANKIW served as Chairman of the President's Council of Economic Advisers from 2003 to 2005 under President George W. Bush. He is the Robert M. Beren Professor of Economics at Harvard University.

ROB WALTON served as chairman of the board of Walmart, the world's largest retailer and employer, from 1992 to 2015. He is currently Chairman of the Executive Committee of Conservation International.

ABOUT THE CLIMATE LEADERSHIP COUNCIL

The Climate Leadership Council is an international research and advocacy organization whose mission is to mobilize global opinion leaders around the most effective, popular and equitable climate solutions. As a central part of this mission, the Council develops and promotes new policy frameworks based on carbon dividends for each of the largest greenhouse gas emitting regions. Currently active in Washington and London, the Council will expand to Berlin, Beijing and New Delhi next. Find out more at www.clcouncil.org.

THE NEED FOR A CONSERVATIVE CLIMATE SOLUTION

Mounting evidence of climate change is growing too strong to ignore. While the extent to which climate change is due to man-made causes can be questioned, the risks associated with future warming are too big and should be hedged. At least we need an insurance policy. For too long, many Republicans have looked the other way, forfeiting the policy initiative to those who favor growth-inhibiting command-and-control regulations, and fostering a needless climate divide between the GOP and the scientific, business, military, religious, civic and international mainstream.

Now that the Republican Party controls the White House and Congress, it has the opportunity and responsibility to promote a climate plan that showcases the full power of enduring conservative convictions. Any climate solution should be based on sound economic analysis and embody the principles of free markets and limited government. As this paper argues, such a plan could strengthen our economy, benefit working-class Americans, reduce regulations, protect our natural heritage and consolidate a new era of Republican leadership. These benefits accrue regardless of one's views on climate science.

THE FOUR PILLARS OF A CARBON DIVIDENDS PLAN

1. A GRADUALLY INCREASING CARBON TAX

The first pillar of a carbon dividends plan is a gradually increasing tax on carbon dioxide emissions, to be implemented at the refinery or the first point where fossil fuels enter the economy, meaning the mine, well or port. Economists are nearly unanimous in their belief that a carbon tax is the most efficient and effective way to reduce carbon emissions. A sensible carbon tax might begin at $40 a ton and increase steadily over time, sending a powerful signal to businesses and consumers, while generating revenue to reward Americans for decreasing their collective carbon footprint.

2. CARBON DIVIDENDS FOR ALL AMERICANS

All the proceeds from this carbon tax would be returned to the American people on an equal and monthly basis via dividend checks, direct deposits or contributions to their individual retirement accounts. In the example above, a family of four would receive approximately $2,000 in carbon dividend payments in the first year. This amount would grow over time as the carbon tax rate increases, creating a positive feedback loop: the more the climate is protected, the greater the individual dividend payments to all Americans. The Social Security Administration should administer this program, with eligibility for dividends based on a valid social security number.

3. BORDER CARBON ADJUSTMENTS

Border adjustments for the carbon content of both imports and exports would protect American competitiveness and punish free-riding by other nations, encouraging them to adopt carbon pricing of their own. Exports to countries without comparable carbon pricing systems would receive rebates for carbon taxes paid, while imports from such countries would face fees on the carbon content of their products. Proceeds from such fees would benefit the American people in the form of larger carbon dividends. Other trade remedies could also be used to encourage our trading partners to adopt comparable carbon pricing.

4. SIGNIFICANT REGULATORY ROLLBACK

The final pillar is the elimination of regulations that are no longer necessary upon the enactment of a rising carbon tax whose longevity is secured by the popularity of dividends. Much of the EPA's regulatory authority over carbon dioxide emissions would be phased out, including an outright repeal of the Clean Power Plan. Robust carbon taxes would also make possible an end to federal and state tort liability for emitters. To build and sustain a bipartisan consensus for a regulatory rollback of this magnitude, the initial carbon tax rate should be set to exceed the emissions reductions of current regulations.

HELPING WORKING-CLASS AMERICANS

President Donald J. Trump's electoral victory stems in large part from his ability to speak to the increasing frustration and economic insecurity that many voters feel the political establishment has failed to address. This frustration has found expression in a growing populist sentiment and yearning for fundamental change. A carbon dividends plan responds to these powerful trends.

Relieving Economic Anxiety

Today's economic insecurity is driven by both technological progress and globalization. As such, it does not lend itself to easy answers. A carbon dividends program provides a rare exception: a simple idea that strengthens the economy and elevates the economic prospects of the nation's disaffected. The Department of Treasury estimates that the bottom 70% of Americans would come out ahead under such a program. Carbon dividends would increase the disposable income of the majority of Americans while disproportionately helping those struggling to make ends meet. Yet these dividends are not giveaways; they would be earned based on the good behavior of minimizing our carbon footprints.

Redirecting Populism

Increasingly, voters feel that the American political and economic system is rigged against their interests. Populism threatens the current policy consensus in favor of liberalized trade and investment. The best remedy is to redirect this populist energy in a socially beneficial direction. Carbon dividends can do just that based on a populist rationale: We the People deserve to be compensated when others impose climate risks and emit heat-trapping gases into our shared atmosphere. The new ground rules make intuitive sense: the more one pollutes, the more one pays; the less one pollutes, the more one comes out ahead. This, for once, would tip the economic scales towards the interests of the little guy.

> *Carbon dividends would increase the disposable income of the majority of Americans while disproportionately helping those struggling to make ends meet*

STRENGTHENING OUR ECONOMY

Incentivizing Growth & Innovation

An ideal climate strategy would simultaneously reduce carbon emissions and steer America towards a path of more durable economic growth. A carbon dividends plan can do exactly that. A carbon tax would send a powerful market signal that encourages technological innovation and large-scale substitution of existing energy and transportation infrastructures, thereby stimulating new investment. Second, the plan would offer companies, especially those in the energy sector, the predictability they now lack, thus removing one of the most serious impediments to longer-term capital investment. Third, because many regulations would become unnecessary, the plan would give companies the flexibility to reduce emissions in the most efficient way.

> *This plan would steer America towards more durable economic growth by encouraging technological innovation and stimulating new investment*

The Immediate Impact of Future Policy

A well-designed carbon dividends plan would further contribute to economic growth through its dynamic effects on consumption and investment. Just as central banks rely on forward guidance to influence future market expectations, if investors know that a carbon tax will increase steadily over time, the stimulatory effect of the final tax rate would be felt almost immediately for infrastructure and utility projects, especially ones that have long-term paybacks. In addition, forward-looking households would have an incentive to borrow to make durable purchases that would reduce their carbon footprint. Congress might even consider allowing individuals to borrow against their future dividend income for certain clearly defined purposes, such as higher education or the purchase of an electric vehicle.

SHRINKING THE SIZE OF GOVERNMENT

Less Government, Less Pollution

In order to separate the consideration of carbon taxes from debates over size of government, most carbon tax proposals are now revenue-neutral. This proposal, however, would go one step further by shrinking the overall size of government and streamlining the regulatory state. Eliminating or phasing out an array of energy-related regulations would reduce government bureaucracy, promote economic growth and free up the financial and personnel resources now allocated to administer and comply with these programs. A gradually increasing carbon tax would also eliminate the rationale for ever more heavy-handed regulations of greenhouse gas emissions in future years.

The Essential Link Between Carbon Taxes, Dividends & Regulatory Relief

For the elimination of heavy-handed climate regulations to withstand the test of time and not prove highly divisive, they must be replaced by a market-based alternative. Our policy is uniquely suited to building bipartisan and public support for a significant regulatory rollback. It is essential that the one-to-one relationship between carbon tax revenue and dividends be maintained as the plan's longevity, popularity and transparency all hinge on this. Allocating carbon tax proceeds to other purposes would undermine popular support for a gradually rising carbon tax and the broader rationale for far-reaching regulatory reductions.

STABILIZING AN UNSTABLE WORLD

Our reliance on fossil fuels contributes to a less stable world, empowers rogue petro-states and makes us vulnerable to a volatile world oil market. Carbon dividends would accelerate the transition to a low-carbon global economy and domestic energy independence. Not only would this help prevent the destabilizing consequences of climate change, it would also reduce the need to protect or seek to influence politically vulnerable oil-producing regions. With our electric grids susceptible to cyber attacks, a transition to cleaner power sources combined with new distributed storage technologies could also strengthen national security. Carbon pricing would also encourage domestic nuclear energy, further promoting climate stability and America's energy independence.

> *"Many carbon tax proposals are revenue-neutral. This proposal goes one step further by shrinking the overall size of government and streamlining the regulatory state*

CONSOLIDATING CONSERVATIVE LEADERSHIP

A Popular Solution to a Widely Shared Concern

The opposition of many Republicans to meaningfully address climate change reflects poor science and poor economics, and is at odds with the party's own noble tradition of stewardship. A carbon dividends plan could realign the GOP with that longstanding tradition and with popular opinion. Recent polls indicate that 64% of Americans worry a great deal or a fair amount about climate change, while a clear majority of Republicans acknowledge that climate change is occurring. Meanwhile, one telling survey finds that 67% of Americans support a carbon tax with proceeds returned directly to them, including 54% of conservative Republicans.

Appealing to Younger Voters, Latinos & Asians

Concern about climate change is greatest among Americans below the age of 35, Latinos and Asians. And it is, of course, younger voters who hold the key to the future political fortune of either party. Increasingly, climate change is becoming a defining issue for this next generation of Americans, which the GOP ignores at its own peril. Meanwhile Asians and Hispanics – the fastest growing demographic groups – are also deeply concerned about climate change. A carbon dividends plan offers an opportunity to appeal to all three key demographics, while illustrating for them the superiority of market-based solutions.

POLICY FINE PRINT

A carbon tax should increase steadily and predictably over time so that companies and consumers can plan accordingly, and the previously mentioned economic stimulatory effects can be harnessed. At the completion of a five year period, a Blue Ribbon Panel could recommend whether the tax rate should increase further, based on the best climate science available at the time. Provisions must be established for the unbanked to receive their monthly dividend checks, possibly through commercial services such as PayPal or Western Union. The dividend income should be tax-free. Exports by companies in sectors with greater than 5% energy cost in final value should have any carbon taxes rebated on leaving the United States. Finally, non-emissive fossil fuel products (e.g. asphalt for road use) should be exempt, with a refund for any tax previously paid.

> *With the privilege of controlling all branches of government comes a responsibility to exercise wise leadership on climate policy and promote a solution that showcases the full power of enduring conservative convictions*

THE IMPERATIVE TO LEAD

With the privilege of controlling all branches of the government comes a responsibility to exercise wise leadership on the defining challenges of our era, including global climate change. It is incumbent upon the GOP to lead the way rather than look the other way. Republicans now have a rare opportunity to set the terms of a lasting market-based climate solution that warrants bipartisan, industry and public support. No less important, this is an opportunity to demonstrate the power of the conservative canon by offering a more effective, equitable and popular climate policy based on free markets, smaller government and dividends for all Americans.

CLIMATE
LEADERSHIP
COUNCIL

CLIMATE LEADERSHIP COUNCIL

OCTOBER 2018

THE DIVIDEND ADVANTAGE

The 10 Reasons Why Rebating All Carbon Fee Revenues Directly to the American People Offers the Most Popular, Equitable and Politically Viable Climate Solution

by

George P. Shultz

Ted Halstead

ABOUT THE AUTHORS

GEORGE P. SHULTZ served as Secretary of State under President Ronald Reagan, and as Secretary of Treasury and Labor under President Nixon. He is the Thomas W. and Susan B. Ford Distinguished Fellow at the Hoover Institution.

TED HALSTEAD is the founder, Chairman & CEO of the Climate Leadership Council. Previously, he founded New America, a leading public policy think tank. He is co-author of *The Radical Center: The Future of American Politics.*

THE DIVIDEND ADVANTAGE

1. **MOST POPULAR**
2. **CARROTS TRUMP STICKS**
3. **MOST EQUITABLE**
4. **MOST DURABLE**
5. **REGULATORY SIMPLIFICATION**
6. **PRO-GROWTH**
7. **RESTORING TRUST IN GOVERNMENT**
8. **POSITIVE FEEDBACK LOOP**
9. **BORROWING BONUS**
10. **CLOSING PANDORA'S BOX**

ABOUT THE CLIMATE LEADERSHIP COUNCIL

The Climate Leadership Council is an international research and advocacy organization founded in collaboration with a who's who of business, opinion and environmental leaders to promote a carbon dividends framework as the most cost-effective, equitable and politically-viable climate solution.

Find out more at www.clcouncil.org.

EXECUTIVE SUMMARY

There is widespread agreement among economists that a carbon fee offers the most cost-effective way to reduce greenhouse gas emissions. Top corporations and environmental groups, as well as opinion leaders from across the political spectrum, are increasingly converging around the idea. As support for a revenue-neutral carbon fee grows, however, there are diverging views about how to use the revenue.

Interest groups are lining up behind a variety of potential revenue uses, ranging from: cutting the deficit; reducing corporate or personal taxes; investing in green technologies and infrastructure; and financing climate adaptation and remediation.

In assessing possible revenue uses, it is critical to recognize that the primary obstacle to a carbon fee has long been political. The key to making a carbon fee popular and politically viable is finding a countervailing incentive that outweighs the fee's burden. The best candidate is carbon dividends, which would put money directly into people's hands.

> **"Over two-thirds of American households would be financial winners under a carbon dividends program, including the most vulnerable**

Simply put: all proceeds from a nation's carbon fee would be divided equally among its citizens and returned directly to them. Conferring financial benefits in the here and now would fundamentally alter the cost-benefit time horizon of climate mitigation, re-casting a carbon fee as a popular and even populist solution.

> **"A major advantage of pairing carbon fees with dividends is that the latter's popularity would ensure the policy's longevity, giving environmentalists and businesses the confidence they need to strike a lasting political bargain**

Carbon dividends also open the door to business and bipartisan support, which will require trading a robust carbon price for regulatory relief. Striking this "grand bargain" will hinge on both sides believing it will hold: environmentalists must be assured that the carbon fee rate will continually increase until emissions targets are met, while businesses and conservatives must be assured the corresponding regulatory simplification will last.

A major advantage of pairing carbon fees with dividends is that the latter's popularity would ensure the policy's longevity, giving environmentalists and businesses the confidence they need to strike a lasting political bargain.

Climate policy in the United States has been deadlocked for far too long, forestalling what economists of all stripes agree is the most cost-effective solution. The key to unlocking this puzzle is selecting the most popular, equitable and politically viable use of carbon fee proceeds.

1. MOST POPULAR

Public support for pricing carbon is highly dependent on how the revenue is used. By far the most popular use – by a ratio of 3 to 1 – is returning the proceeds directly to all citizens in the form of dividends.[1] The reason for this popular appeal is obvious: over two-thirds of American households would be financial winners under a carbon dividends plan. Recent polling reveals that a majority of Americans favor a carbon dividends plan, including support by a 3 to 1 margin among Republican voters.[2] Among 18-35-year-olds – the cohort that will determine the future of any party – support reaches 4 to 1. No other approach to carbon pricing comes close to this level of popular support.

The Alaska Permanent Fund Dividend illustrates the enduring popularity of dividends. Enacted in 1982 by a Republican Governor in a Republican state, it provides over $1,000 per year to each state resident. This program has consistently proven popular across all income groups, turning it into a "third rail" that has withstood all efforts to tamper with it. The dividend is particularly popular among the 72% of Alaskans who make less than $50,000 per year. But even Alaskans making more than $100,000 per year prefer the dividend to income tax cuts.[3] The durability and popularity of the Alaska dividend provides an important lesson for carbon fee advocates.

> *"The majority of Americans favor a carbon dividends plan, including support by a 3 to 1 margin among Republican voters and by a 4 to 1 margin among 18-35-year-olds*

2. CARROTS TRUMP STICKS

The primary impediment to US climate progress may be the least recognized: a fundamental psychological barrier. The prevailing message espoused by climate advocates, at its core, is that we should make short-term sacrifices now for the benefit of other people, in other countries, thirty to forty years in the future. This runs contrary to what extensive psychological research confirms is our "loss aversion" preference: we place a higher value on avoiding short-term pain, even if it leads to greater long-term gain.[4, 5] Like it or not, human nature is inherently self-interested, and we will only solve our climate problem at the required scale and speed if we recognize this.

A winning climate strategy must offer the public a countervailing "carrot" that more than compensates them for the necessary "stick" of higher fossil fuel prices. The most politically viable way to do so is by rebating the proceeds from a carbon fee directly to all American citizens on an equal basis. And this carrot is quite significant: a family of four could receive approximately $2,000 in dividends per year. The appeal of cash dividends offers a game changing "saliency" that is immediately tangible to ordinary citizens. This fundamentally alters the cost-benefit time horizon for climate action, while re-messaging a carbon fee around a far more compelling narrative.

3. MOST EQUITABLE

A common concern is that carbon fees can be regressive, imposing a disproportionate burden on the least fortunate. Combining carbon fees with dividends solves this problem and ensures that the most vulnerable come out ahead. The reason is simple: the wealthier tend to pollute more, and therefore would face higher costs. Importantly, however, these dividends are neither giveaways nor a new entitlement. Since costs increase in direct proportion to one's carbon footprint and all citizens receive identical dividends, everyone is rewarded equally for reducing their carbon footprint.

Numerous studies confirm the distributional advantages of dividends over all other uses of carbon fee proceeds.[6] For example, the US Treasury found that 70% of American households would benefit, because on average they would receive more in dividend payments than they would pay in increased energy prices.[7] And the bottom income deciles – those who have the most trouble making ends meet – would experience the greatest net gains. The dividend pathway is the only approach to carbon pricing that would result in higher median household incomes for the vast majority of Americans, across all 50 states.[8, 9]

> *"The dividend pathway is the only approach to carbon pricing that would result in higher median household incomes for the vast majority of Americans, across all 50 states*

4. MOST DURABLE

Two frequent misconceptions about carbon pricing are that enacting the initial fee is the main political hurdle and the fee rate need not increase year to year. Neither is correct. For a carbon fee to meet agreed-upon emissions reduction targets, it must increase every year. British Columbia demonstrated this. When BC introduced a steadily rising carbon fee in 2008, emissions declined as intended. But when the carbon fee stopped increasing in 2013, emissions began rising again.[10] Enacting a continually rising carbon fee that is immune to a popular backlash and to repeal efforts by future Congresses is a far greater political challenge.

The only way to guarantee this policy durability is by rebating the revenue directly to the American people, thereby creating a "hook" that cannot be undone. For example, the popularity of Alaska's dividend model turned it into a lasting program with decades of broad bipartisan support. Similarly, a national carbon dividends program may be the only climate solution capable of withstanding the political test of time. And this durability is a necessary pre-condition to strike a grand bargain capable of uniting Republicans and Democrats, businesses and environmentalists, and ultimately the American people, around a bipartisan climate breakthrough.

5. REGULATORY SIMPLIFICATION

The Baker-Shultz Carbon Dividends Plan is premised on a grand political bargain: trading a robust and rising carbon fee for a phase-out of most existing carbon regulations. Designed correctly, this would be a winning trade for all key stakeholders and a vast improvement over the status quo. For the past decade, US climate policy has zig-zagged between an aggressive regulatory agenda under President Obama to an equally aggressive de-regulatory push under President Trump. On-again-off-again regulation is a poor way to protect the environment or promote economic growth. A carbon fee offers a more cost-effective and business-friendly path to greater climate ambition.

Just as carbon dividends pave the way for a majority of Americans to support a carbon fee, they also make it possible for this grand bargain to take shape and sustain itself. Indeed, dividends can provide the glue to bind the deal together. For businesses and Republicans, dividends offer a uniquely popular and bipartisan pathway to significant and permanent regulatory relief. For environmentalists and Democrats, dividends would ensure that the carbon fee rate increases every year until emissions targets are met, thereby overcoming their resistance to regulatory simplification. If all parties believe the deal will last, the lack of trust separating them can be overcome.

> *"Just as carbon dividends pave the way for a majority of Americans to support a carbon fee, they also make it possible for a grand bargain to take shape and sustain itself*

6. PRO-GROWTH

When combined with dividends, a carbon fee would become a pro-growth policy instrument with substantial stimulatory effects. The dividends would more than offset the negative effects on consumer purchasing power.[11] Since less well-off households consume a greater proportion of their income, carbon dividends would put money in the hands of those most likely to spend it, thereby boosting overall aggregate demand. A carbon dividends program would also incentivize households to reduce their energy costs by upgrading to cleaner cars and appliances, thereby spurring a new wave of consumer spending. This would in turn drive new business investment as companies sought to meet consumer demand.

A carbon fee would also send a powerful market signal that encourages technological innovation and large-scale substitution of existing energy and transportation infrastructures, stimulating new investment. The plan would also offer companies, especially in the energy sector, the predictability they now lack, removing one of the most serious impediments to long-term capital investment. Just as central banks rely on forward guidance to influence future market expectations, if investors know that a carbon price will increase steadily over time due to the popularity of dividends, the stimulatory effect of the final fee rate would be felt almost immediately for infrastructure and utility projects that have long-term paybacks.

7. RESTORING TRUST IN GOVERNMENT

Public trust in government is near an all-time low, at less than 20%.[12] This lack of faith in our government's ability to solve national problems further polarizes our body politic, empowering extremes at the expense of a sensible center. To a large extent, this worrying collapse of the center is rooted in a widespread perception among voters that our political and economic systems are rigged against their interests by wealthy, powerful and out of touch elites who control the game. Without restoring public trust in our political system, it will be difficult for the American people to unify around important national projects and a common narrative, and for our great nation to continue leading by example.

Carbon dividends offer a unique opportunity to channel this growing populist sentiment in a socially beneficial direction and demonstrate that we can solve national problems in a way that benefits all Americans. The new ground rules would make intuitive sense: the more you pollute, the more you pay; the less you pollute, the more you come out ahead. Since dividends are paid out equally to all citizens, your personal choices determine how much you pay and how much you benefit. This would tip the economic scales towards the interests of the many. As a result, carbon dividends could help restore trust in our public institutions and inspire a new sensible center in American politics.

> *"A carbon dividends program speaks to today's growing populist sentiment, and offers a unique opportunity to channel it in a socially beneficial direction*

8. POSITIVE FEEDBACK LOOP

Political and economic systems – like natural and biological ones – operate on feedback loops, which can be positive or negative. Currently the dominant climate narrative is a negative feedback loop. Opponents often argue that solving climate change would constrain economic growth and impose undue costs on businesses and workers. Interestingly, much of the environmental movement's narrative reinforces a similar theme of shared sacrifice, along with dire warnings of climate catastrophe. What both narratives share in common is a message of fear and austerity: that climate protection requires short-term sacrifice. Not surprisingly, this negative feedback loop has yielded very modest emissions reductions.

A carbon dividends program offers the only climate solution capable of establishing a positive feedback loop that reduces emissions at the necessary scale and speed. Simply put: the more the carbon price increases, the greater the emissions reductions, and the higher the economic dividends to the American people. This favorable dynamic would encourage voters to support ever-greater climate ambition because it is good for their economic bottom line. From a political perspective, aligning individual self-interest with increased climate ambition changes everything. That is why the Baker-Shultz Carbon Dividends Plan would not only meet but exceed the US commitment under the Paris climate agreement.[13]

9. BORROWING BONUS

A carbon dividends program could be designed to expand consumer credit for specific climate related investments. Over half of all Americans do not currently have $500 or more in savings. This prevents households from replacing old and inefficient vehicles, heating and cooling systems and appliances with more energy-efficient ones. Even though they would gain financially over the longer term by making these investments, they simply do not have the disposable income to afford large upfront purchases, or the access to affordable credit to make these purchases over time. Solving this problem could not only reduce emissions, but also spur economic growth by enabling households to make investments they otherwise could not afford.

Allowing individuals to borrow from private institutions against future dividend income streams for specific clean energy-related investments could become a key feature of a carbon dividends plan. With minimal regulatory intervention, this could lead to a new kind of consumer loan that gives more Americans access to affordable credit that lowers both their long-term costs and carbon footprints. For example, such a program could allow credit-constrained households to secure affordable credit to invest in more fuel-efficient cars, energy-efficient home improvements or new appliances. As a result, this could save money over time, while ensuring that even more Americans gain (or continue to gain) from a carbon dividends program.

> *“Only a carbon dividends solution offers a bipartisan and politically sustainable pathway forward where all key stakeholders, above all the American people, can claim an important victory*

10. CLOSING PANDORA’S BOX

As we have seen, there are many compelling reasons to return all carbon fee proceeds directly to the American people. Yet politicians will no doubt be tempted to use the hundreds of billions of dollars in new revenue for other purposes – whether it be paying down the debt, reducing corporate or personal taxes, investing in green infrastructure, or financing climate adaptation or remediation. While these other uses have merit and appeal to particular constituencies, they would each alienate many others. As tempting as it will be for elected officials to dedicate carbon fee revenues in these other ways, doing so would be a strategic misstep, and doom the political prospects of a lasting bipartisan climate breakthrough.

Each alternative revenue use would open a Pandora’s Box. Whereas the Baker-Shultz Carbon Dividends Plan has already attracted an unusually broad and bipartisan coalition of support, no other use of proceeds can do so. Washington State learned this lesson the hard way: its attempt to pass a carbon fee failed largely because even its proponents could not agree on revenue use.[14] At the national level, Members of Congress who pass a carbon fee that does not enjoy public support risk an electoral backlash, all the more so from a carbon fee that grows annually. Only a carbon dividends solution offers a bipartisan and politically sustainable pathway forward where all key stakeholders, above all the American people, can claim an important victory.

ENDNOTES

1. "Carbon Dividends Plan Survey Results." Hill+Knowlton Strategies. Online survey conducted June 4-10, 2018.
2. "National Survey Results on the Baker-Shultz Carbon Dividends Plan." Yale Program on Climate Change Communication, George Mason University Center for Climate Change Communication and Nexus Polling. Online survey conducted August 29-30, 2018.
3. Economic Security Project and Harstad Strategic Research. "ESP Alaska PFD Phone Survey Executive Summary." Scribd. Spring 2017.
4. Kahneman, Daniel, and Amos Tversky. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47, no. 2 (1979): 263-91.
5. Gilovich, Thomas, Dale Griffin, and Daniel Kahneman. *Heuristics and Biases: The Psychology of Intuitive Judgment.* Cambridge: Cambridge University Press, 2013.
6. Diamond, John W., and George R. Zodrow. *The Effects of Carbon Tax Policies on the US Economy and the Welfare of Households.* Report. Edited by Noah Kaufman. SIPA Center for Global Energy Policy, Columbia University. July 2018.
7. Horowitz, John, Julie-Anne Cronin, Hannah Hawkins, Laura Konda, and Alex Yuskavage. *Methodology for Analyzing a Carbon Tax.* Working paper no. 115. Office of Tax Analysis, US Department of the Treasury. January 2017.
8. Boyce, James K., and Matthew E. Riddle. *Clear Economics: State-Level Impacts of the Carbon Limits and Energy for America's Renewal Act on Family Incomes and Jobs.* Report. Department of Economics and Political Economy Research Institute, University of Massachusetts, Amherst. Revised July 2011.
9. Ummel, Kevin. *Impact of CCL's Proposed Carbon Fee and Dividend Policy: A High-Resolution Analysis of the Financial Effect on U.S. Households*. Working paper no. v1.3. Prepared for Citizens' Climate Lobby (CCL). February 2016.
10. Horne, Matt, Kevin Sauvé, and Tom Pedersen. *British Columbians' Perspectives on Global Warming and the Carbon Tax*. Poll. Pembina Institute. October 2012.
11. Boyce, James K., and Matthew E. Riddle. *Clear Economics: State-Level Impacts of the Carbon Limits and Energy for America's Renewal Act on Family Incomes and Jobs.* Report. Department of Economics and Political Economy Research Institute, University of Massachusetts, Amherst. Revised July 2011.
12. "Public Trust in Government: 1958-2017." Pew Research Center. December 14, 2017.
13. Halstead, Ted, George P. Shultz, Lawrence Summers, Rob Walton, Christine Todd Whitman, and Janet Yellen. *Exceeding Paris*. Report. The Climate Leadership Council. September 2018. https://www.clcouncil.org/exceedingparis/.
14. Sweet, Cassandra. "Carbon-Tax Measure Fails in Washington State." *The Wall Street Journal*. November 9, 2016.

CLIMATE
LEADERSHIP
COUNCIL

RESOURCES *for the* FUTURE

Analysis of Alternative Carbon Tax Price Paths for the Climate Leadership Council (CLC) Carbon Dividends Plan

Issue Brief 18-07 by **Marc Hafstead** — June 2018; Revised March 2019

In February 2017, the Climate Leadership Council (CLC), led by Ted Halstead and Republican statesmen George P. Shultz and James A. Baker III introduced **"The Conservative Case for Carbon Dividends."** The CLC's Founding Members help refine the policy details of its carbon dividends plan. Individual Founding Members include leading economists such as Ben Bernanke, Larry Summers and Janet Yellen. Corporate Founding Members include oil and gas companies BP, ExxonMobil, Shell, and Total; General Motors; consumer good giants Johnson&Johnson, P&G, and Unilever; and other multi-national firms. NGO Founding Members include Conservation International, The Nature Conservancy and World Wildlife Fund.

CLC's Carbon Dividend Plan rests on four pillars:

- **A Gradually Increasing Carbon Tax:** "A sensible carbon tax should begin at $40 a ton and increase steadily over time."
- **Carbon Dividends for All Americans:** "All the proceeds from this carbon tax would be returned to the American people on an equal and monthly basis."
- **Border Carbon Adjustments:** "Border adjustments for the carbon content of both imports and exports would level the playing field and promote American competitiveness."
- **Regulatory Simplification:** "The elimination of regulations that are no longer necessary upon the enactment of a rising carbon tax."

The purpose of this RFF analysis is to assess the impacts of alternative carbon tax paths on US energy-related CO_2 emissions.[1] Our sole focus is on the emissions impact of CLC's first pillar and we do not consider the impacts of any pillars on households or industry.

Economic Model of Carbon Emissions

We utilize the Goulder-Hafstead Energy-Environment-Economy E3 CGE Model, an economy-wide model of the United States with international trade. Production is divided into 35 industries, with particular emphasis on energy-related industries such as crude oil extraction, natural gas extraction, coal mining, electric power (represented by four industries), petroleum refining, and natural gas distribution. The model is unique in its detailed tax treatment, which allows for interactions of environmental policy and pre-existing taxes on capital and labor, and its attention to capital dynamics, which are important for analyzing how policies impact the economy over time. The model utilizes 2013 benchmark data and solves for impacts at one-year intervals beginning in 2013. Baseline technology and preference forecasts are calibrated to the 2016 Annual Energy Outlook (AEO) from the Energy Information Administration (EIA).

In *Confronting the Climate Challenge: US Policy Options*, published by Columbia University Press (co-authored by Lawrence Goulder of Stanford University), the E3 model is used to evaluate carbon taxes, cap-and-trade programs, clean energy standards, and increases in the federal gasoline tax. The model has also been featured in three peer-reviewed journal publications, and it participated Stanford's Energy Modeling Forum (EMF) 32: Inter-model Comparison of US Greenhouse Gas Reduction Policy Options. For further analyses of a carbon tax using the E3 model, including a wider range of impact results, see **www.rff.org/carbontax**.

Results

Table 1a displays projected E3 energy-related carbon dioxide (CO_2) emissions through 2035 across the four alternative growth rates and a baseline scenario without a federal carbon tax.[2] Table 1b reports emissions relative to 2005 emissions.

Table 1a: Sensitivity of Energy-Related CO_2 Emissions to Different Rates of Growth of the Carbon Tax (billion metric tons)

Year	Baseline Emissions	Growth Rate of Carbon Tax 3%	4%	5%	6%
2021	5.1	4.1	4.1	4.1	4.1
2022	5.0	4.0	4.0	4.0	4.0
2023	5.0	3.9	3.9	3.9	3.9
2024	5.0	3.8	3.8	3.8	3.7
2025	5.0	3.7	3.7	3.7	3.6
2026	5.0	3.7	3.6	3.6	3.5
2027	4.9	3.6	3.5	3.5	3.4
2028	4.9	3.5	3.5	3.4	3.4
2029	4.9	3.5	3.4	3.3	3.3
2030	4.9	3.4	3.3	3.3	3.2
2031	4.9	3.4	3.3	3.2	3.1
2032	4.9	3.3	3.2	3.1	3.0
2033	4.9	3.3	3.2	3.1	3.0
2034	4.8	3.2	3.1	3.0	2.9
2035	4.8	3.2	3.1	3.0	2.8

In the absence of carbon pricing or other regulations, energy-related CO_2 emissions are expected to fall at a relatively slow rate through 2035. In 2021, with the initial CLC carbon price of $43, emissions are projected to drop by about one billion metric tons, a 19% reduction relative to business as usual. Emissions after 2021 depend on the growth rate of the tax over time. In 2025, emissions vary between 3.6 and 3.7 billion metric tons (38 – 39% below 2005 energy-related CO_2 emissions).[3] By 2035, the difference in emissions levels across growth rates becomes more pronounced – a difference of 0.4 billion metric tons between the lowest and highest growth rate scenarios. Under the 5% growth rate, energy-related carbon dioxide emissions are 51% below 2005 levels in 2035.

Table 1b: Energy-Related CO_2 Emissions (below 2005 levels), by Carbon Tax Growth Rate

	Growth Rate of Carbon Tax			
Year	3%	4%	5%	6%
2021	32%	32%	32%	32%
2022	33%	33%	34%	34%
2023	35%	35%	35%	36%
2024	36%	37%	37%	38%
2025	38%	38%	39%	39%
2026	39%	40%	40%	41%
2027	40%	41%	42%	43%
2028	41%	42%	43%	44%
2029	42%	43%	44%	45%
2030	43%	44%	45%	47%
2031	44%	45%	47%	48%
2032	45%	46%	48%	49%
2033	45%	47%	49%	51%
2034	46%	48%	50%	52%
2035	47%	49%	51%	53%

Projections are not forecasts because they depend on values for a number of variables whose future values are uncertain. Projections in the E3 model represent central estimates of future outcomes conditional on a large number of parameter and model assumptions. Changes to any single assumption may alter projections. Key sources of uncertainty include both baseline forecasts and price elasticities. Chen, Hafstead, and Goulder (2018), available for free download **here**, evaluate the sensitivity of E3's projected emissions to baseline forecasts such as fossil fuel prices, economic growth and the rate of energy efficiency improvements in nonenergy sectors. In future work, we plan to evaluate the sensitivity of emissions to price elasticities to determine appropriate confidence intervals for long-run emissions projections.

Terms of Reference for the Analysis

The model analysis was structured by the specific elements below.

- The tax is imposed on all fossil fuels (coal, petroleum and natural gas) combusted within the United States.
- The tax is based on the carbon content of these fuels.
- Only the effect of the tax on energy-related CO_2 emissions is modeled. Emissions of the other five greenhouse gases (methane, nitrous oxide, HFCs PFCs and SF6) and non-energy-related CO_2 emissions are not included in this analysis.
- The tax is initially imposed in 2021.
- The tax is applied at a rate $43/per ton (in $2021) of CO_2 emitted through combustion. A fee of $43 is an increase from the original CLC proposal of $40 to account for inflation between 2018 and 2021.
- The tax increases annually at a rate of 3, 4, 5, or 6 percent above inflation.
- All of the proceeds from the carbon tax, net of reductions in pre-existing taxes, are returned to the American people on an equal basis.
- Border adjustments are only considered in the model for imports and exports of secondary fossil fuels (such as gasoline).

Notes

1 This analysis uses the EIA definition of energy-related carbon dioxide emissions. The EPA's Inventory of Greenhouse Gas Emissions and Sinks reports levels of energy-related carbon dioxide emissions that exclude emissions from international bunker fuels and includes emissions from US territories.

2 Emissions under the baseline scenario are from EIA's AEO 2019. Emissions under the carbon tax are derived from multiplying the percentage change in emissions from the E3 model with a different reference case to the AEO baseline emissions. As shown in Chen, Goulder, and Hafstead (2018), the percentage change in emissions from a carbon tax are approximately independent of reference case forecast assumptions.

3 The Obama Administration's US Paris Agreement commitment was to reduce *net greenhouse gas* emissions to 26-28% below 2005 levels. Energy-related CO_2 emissions account for about 78% of gross greenhouse gas emissions. Under conservative estimates for changes in non-energy-related CO_2 emissions, non-CO_2 greenhouse gas emissions, and forestry sequestration, energy-related CO_2 emissions need to be reduced by about 30% from 2005 levels to achieve the 2025 28% net greenhouse gas reduction target.

Resources for the Future (RFF) is an independent, nonprofit research institution in Washington, DC. Its mission is to improve environmental, energy, and natural resource decisions through impartial economic research and policy engagement. RFF does not take positions on specific legislative proposals and this memo is not an endorsement of the Carbon Dividends Plan.

Marc Hafstead is a Fellow and the director of the Carbon Pricing Intiative at RFF. He is a leading researcher on the evaluation and design on climate and energy policies. With Stanford professor and RFF University Fellow Lawrence H. Goulder, he wrote Confronting the Climate Challenge: US Policy Options (Columbia University Press) to evaluate the environmental and economic impacts of carbon taxes, cap-and-trade programs, clean energy standards, and gasoline taxes using a sophisticated multi-sector model of the United States. He is also an expert on the employment impacts of carbon pricing and the design of tax adjustment mechanisms to reduce the emissions uncertainty of carbon tax policies.

Financial support for this analysis was provided by the **Climate Leadership Council**. The Climate Leadership Council (CLC) is an international policy institute founded in collaboration with a who's who of business, opinion and environmental leaders to promote a carbon dividends framework as the most cost-effective, equitable and politically viable climate solution. Find more analysis by RFF experts on the impacts of a US carbon tax at **www.rff.org/carbontax**.