States Taxing Carbon: Proposing Flexibility and Harmonization in the Movement Toward Environmental Reform in the U.S.

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I. INTRODUCTION

In March 2015, two bills were introduced in the Vermont legislature proposing the implementation of a tax on greenhouse gas ("GHG") emissions in the state.[1] If either bill passes, Vermont will become the first state in the nation to impose a carbon tax. Vermont is not, however, the only jurisdiction within the United States with aspirant interests in legislatively reducing GHGs.

Climate change is one of the most controversial issues facing global humanity.[2] It was pegged as one of the critical issues in the 2016 Presidential election.[3] Although GHG emission regulations have been proposed in the United States, there is currently no federal law specifically requiring businesses to mitigate their impact on global climate.[4] Intrinsically, this has led select states and local jurisdictions to pursue independent climate change schemes either via cap-and-trade initiatives or carbon tax proposals.[5]

The purpose of this article is to analyze the benefits and obstacles of the unilateral approach of states taxing carbon in the United States, and to suggest proposals towards more flexible and harmonized carbon tax administration among states. To meet this objective, this article (I) provides a synopsis of the global efforts currently operating to reduce GHG emissions; (II) analyzes the perplexity of implementing a carbon tax scheme at the federal level; (III) explores the specific state and local movements toward climate change legislation and evaluates the benefits arising from unilateral carbon tax administration; and (IV) addresses the practical quandaries of unilateral state tax carbon systems while offering proposals to allow for more flexible, simplified and harmonized carbon tax administration among the states.

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[1] *See* H. 395, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015); H. 412, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015).

[2] Michael Duffy, *Climate Change Causation: Harmonizing Tort Law and Scientific Probability*, 28 TEMP. J. SCI. TECH. & ENVTL. L. 185, 186 (2009) (noting that climate change is a global and controversial issue).

[3] Sandy Dechert, *Climate Change Issues May Decide 2016 US Election*, CLEAN TECHNICA (July 24, 2015), http://cleantechnica.com/2015/07/24/climate-change-issues-may-decide-2016-us-election-video/.

[4] *Climate Change Laws of the United States of America*, COLUM. L. SCH., SABIN CENTER FOR CLIMATE CHANGE LAW, http://columbiaclimatelaw.com/resources/climate-change-laws-of-the-world-2/climate-change-laws-of-the-world-database/united-states/ (last visited Mar. 29, 2017).

[5] *See* Carol McAusland & Nouri Najjar, *The WTO Consistency of Carbon Footprint Taxes*, 46 GEO. J. INT'L L. 765, 766 (2015) (noting that a parallel issue resonates globally, with a lack of international cooperation over how to address climate change, resulting in individual countries unilaterally pursuing climate change policies).

II. CARBON POLLUTION AND CLIMATE CHANGE: A GLOBAL EFFORT

Concerns about global warming and climate change have evolved from their early origins burrowed within the scientific and academic sectors to virtually all areas of today's modern society.[6] One need only turn on their iPhone to witness an array of public figures campaigning for environmental reform—from Al Gore's biopic on climate change,[7] to Leonardo DiCaprio's film production documenting human impact on the environmental crisis,[8] to Pope Francis' encyclical letter addressing the reality of climate change[9] (a writing which received endorsement by the Dalai Lama, another personage advocating for a global effort towards tackling climate change.)[10] In the twenty-seven years since Dr. James E. Hansen testified before the United States Senate that the National Aeronautics and Space Administration ("NASA") was 99 percent certain that increased global temperatures were not a natural variation, but caused by the burning of fossil fuels, environmental advocates have passionately served a visible role in society.[11]

At the forefront of global climate change research is the Intergovernmental Panel on Climate Change ("IPCC"), an international body established by the World Meteorological Organization and the United National Environment Programme in 1998.[12] The role of the IPCC is to provide governments with a widespread assessment of the state of scientific knowledge regarding climate change.[13] Although the IPCC lost some credibility following the publication of its Fourth Assessment Report ("AR4") and its publicized mistreatment of non-

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[6] Seth W. Eaton, Comment, *Winter is Frigid, so I Say Bring on the Greenhouse Effect! A Legal and Policy Discussion of the Strategies the United States Must Employ to Combat Global Warming*, 35 PEPP. L. REV. 787, 789 (2008).

[7] *See An Inconvenient Truth*, TAKEPART.COM, http://www.takepart.com/an-inconvenient-truth/film (last visited Oct. 6, 2015).

[8] LEONARDO DICAPRIO FOUNDATION, http://leonardodicaprio.org (last visited May 25, 2016).

[9] Pope Francis, Laudato Si': On Care for Our Common Home (2015), *available at* http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html.s (last visited Mar. 29, 2017); *see also* Christopher J. Hale, *The 5 Most Important Points of Pope Francis's Climate Change Encyclical*, TIME (June 18, 2005), http://time.com/3925520/pope-francis-climate-change-encyclical/.

[10] Cole Mellino, *The Dalai Lama Endorses Pope Francis' Climate Change Encyclical*, ALTERNET (June 30, 2015), http://www.alternet.org/environment/dalai-lama-endorses-pope-francis-climate-change-encyclical.

[11] *See* Philip Shabecoff, *Global Warming Has Begun, Expert Tells Senate*, N.Y. TIMES (June 24, 1988), http://www.nytimes.com/1988/06/24/us/global-warming-has-begun-expert-tells-senate.html?pagewanted=all.; *see also* Keith W. Rizzardi, *The Duty to Advise the Lorax: Environmental Advocacy and the Risk of Reform*, 37 WM. & MARY ENVTL. L. & POL'Y REV. 25, 28 (2012) (noting that environmental advocates serve an important role in the U.S. system of environmental law).

[12] *See* Joshua Mack, *The IPCC Third Assessment Report, Climate Change 2001: Findings, Criticism, and Lessons for Next Time*, 17 COLO. J. INT'L ENVTL. L. & POL'Y 21, 22 (2005).

[13] Michelle S. Simon & William Pentland, *Reliable Science: Overcoming Public Doubts in the Climate Change Debate*, 37 WM. & MARY ENVTL. L. & POL'Y REV. 219, 221 (2012).

peer reviewed research, its historic and continuous warnings about the potential impacts of climate change have resulted in a growing international consensus on the issue.[14]

Since 1990, the IPCC has issued a total of five comprehensive reports, each documenting evidence of the increasing likelihood that anthropogenic climate change is happening.[15] In March 2015 the IPCC released its most recent Synthesis Report ("Report") as the final conclusion to its Fifth Assessment Report ("AR5").[16] It deduces that protecting the planet requires a dramatic shift away from fossil fuel use.[17] Specifically, the Report documents that it is "extremely likely" that human influence is causing global warming, primarily through the burning of fossil fuels.[18] Data compiled in the Report further indicates that the effects of carbon dioxide ("CO_2"), methane, and nitrous oxides within the climate system are "extremely likely" to have been the prevailing cause of the global warming since the mid-20th century.[19] Equally notable, the Report documents that "[c]ontinued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems."[20] Data suggest that the majority of climate scientists agree with the IPCC's conclusions, as do the preponderance of peer-reviewed publications in the area of climate science.[21]

Since 1880 when instrumental recordings began, the annual global average temperatures from 2002 through 2011 ranked among the top thirteen in history, and included numerous high-impact, weather-related disasters.[22] In its 2012

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[14] *See id.* at 222 (noting that errors in AR4 included non-peer-reviewed data suggesting the speed at which glaciers are melting, which was subsequently deemed not to be supported by any formal evidence); *see also* Mostafa Mahmud Naser, *Climate Change, Environmental Degradation, and Migration: A Complex Nexus*, 36 WM. & MARY ENVTL. L. & POL'Y REV. 713, 718 (2012) (discussing the impact which the IPCC's research has had on the global community).

[15] *See* Michael P. Vandenberg, Kaitlin Toner Raimi & Jonathan M. Gilligan, *Energy and Climate Change: A Climate Prediction Market*, 61 UCLA L. REV. 1962, 1969 (2014).

[16] INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: SYNTHESIS REPORT (2014), http://www.ipcc.ch/report/ar5/syr/ [hereinafter SYNTHESIS REPORT]; *see also* Elizabeth Shogren, *5 Key Takeaways From the Latest Climate Change Report*, NAT'L GEOGRAPHIC, (Nov. 2, 2014, 02:05 EST), http://news.nationalgeographic.com/news/2014/11/141102-ipcc-synthesis-report-climate-change-science-environment/.

[17] *Id.*

[18] *See* SYNTHESIS REPORT, *supra* note 16, at 47 ("The evidence for human influence on the climate system has grown since AR4. Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, and in global mean sea level rise; and it is extremely likely to have been the dominant cause of the observed warming since the mid-20th century.").

[19] *Id.* at 4.

[20] *Id.* at 8.

[21] Vandenberg et. al., *supra* note 15, at 1970.

[22] Michael B. McElroy & D. James Baker, *Trends with Implications for National Security*, 15 VT. J. ENVTL. L. 727, 729 (2014).

State of the Climate report, the National Oceanic and Atmospheric Administration ("NOAA") declared 2012 as the "warmest and second most extreme year on record for the contiguous United States"[23] That year the United States was not only ravaged by droughts, floods, fires, and tornados, but Superstorm Sandy took the lives of hundreds of people and caused massive property and infrastructure damage in New York and New Jersey.[24] Although NOAA's Climate Report of 2013 showed that year tied with 2003 as the fourth recorded warmest year globally,[25] NOAA then recorded 2014 as the hottest year in modern record.[26] In separate and independent analyses by NASA and the NOAA, 2015 surface temperatures were recorded as being the warmest since recordkeeping began, while 2016 marked the third consecutive year that a new global annual temperature record was set.[27]

However concerning these scientific data results and records may be, there is some discord as to the existence of a direct causal link between human activity and global warming and climate change.[28] In conjunction with the IPCC, numerous scientific organizations and groups, including the National Academy of Sciences, American Meteorological Society, American Geophysical Union, and the American Academy of Sciences have concluded that GHGs are accumulating in the earth's atmosphere as a result of human activity.[29] In 2005,

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[23] NAT'L OCEANIC & ATMOSPHERIC ADMIN., STATE OF THE CLIMATE: NATIONAL ANALYSIS FOR DECEMBER 2012–SUMMARY INFORMATION, (2012), https://www.ncdc.noaa.gov/sotc/summary-info/national/201212.

[24] *See* Jacqueline Peel & Hari M. Osofsky, *Sue to Adapt?*, 99 MINN. L. REV. 2177, 2187 (2015).

[25] NAT'L OCEANIC & ATMOSPHERIC ADMIN., STATE OF THE CLIMATE: GLOBAL ANALYSIS FOR ANNUAL 2013 (2014), https://www.ncdc.noaa.gov/sotc/global/201313.

[26] NAT'L OCEANIC & ATMOSPHERIC ADMIN., STATE OF THE CLIMATE: GLOBAL ANALYSIS FOR ANNUAL 2014, (2015), https://www.ncdc.noaa.gov/sotc/global/201413.

[27] *See* Press Release, Sean Potter, Michael Cabbage & Leslie McCarthy, NASA, NOAA Analyses Reveal Record-Shattering Global Warm Temperatures in 2015 (Jan. 20, 2016), http://www.nasa.gov/press-release/nasa-noaa-analyses-reveal-record-shattering-global-warm-temperatures-in-2015; *see also* NAT'L OCEANIC & ATMOSPHERIC ADMIN., STATE OF THE CLIMATE: GLOBAL ANALYSIS FOR ANNUAL 2016 (2017), https://www.ncdc.noaa.gov/sotc/global/201613.

[28] *Compare* Robert L. Glicksman, *Global Climate Change and the Risks to Coastal Areas from Hurricanes and Rising Sea Levels: The Costs of Doing Nothing*, 52 LOY. L. REV. 1127, 1130 (2006) (documenting that although a link between human activity and rising global temperatures has been suspected, not all scientists are willing to confirm such link), *and* John Holland, Note, *The United States and its Climate Change Policy: Advocating an Alignment of National Interest and Ethical Obligations*, 23 N.D. J. L. ETHICS & PUB. POL'Y 623, 625 (2009) (noting that although there is an "overwhelming scientific consensus" that there is a causal connection between global warming and human activity, some skeptics question whether science adequately proves that human activity is causing global warming), *with* Rebecca Elizabeth Jacobs, Comment, *Treading Deep Waters: Substantive Law Issues in Tuvalu's Threat to Sue the United States in the International Court of Justice*, 14 PAC. RIM L. & POL'Y J. 103, 110 (2005) (remarking that many scientists contest the findings of the IPCC, and believe there is no connection between the increased release of CO_2 in the twentieth century and global warming).

[29] *See* John Burritt McArthur & Rick Harper, *Global Warming, the Regulations Ahead, and the*

the International Climate Change Taskforce ("ICCT"), a think-tank consortium composed of the Institute for Public Policy Research in the U.K., the Center for American Progress in the United States, and the Australia Institute issued a climate change report endorsing the conclusion that human activity has contributed to global climate change.[30] As of 2013, numerous findings published in peer-reviewed scientific journals document that at least ninety-seven percent of actively publishing climate scientists concede that climate-warming trends over the past century are very likely due to human activities.[31]

Despite robust scientific support endorsing the relationship between human activity and climate change, not all parties corroborate such linkage.[32] An opinion poll released by the Pew Research Center and the American Association for the Advancement of Science ("AAAS") found that while 79 percent of Americans find science to be invaluable, a significant number ascribe to their political orientation and ideology when analyzing global warming factors in lieu of relying on hard scientific data.[33] And although the United States Senate voted 98-1 in 2015 in favor of a nonbinding agreement expressing "that climate change is real and not a hoax," a second amendment which included the language, "human activity significantly contributes to climate change" failed to pass.[34] Moreover, less than half of all Americans support the belief that there is a causal connection between climate change and human factors.[35]

The debate over whether human activity is causing climate change has been a proxy in the United States for greater debates over whether and how policymakers should respond to the possibility of significant global climate

Oil and Gas Industry, 48 NAT. RESOURCES J. 745, 757 (2008) (noting that numerous scientific organizations are in consensus that accumulating GHGs are increasing global temperature); *see also* Glicksman, *supra* note 28, at 1130-32 (addressing the National Academy of Science, the Climate Change Science Program, and the International Climate Change Taskforce's stances on the link between GHG's and human activity).

[30] Glicksman, *supra* note 28, at 1132.

[31] *Scientific Consensus: Earth's Climate is Warming*, NASA, http://climate.nasa.gov/scientific-consensus/ (last visited May 25, 2016) (citing multiple scientific journals).

[32] *See* Glicksman, *supra* note 28, at 1130.

[33] Gayathri Vaidyanathan, *Big Gap Between What Scientists Say and Americans Think About Climate Change*, SCI. AM. (Jan. 30, 2015), http://www.scientificamerican.com/article/big-gap-between-what-scientists-say-and-americans-think-about-climate-change/ (documenting that although eighty-seven percent of scientists concur that human activity is driving global warming, only half of the American public follow that view, and only thirty-three percent of the general public find climate change to be a serious problem).

[34] *See* S. 1, 114th Cong. (as amended by Senate, Jan. 21, 2015); *see also* Eric Holthaus, *Senate Votes 98-1 that Climate Change is Real but Splits on that Pesky Clause*, SLATE: FUTURE TENSE (Jan. 21, 2015, 6:33PM) http://www.slate.com/blogs/future_tense/2015/01/21/senate_votes_that_climate_change_is_real_but_doesn_t_agree_on_cause.html (noting that the vote on the second amendment was 50-49 in favor, needing 60 votes to pass).

[35] Michael P. Vandenberg, Kaitlin Toner Raimi, & Jonathan M. Gilligan, *Energy and Climate Change: A Climate Prediction Market*, 61 UCLA L. REV. 1962, 1964 (2014).

change.[36] Such arguments, brought forth by activists, policymakers, lobbyists, and scientists who prescribe to alternative explanations for global climate change, undermine any political momentum towards efforts to regulate carbon, methane, and GHG emissions in the United States.[37] Ultimately, the lack of federal governmental action in addressing climate change legislation has allowed a variety of global nations to forge ahead of the United States in tackling what is referred to as a global warming crisis.[38]

On July 1, 2008 British Columbia, Canada, ("BC") enacted a revenue-neutral carbon tax.[39] This became North America's first economy-wide carbon pricing policy.[40] The tax applies specified rates to carbon emissions from the combustion of fossil fuels and targeted combustibles within the Province.[41] Since its inception, BC's economy has demonstrated stronger economic performance than the Canadian average, carbon emissions decreased in the Province by more than twelve percent between 2008 and 2013, and per capita fuel consumption has dropped.[42] Although the BC carbon tax applies to CO_2 and other GHG emissions from fossil fuels, it does not apply to CO_2 emissions from industrial processes or from the disposal of solid waste and the agricultural sector.[43] Further, the tax either excludes or exempts fuels exported from BC, as well as fuels used for inter-jurisdictional commercial marine and aviation

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[36] Eric Biber, *Climate Change, Causation, and Delayed Harm*, 37 HOFSTRA L. REV. 975, 975 (2009).

[37] *Id.*

[38] *See* McArthur & Harper, *supra* note 29, at 758 (addressing that many other countries have been ahead of the U.S. federal government in treating global warming seriously); *see generally* Rachel Brewster, *Stepping Stone or Stumbling Block: Incrementalism and National Climate Change Legislation*, 28 YALE L. & POL'Y REV. 245, 258 (2010) (analyzing the role of the U.S. within the international arena in addressing the global warming crisis).

[39] *See Carbon Tax*, B.C. MINISTRY OF FIN., http://www.fin.gov.bc.ca/tbs/tp/climate/carbon_tax.htm (last visited May 25, 2016)*; see also* CLEAN ENERGY CAN., HOW TO ADOPT A WINNING CARBON PRICE 3 (2015), http://www.cleanenergycanada.org/wp-content/uploads/2015/06/Clean-Energy-Canada-How-to-Adopt-a-Winning-Carbon-Price-2015.pdf.

[40] *Id.*

[41] David G. Duff, *The Reality of Carbon Taxes in the 21st Century: Carbon Taxation in British Columbia*, 10 VT. J. ENVTL. L. 87, 93 (2008); *see also Tax Bulletin MFT-CT 005*, B.C. MINISTRY FIN. (last updated July 2015), http://www.sbr.gov.bc.ca/documents_library/bulletins/mft-ct_005.pdf (documenting the various tax rates applicable).

[42] CLEAN ENERGY CAN., *supra* note 39, at 6; *see also* Charles Komanoff, *British Columbia's Carbon Tax: By the Numbers*, CARBON TAX CTR. (Dec. 17, 2015), https://www.carbontax.org/blog/2015/12/17/british-columbias-carbon-tax-by-the-numbers/ (documenting that BC's per capita carbon emissions decreased 12.9% in 2008 – 2013 as compared to 2000 – 2007)*; see also* Stewart Elgie & Richard Lipsey, *B.C.'s Carbon Tax Shift Works*, FINANCIAL POST (Jan. 22, 2015, 2:07 PM ET), http://business.financialpost.com/fp-comment/b-c-s-carbon-tax-shift-works (communicating that BC's total use of fossil fuels has dropped by 16.1% (2000–2008), the per capital use of motor gas fell by 0.5% while in the remainder of Canada it rose by 1.6% (2008–2014), and BC's GDP has slightly outperformed the rest of Canada's since the carbon tax was instituted).

[43] Duff, *supra* note 41, at 93-94.

targets.[44] Instead, the imposition of this tax largely affects individuals by specifically targeting transportation and household heating.[45] Still, the BC carbon tax, designed to incentivize pollution reduction, was not implemented to impose a net loss on consumers.[46] As a revenue-neutral tax, all revenue generated by this tax is recycled to BC taxpayers through tax reductions and credits.[47] Carbon tax revenue in BC during the 2014–2015 period was estimated to be $1.228 million, rising to a forecasted $1.271 million during the 2016–2017 period.[48]

In November 2015 Canada's largest oil-producing province, Alberta, announced its plan to implement an aggressive carbon tax.[49] Although Alberta has technically imposed a carbon tax since 2007, the rate was so low that its effect on carbon emissions was null.[50] The new tax will enforce a phased-in rate of $20 per ton price on carbon beginning in 2017, increasing to $30 by 2018, and subsequently rising with inflation.[51] The Province's climate change plan anticipates that Alberta will reduce emissions by approximately twenty megatonnes in 2020 and cut methane emissions from flaring and leakage by 45 percent from 2014 levels by 2025.[52] However, as the economy-wide tax will add an additional $900 to annual household costs by 2030 due to increased home heating and gasoline prices, a recent poll indicates that 66 percent of Albertans oppose the measure.[53] Still, the plan includes rebates for low and middle income families to help meet their increased costs, with the remainder of revenue generated being reinvested in clean energy projects within the Province in an

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[44] *Id.* at 94.

[45] *See* B.C. MINISTRY OF FIN., BUDGET AND FISCAL PLAN 2008/09–2010/11 13 (2008), http://www.bcbudget.gov.bc.ca/2008/bfp/2008_Budget_Fiscal_Plan.pdf (documenting that the tax base also includes fossil fuels for transportation by all industries, as well as fuel used to create heat for industrial processes).

[46] *See* Amy Sinden, *Shifting the Domestic and International Logjams on Climate Change: A New Defense of Cap and Dividend*, 19 TUL. J. INT'L & COMP. L. 79, 88 (2010).

[47] B.C. MINISTRY OF FINANCE, BUDGET AND FISCAL PLAN 2014/15–2016/17 11, 64 (2014), http://www.bcbudget.gov.bc.ca/2014/bfp/2014_Budget_Fiscal_Plan.pdf; *see also* Sinden, *supra* note 46, at 88.

[48] B.C. MINISTRY OF FIN., *supra* note 47, at 66.

[49] *Why Alberta's Carbon Tax Matters*, BLOOMBERG VIEW (Nov. 30, 2015, 7:00 AM EST), http://www.bloombergview.com/articles/2015-11-30/why-alberta-s-carbon-tax-matters.

[50] *Id*.

[51] *Id*.

[52] Jodie Sinnema, *New Alberta Climate-Change Plan Includes Carbon Tax for Individual Albertans, Cap on Oils and Emissions*, EDMONTON JOURNAL (Nov. 23, 2015, 1:29 PM MST), http://edmontonjournal.com/news/local-news/new-alberta-climate-change-plan-includes-carbon-tax-for-individual-albertans-cap-on-oilsands-emissions.

[53] Reid Southwick, *Alberta Faces Strong Opposition to its Climate Change Plan, Fueled by Distaste for Carbon Tax, New Poll Says*, NATIONAL POST (Dec. 7, 2015, 1:36 PM ET), http://news.nationalpost.com/news/canada/alberta-faces-strong-opposition-to-its-climate-change-plan-fuelled-by-distaste-for-carbon-tax-new-poll-says.

effort to phase out the use of coal-fired electricity in Alberta.[54]

Several European nations, including the Netherlands, Sweden, Finland, Norway, Denmark, and Switzerland, have implemented carbon taxes since the early 1990s.[55] Although these carbon taxes provide incentives to reduce GHG emissions, a few have been subjected to negative endorsement. For example, in 1992 Denmark's carbon tax on the consumption of fuels was adopted for households, and subsequently levied on industry the following year.[56] Although criticized for imposing too low of a tax on industry and thus providing little economic incentive for businesses to reduce emissions, the tax is still operative as part of a broader energy tax.[57]

In 1991, Norway introduced a carbon tax; however, critics have argued that its impact on emissions has been limited due to the extensive tax exemptions offered and the inflexible demand in those sectors where the tax is actually implemented.[58] Still, in 2013 Norway nearly doubled the carbon tax rate for offshore oil and gas production, setting one of the highest carbon tax rates globally.[59]

In lieu of adopting a carbon tax, the European Union ("EU") implemented a cap-and-trade policy in 2005 designed to restrict CO_2 emissions in various industries throughout Europe.[60] Referred to as the Emissions Trading Scheme ("ETS"), the goal is to create a market for carbon to encourage investment in low-emissions technologies.[61] This system was a pioneer as the largest carbon pricing regime globally, and was initially hailed by supporters as the catalyst for

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[54] Andy Szal, *Oil-Rich Alberta Unveils Carbon Tax, Emissions Cap*, IMPO (Nov. 24, 2015, 9:56 AM), http://www.impomag.com/news/2015/11/oil-rich-alberta-unveils-carbon-tax-emissions-cap.

[55] *See Factbox: Carbon Taxes Around the World*, SBS (Feb. 24, 2015, 4:56 PM), http://www.sbs.com.au/news/article/2013/10/29/factbox-carbon-taxes-around-world; *see also* Emily Atkin, *Months After Banning Fracking, France Now Has a Carbon Tax*, THINKPROGRESS, (Dec. 19, 2013, 5:33 PM), http://thinkprogress.org/climate/2013/12/19/3091081/france-carbon-tax/ (noting that the 2014 French Parliament budget included a tax on carbon emissions from gas, heating oil, and coal);

[56] Christina K. Harper, *Climate Change and Tax Policy*, 30 B.C. INT'L & COMP. L. REV. 411, 437 (2007).

[57] *Id.* at 438 (noting critiques of the Denmark carbon tax).

[58] Sarah E. Light, *The New Insider Trading: Environmental Markets with the Firm*, 34 STAN. ENVTL. L.J. 3, 28 (2015) (citing Annegrete Bruvoll & Bodil Merethe Larsen, *Greenhouse Gas Emissions in Norway: Do Carbon Taxes Work?*, 32 ENERGY POL'Y 493, 498 (2004)).

[59] Christopher F. Schuetze, *Norway Increases Carbon Tax on Domestic Production*, N.Y. TIMES (Oct. 15, 2012, 8:10 AM), http://rendezvous.blogs.nytimes.com/2012/10/15/norway-increases-carbon-tax-on-domestic-production/?_r=0 (noting the tax increased from 210 Norwegian Krone to 410 Krone per ton of CO_2).

[60] Stephen Sewalk, *The EU-27, U.S., U.K., and China Should Dump Cap-and-Trade as a Policy Option and Adopt a Carbon Tax with Reinvestment to Reduce Global Emissions*, 47 SUFFOLK U. L. REV. 525, 537 (2014).

[61] *Id.*

the successful implementation of carbon restrictions on a grand scale.[62]

The EU ETS utilizes a tri-phase implementation plan: the first phase, which allowed trading in CO_2 only, ran from 2005-2007; the second phase, which broadened the program to include other GHGs from certain industrial sectors, ran from 2008-2012; and the third phase, currently in place until 2020, encompasses a single, EU-wide cap on emissions in place of the previous system of national caps and encompasses additional gases and sectors, including aviation emissions.[63]

Although designed to comply with the 1997 Kyoto Protocol, the EU ETS has been met with some opposition.[64] Because the policy includes both international and inter-temporal components, the potential for tax-induced distortions that permit trading and permit pricing exits.[65]It has been noted that this inconsistency in the tax treatment of permits across state lines poses obstacles to the cost-effectiveness of combatting GHG emissions.[66]

Further, since its inception the EU ETS program has struggled with feeble economic efficiency and unrealized environmental goals, ultimately resulting in a 2013 vote by the European Parliament to reject measures to bolster the wavering program.[67] As a result, the program's carbon-market price for allowances fell to new lows.[68] Market fraud activity also interwove itself into the EU ETS.[69] Scams involving missing trader or "carousel fraud"—the act of

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[62] *See id.*

[63] Matthew Ranson & Robert N. Stavins, *Post-Durban Climate Policy Architecture Based on Linkage of Cap-and-Trade Systems*, 13 CHI. J. INT'L L. 403, 415 (2013) (discussing the first two phases of the program); *see also Climate Action: The EU Emissions Trading System (EU ETS)*, EUR. COMM'N, http://ec.europa.eu/clima/policies/ets/index_en.htm (last visited May 25, 2016) (documenting changes during the third phase of the program); Victoria Peters, Comment, *A Legal Obligation to Mitigate Greenhouse Gas Emissions From Agriculture: A Challenge to the European Union's Emissions Trading System and the EU Member States With The Largest Agricultural Impact*, 19 UCLA J. INT'L L. & FOR. AFF. 213, 224 (2015) (noting the addition of various gases and sectors in the third phase, including the aviation industry).

[64] *See* David B. Hunter & Nuno Lacasta, *Lessons Learned from the European Union's Climate Policy*, 27 WIS. INT'L L.J. 575, 577 (2009) (discussing that the EU designed this policy to assist member states in complying with their collective emissions reduction commitments under the Kyoto Protocol); *see also* Lauren E. Mullen, Note, *The European Union Overstepping Its Bounds and Borders: The Extraterritorial Effect of the Emissions Trading System and Its Call for Multilateral Action*, 74 U. PITT. L. REV. 783, 784–86 (2013) (noting the resonating purpose of the EU ETS and the heavy opposition which developed following the inclusion of aviation emissions).

[65] Mitchell A. Kane, *Taxation and Multi-Period Global Cap and Trade*, 19 N.Y.U. ENVTL. L.J. 87, 88 (2011) (finding that decisions regarding the tax consequences of market actions with minimal guidance from government regulators occur on a daily basis).

[66] *Id.* at 89.

[67] Sewalk, *supra* note 60, at 537 (noting that members of the European Parliament appear ready to abandon the EU ETS); *see also ETS, RIP?*, THE ECONOMIST (Apr. 20, 2013), http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets.

[68] Sewalk, *supra* note 60, at 538.

[69] Victor B. Flatt, *"Offsetting" Crisis?—Climate Change Cap-and-Trade Need Not Contribute*

importing carbon credits from one country where they are not subject to the Value Added Tax ("VAT"), selling them with the VAT included, and then purposefully not paying the VAT to the taxing authorities[70]—have been discovered.[71] Estimates indicate that fraud affected seven percent of the $125 billion dollar carbon market in the EU in 2009, totally $8.75 billion.[72]

Outside of the European sector, Australia's 2012 Clean Energy Act imposed a carbon emission fee on the largest emitters in the nation; however, the tax was repealed in July 2014 after voters blamed it for increasing energy bills and living costs.[73] In 2014, as part of a broad tax reform, the country of Chile became the first South American country to tax carbon emissions.[74] Although global efforts to impose a fixed carbon tax or require the purchase of carbon permits under a cap-and-trade program have emerged with mixed results, numerous countries have endeavored to implement policy instruments to acknowledge climate change and curb GHG emissions.[75]

While the United States employs some forms of climate control efforts, including GHG performance standards for new automobiles and industrial sources of emissions, it has yet to employ any model of federal carbon tax legislation.[76] As the majority of Americans polled support the idea of a revenue-neutral carbon tax, and several countries have progressed ahead of the United States in this endeavor, it is not surprising that individual states and localities are now embarking on unilateral efforts to propose and employ carbon tax regulations.[77] To better understand the unilateral movement towards taxing carbon in the United States a brief analysis of the history and policy issues surrounding federal climate initiatives ensues.

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to Another Financial Meltdown, 39 PEPP. L. REV. 619, 639 (2012).

[70] *See Carousel Fraud*, DICTIONARY.COM, http://dictionary.reference.com/browse/carousel-fraud (last visited May 25, 2016) (defining "carousel fraud").

[71] *See* Flatt, *supra* note 69, at 639 (discussing fraud within the EU ETS); *The Carbon Carousel: VAT Tax Fraud*, CORPORATE WATCH (July 22, 2010), https://corporatewatch.org/?q=node/3676 (discussing 'carousel fraud' within the EU ETS).

[72] CORPORATE WATCH, *supra* note 71, at 59.

[73] *See* Light, *supra* note 58, at 28 (reviewing briefly Australia's Clean Energy Act)*; see also* Rob Taylor & Rhiannon Hoyle, *Australia Becomes First Developed Nation to Repeal Carbon Tax*, WALL ST. J. (July 17, 2014, 5:15AM, ET), http://www.wsj.com/articles/australia-repeals-carbon-tax-1405560964 (noting the reasons behind the repeal).

[74] Marcelo Teixeira, *Chile Becomes the First South American Country to Tax Carbon*, REUTERS (Sept. 27, 2014, 1:00 AM BST), http://uk.reuters.com/article/2014/09/27/carbon-chile-tax-idUKL6N0RR4V720140927.

[75] *See* James W. Coleman, *Unilateral Climate Regulation*, 38 HARV. ENVTL. L. REV. 87, 91–92 (2014).

[76] *See id.* at 92 (discussing the U.S.'s implementation of performance standards).

[77] *See Majority in U.S. Support Revenue-Neutral Carbon Tax, Survey Says*, YALE ENV'T 360 (Nov. 22, 2011), https://e360.yale.edu/digest/majority_in_us_support_revenue-neutral_carbon_tax_survey_says/3222/ (reporting on a 2011 Yale Project on Climate Change Communication survey which found that sixty-five percent of respondents supported a revenue-neutral carbon tax).

III. THE QUAGMIRE OF IMPLEMENTING CARBON TAX LEGISLATION AT THE FEDERAL LEVEL

Understanding the dilemma of implementing a carbon tax system at the federal level requires an appreciation of the historical legacy of early climate change legislation in the United States, the budding environmental activist movement of the 1960s, and the resulting gridlock on climate change policy currently plaguing the federal government. The following subsections offer a synopsis of the spectrum of climate change policy in the United States, setting the stage for the emerging state movement towards unilateral carbon tax regulation.

A. *Air Pollution and Climate Change Legislation*

The earliest legislative approaches that indirectly addressed GHG emissions in the United States encompassed air pollution policies.[78] Although the origin of air pollution control in the United States began taking shape at the state and local levels in the latter part of the 19th century, both the judicial and legislative branches of the federal government advanced these efforts at the turn of the 20th century, reserving the benchmark for federal supremacy in United States environmental reform with Congress, while placing ultimate responsibility for the adoption and enforcement of air pollution standards with the states.[79]

1. Federal Recognition of Air Pollution

The earliest prototype efforts to legislate on pollution emissions commenced at local levels in the form of city ordinances, which were often unsupported by the judicial system.[80] Following World War II, such localized legislative efforts gained sophistication and subsequent judicial validation.[81] A deadly air inversion in Pennsylvania and the development of chronic air pollution in southern California garnered the attention of the federal government, compelling recognition for the need to conduct federal research on air pollution.[82] Formal recognition by Congress that air pollution endangers the public health and

[78] Interestingly, GHG emissions did not become recognized as an air pollutant within the scope of the Clean Air Act until the U.S. Supreme Court addressed the issue in Massachusetts v. Envtl. Prot. Agency, 549 U.S. 497, 532–33 (2007).

[79] *See* Arnold W. Reitze, *The Legislative History of U.S. Air Pollution Control*, 36 HOUSTON L. REV. 679, 684-90 (1999) (offering a historical analysis of air pollution control in the U.S. from 1880 to 1963).

[80] *Id.* at 685. In one instance, City of St. Louis v. Heitzeberg Packing & Provision Co., 42 S.W. 954, 957 (Mo. 1897), the Missouri Supreme Court invalidated a St. Louis ordinance that addressed smoke emissions because it believed the power to make smoke releases a "nuisance"—a power reserved only to the state.

[81] *Id.* at 686-88.

[82] *Id.* at 696.

welfare culminated with the passing of legislation in 1955 which directed the Secretary of Health, Education, and Welfare and the Surgeon General of the Public Health Service to "devise and develop methods of abating such pollution," and to conduct air pollution research at the state and local levels.[83]

Although air pollution control received early federal recognition, national climate change policies only surfaced within the last half-century. Congress officially recognized the concern for climate change in 1978 with the advent of the National Climate Change Program Act.[84] This legislation required the President to establish a program to "assist the nation and the world to understand and respond to natural and man-induced climate processes and their implications."[85] Pursuant to President Carter's request, the National Research Council ("NRC") investigated the issue and determined that "[i]f carbon dioxide continues to increase, the study group finds no reason to doubt that climate changes will result and no reason to believe that these changes will be negligible . . . . A wait-and-see policy may mean waiting until it is too late."[86] Congress acknowledged that air pollution and climate change pose real and credible threats to the public and require federal solutions.

2. The Development of Air Pollution Policies

Once Congress acknowledged the threats posed by air pollution and climate change, overarching pollutant policies and frameworks began to take shape. Given the federal government's resistance to concede air pollution as a health and welfare threat in the first half of the 20th Century, national climate policies initially mirrored the economic views of the era, favoring industrial expansion over pollution accountability.[87] Budding protests and political tensions caused advocates to split between those who supported environmental reform and those seeking self-regulation.[88]

The environmentalist movement continued to gain public support and attention following several high profile incidents. The "Killer Smog" over London in December 1962 provided President Kennedy backing to develop a framework and outline for the federal government's role in controlling air pollution.[89] This initiative was followed by a three-day air pollution inversion

[83] *See* Air Pollution Control Act of 1955, Pub. L. No. 84-159, 69 Stat. 322 (1955).

[84] *See* National Climate Change Program Act, Pub. L. No. 95-367, 92 Stat. 601 (1978).

[85] *Id.* at § 3.

[86] CLIMATE RESEARCH BOARD, CARBON DIOXIDE AND CLIMATE: A SCIENTIFIC ASSESSMENT, viii (1979). The National Research Council was a study group convened by the National Academy of Sciences "to assess the scientific basis for projection of possible future climatic changes resulting from man-made releases of carbon dioxide into the atmosphere." *Id.* at ix.

[87] *See* Reitze, *supra* note 79, at 683.

[88] *Id.* at 686 (stating that one group viewed the issue in environmental terms, while the other considered the matter to be one requiring pollution education to achieve self-regulation).

[89] *Id.* at 698.

that caused the death of an estimated 168 people in New York City in November 1966.[90] Due to high profile influence of this incident, Congress found enough support for federal legislation that designated air quality regions throughout the country while placing primary responsibilities on each state to adopt and enforce pollution control standards within each region.[91] In 1970, President Nixon signed the Clean Air Amendments into law, directing the federal government to develop standards for new stationary (industrial) pollution sources, while allowing states to retain jurisdiction over existing ones.[92]

In response to the Arab states' oil embargo of 1973, Congress passed several pieces of legislation designed to reduce the United States' dependency on foreign oil.[93] Under the Energy Supply and Environmental Coordination Act, the Department of Energy disallowed electric power generators and industrial facilities from using petroleum and natural gas as fuel while compelling new ones to burn coal instead.[94] The Powerplant and Industrial Fuel Use Act required that the Secretary of Energy approve any new electric generation facility's use of petroleum and natural gas, compelling the use of coal or other alternative fuels.[95] As a result, the historic tug of war between competitive interests shaped the current framework and approach of concurrent and joint jurisdiction over air pollution and climate change regulation.

Today, the Administrator of the Environmental Protection Agency ("EPA") maintains the authority to develop national ambient air quality standards[96] for primary and secondary sources,[97] while compelling each state to approve a plan that includes "implementation, maintenance, and enforcement" of the benchmarks within each air quality control region within its jurisdiction.[98]

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[90] *Id.* at 699.

[91] *See* Air Quality Act of 1967, Pub. L. No. 90-148, 81 Stat. 485 (1967).

[92] *See* Clean Air Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (1970); *see also* Clean Air Act, 42 U.S.C. §§ 7410, 7411(d) (1970).

[93] *See* Sam Andre, *Striking Before he Well Goes Dry: Exploring If and How the United States Ban on Crude Oil Exports Should be Lifted to Exploit the American Oil Boom*, 100 MINN. L. REV. 763 (2015).

[94] William Foster Cockrell, Jr., *Coal Conversion by Electric Utilities: Reconciling Energy Independence and Environmental Protection*, 28 HASTINGS L. J. 1245, 1255 (1977).

[95] *See* Powerplant and Industrial Fuel Use Act of 1978, Pub. L. No. 95-620, 92 Stat. 3289, 3298–99 (1978).

[96] 42 U.S.C § 7601 (2015). The U.S. Supreme Court reiterated, in Massachusetts v. Envtl. Prot. Agency, 549 U.S. 497, 532–33 (2007), that the EPA bears authority and responsibility for setting national and regional standards where it determines an endangerment exists to the public's health and welfare and that GHGs fit within the meaning of an air pollutant.

[97] 42 U.S.C § 7409 (2015).

[98] 42 U.S.C § 7410(a)(1) (2015). The EPA received oversight of the air pollution control programs, but the legislation made it clear that prevention and control remained the primary responsibility of States and local governments. *See* 42 U.S.C § 7410(a)(2)(E) (2015). However, the EPA maintains the authority to operate the air program within a state should it fail to satisfy the agency's requirements. 42 U.S.C § 7410(c) (2015).

Consequently, the EPA sets principal policy standards while leaving the implementation, maintenance, and enforcement to the states.

a. Energy and Tax Policy

The Revenue Act of 1932 represents the first federal tax on gasoline and electricity consumption.[99] It came about from a combined effort between then-President Hoover and Congress to balance the nation's budget in the midst of the Great Depression.[100] Within the framework of this landmark legislation for climate change, Congress—perhaps unintentionally—created what is arguably the first national carbon tax. At the direction of the Executive Branch, Congress initiated a federal policy to collect revenue based on consumers' energy consumption resulting in GHG emissions.[101]

Throughout the 21st century, United States energy and tax policy appeared to oscillate between promoting oil and gas and encouraging conservation through the use of alternative sources of energy, with a brief interlude of endorsing a free market approach.[102] Although oil and gas interests were predominant until the 1970s, federal budget deficits and increased awareness of environmental issues brought about a powerful shift in federal energy policy in the latter part of that decade.[103]

The Energy Tax Act of 1978 eliminated or reduced special tax benefits, created several excise taxes that strongly encumbered the consumption of fossil fuels while enacting a levy on vehicles with low fuel efficiency, and introduced tax incentives or subsidies for saving energy, developing alternative fuels, and commercializing green technologies.[104] The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 also introduced an excise tax on petroleum, although its main focus addressed cleanup costs for contaminated real property.[105] One legal scholar asserts that the United States' approach to use tax policy as a pollution-reducing tool made it the world's leader at the time.[106]

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[99] The Revenue Act of 1932, Pub. L. No. 72-154, § 617, 47 Stat. 169, 266 (1932).

[100] *See generally id.* Following a more comprehensive energy tax approach, The Revenue Act of 1932 also included a tax on coal, which basically occurred as a depletion allowance. *Id.* at § 114(b)(4).

[101] *See generally id.* While not specifically levying the emissions of GHGs, the tax burdened the main fuel sources of the time for generating electricity. *Id.*

[102] *See* SALVATORE LAZZARI, CONG. RES. SERV., RL33578, ENERGY TAX POLICY: HISTORY AND CURRENT ISSUES (2008) [hereinafter CRS 2008]; MOLLY F. SHERLOCK, CONG. RES. SERV., R41227, ENERGY TAX POLICY: HISTORICAL PERSPECTIVES ON AND CURRENT STATUS OF ENERGY TAX EXPENDITURES (2011) [hereinafter CRS 2011].

[103] *See* CRS 2008 *supra* note 102, at 2; CRS 2011 *supra* note 102, at 2-3.

[104] *See* Energy Tax Act of 1978, Pub. L. No. 95-618, 92 Stat. 3174 (1978).

[105] *See* The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Pub. L. No. 96-510, 94 Stat. 2767 (1980).

[106] Janet E. Milne, *Carbon Taxes in the United States: The Context for the Future*, 10 VT. J.

Outside the period of President Reagan's free market approach that opposed the imposition of tax law to stimulate oil and gas development, energy efficiency, or alternative fuel sources during the 1980s, the federal government continued its "interventionist" course when Presidents George H. W. Bush and Bill Clinton took office.[107] The Omnibus Budget Reconciliation Act of 1990 increased the gasoline and gas-guzzler tax while offering a various assortment of credits to assist in promoting oil and gas interests and alternative fuel sources.[108] This legislation, followed by the introduction of tax credits for energy generated from renewable resources under The Energy Policy Act of 1992, continued to build on the incremental environmental considerations of the 1970s.[109]

Breaking with the traditional approach of taxing gasoline and low mileage vehicles and offering tax credits to promote oil and gas interests and alternative fuel sources, President Clinton took a step towards a nationalized carbon tax when he proposed a differential British thermal unit ("Btu") tax on fossil fuels in 1993.[110] This proposal sought to tax the Btu content of heat output by fuel including oil, gas, and coal; but the Clinton Administration altered its course to increase the tax on motor fuels instead when the final version of the legislation emerged.[111] Into the 21st century, policymakers were confronted with an electrical crisis in California, inconsistent oil prices, and spiking natural gas prices.[112] This assortment of energy issues finally overcame Congressional politics with the passage of The Energy Policy Act of 2005.[113]

Currently, the closest our nation has come to a tax on carbon remains with a tax on motor vehicle fuels. Although conservation efforts and alternatives receive recognition, Congress tends to utilize tax credits, deductions, and shorter

ENVTL. L. 1, 18 (2008).

[107] *See* CRS 2008 *supra* note 102, at 8; CRS 2011 *supra* note 102, at 5. Under President Reagan's leadership and policies, the federal government permitted the majority of the energy tax credits and residential energy credits to expire pursuant to their scheduled timetable. *See* CRS 2008 *supra* note 102, at 6; CRS 2011 *supra* note 102, at 5. Both CRS commentators also note that a large factor affecting the energy policy during the 1990s came from historically low crude oil prices, which influenced consumption and investment. *See* CRS 2008 *supra* note 102, at 8; CRS 2011 *supra* note 102, at 6.

[108] *See* The Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, 104 Stat. 1388, 1876 (1990).

[109] *See* The Energy Policy Act of 1992, Pub. L. No. 102-486, 106 Stat. 2776 (1992).

[110] *See* CRS 2008 *supra* note 102, at 7; CRS 2011 *supra* note 102, at 6.

[111] *See* The Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, 107 Stat. 312, 527–28 (1993).

[112] *See* CRS 2008 *supra* note 102, at 9.

[113] *See* The Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005). In the meantime, Congress extended four energy tax subsidies that expired when it passed The Working Families Tax Relief Act of 2004, Pub. L. No. 108-311, 118 Stat. 1166 (2004); and it expanded tax credits to include alcohol fuels and biodiesel in conjunction with increasing the number of technologies eligible for renewable energy by enacting The American Jobs Creation Act of 2004, Pub. L. No. 108-357, 118 Stat. 1418 (2004).

depreciation recovery periods to stimulate the production and investment side of the energy industry. According to one commentator, this approach minimizes negative externalities by subsidizing substitute activities, which poses economic efficiency issues; Congress ultimately must balance a variety of issues that depend on stable energy sources to preserve the economic well-being and security of the country.[114] Consequently, any attempt to implement a comprehensive plan to tax carbon on a national level requires support from a broad base to succeed.

b. The Current Status

Following the numerous pollution control statutes enacted between 1970 and 1990, no major United States GHG regulation has been passed by Congress since.[115] Climate change became a significant issue during the 2000 presidential campaign with Democratic candidate Al Gore.[116] Later, during the 2008 Presidential campaign both major party candidates supported a cap-and-trade structure.[117] During President Obama's term, he issued various executive actions to address climate change issues; however, he was unable to persuade Congress to adopt comprehensive legislation to control GHG emissions.[118] In fact, over the past decade Congress rejected both carbon tax and cap-and-trade legislation on numerous occasions.[119] Despite some indications that there may be mounting interest in the concept of carbon taxation, adoption of a federal carbon tax has thus far proven to be politically untenable in the United States as Congressional opponents cite to economic hardship.[120]

The melding of environmental issues with the widespread energy footprint creates a setting ripe for gridlock. While the United States has laws addressing GHG emissions, it does not have a national system in place to reduce its contribution to global CO_2 or GHG emissions.[121] In recent years, observers thought it likely that Congress would pass some form of broad climate change

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[114] *See* CRS 2011 *supra* note 102, at 10-12.

[115] Michael P. Vandenbergh & Jonathan A. Gilligan, *Beyond Gridlock*, 40 COLUM. J. ENVTL. L. 217, 235 (2015).

[116] Robert V. Percival, *Presidential Power to Address Climate Change in an Era of Legislative Gridlock*, 32 VA. ENVTL. L.J. 134, 140 (2014).

[117] Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax Is a Better Response to Global Warming Than Cap and Trade*, 28 STAN. ENVTL. L.J. 3, 5 (2009).

[118] Percival, *supra* note 116, at 135.

[119] Vandenbergh & Gilligan, *supra* note 115, at 236.

[120] Joshua P. Fershee, *Levels of Green: State and Regional Efforts, in Wyoming and Beyond, to Reduce Greenhouse Gas Emissions*, 7 WYO. L. REV. 269, 290 (2007) (citing Richard E. Cohen & Peter Bell, *Congressional Insiders Poll*, NAT'L J., Feb. 3, 2007, at 6-7).

[121] Milne, *supra* note 106, at 18 (2008).

policy to include a cap-and-trade system.[122] Bills introduced to this effect included: the *Save our Climate Act of 2009*, proposing to amend the Internal Revenue Code to levy an excise tax on the carbon content of taxable fuels sold by manufacturers, producers, or importers;[123] the *Climate Protection Act of 2013*, aimed at amending the Clean Air Act to require the EPA to impose a carbon pollution fee on manufacturers, producers and importers of carbon polluting substances and a fee on imports of carbon pollution-intensive goods;[124] and the *Managed Carbon Price Act of 2015*, intended to help cut carbon emissions towards a clean United States energy economy.[125] The 113th Congressional session saw six proposals to put a price on carbon—five establishing a tax on carbon and one establishing a cap-and-dividend program.[126]

Still, despite increasing evidence of climate change, the United States public has been hesitant to support legislative policies preventing the future risks driven by climate change.[127] In fact, amidst efforts introduced by various legislators to impose a tax on carbon at the federal level, there have been equal and parallel legislative endeavors to ban carbon taxation and curb climate action. Initiatives include the *No Carbon Tax Act of 2013*, introduced in the House during the 113th Congress, and the *American Energy Renaissance Act of 2015*, which proposes to amend the Clean Air Act to exclude GHGs from the definition of "air pollutant" and to repeal current rulemaking for carbon pollution standards for power plants.[128]

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[122] NATHAN RICHARDSON, ART FRAAS & DALLAS BURTRAW, RES. FOR THE FUTURE, *GREEHOUSE GAS REGULATION UNDER THE CLEAN AIR ACT: STRUCTURE, EFFECTS, AND IMPLICATIONS OF A KNOWABLE PATHWAY* (2010), http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-10-23.pdf.

[123] Save Our Climate Act of 2009, H.R. 594, 111th Cong. (2009) (The Save Our Climate Act of 2009—introduced by Congressman Fortney "Pete" Stark (D-CA)—was not enacted).

[124] Climate Protection Act of 2013, S. 332, 113th Cong. (2013) (The Climate Protection Act of 2013 was sponsored by Senator Bernard "Bernie" Sanders (I-VT) in 2013, but was not enacted).

[125] *See* Milne, *supra* note 106, at 19; Managed Carbon Price Act of 2015, H.R. 972, 114th Cong. (2015) (the Managed Carbon Price Act of 2015—introduced by Representative Jim McDermott (D-WA)—sets specific GHG emission reduction targets, requires producers of GHG emitting substances to purchase permits, sets the 2016 price at $12.50 per metric ton of CO_2, requires publication of permit prices five years in advance, and allocates 100% of revenue going to U.S. Residents).

[126] *See* CENTER FOR CLIMATE AND ENERGY SOLUTIONS, COMPARISON OF CARBON PRICING PROPOSALS IN THE 113TH CONGRESS (2014), http://www.c2es.org/publications/carbon-pricing-proposals-113th-congress (comparing these proposals: The Climate Protection Act of 2013, S. 332, 113th Cong. (2013); The Managed Carbon Price Act of 2014, H.R. 4754, 113th Cong. (2014); The Healthy Climate and Family Security Act of 2014, H.R. 5271, 113th Cong. (2014); America's Energy Security Trust Fund Act of 2014, H.R. 5307, 113th Cong. (2014); The American Opportunity Carbon Fee Act, S. 2940, 113th Cong. (2014); and The State Choices Act, H.R. 5796, 113th Cong. (2014)).

[127] Simon & Pentland, *supra* note 13, at 220.

[128] *See* No Carbon Tax Act of 2013, H.R. 1486, 113th Cong. (2013). This bill, introduced by

As a result of this gridlock within the federal government to implement a nationalized carbon tax, some state and local jurisdictions have proposed and implemented their own cap-and-trade and carbon tax schemes. However, an interesting question ensues whether states, in their individual and varied approaches, imposing taxes on carbon is a practical approach to address climate change, or instead will create a negative economic ripple across the United States. To address this query, the following section analyzes the single-jurisdiction movement towards taxing carbon and evaluates the benefits of unilateral carbon tax systems.

IV. STATES TAXING CARBON—A PRAGMATIC APPROACH?

The lack of federal initiative in developing a nation-wide carbon tax regime has led select states and local jurisdictions to pursue independent climate change legislation.[129] From an opportunistic stance, unilateral state climate change regulations could offer the federal government a constructive model to springboard toward carbon tax legislation in the United States. This section addresses the current climate change efforts within states and analyzes the benefits of enacting a carbon tax unilaterally, including implementing an optional and flexible tax plan, inviting innovative revenue, exploring the market-based approach of carbon taxation, and stimulating green technology.

A. *Carbon Emissions: Era of the Single Jurisdiction Movement*

In 2006 California pioneered a state-level cap-and-trade program targeting GHG emissions. The Global Warming Solutions Act ("AB 32") aims to diminish the state's GHG emissions to 1990 levels by 2020.[130] Although environmental justice advocates initially praised California's commitment to reduce GHG emissions, such enthusiasm was stunted when the AB 32 initiative effectuated the development of a cap-and-trade program.[131]

Rep. Nick Rahall (D-WV), was not enacted. Rep. Jim Bridenstine (R-OK) also introduced the American Energy Renaissance Act of 2015 to "free the private sector to harness domestic energy resources to create jobs and generate economic growth by removing statutory and administrative barriers." American Energy Renaissance Act of 2015, H.R. 1487, 114th Cong. (2015).

[129] *See* McAusland & Najjar, *supra* note 5, at 766 (noting that a parallel issue resonates globally with a lack of international cooperation over how to address climate change, resulting in individual countries unilaterally pursuing climate change policies).

[130] *See* CAL. HEALTH & SAFETY CODE §§ 38500–99 (West 2008); *see also* CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY AIR RESOURCES BOARD, ASSEMBLY BILL 32: GLOBAL WARMING SOLUTIONS ACT, http://www.arb.ca.gov/cc/ab32/ab32.htm (last visited Apr. 12, 2017) (noting that the California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, passed in 2006); Joanna D. Malaczynski & Timothy P. Duane, *Reducing Greenhouse Gas Emissions from Vehicle Miles Traveled; Integrating the California Environmental Quality Act with the California Global Warming Solutions Act*, 36 ECOLOGY L.Q. 71, 71 (2009).

[131] Vien Truong, *Addressing Poverty and Pollution: California's SB 535 Greenhouse Gas*

To achieve the target GHG emissions goals, AB 32 provides for the creation of permits and/or offsets by third parties that can be sold to capped facilities for use in lieu of meeting required emission reductions or expensive allowances obtained at governmental auctions or by purchase from companies emitting less than their allotted amount.[132] As the cap declines, the theoretical framework anticipates that companies will be motivated to reduce their GHG emissions.[133]

Although the first carbon allowance auction raised a total of $289 million, the California Air Resources Board ("CARB")—the agency tasked with regulating state GHG emissions by adopting market-based compliance mechanisms—faced challenges at both the state and federal levels.[134] State court claimants alleged the cap-and-trade program was too flawed to be a reasonable interpretation of AB 32, while in federal court ethanol and fossil fuel interests have challenged CARB's low carbon fuel standards as discriminatory and extraterritorial on dormant Commerce Clause grounds.[135] Amidst struggles AB 32 has survived these legal challenges, allowing CARB to continue to improve its cap-and-trade program as it moves towards the deadline for achieving the 2020 emission cap.[136] In August 2016 California Governor Jerry Brown signed SB 32 in law, extending the state's targets for reducing GHG gases from 2020 to 2030.[137] Specifically, SB 32 requires that California cut GHG gas emissions to 40 percent below 1990 levels by 2030, creating a far more impressive target than

Reduction Fund, 49 HARV. C.R.–C.L. L. REV. 493, 500-01 (2014).

[132] Alan Ramo, *The California Offset Game: Who Wins and Who Loses*, 20 HASTINGS W.–N.W. J. ENVL. L. & POL'Y 109, 110 (2014).

[133] Truong, *supra* note 131, at 501; *see also* CA.gov, *Assembly Bill 32 Overview*, https://www.arb.ca.gov/cc/ab32/ab32.htm (last visited Mar. 29, 2017) (noting that on January 1, 2013 the cap-and-trade program began with a GHG emission cap scheduled to decline over time).

[134] *See* Dana Hull, *13 Things to Know About California's Cap-And-Trade Program*, MERCURYNEWS.COM (Feb. 22, 2013, 6:16 PM), http://www.mercurynews.com/business/ci_22092533/13-things-know-about-california-cap-trade-program.

[135] *See* Riti Chandiok, *Climate Change Law in California and Massachusetts: Lessons for State Policymakers*, 21 HASTINGS W.-N.W. J. ENV. L. & POL'Y 249, 256 (2015); *see also* Assoc. of Irritated Residents v. Cal. Air Res. Bd., 143 Cal. Rptr. 3d 65 (Cal. Ct. App. 2012) (holding that the scoping plan satisfies the requirements of AB 32); Citizens Climate Lobby v. Cal. Air. Res. Bd., No. CGC-12-519554, 2013 WL 861396 at 20 (Cal. Super. Ct. Jan. 25, 2013) (holding that CARB's "use of standardized mechanisms [was] supported by evidence contained in the administrative record"); Rocky Mountain Farmers Union v. Corey, 730 F. 3d 1070 (9th Cir. 2013) (reversing the district court opinion and finding that the state's Low Carbon Fuel Standard ("LCFS")'s ethanol provisions are not discriminatory against out-of-staters, and that the LCFS is not an extraterritorial regulation under the dormant Commerce Clause), *cert. denied*, 134 S. Ct. 2884 (2014), and 134 S. Ct. 2875 (2014).

[136] Chandiok, *supra* note 135, at 260.

[137] Chris Megerian & Liam Dillon, *Gov, Brown Signs Sweeping Legislation To Combat Climate Change*, LOS ANGELES TIMES (Sept. 8, 2016, 3:55PM), http://www.latimes.com/politics/la-pol-ca-jerry-brown-signs-climate-laws-20160908-snap-story.html; see also CALIFORNIA, SENATE BILL 32: CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006: EMISSION LIMIT, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32 (last visited Feb. 8, 2017).

the previous goal of meeting 1990 levels by 2020.[138] Although few countries have achieved such acute emissions cuts while experiencing stout economic growth, the EU is simultaneously aiming for a similar 40 percent cut below 1990 levels by 2030 as well.[139]

To date, California has enacted what is perhaps the world's most ambitious policy to tackle GHG emissions, and certainly the boldest legislative climate regulatory movement in the United States.[140] California is not, however, the only locale to address the significance of GHG emissions on a jurisdictional level. In March 2015, two bills were introduced in the Vermont legislature proposing the implementation of an excise tax on fossil fuels that emit GHGs.[141] The delegated purpose of these bills is to "reflect external costs of greenhouse gas emissions in the price of these fuels and reduce fossil fuel use."[142] More concisely, proponents of these bills have acknowledged their primary purpose is to propel the market away from fossil fuel use.[143]

The Vermont legislature introduced House Bill 412 to establish a carbon pollution tax during the 2015-2016 session.[144] It proposes to offset 90 percent of carbon tax pollution revenues through a reduction of the Vermont sales and use tax.[145] The remaining ten percent of revenue would fund low-income weatherization and a Vermont Energy Independence Fund ("VEIF").[146] The tax itself, $10 per tonne of CO_2 emissions during the first fiscal year (increasing by $10 each subsequent year until reaching a maximum of $100 per tonne) would be imposed on the sale in Vermont of specifically identified fuels by distributors.[147]

Similarly, House Bill 395, also introduced in the 2015-2016 Vermont session, proposes a carbon tax imposed per tonne of CO_2 emissions on the sale of specified fuels by distributors in Vermont, amounting to $50 during the first

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138 Megerian & Dillon, *supra* note 137.

139 Brad Plumer, *California Is About to Find Out What a Truly Radical Climate Policy Looks Like*, VOX (Sept. 9, 2016, 8:43am EDT), http://www.vox.com/2016/8/29/12650488/california-climate-law-sb-32.

140 Ann E. Carlson, *Regulatory Capacity and State Environmental Leadership: California's Climate Policy*, 24 FORDHAM ENVTL. L. REV. 63 (2013).

141 *See* H. 395, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015); H. 412, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015).

142 *See* H. 395, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015); H. 412, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015).

143 *See* John Herrick, *Study Shows Carbon Tax Would Grow State's Economy*, VT DIGGER.ORG (Apr. 14, 2015, 5:14 AM), http://vtdigger.org/2015/04/14/study-shows-carbon-tax-would-grow-states-economy/.

144 H. 412, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015).

145 *Id*.

146 *Id*.

147 *Id*. The carbon pollution tax would be calculated and assessed on each unit of fuel in accordance with a specified formula assessed specifically for: butane, coal, diesel fuel, gasoline, fuel oil, jet fuel, kerosene, natural gas and propane. *Id.*

fiscal year and increasing $10 in each subsequent year until reaching a maximum of $100.[148] This bill suggests "to offset eighty percent of the tax revenue through a per-employee rebate to employers and a refundable tax credit to personal income taxpayers of middle and low income," while the remaining 20 percent would fund low-income weatherization and the VEIF.[149]

If either of these proposed bills moves forward in the state legislature, Vermont would become the first state to enact an official carbon tax.[150] From a legislative perspective, implementing laws to help reduce GHG emissions is not a new concept in Vermont.[151] Not only does Vermont emit the second-lowest per-capita CO_2 emissions in the nation, but it is a member of the Regional Greenhouse Gas Initiative ("RGGI"), a multistate cooperative effort to limit GHG emissions.[152] Still, the most eco-friendly state's pursuit to pass proposed legislation on a tax on fossil fuel use has met rigorous political debate.[153]

Proponents claim that a tax on carbon emissions in Vermont would help grow the state's economy, close wealth inequity, and reduce the state's GHG emissions by driving the market away from fossil fuels.[154] A study prepared by Regional Economic Models, Inc. on behalf of Energy Independent Vermont (a coalition of groups concerned with reducing the state's carbon emissions) found that a steadily rising tax over a ten year period would result in the creation of 1,000 new jobs, and increase the state's annual economy by $40 million per year.[155] The study further concluded that the tax would reduce carbon emissions

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148 *See* H. 395, 2015 Gen. Assemb., Reg. Sess. (Vt. 2015).

149 *Id.*

150 Irvin Dawid, *Businesses Want Vermont to Adopt Nation's First Carbon Tax*, PLANETIZEN (Apr. 13, 2015, 1:00 PM), http://www.planetizen.com/node/75759.

151 In 2005, Vermont collaborated with Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont to create the Regional Greenhouse Gas Initiative (RGGI), a narrow cap-and-trade regime targeting the electricity sector. *See* 30 V.S.A. § 255 for more information regarding Vermont's Regional coordination to reduce greenhouse gases.

152 *See* Bobby Magill, *Texas, California Lead Nation in Carbon Emissions*, CLIMATE CENTRAL (Oct. 29, 2015), http://www.climatecentral.org/news/carbon-emissions-spike-in-some-states-19615 (analyzing carbon emissions from all fifty states and the District of Columbia); *see also* REGIONAL GREENHOUSE GAS INITIATIVE, http://www.rggi.org/ (last visited May 25, 2016) [hereinafter RGGI].

153 *See* John S. Kiernan, *2016's Most & Least Eco-Friendly States*, WALLETHUB, https://wallethub.com/edu/most-least-eco-friendly-states/11987/ (last visited May 25, 2016) (ranking Vermont as the most eco-friendly state in the U.S.).

154 Herrick, *supra* note 143.

155 Jeff Spross, *How a Carbon Tax in this Tiny State Would Cut Pollution and Add Thousands of Jobs*, THINK PROGRESS (Nov. 18, 2014), http://thinkprogress.org/climate/2014/11/18/3593676/vermont-carbon-tax/ (presenting results based on a tax model beginning at $5 per metric ton of carbon emissions, and rising to $50 per ton over a ten year period); *see also* REGIONAL ECONOMIC MODELS, INC. (REMI), THE ECONOMIC, FISCAL, EMISSIONS, AND DEMOGRAPHIC IMPLICATIONS FROM A CARBON PRICE POLICY IN VERMONT (2014), http://www.energyindependentvt.org/wp-content/uploads/2015/04/REMI_Final.pdf.

by more than one million tons per year.[156] Advocates further contend that ten percent of the revenue earned from the tax would go towards energy-saving measures, including financing energy-efficient home projects, while the remaining ninety percent would go toward reducing the Vermont sales tax and other taxes.[157]

Critics of the bills, however, challenge that Vermont's economy would suffer from the imposition of an additional 88 cents per gallon tax on gasoline and a $1 tax per gallon of heating oil.[158] Proponents predict that the tax would strike the middle class hardest, forcing residents to cross the border to New Hampshire, New York, and Massachusetts to purchase gasoline.[159] Scholars contend that a state carbon tax could make Vermont an unappealing location in which to do business for energy-intensive companies not willing to absorb the higher tax burden.[160] It has been further asserted that the overall cost and complexity of implementing such tax would outweigh any benefit of reducing Vermont's carbon footprint on a global scale.[161]

As lawmakers contemplate the future of a plausible Vermont carbon tax, other states with aspiring legislative goals for reducing GHG emissions have likewise emerged.[162] A December 2014 state study prepared for the Massachusetts Department of Energy Resources analyzed whether a carbon fee or tax could help reduce GHG emissions in the state.[163]

The study, *Analysis of a Carbon Fee or Tax as a Mechanism to Reduce GHG Emissions in Massachusetts* ("Analysis"), was conducted by a team of energy and economic consulting firms and laid the framework for a carbon tax on gasoline, heating oil, natural gas, and other fossil fuels.[164] The Analysis employed the BC revenue-neutral carbon tax as precedent and proposed three

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156 Spross, *supra* note 155.

157 Bob Kinzel & Patti Daniels, *Carbon Tax: Environmental Vanguard or Economic Disaster?*, VT. PUB. RADIO (Nov. 6, 2015), http://digital.vpr.net/post/carbon-tax-environmental-vanguard-or-economic-disaster#stream/0.

158 *Id*.

159 Bruce Parker, *Vt. Carbon Tax Could Wipe Out Low Gas Prices*, SUN COMMUNITY NEWS (Jan. 19, 2015, 8:53 AM), http://www.suncommunitynews.com/articles/vt-carbon-tax-could-wipe-out-low-gas-prices/.

160 Alex Keefe & Annie Russel, *Another Take on What a Carbon Tax Could Mean for Vermont*, VT. PUB. RADIO (Nov. 5, 2015), http://digital.vpr.net/post/another-take-what-carbon-tax-could-mean-vermont#stream/0.

161 *Id*.

162 Fred Thys, *With Mass. Off Track on Emissions Goal, Advocates Seek 1st State Carbon Tax*, WBUR (Mar. 12, 2015), http://www.wbur.org/2015/03/12/massachusetts-carbon-tax-proposal.

163 MARC BRESLOW, SONIA HAMEL, PATRICK LUCKOW & SCOTT NYSTROM, MASS. DEP'T OF ENERGY RESOURCES, ANALYSIS OF A CARBON FEE OR TAX AS A MECHANISM TO REDUCE GHG EMISSIONS IN MASSACHUSETTS (2014), http://www.mass.gov/eea/docs/doer/fuels/mass-carbon-tax-study.pdf.

164 *Id*. at 6.

separate scenarios for a fee/tax on carbon in Massachusetts.[165] Findings concluded that a revenue-neutral graduated tax on the state's major sources of CO_2 emissions—fossil fuels and electricity consumption—would result in positive impacts on Massachusetts' economic and employment sectors while reducing CO_2 emissions by five to ten percent.[166]

Following the conclusion of the Analysis, the Massachusetts Senate proposed instituting one of two carbon price options.[167] Along with Vermont, the state had already been pricing carbon on electricity through the RGGI cap-and-trade program.[168] However, the proposed carbon pricing legislation would account for carbon emissions not covered under the RGGI.[169] Senate Bill 1747 provides for the imposition of a $10 per ton of carbon tax in the first year, increasing to $40 per ton in year seven, to be levied on gasoline or in heating bills.[170] All proceeds generated by this tax/fee would be rebated back to state residents and businesses at the year end.[171] Alternatively, Senate Bill 1786 proposes that 20 percent of the carbon price earnings be earmarked for a Clean Energy and Transportation Fund to be used for public transportation and energy projects in an effort to help transition Massachusetts away from fossil fuels while, the remaining 80 percent be rebated back to state residents.[172] Both the Analysis and proposed carbon pricing bills follow a previous attempt in the Massachusetts legislature to impose a carbon tax during the 2013-2014 session.[173]

The state of Washington is also in the running to implement the nation's first carbon tax. The proposal is taking shape in the form of Initiative 732 ("I-732"), a grassroots campaign to add a revenue-neutral $25 per ton tax on polluting fossil fuels, while cutting other taxes by an equal amount.[174] I-732, also based

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[165] *Id.* at 4.

[166] *Id.* at 10-12. (finding that positive impacts on economic indicators included a rise in disposable personal income, personal income per capita and the labor share of the state income, and that employment is forecasted to grow by 4,000 to 10,000 jobs by 2030 due to the imposition of the tax).

[167] *See* S. 1747, 189th Leg., Reg. Sess. (Mass. 2015); *see also* S. 1786, 189th Leg., Reg. Sess. (Mass. 2015).

[168] *See* RGGI, *supra* note 152.

[169] *See* Zahra Hirji, *Massachusetts Mulls an Economy-Wide Price on Carbon*, INSIDE CLIMATE NEWS (Oct. 29, 2015), http://insideclimatenews.org/news/29102015/massachusetts-mulls-economy-wide-price-carbon-michael-barrett.

[170] *Id.*; *see also* Mass. S. 1747, *supra* note 167.

[171] Hirji, *supra* note 169.

[172] *Id.*; *see also* Mass. S. 1786, 189th Leg., Reg. Sess. (Mass. 2015).

[173] *See* H. 2532, 188th Leg., Reg. Sess. (Mass. 2013), https://malegislature.gov /Bills/188/House/H2532.

[174] *Yes on I-732*, CARBON WASHINGTON, http://yeson732.org/ (last visited Mar. 10, 2017) (campaigning for I-732); *see also* Kurt Cobb, *Will Washington be the first US state to have a carbon tax?*, CHRISTIAN SCIENCE MONITOR (Sept. 25, 2015), http://www.csmonitor.com/Environment /Energy-Voices/2015/0925/Will-Washington-be-the-first-US-state-to-have-a-carbon-tax. (noting that the proposal taxes carbon emissions at a rate of $25 per metric ton, to be phased in over two years

on the BC carbon tax approach, comes on the heels of Governor Jay Inslee's recently proposed *Carbon Pollution Accountability Act* to create a market-based cap-and-trade program in Washington that would limit carbon pollution and require major polluters to pay for their emissions.[175] Although Governor Inslee failed to pass legislation on his cap-and-trade program, in June 2016 state regulators unveiled a new plan to minimize GHGs in the state.[176]

While select states have independently pursued climate change legislation in the United States, there is an emerging squall of environmental movement at the local level as well. In 2002 Boulder, Colorado adopted the nation's first official carbon tax under its Climate Action Plan ("CAP").[177] The aim is to preserve the health and sustainability of the climate by reducing local GHG emissions.[178] In 2006, Boulder enacted a CAP Excise Tax (also known as the Carbon Tax) to impose a tax on electricity used by residents, commercial businesses, and industry.[179] The tax provides approximately $1.8 million per year for local energy efficiency programs and renewable energy incentives, and pays for residential and commercial EnergySmart programs that assist residents and business owners in identifying energy efficiency measures and rebates.[180] Revenue from the tax has funded pilot programs encouraging energy efficient innovation.[181] According to the City of Boulder 2012 inventory results, from 2005 through 2012 local emissions remained fairly constant despite city-wide growth, and the City stabilized waste, vehicular, and per capita residual energy use emissions.[182] Although the CAP was scheduled to expire in March 2019, the Boulder City Council moved to extend the tax by an additional five years to 2023 without imposing an increase in the current rates.[183]

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and increase each year after that by 3.5 percent plus the rate of inflation).

[175] *See* S.B. 5283, 189th Leg., Reg. Sess. (Wash. 2015); *see also* Rory Carroll, *Washington Governor Unveils Carbon Cap-and-Trade Plan*, REUTERS (Dec. 17, 2014), http://www.reuters.com/article/2014/12/18/us-washington-carbon-policy-idUSKBN0JW01G20141218.

[176] *See Washington State Unveils Carbon Caps on Industrial Polluters*, ASSOCIATED PRESS (June 1, 2016 7:12 PM), http://www.oregonlive.com/pacific-northwest-news/index.ssf/2016/06/washington_state_unveils_carbo.html.

[177] *Climate Action Home Page*, CITY OF BOULDER COLORADO, https://bouldercolorado.gov/climate (last visited Nov. 12, 2015).

[178] *Id*.

[179] BOULDER, COLO., REV. CODE, tit. 3, § 12 (2007); *see also* Edna Sussman, et al., *Climate Change Adaptation: Fostering Progress Through Law and Adaptation*, 18 N.Y.U. ENVTL. L.J. 55, 138, 179 (2010) (describing the tax on residents and businesses as aiming to increase the long-term funding for the CAP).

[180] *See Boulder Question 2P: Climate Action Plan Tax Extension*, DAILY CAMERA ELECTION (Oct. 10, 2015, 06:18:11 PM MDT), http://www.dailycamera.com/local-election-news/ci_28948177/boulder-question-2p-climate-action-plan-tax-extension.

[181] *Id*.

[182] *2012 Community Greenhouse Gas Inventory Results*, CITY OF BOULDER, https://www-static.bouldercolorado.gov/docs/2012_GHG_Inventory_Summary_FINAL-1-201507271631.pdf.

[183] *See* BOULDER, COLO., Ordinance No. 8057 (Nov. 3, 2015).

With the growing spectrum of state and local jurisdictions considering independent climate change initiatives, the question follows whether singular-state efforts could provide constructive impetus for future federal carbon tax legislation, or ultimately give rise to enhanced environmental and economic distortions nation-wide. To better understand the consequences posed by unilateral carbon tax initiatives, an evaluation of the promotion of the carbon tax regulation at the jurisdictional level follows.

B. *Promoting State-Level Carbon Taxes*

As already discussed, the United States' political debate over carbon tax initiatives currently lags behind the consensus of other industrialized countries.[184] Although the United States has taken steps to deal with emissions reduction, there is not presently in place a legislative expression of national commitment to implement a federal carbon tax.[185]

In the absence of such commitment, states might singularly consider unilateral taxes on GHG emissions in the future. Given the global nature of the world's climate problem, individual nations have taken proactive approaches to regulating domestic GHG emissions in the absence of an international treaty specifying what each country must do.[186] A similarly-shaped movement within the United States to individually regulate GHG emissions parallels the broader movement of individual nations adopting a range of policies to address climate change.[187]

There are several incentives for states to impose a jurisdictional tax on carbon: (1) optional and flexible implementation of the tax based on state interest and need; (2) introduction of innovative revenue strictly for the benefit of the state and its residents; (3) exploration and testing of the market-based approach of carbon taxation and its effect on environmental protection and climate change on a narrower scale; and (4) stimulus of enhanced technological advancement in green technology.[188] To adequately analyze the future stake of

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[184] *See* Frank Muller & J. Andrew Hoerner, *Greening State Energy Taxes: Carbon Taxes for Revenue and the Environment*, 12 PACE ENVTL. L. REV. 5, 11 (1994).

[185] *See id*. at 7 (noting that the U.S.'s commitment to climate change, to include implementing an energy tax, is an on-going agenda); *see also United States Submits its Climate Action Plan Ahead of 2015 Paris Agreement*, U.N. CLIMATE CHANGE NEWSROOM (Mar. 31, 2015), http://newsroom.unfccc.int/unfccc-newsroom/united-states-submits-its-climate-action-plan-ahead-of-2015-paris-agreement/ (documenting that the U.S. ratified the United Nations Framework Convention on Climate Change ("UNFCCC") and submitted its most recent climate action plan to the UNFCCC ahead of the December 2015 UN climate conference in Paris).

[186] *See* Coleman, *supra* note 75, at 88-89.

[187] *See id.* (noting the emergence of unilateral climate regulations around the world).

[188] *See* John K. Delaney, *An Excise Tax Would Give States a Role in Fighting Climate Change*, WASH. POST (May 30, 2014), https://www.washingtonpost.com/opinions/john-k-delaney-an-excise-tax-would-give-states-a-role-in-fighting-climate-change/2014/05/30/ac2a58b4-e763-11e3-a86b-362fd5443d19_story.html.

carbon tax regulation within the United States it is important to address these incentives separately.

1. An Optional and Flexible Carbon Tax

The harmonized power shared by the federal and state governments under Article I, Section 8 of the United States Constitution gives each state the authority to impose taxes on their own residents.[189] Since the beginning of this nation's history, states have maintained the right to impose any type of tax except those clearly forbidden by the Constitution and their own state constitutions.[190] Although the means by which state governments have devised to obtain revenue is vast, there are three categories of generally recognized taxes among states: income, retail sales, and property tax.[191] All three categories are both optional and flexible, and therefore provide analogous models for flexible and voluntary state carbon tax administration based on state interest and need.

With respect to income tax, for example, the United States Constitution provides that, "The Congress shall have the power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several States,"[192] while the United States Tax Code provides that taxable income includes gross income.[193] In addition to the federal income tax, forty-one states levy a tax on the net income of resident and nonresident individuals whose income is derived from sources within the state,[194] two states tax dividend and investment income in lieu of personal income tax,[195] and forty-seven states impose some form of tax on corporate income.[196]

Regardless of their tax policy reasons, each state embraces the ability to impose an income tax, as well as the flexibility to implement its own rate(s) and

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189 U.S. CONST. art. 1, § 8.

190 *State and Local Taxes*, U.S. DEPT. OF THE TREASURY, https://www.treasury.gov/resource-center/faqs/Taxes/Pages/state-local.aspx (last visited May 26, 2016).

191 *See* Liz Malm & Ellen Kant, *The Sources of State and Local Tax Revenues*, TAX FOUNDATION (Jan. 28, 2013), http://taxfoundation.org/article/sources-state-and-local-tax-revenues.

192 U.S. CONST. amend. XVI.

193 I.R.C. § 63(a) (2016).

194 *See* Bernard E. Jacob, *An Extended Presence, Interstate Style: First Notes on a Theme from Saenz*, 30 HOFSTRA L. REV. 1133, 1134 (2002) (documenting that many states impose an income tax on resident and nonresident sourced income). *See also* Terry Sheridan, *How States Stack Up by Individual Income Tax Collections*, ACCOUNTINGWEB (May 4, 2016), http://www.accountingweb.com/tax/individuals/how-states-stack-up-by-individual-income-tax-collections (noting that 41 states and the District of Columbia impose an income tax).

195 *See* Stephanie Leonard Yarbrough, *Why South Carolina Should Eliminate the Personal Income Tax*, 66 S.C. L. REV. 667, 670 (2015) (documenting the dividend and interest tax in Tennessee and New Hampshire).

196 Lindsay C. McAfee, Note, *Making Taxes More Certain: Iowa State Legislators' Guide to Combined Reporting*, 95 IOWA L. REV. 245, 248–49 (2009) (noting that forty-seven states impose some form of corporate income tax).

tax structure on the specified income designated within its statutes.[197] For states that do not elect to impose an income tax, there is generally an economic policy reason against such a levy. In Nevada, for example, the tourism and gambling industries diminish the need for state income tax revenue.[198] In Wyoming, the state's property tax rate of 9.5 percent coupled with its natural-resources taxes negate the economic need for an income tax, while Washington's 6.5 percent sales tax rate accounts for more than 60 percent of the state's revenue, allowing it the flexibility to forgo a personal income tax on residents.[199]

For the majority of states that do impose an income tax, the flexibility of the 2015 marginal income tax rates ranged from 3.07 percent in Pennsylvania to 13.3 percent in California.[200] Further, eight states apply a single-rate tax structure applicable to all taxable income, while thirty-three states implement a graduated rate system, with the number of brackets ranging from two to twelve depending on the state.[201]

Similarly, forty-five states and the District of Columbia impose a retail sales and use tax.[202] Although sales tax comes in various forms, the most well-known is the general retail sales tax that purchasers pay on the retail sales price for goods and services.[203] Each state that imposes a sales tax also implements a use tax on the use or consumption of out-of-state or online purchases falling outside the constitutional reach of the sales tax.[204]

Like the income tax, sales tax rates vary by state. California boasts the highest state-level rate at 7.5 percent while Colorado imposes the lowest non-zero tax rate of 2.9 percent.[205] States depend on the sales tax for substantial portions of their revenues, with some relying on this tax for over fifty percent of their revenue needs.[206]

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[197] *See* Nicole Kaeding, *State Individual Income Tax Rates and Brackets for 2016*, TAX FOUNDATION (Feb. 8, 2016), https://taxfoundation.org/state-individual-income-tax-rates-and-brackets-2016/ (documenting the individual income tax rates and brackets for all fifty states).

[198] Yarbrough, *supra* note 195, at 671.

[199] *Id*.

[200] Kaeding, *supra* note 197; *see also* Jared Walczak, *State Individual Income Tax Rates and Brackets for 2015*, TAX FOUNDATION (Apr. 15, 2015), https://taxfoundation.org/state-individual-income-tax-rates-and-brackets-2015/; *see also* 72 PA. CONS. STAT. §§ 7301-61 (2015); CAL. REV. & TAX CODE §§ 17041-61 (2015).

[201] *See* Walczak, *supra* note 200 (noting the various brackets implemented by states, and documenting that Kansas and Maine levy a two-rate bracket while Hawaii implements a twelve bracket tax system).

[202] Mark J. Cowan, *Nonprofits and the Sales and Use Tax*, 9 FLA. TAX REV. 1077, 1103 (2010) (noting that Alaska, Delaware, Montana, New Hampshire and Oregon do not impose a state sales tax).

[203] *Id*.

[204] *Id*.

[205] *See* Scott Drenkard & Jared Walczak, *State and Local Sales Tax Rates in 2015*, TAX FOUNDATION (Apr. 8, 2015), http://taxfoundation.org/article/state-and-local-sales-tax-rates-2015.

[206] Sara Schoenfeld, Note, *Much Ado About Nexus: The States Struggle to Impose Sales Tax*

States that do not impose a sales tax generally have an economic reason against such imposition. For example, Delaware's 8.7 percent flat corporate income tax rate makes it the fourth highest corporate income tax collector in the United States and alleviates the state's economic need for a sales tax.[207] Similarly, Montana's high personal income tax rates capping at 6.9 percent offset the state's interest in imposing a sales tax, while New Hampshire's hefty property taxes allow the same sales tax break for its residents.[208]

Without a comprehensive and uniform national carbon tax in place, states are free to implement their own carbon tax schemes in a similar fashion. Because the United States Constitution does not expressly prohibit states from unilaterally imposing a carbon tax, states have vast flexibility in implementing their own legislation tailored specifically to local needs and preferences.

Every state embraces a distinct set of conditions fashioned by its political environment, tax structure, and overall economic health.[209] A unilateral approach to carbon tax administration allows state legislators the flexibility to establish tax regimes as broadly or narrowly as necessary, while simultaneously allocating carbon tax revenue directly to the explicit needs of the state without federal assumption of power and responsibility.[210] Further, states having a vested interest in reducing carbon emissions may consider various avenues for instituting more progressive climate change policies. States having little or no vested interest in imposing a carbon tax are not at the mercy of federal regulation to do so.

Implementing a state-level carbon tax in the absence of federal policy-making may provide an incentive for a more uniform model in the future, while allowing states to initially investigate plausible carbon tax regulations on a narrower scale.[211] Certainly, the flurry of activity at the state level with regard to environmental law is undeniable.[212] Eco-friendly states like Vermont,

Obligations on Out-of-State Sellers Engaged in E-Commerce, 24 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 263, 280 (2013).

[207] Dan Caplinger, *The 5 States with No Sales Tax*, DAILY FIN. (May 5, 2013, 9:20 AM), http://www.dailyfinance.com/2013/05/05/the-5-states-with-no-sales-tax/.

[208] *Id*.

[209] James R. Hackney, Jr., Note, *A Proposal for State Funding of Municipal Tort Liability*, 98 YALE L.J. 389, 398 (1988).

[210] *See* Glen Rectenwald, Note, *A Proposed Framework for Resolving the Transfer Pricing Problem: Allocating the Tax Base of Multi-National Entities Based on Real Economic Indicators of Benefit and Burden*, 22 DUKE J. COMP. & INT'L L. 425, 447 (2012) (discussing benefits to the flexible implementation of formulary apportionment, the method of allocating profits earned to a specific jurisdiction, at the state level).

[211] *See* Cinnamon Carlarne, *Notes from a Climate Change Pressure-Cooker: Sub-Federal Attempts at Transformation Meet National Resistance in the USA*, 40 CONN. L. REV. 1351, 1365 (2008) (discussing state action in the area of environmental law and policy).

[212] *See id*. (noting that states have already adopted a variety of legal, regulatory and policy measures to address climate change, such as creating GHG inventories and climate action plans, imposing GHG emission targets, standards and reporting programs, and implementing state climate

Massachusetts, and Washington have the opportunity to experiment with unique carbon tax legislation in line with other global jurisdictions outside the spectrum of federal preemption.[213] However, states with less motivation to further politicize climate change and control within their borders are free from the federal mandates of a comprehensive climate change framework. Therefore, emulating income and sales tax models, states are free to consider optional and flexible carbon tax initiatives based entirely on jurisdictional interest and need.

2. Introducing Innovative Revenue

Since the start of the 20th century, states have capitalized on opportunities to tax citizens and business ventures to satisfy revenue needs and fund services sought by their constituents.[214] Although the United States was coming out of a recession prior to the events of September 11, 2001,[215] consumer confidence was already in decline and predatory lending was increasing.[216] Post September 11th, the United States sank into another recession, followed six years later by what is now coined the "Great Recession."[217] The events of September 11th and the Great Recession required that the federal government make considerable cuts to local funding to help curtail national debt.[218] As a consequence, state governments were compelled to decrease local agency funding, resulting in sizeable drops in housing prices, consumer spending, and sales tax collection.[219]

In subsequent years, states focused efforts on implementing new and sometimes unique opportunities to generate revenue.[220] So-called sin taxes—aimed at products and behaviors that are deemed socially undesirable—have exponentially increased across all levels of government.[221] Although history reflects a long legacy of sin taxes on alcohol and tobacco products,[222] states

change advisory boards).

213 *Id.* at 1355-56 (discussing the impetus for states to move forward with their own environmental plans outside the hand of the federal government).

214 *See* McAfee, *supra* note 196, at 248 (discussing each states' need to generate income).

215 *See* Kathryn Kisska-Schulze, *The Future of E-mail Taxation in the Wake of the Expiration of the Internet Tax Freedom Act*, 51 AM. BUS. L.J. 315, 326 (2014).

216 Catherine New, *Then and Now: How the Economy Has Changed Since 9/11*, AOL.COM (Sept. 11, 2011), https://www.aol.com/article/2011/09/11/then-and-now-how-the-economy-has-changed-since-9-11/20038926/.

217 *Id.*; *see also* Matthew Parlow, *The Great Recession and Its Implications for Community Policing*, 28 GA. ST. U. L. REV. 1193, 1207-08 (2012) (analyzing the financial downturn effects of the Great Recession in the U.S., which began in 2007 and the downturn the world experienced over the last several years).

218 Kisska-Schulze, *supra* note 215, at 326-27.

219 *Id.* at 327.

220 *Id.*

221 Rachelle Holmes Perkins, *Salience and Sin: Designing Taxes in the New Sin Area*, B.Y.U. L. REV. 143, 145 (2014).

222 *See id.* (documenting the long history of sin taxes on alcohol and tobacco)

have expanded that reach to new classes including soda and energy drinks, casinos, and strip clubs.[223]

The expansion of sin taxes in the United States is not surprising. Record economic deficits and a struggling economy, combined with vigorous opposition to income tax hikes, have required legislators to seek alternate avenues for sourcing revenue.[224] In fiscal year 2014 total state sin tax collections exceeded $32 billion, representing about 3.8 percent of total tax revenues collected.[225] In Texas, sin tax collections reached $3.8 billion in 2015, accounting for 7.3 percent of all state tax collections and 3.5 percent of the total state revenue.[226] In Delaware, sin taxes in 2014 brought $300 million to the state, representing 9.4 percent of the state's total tax revenue, while in Nevada the 2014 sin tax revenue topped $1 billion, representing 14.8 percent of the state's total tax revenue that year.[227]

Sin taxes are certainly not the only avenues by which states have turned to generate additional income. California's AB 32 auctions have generated $4.4 billion since its inception.[228] Funds generated through AB 32 are used to reduce GHG emissions, create jobs, and improve state air quality and public health benefits.[229]

Following the 2013 New York Court of Appeals ruling upholding the lower court's decision in *Amazon.com, LLC v. New York State Department of Taxation and Finance*, twenty-six states now collect sales tax on remote purchases.[230] The so-called *Amazon* tax decision has encouraged states to pursue sales tax collection on certain internet purchases. Although a 2009 study out of the University of Tennessee estimated significant revenue boosts to states that

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[223] *See* Rachel E. Morse, *Resisting the Path of Least Resistance: Why the Texas "Pole Tax" and the New Class of Modern Sin Taxes Are Bad Policy*, 29 B.C. THIRD WORLD L.J. 189, 189–91 (2009) (analyzing the Texas "pole tax" on strip clubs); Merav W. Efrat & Rafael Efrat, *Tax Policy and the Obesity Epidemic*, 25 J.L. & HEALTH 233, 253 n.158 (2012) (referencing that states have begun imposing a tax on soft drinks and candy) (citing S.B. 1520, 2002 Leg. Reg. Sess. (Cal. 2002) (codified as amended in CAL. EDUC. CODE § 49431 (West 2002)); *see also California voters approve tax on sugary sodas and energy drinks*, FOX6NEWSNOW.COM (Nov. 5, 2014, 3:30 PM), http://fox6now.com/2014/11/05/california-voters-approve-tax-on-sugary-sodas-and-energy-drinks/ (last visited Apr. 12, 2017) (noting California's tax on soft and energy drinks).

[224] Perkins, *supra* note 221, at 152.

[225] *Sin Tax Revenues by State*, GOVERNING, http://www.governing.com/gov-data/finance/state-sin-tax-collections-revenues.html (last visited Apr. 12, 2016).

[226] Lisa Minton, *How Texas Taxes "Sin"*, FISCAL NOTES (Nov. 2015), http://www.comptroller.texas.gov/economy/fiscal-notes/2015/november/sintax.php.

[227] GOVERNING, *supra* note 225.

[228] California Cap-And-Trade Auction Litigation, Environmental Defense Fund (Jan. 19, 2017), https://www.edf.org/sites/default/files/california-cap-and-trade-auction-litigation-faq-jan17.pdf.

[229] *Id*.

[230] Amazon.com, LLC v. N.Y. State Dep't of Taxation & Fin., 913 N.Y.S.2d 129 (2010), *aff'd sub nom.* Overstock.com, Inc. v. N.Y. State Dep't. of Taxation & Fin., 987 N.E.2d 621 (2013).

collect sales tax from remote vendors, other experts suggest that collecting tax from online retail sales actually results in overall state revenue loss.[231] Still, as the United States Supreme Court has thus far punted review of legal questions surrounding collection authority on remote sales, states have gone rogue in their various attempts to require online retailers to collect and submit sales tax on goods sold over the internet.[232]

Perhaps more intriguing, Colorado became the first global location to legalize the recreational sale of marijuana.[233] A chief motivator for this historical voter-approved legislation was the anticipation of lucrative state tax revenue.[234] While the sale of medical and recreational marijuana in Colorado recently eclipsed the $100 million mark over a period of just one month, a secondary facet of Colorado's early implementation is that the state now stands as a preeminent model that could influence marijuana policy in the future.[235] As of 2016, twenty-six states and the District of Columbia have enacted laws legalizing marijuana in some form, while seven states and the District of Columbia have followed Colorado's lead and legalized its recreational use.[236]

With ever-increasing areas of even minute state tax opportunities emerging, it is perhaps not surprising that states might consider implementing a tax on carbon to help fund state needs.[237] Imposing a carbon tax scheme at the state level would generate another avenue of innovative revenue that states could use to build economic well-being within their borders.[238]

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[231] *See* DONALD BRUCE, WILLIAM F. FOX & LEANN LUNA, THE UNIV. OF TENN., STATE AND LOCAL GOVERNMENT SALES TAX REVENUE LOSSES FROM ELECTRONIC COMMERCE iii (Apr. 13, 2009) (analyzing state revenue from e-tail sales); *see also* Robert A. Robicheaux, *Tax Collections on Online Retail Sales: The Rest of the Story*, 73 STATE TAX NOTES 731, 736 (Sept. 14, 2014) (analyzing state overall losses due to losses from local retail sales revenue).

[232] *See* Laura Mahoney et al., *States See Little Revenue from Online Tax Laws, Keep Pressure on Congress*, BLOOMBERG BNA: DAILY TAX REPORT (Jan. 8, 2014), http://www.bna.com/states-little-revenue-n17179881226/.

[233] Kisska-Schulze, *supra* note 215, at 329. *See also* COLO. CONST. art. XVIII, § 16 (2013) ("Amendment 64").

[234] Kisska-Schulze, *supra* note 215, at 329.

[235] *See* Elizabeth Hernandez, *Colorado Monthly Marijuana Sales Eclipse $100 Million Mark*, DENVER POST (Oct. 9, 2014, 5:41 PM), http://www.denverpost.com/news/ci_28947869/colorado-monthly-pot-sales-pass-100-million-mark; *see also* John Hudak, *Colorado's Rollout of Legal Marijuana is Succeeding: A Report on the State's Implementation of Legalization*, 65 CASE W. RES. L. REV. 649, 654 (2015) (noting Colorado's role in future policy influence).

[236] *State Marijuana Laws Map*, GOVERNING (Jan. 30, 2016) http://www.governing.com/gov-data/state-marijuana-laws-map-medical-recreational.html (last visited Mar. 11, 2017).

[237] *See, e.g.*, Hoa Quach, *Bill To End 'Tampon Tax' Endorsed by State Board*, MYNEWSLA.COM (Jan. 26, 2016), http://mynewsla.com/government/2016/01/26/bill-to-end-tampon-tax-endorsed-by-state-board/ (discussing reports on the recent "tampon tax" which has resulted in at least one state board proposing a bill exempting menstrual products from sales tax); Emilie Raguso, *Wozniak's Email Tax: Good Sense or Nonsense?*, BERKLEYSIDE (Mar. 7, 2013, 9:14 AM), http://www.berkeleyside.com/2013/03/07/wozniaks-email-tax-good-sense-or-nonsense/ (noting California City Councilman Gordon Wozniak's 2013 proposal to tax emails).

[238] *See* Michael Waggoner, *Why and How to Tax Carbon*, 20 COLO. J. INT'L ENVTL. L. & POL'Y

3. Exploring the Market-Based Approach

The leading proposal in the United States and globally for addressing climate change is the institution of some form of market-based cap-and-trade system.[239] Although the intrigue of the cap-and-trade system relies on promises of (1) reducing CO_2 emissions, (2) offering new market carbon allowances, and (3) providing opportunities for politicians to act without imposing fossil fuel taxes, the cap-and-trade ideal also harbors depressing challenges, including (i) inherent delays in the federal policymaking process, (ii) perplexities in setting baselines for emissions targets, and (iii) uncertainty of the price of reductions.[240]

Academics have proposed that a more capable, simplified, and operational market-based approach to reduce CO_2 emissions in the United States is the institution of a carbon tax.[241] A tax on carbon offers several benefits, including allowing the market to account for societal costs of carbon emissions to encourage reductions, easing implementation and rate adjustment pending market-based changes, increasing revenue to help fund green technology research and development ("R&D"), and reducing emissions at a more rapid rate than a cap-and-trade system.[242] However, one of the most profound challenges to implementing a federal carbon tax is heavy political resistance.[243]

Although lawmakers opposing a price tag on carbon argue that doing so would hurt businesses and consumers, many economists regard the carbon tax as a simple solution to effectively raise the price of fossil fuels and encourage the production of energy from low-carbon sources.[244] Both the cap-and-trade and carbon tax schemes are market-based mechanisms targeted at reducing GHG emissions.[245] However, unlike a cap-and-trade program (which allows for price fluctuations based on market demand), a carbon tax sets a specific price on carbon emissions, resulting in "cost certainty."[246] Conversely, while a tax on carbon provides price stability so emitters are constantly aware of emissions costs, it does not guarantee any environmental "benefit certainty" that comes

1, 4 (2008).

239 Avi-Yonah & Uhlmann, *supra* note 117, at 5.

240 *Id*. at 5-6.

241 *See, e.g.*, *id.* at 6-7 (calling the carbon tax a more efficient and effective method of reducing CO_2 in the U.S.); *see also* Stephen Sewalk, *Carbon Tax with Reinvestment Trumps Cap-and-Trade*, 30 PACE ENVTL. L. REV. 580 (2013) (arguing that a carbon tax system is the best approach in the U.S. due to simplicity and ease of implementation).

242 Avi-Yonah & Uhlmann, *supra* note 117, at 6-7.

243 *Id.* at 45 (addressing the political issues of imposing a federal carbon tax); *see also* Karl S. Coplan, *Public Trust Limits on Greenhouse Gas Trading Schemes: A Sustainable Middle Ground?*, 35 COLUM. J. ENVTL. L. 287, 302 (2010) (noting the political concerns regarding implementing a tax at the federal level).

244 The Editorial Board, *Proof That a Price on Carbon Works*, N.Y. TIMES (Jan. 19, 2016), http://www.nytimes.com/2016/01/19/opinion/proof-that-a-price-on-carbon-works.html?_r=0.

245 Sewalk, *supra* note 241, at 603.

246 *Id.*

with a cap-and-trade system.[247] Still, polls demonstrate that of the two market-based approaches, the United States public would favor a carbon tax over a cap-and-trade regime.[248]

Absent federal legislation dictating which market-based method should be used across the United States to reduce GHG emissions, each state has the opportunity to test and control its own exploration of the market-based approach to taxing carbon at a more localized level. An optimal environmental tax can achieve its objective through the creation of its tax base and tax rate, leaving policymakers with the task of determining how the revenue can best serve the government's purpose.[249]

By instituting a carbon tax at the jurisdictional level, states can explore the optimal harmonization of tax rate and base, experiment with carbon tax rebates and revenue investment, place downward pressure on carbon consumption, and increase the adoption of green technology.[250] A balanced, revenue-neutral carbon tax within a state should epitomize and capitalize on the express needs of that state without federal directive. Further, as increased interest in unilateral autonomy continues to cultivate in this arena, states stand to become laboratories for a more nationalized, innovative, and improved approach to taxing carbon in the future.[251]

4. Spurring Advancement in Green Technology

Climate change is an international challenge. A sound question exists whether individual states employing independent climate change policies can have a meaningful impact on this global problem.[252] Certainly, the same question exists when individual nations implement climate change policies in the absence of a rigorous unified action plan.[253] While individual state action alone will not reduce the global carbon footprint, states do have the capacity to stimulate technological advancement in clean energy by providing a sovereign ground for

[247] *See id.* (noting that because a cap-and-trade system puts a cap on the level of emissions, there are specified benefits to the environment from reaching achieved emission reductions, referred to as "benefit certainty").

[248] Karl S. Coplan, *supra* note 243, at 302.

[249] Janet E. Milne, *Environmental Taxation in the United States: The Long View*, 15 LEWIS & CLARK L. REV. 417, 439 (2011).

[250] *See* Alex Rice Kerr, *Why We Need a Carbon Tax*, 34 ENVIRONS ENVTL. L. & POL'Y J. 69, 82 (2010) (noting the various pressures imposed from the institution of a carbon tax).

[251] *See* Alice Kaswan, *Decentralizing Cap-And-Trade? State Controls Within a Federal Greenhouse Gas Cap-And-Trade Program*, 28 VA. ENVTL. L.J. 343, 359 (2010) (noting the benefit of states' roles as "laboratories of invention" with regard to the unilateral adoption of cap-and-trade programs).

[252] *See* David E. Adelman & Kristen H. Engel, *Reorienting State Climate Change Policies to Induce Technological Change*, 50 ARIZ. L. REV. 835, 838 (2008).

[253] *See supra* text accompanying notes 38–75.

localized environmental action.[254] As it has been widely recognized that advancement in green technologies is the cornerstone to solving the problem of global warming, individual state action could be the catalyst for increasing the green technology movement in the United States.[255]

Autonomous state carbon tax legislation could provide a platform for innovative research in renewable resources and supply a springboard for advancing essential green technology.[256] Throughout the Obama Administration, expanding green technology has been part of the United States' strategy to promote economic development, create new jobs, and compete with foreign countries extending their own green technology sectors.[257] In 2015, roughly five percent of the global Gross Domestic Product ("GDP") derived from the green technology sector, and global investment in renewable energy increased five percent from the prior year.[258] As technological advancement by other nations threatens the United States' global economic position, incentivizing opportunities for innovation and commercialization of new technologies is essential to our nation's continued global competitiveness.[259] The development of green technologies should, therefore, be an important economic, political, and environmental goal in the United States.[260]

The state carbon tax would ideally incentivize businesses and industries to adopt green technology to reduce carbon emissions in an effort to comply with the costs of the tax.[261] Specifically, it has been argued that a carbon tax is the best policy to facilitate the movement towards new energy sources.[262] The

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254 *See* Adelman & Engel, *supra* note 252, at 838.

255 Eric C. Lane, *Building the Global Green Patent Highway: A Proposal for International Harmonization of Green Technology Fast Track Programs*, 27 BERKELEY TECH. L.J. 1119, 1121 (2012) (citing Sarah M. Wong, *Environmental Initiatives and the Role of the USPTO's Green Technology Pilot Program*, 16 MARQ. INTELL. PROP. L. REV. 233, 237-38 (2012)) (noting that advancing green technologies could be the key to solving the problem of global warming).

256 *See* Adelman & Engel, *supra* note 252 at 840 (discussing the effect of technological change on environmental reform).

257 Joshua Meltzer, *A Carbon Tax as a Driver of Green Technology Innovation and the Implications for International Trade*, 35 ENERGY L.J. 45, 47 (2014).

258 *See Green Technology (GreenTech), Clean Technology (CleanTech), & Sustainability Market Research*, PLUNKETT RESEARCH, LTD., https://www.plunkettresearch.com/industries/green-technology-greentech-cleantech-market-research/ (last visited Apr. 12, 2017); *see also Global Trends in Renewable Energy Investment 2016*, BLOOMBERG NEW ENERGY FINANCE (Mar. 24, 2016), http://about.bnef.com/press-releases/global-trends-in-renewable-energy-investment-2016/.

259 *See* Sarah Tran, *Expediting Innovation*, 36 HARV. ENVTL. L. REV. 123, 124 (2012) (documenting that foreign nations' technological advancements are a threat to the U.S.' dominant economic position).

260 Meltzer, *supra* note 257, at 47.

261 *Id*. at 52-53 (citing Reyer Gerlagh & Wietze Lise, *Carbon Taxes: A Drop in the Ocean, or a Drop That Erodes the Stone? The Effect of Carbon Taxes on Technological Change*, 54 ECOLOGICAL ECON. 241, 251 (2005)).

262 *See, e.g.*, Kerr, *supra* note 250, at 70 (arguing the need for a carbon tax to facilitate green technology); Lincoln L. Davies, *Reconciling Renewable Portfolio Standards and Feed-In Tariffs*, 32

function of a carbon tax is to assume the environmental costs of carbon emissions while driving a price signal leading to the reduced consumption of high-energy goods.[263] To effectively reduce CO_2 emissions and costs under the auspice of a carbon tax, companies turn towards innovation and development of green technologies.[264]

Although R&D is necessary for the successful innovation of green technology, mere ideas will not address the overriding magnitude of global warming unless or until they are actually implemented.[265] Absent a nationalized tax on carbon in the United States, independent state action would help promote the evolution of green technology from idea to factory to field.[266] State adoption of carbon taxes would also stimulate the continued advancement of technological ideas in research and development, further scientific collaboration in clean energy, and motivate business ventures to implement cutting edge green technology to reduce their carbon footprint.[267] As green technology represents a growing and profitable avenue within the global economy, unilateral state action to tax carbon could spirit the expansion of green technology and further economic growth in the United States.[268]

Although states may capitalize on several benefits when instituting unilateral carbon tax regimes, such singular and varied implementation could also result in divergent consequences within the United States. Specifically, negative consequences due to the lack of uniformity among states in imposing carbon tax models may result in carbon leakage, administrative inefficiency, and complexities resulting from non-uniform administration of the tax.The following section addresses these negative concerns, and proposes a solution towards more unified carbon tax reform among states.

UTAH ENVTL. L. REV. 311, 321 (2012) (noting that a high enough carbon tax would increase the market demand for non-fossil-fuel technologies); Muller & Hoerner, *supra* note 184, at 9 (documenting that a carbon tax can stimulate the development of zero-emission technologies).

263 Meltzer, *supra* note 257, at 52.

264 *Id*. at 52-53.

265 Lane, *supra* note 255, at 1121.

266 Meltzer, *supra* note 257, at 57 (reviewing the effects of a carbon tax on green technology on a nationalized scale); *see also* Lane, *supra* note 255, at 1122 (noting the movement of green products from factory to field).

267 Meltzer, *supra* note 257, at 57-58.

268 Colin S. Crawford, Comment, *Green Warfare: An American Grand Strategy for the 21st Century*, 11 WAKE FOREST J. BUS. & INTELL. PROP. L. 243, 247 (2011) (noting the economic growth and expansion of green technology in the U.S.).

V. OBSTACLES TO INDEPENDENT CARBON TAX LEGISLATION AND A PROPOSAL TOWARDS UNIFIED REFORM

As previously noted, lack of federal advancement towards a national carbon tax system has resulted in states taking individual action.[269] While incentives exist to promote carbon tax legislation at the jurisdictional level, such initiatives could also pose realistic and concerning obstacles within the United States. Since each state has the power to impose individualized carbon tax legislation, variations could result in differing reduction targets and carbon tax rates across states.[270] Variances on a single product type may lead to economic disparity in the United States. Specifically, negative outcomes arising from the lack of uniformity among states' carbon tax models include (1) business relocation and carbon leakage, and (2) inefficiencies resulting from non-uniform administration of the tax.

A. *Carbon Leakage—A Call for Flexibility and Tax Credits*

The unilateral regulation of GHG emissions via a carbon tax could create harmful economic consequences.[271] For one, businesses and industries may relocate or expand outside local taxing jurisdictions to avoid the rising price of carbon. This prospect is not unique, as similar concerns have arisen in response to global carbon emissions restrictions. Emissions-dependent industries may relocate to countries with no emissions limits to avoid restrictions imposed by more developed countries.[272] Within the United States, it is possible that business decisions may be driven by individual state carbon tax policies, resulting in corporate relocation and carbon leakage.

Carbon leakage refers to the shifting of the production of goods to locations without carbon pricing mechanisms.[273] Specifically, carbon leakage arises from the notion that if fossil fuel use is restricted in one location, the emissions-producing activity may shift to a non- or lesser- restrictive location to avoid costly market channels.[274] Without a national and unified carbon tax system in place in the United States, it is conceivable that carbon tax regulation in one location may factor into corporate investment decisions, leading to carbon

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269 *See* McAusland & Najjar, *supra* note 5, at 766.

270 *See* Lyman Stone, *New EPA Rules Could Lead to State Carbon Taxes*, TAX FOUNDATION (June 5, 2014), http://taxfoundation.org/blog/new-epa-rules-could-lead-state-carbon-taxes.

271 *See* Neil Peretz, *Carbon Leakage Under the European Union Emissions Trading Scheme: Is It a Major Policy Concern?*, 23 TUL. ENVTL. L.J. 57, 60 (2009).

272 *See* Sewalk, *supra* note 60, at 531.

273 Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499, 502 (2009).

274 *See* Roy Andrew Partain, *Is a Green Paradox Spectre Haunting International Climate Change Laws and Conventions?*, 33 UCLA J. ENVTL. L. & POL'Y 61, 96 (2015).

leakage.[275]

In 2012, the Association of Chartered Certified Accountants ("ACCA"), a global body for professional accountants, analyzed the role of carbon taxation and corporate behavior.[276] The ACCA noted that many organizations do not measure the full impact of tax levies on their business and that the misunderstanding of the full cost of compliance can lead to corporate relocation away from taxing regimes where environmental policies are in place.[277] However, the ACCA also recognized that business relocation is a significant corporate decision that may be problematic to stakeholders if done wholly to avoid environmental responsibilities.[278] Further, ACCA research indicates that organizations reducing their carbon emissions do not inescapably experience reduced profitability or productivity, but rather entertain a better record in both environmental and energy performance.[279]

In 2014, following the institution of the EU ETS, one study found no evidence of business production relocation during the system's first two phases.[280] However, early concerns about possible carbon leakage led the EU to exempt certain carbon intensive industries—including steel and cement—from specified carbon taxes and to qualify certain industries for free emission allocations in order to reduce high-risk business relocation.[281] Although loss of competitiveness and relocation of carbon-intensive activity continues to be a concern in the EU, the general consensus holds that corporate relocation decisions are often driven by factors outside climate change policy, including the price of energy and raw materials, cost of labor, market characteristics, institutional framework, and demand shifts.[282]

The absence of competitiveness impact under the EU ETS is reasonable given

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[275] Peretz, *supra* note 271, at 61 (noting that carbon leakage concerns have been raised in the EU with regard to corporate investment decisions).

[276] ASS'N OF CHARTERED CERTIFIED ACCOUNTANTS, CARBON TAXATION AND CORPORATE BEHAVIOUR, (2012), http://www.accaglobal.com/content/dam/acca/global/PDF-technical/climate-change/tech-tp-ctcb.pdf.

[277] *Id.* at 7.

[278] *Id.*

[279] *Id.*

[280] *See Ecorys Study: EU-ETS has not driven industry out of Europe*, ECORYS (Jan. 14, 2014), http://www.ecorys.com/news/ecorys-study-eu-ets-has-not-driven-industry-out-europe; *see also No Sign of 'Carbon Leakage' After EU Puts a Price on Emissions*, SYDNEY MORNING HERALD (Nov. 2, 2013), http://www.smh.com.au/business/carbon-economy/no-sign-of-carbon-leakage-after-eu-puts-a-price-on-emissions-20131101-2wssz.html.

[281] Jocelyn Timperely, *Has the OECD Just Rubbished the 'Carbon Leakage' Argument?*, BUSINESSGREEN (Mar. 11, 2016), http://www.businessgreen.com/bg/analysis/2450614/has-the-oecd-just-rubbished-the-carbon-leakage-argument.

[282] Samuela Bassi & Dimitri Zenghelis, *Burden or Opportunity? How UK Emissions Reductions Policies Affect the Competitiveness of Businesses*, CENTRE FOR CLIMATE CHANGE ECONOMICS AND POLICY, 6, 25 (2014), http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2014/07/Burden-or-opportunity.pdf.

the relatively low carbon price tags and policies that have prevailed under this system.[283] Further, it is the goal of EU member states to ensure that energy intensive industries do not move operations, jobs, and emissions outside EU borders.[284] However, it has been suggested that industry warnings regarding potential carbon leakage in the EU may be exaggerated due to the narrow range of companies, sectors, and products which are most vulnerable to relocation consideration.[285] For most businesses, increased costs due to pollution control do not immediately impair trade and location patterns; rather, industry relocation is more likely driven by labor costs, market size, political stability, income levels, infrastructure, and various government policies.[286]

1. Proposing a Flexible Carbon Tax System

While carbon leakage could pose a legitimate concern in the United States under a unilateral tax system, a company's ability to respond to carbon tax policies is dependent on the various alternatives available and the costs of the mandated action.[287] Specifically, in the short-term, businesses and industries would have limited ability to transition toward alternative sources of energy under new carbon tax legislation; however, over the medium- and long-terms, companies will have greater flexibility in finding lower-carbon fuel sources and implementing more energy-efficient technology.[288] The more certainty and advance notice policymakers can offer as part of a state carbon tax design, the more cost-effectively businesses will adapt to price changes.[289]

Although it is outside the scope of the article to design a carbon tax regime as part of any particular state legislative system, we recommend that states desiring carbon tax regulation implement a flexible schedule allowing businesses and industries the opportunity to adapt over time. A flexible approach to taxing carbon relies on the assurance that health and environmental costs are reflected in the final cost of the product, tax schedules remain elastic, and taxpayers have the ability to make modifications throughout.[290] Unilateral state legislation that

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[283] *Id.* at 5.

[284] Peretz, *supra* note 271, at 61. Energy-intensive industries include steel, aluminum, and chemicals. *Id.* at 63. Emissions-intensive production process industries include cement, electricity, and paper. *Id.* at 70-74.

[285] *Id.* at 74-76.

[286] *Id.*

[287] LARRY PARKER & JOHN BLODGETT, CONG. RESEARCH SERV., "CARBON LEAKAGE" AND TRADE: ISSUES AND APPROACHES , 14 (2008), https://www.fas.org/sgp/crs/misc/R40100.pdf.

[288] *Id.* at 16 (citing *International Competition and US Climate Policy Design*, CARBON PLAYING FIELD 8 (2008), http://pdf.wri.org/leveling_the_carbon_playing_field.pdf).

[289] *Options and Considerations for a Federal Carbon Tax*, CENTER FOR CLIMATE & ENERGY SOLUTIONS (Feb. 2013), http://www.c2es.org/publications/options-considerations-federal-carbon-tax.

[290] *See* Christian Van Schayk, *Tax the Toxics Out of the Environment*, N.Y. TIMES (Apr. 26,

provides flexibly within its carbon tax system will help alleviate the potential of carbon leakage.[291]

2. Proposing Carbon Tax Credits

A second proposal to help minimize business relocation and carbon leakage would be for states to offer tax credit incentives to offset higher prices paid due to the tax.[292] Credits provide taxpayers an opportunity to reduce their overall tax liability by an amount equal to a specified percentage of the cost basis of equipment and property acquired and used in connection with specified activities.[293] Although it is also outside the scope of this article to develop a detailed tax credit system for states to adopt, we propose that states implementing a carbon tax scheme consider offering tax credits to help reduce costs for industries located within state carbon taxing jurisdictions.[294] Specifically, a carbon tax credit should be offered to businesses and industries that implement carbon-reducing programs and technologies.[295]

To successfully offer tax credits, jurisdictions must mandate restrictions on credit dollar amounts and adhere to strong administrative rules to avoid taxpayer abuse. In 1979, the state of Oregon created the Business Energy Tax Credit Program ("BETC") to encourage green building, incentivize energy projects and conservation, and develop investment opportunities in renewable energy resources in the state.[296] The BETC, which was expanded in 2007 and 2008, was offered to individuals and businesses in varying amounts depending on the square footage construction of sustainable buildings and the development of eligible energy projects.[297]

From 2007 until its sunset date in 2014, the Oregon Department of Energy approved 12,529 credits worth $857 million, with an additional 122 outstanding pre-certified credits worth $86 million.[298] While active, the BETC lowered the

1990), http://www.nytimes.com/1990/04/26/opinion/l-tax-the-toxics-out-of-the-environment-604290.html.

[291] PARKER & BLODGETT, *supra* note 287, at 16 (noting that timing affects the ability of industry to adapt to carbon policies).

[292] *Id.* at 17.

[293] Tracey M. Roberts, *Picking Winners and Losers: A Structural Examination of Tax Subsidies to the Energy Industry*, 41 COLUM. J. ENVTL. L. 63, 90 (2016).

[294] *See* Randall S. Abate, *Corporate Responsibility and Climate Justice: A Proposal for a Polluter-Financed Relocation Fund for Federally Recognized Tribes Imperiled by Climate Change*, 25 FORDHAM ENVTL. L. REV. 10, 40 (2013).

[295] *Id.* at 39.

[296] Nancy E. Shurtz, *Eco-Friendly Building from the Ground Up: Environmental Initiatives and the Case of Portland, Oregon*, 27 J. ENVTL. L. & LITIG. 237, 299-300 (2012).

[297] *Id.* at 301. *See also* H.B. 3201, 74th Assemb., Reg. Sess. (Or. 2007); H.B. 3619, 74th Leg. Assemb., Spec. Sess. (Or. 2008).

[298] Ted Sickinger, *Oregon's Business Energy Tax Credit is Officially Dead, But Its Liability Lives On*, OREGONLIVE.COM (July 1, 2014, 6:05 PM, updated July 2, 2014 (6:36 AM),

average person's energy consumption in Oregon by 3.4 percent in 2008, saving 39.7 trillion Btu of fossil fuels, and saved 4.06 million metric tons of CO_2 within the state in a single year.[299]

Although touted as being a "powerful stimulus for the development of renewable energy resources and the 'alternative' energy industry in Oregon,"[300] the BETC was also found to be one of Oregon's "most costly and politically contentious business subsidies."[301] The BETC tax credits were the most generous subsidies offered in the United States, which helped fuel a green energy windfall in Oregon.[302] However, the benefits were extremely expensive—costing the state $156 million in 2008 alone—and allowed credits to be issued based on loose rules and careless administration of the program.[303]

Although the Oregon Legislature attempted multiple times to reduce unnecessary incentives and to cease blatant forms of tax credit abuse, the program was eventually abolished in 2014.[304] While the BETC provided Oregon with more than two billion dollars in investments in renewable energy projects, created of 1,600 jobs, and put the state at the top of the nation in green jobs per capita,[305] the increasing cost of the program, coupled with a national economic downturn and allegations detailing multiple concerns regarding failed administration of the BETC eventually led to its demise.[306]

Although the BETC program is defunct, it offers insight into the progressive effect that tax credits can have on green energy within a single state and provides a platform for the need to implement robust legislative and administrative regulations in order to capitalize on business energy investment while minimizing tax credit abuse. If designed and regulated properly, providing tax credits to offset increasing energy prices under a state carbon tax will help

http://www.oregonlive.com/business/index.ssf/2014/07/oregons_business_energy_tax_cr.html.

299 Gordon J. Kuehl, Comment: *Oregon's Big Gamble: BETC and the Economics of Renewable Energy and Conservation*, 89 OR. L. REV. 701, 709-710 (2010).

300 Neil D. Kimmelfield, *The Oregon Business Energy Tax Credit*, OREGON STATE BAR Vol. 11, No. 1, at 4 (2008), http://www.lanepowell.com/wp-content/uploads/2009/04/kimmelfieldn_012.pdf (noting the powerful benefits of the BETC)

301 Sickinger, *supra* note 298 (documenting the negative effects of the BETC).

302 *Id.*

303 *See id.* (stating credits were issued to windfarms, to solar manufacturing plants, and to transit passes, as well as for lighting upgrades, and for projects that went bankrupt or were never officially launched); *see also* Roberta F. Mann, *Federal, State, and Local Tax Policies for Climate Change: Coordination or Cross-Purpose?*, 15 LEWIS & CLARK L. REV. 369, 384 (2011) (documenting the 2008 cost of the BETC to the state of Oregon).

304 *See* Sickinger, *supra* note 298.

305 Matt Blevins, *BETC: Oregon Should Lead on Clean Energy*, BLUEOREGON, http://www.blueoregon.com/2010/02/betc-oregon-should-lead-on-clean-energy/ (last visited Mar. 2, 2017).

306 Rishi Agrawal, *Incentives Watch: Transferable Tax Credits Create Problems in Oregon, Louisiana*, BLOOMBERG BNA (Dec. 15, 2015), http://www.bna.com/incentives-watch-transferable-b57982065135/ (documenting the allegations behind the BETC).

support and stimulate efficient investments in green energy, while contributing to a reduction in energy consumption and carbon emissions.[307]

B. *Administrative Inefficiency—Proposing a Streamlined State Carbon Tax Administration*

Given that GHG emissions and climate change are global problems that human civilization is likely contributing to, it seems reasonable to consider the need for a global agreement specifying what each country must do.[308] In December 2015 at the United National Climate Change Conference ("COP21") in Paris, 195 countries adopted a universal, legally binding global climate agreement due to begin in 2020.[309] While a monumental endeavor in the unified global drive towards climate control, the reality of COP21 within the parameters of the United States is uncertain. As Republican Oklahoma Senator Jim Inhofe, Chair of the Senate Environment and Public Works Committee noted, "The United States is not legally bound to any agreement setting emissions targets or any financial commitment without approval by Congress."[310]

A valid concern resulting from jurisdictional efforts to tax carbon is whether individualized complexities and the expenses of properly administering the tax could deter states from considering legislation. Implementing an environmental tax of any genus is not without cost. A state's tax department must manage a specialized unit to enforce and collect the taxes and to monitor compliance.[311] The cost of implementing environmental regulation plays a crucial role in considering policy options.[312] An optimal tax structure must balance the burden of complexity and costs of administration against the incentives that the tax aims to address.[313] Although outside the scope of this article to propose a specified optimal tax rate for GHG emissions in any given jurisdiction, it is important to consider that the optimal choice of carbon taxation in a given locale is affected by the administrative costs incurred by the governmental unit contemplating the

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307 *See* Metcalf & Weisbach, *supra* note 273, at 516.

308 Coleman, *supra* note 75, at 88.

309 *See Paris Agreement*, EUROPEAN COMMISSION CLIMATE ACTION, http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm (last visited Mar. 2, 2017). *See also* Justin Worland, *What To Know About the Historic 'Paris Agreement' on Climate Change*, TIME (Dec. 12, 2015), http://time.com/4146764/paris-agreement-climate-cop-21/ (noting that the legally binding aspect of COP21 "walks a fine line", requiring countries to report, but not binding countries to set emissions targets).

310 Suzanne Goldenberg, *How US Negotiators Ensured Landmark Paris Climate Deal Was Republican-Proof*, THE GUARDIAN (Dec. 13, 2015), http://www.theguardian.com/us-news/2015/dec/13/climate-change-paris-deal-cop21-obama-administration-congress-republicans-environment.

311 Sjak Smulders & Herman R. J. Vollebergh, *Green Taxes and Administrative Costs: The Case of Carbon Taxation*, *in* BEHAVIORAL & DISTRIBUTIONAL EFFECTS OF ENVTL. POL'Y 91 (Carlo Carraro & Gilbert Metcalf ed., 2001), http://www.nber.org/chapters/c10606.pdf.

312 *Id.*

313 *Id.* at 91-92.

imposition of such tax.[314]

Concerns and commentary detailing the administrative costs of carbon taxation and emissions control on a global level have been addressed in academic literature.[315] Administrative costs and regulation must be weighed against the benefits drawn from the imposition of a carbon tax. As already noted, the overall expenses and complexities of administering Oregon's BETC program eventually outweighed the state's environmental investments and benefits that the program promoted.[316] To minimize this substantiated administrative concern moving forward, we propose the creation of a Streamlined State Carbon Tax Administration ("SSCTA") program to unify and simplify carbon tax regulation in an efficient and cost effective manner among member states.

The primary purpose of creating a SSCTA is to reduce compliance burdens among member states, thereby minimizing the overall costs associated with tax administration to optimize the benefits of implementing a carbon tax regime within any given state. We suggest that a SSCTA be modeled on the Streamlined Sales and Use Tax Administration ("SSUTA"), which has been in effect in the United States since 2000.

The SSUTA aims to "simplify and modernize sales and use tax administration… in order to substantially reduce the burden of tax compliance."[317] Developed by forty-four states and guided by a Business Advisory Council, the SSUTA is a multilateral agreement among member states formed with the intent to harmonize their sales tax systems.[318] Specifically, for sales and use tax purposes, the SSUTA provides to member states: (1) state level administration; (2) uniformity in state tax bases; (3) simplification of state and

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[314] *Id*. at 92.

[315] *See, e.g.*, Haifeng Deng, *Improving the Legal Implementation Mechanisms for a Carbon Tax in China*, 32 PACE ENVTL. L. REV. 665, 694 (2015) (proposing that a supporting database system working as a technical platform on which tax policy, climate change management, and carbon emissions calculations are accomplished systematically can decrease administrative costs of a carbon tax in China); Harper, *supra* note 56, at 431 (noting that in Belgium, the social benefits of green taxes outweigh the administrative costs of managing the tax); Emily Richman, Note, *Emissions Trading and the Development Critique: Exposing the Threat to Developing Countries*, 36 N.Y.U. J. INT'L L. & POL. 133, 168 (2003) (documenting that the Kyoto Protocol's Clean Development Mechanism provisions fail to provide for the defraying of certain administrative costs of developing countries participating in emissions trading); Kevin M. Stack & Michael P. Vandenbergh, *The One Percent Problem*, 111 COLUM. L. REV. 1385, 1416-17 (2011) (presenting the Regional Aviation News highlighting the high administrative and cost burdens stemming from environmental regulations on the domestic general aviation industry).

[316] *See supra* text accompanying notes 296-306.

[317] STREAMLINED SALES AND USE TAX AGREEMENT (as amended December 16, 2016), http://www.streamlinedsalestax.org/uploads/downloads/Archive/SSUTA/SSUTA%20As%20Amended%2012-16-16.pdf (last visited Mar. 3, 2016); *see also* Kisska-Schulze, *supra* note 215, at 356.

[318] *See* Brian Galle, *Designing Interstate Institutions: The Example of the Streamlined Sales and Use Tax Agreement*, 40 U.C. DAVIS L. REV. 1381, 1387 (2007) (defining the SSUTA).

local tax rates; (4) uniform sourcing rules; (5) simplified administration of exemptions; (6) simplified tax return and remittance procedures; (7) a centralized electronic registration system; and (8) protection of consumer privacy.[319] Although the SSUTA is not wholly conforming (only twenty-four states have thus far passed legislation complying with the requirements of the administration), and specifically focuses on sales and use tax administration, it provides a sound and operational resource foundation for the creation of a SSCTA.[320]

In conjunction with its creation, we suggest the following goals be considered in the development of a SSCTA to efficiently and effectively harmonize state carbon tax legislative approaches: (1) development of solutions to minimize the complexity of state carbon tax implementation, (2) simplification and unification of state carbon tax implementation and administration among member states, (3) encouragement of carbon taxation at the state and local levels, and (4) adoption of uniform carbon tax base definitions.

To meet these goals, we first suggest the creation of a governing body composed of member state legislators authorized to administer and operate a SSCTA, with the ultimate purpose of developing a straightforward, business-friendly carbon tax system that member states can adopt. Second, a SSCTA should incentivize and encourage private sector suppliers to develop carbon tax administrative software to be used by member states in order to reduce the complexity of tax collection and audit issues. Third, a SSCTA should mandate carbon tax rate simplification rules requiring that member states impose a single tax rate applicable to carbon emissions. Finally, a SSCTA should provide uniform definitions of administrative terms and applicable emissions that member states either tax or exempt under their legislative processes, allowing businesses and industries located in member states ease in understanding whether their emissions are taxable or exempt.

Unifying the carbon tax system under a SSCTA would allow unilateral regulatory states to interact with each other in a way that may eventually increase the nation's incentive to regulate emissions.[321] To this end, carbon tax administration among member states should encourage simplified governing cooperation to better harmonize regulations, matching commitments to raise

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[319] John A. Swain, *State Sales and Use Tax Jurisdiction: An Economic Nexus Standard for the Twenty-First Century*, 38 GA. L. REV. 343, 372-73 (2003).

[320] *How Many States Have Passed Legislation Conforming to the Agreement?*, STREAMLINED SALES TAX GOVERNING BOARD, INC., http://www.streamlinedsalestax.org/index.php?page=gen6 (last visited Mar. 11, 2017); *see also* Eric S. Smith, *The Pact Act as Indicium of the Due Process Validity of the Marketplace Fairness Act*, 19 FLA. TAX REV. 1, 28 (2016) (noting that lack of conformity under the SSUTA may be due, in part, to some states' unwillingness to give up their sovereign power to tax).

[321] *See* Coleman, *supra* note 75, at 96 (noting that domestic regulation should interact with other nations' regulations to incentivize those nations to regulate).

broader state interest in implementing a carbon tax system, and formally linked regulations to simplify and cost-effectively manage the tax while benefitting from the overall goal of reducing GHG emissions in the United States.[322]

VI. CONCLUSION

Climate change is one of the most contentious issues facing humanity. Although GHG emissions regulations in the United States have been proposed, there is no federal law currently in place requiring businesses to abate their impact on global climate. In the absence of federal carbon tax legislation, some states have unilaterally pursued independent climate change legislation, including consideration of state carbon tax systems. Although unilateral carbon tax regulation among states could provide numerous benefits, including optional and flexible tax implementation, innovative revenue, market-based freedom, and green technology stimulus, such initiatives also pose economic concerns within the United States, including business relocation, carbon leakage, and costly administrative inefficiencies.

To minimize the potential negative impacts stemming from unilateral carbon tax regulation, and to further incentivize states to consider implementing a carbon tax, this article proposes consideration of flexible, simplified, and harmonized carbon tax administration among states. Specifically, this article proposes that states implement a flexible carbon tax system allowing businesses and industries the opportunity to adapt to the legislation over time, thus minimizing the potential for business relocation and carbon leakage. Second, this article proposes that states offer highly-regulated tax credits to offset energy prices of the tax while stimulating investment in green energy. Finally, this article proposes the creation of a Streamlined State Carbon Tax Administration to reduce compliance burdens among member states, minimize costs resulting from carbon tax administration, encourage simplified governing to harmonize regulations, increase state interest in implementing a carbon tax system, and share the overall goal of reducing GHG emissions in the United States.

322 *See id.*