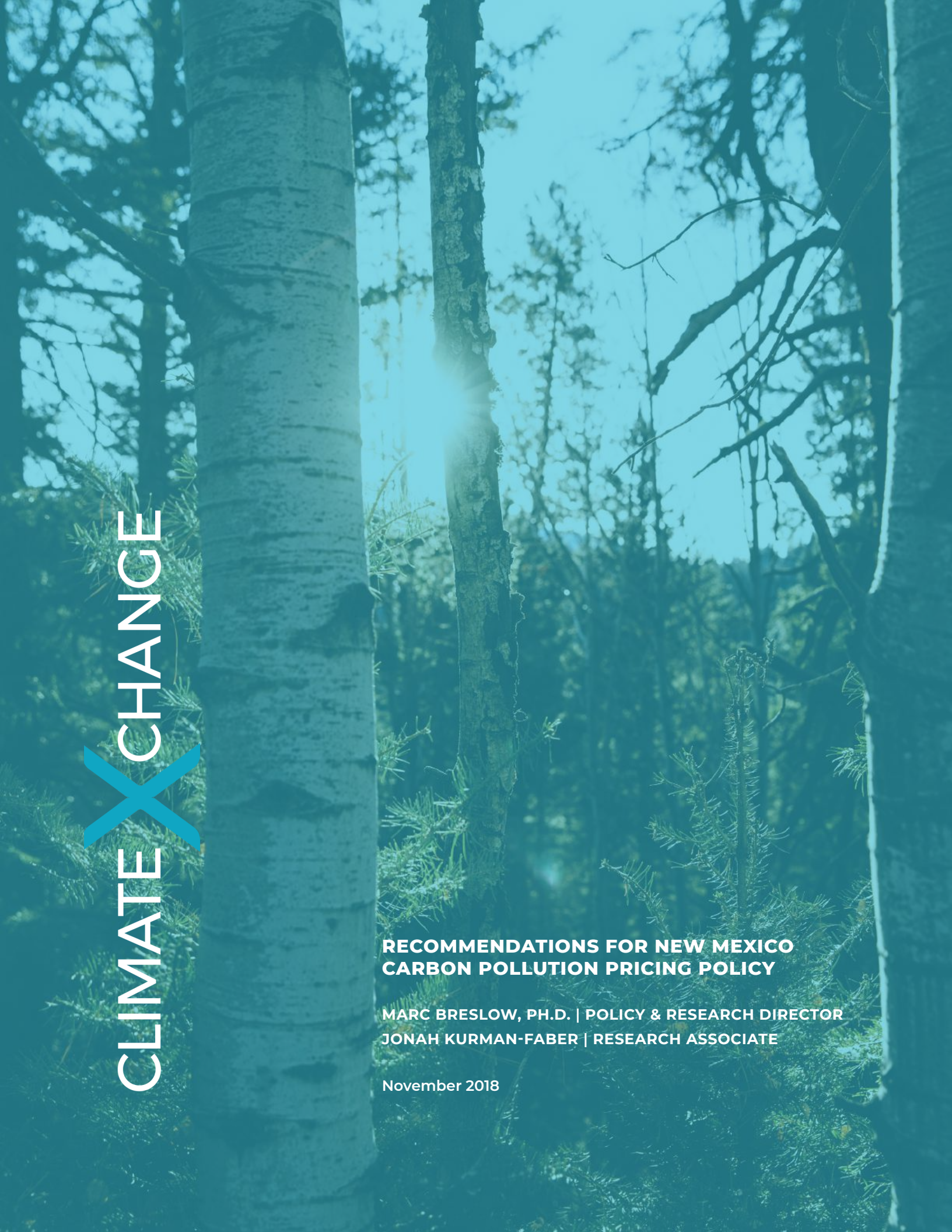

CLIMATE XCHANGE

RECOMMENDATIONS FOR NEW MEXICO CARBON POLLUTION PRICING POLICY

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Our mission is to provide research, education, and advocacy to enhance climate resilience and move us towards a low-carbon economy through market-based mechanisms.

Climate XChange was founded in 2013 by a group of concerned citizens, frustrated by the lack of progress in the fight against climate change, and seeking effective and viable policy solutions to reducing carbon emissions. Inspired by the support for carbon pricing among economists, its popularity across the political aisle, and its potential for yielding deep reductions in GHG emissions cost-effectively, we decided to focus on market-based solutions to the climate crisis. Our starting point was researching the impact of carbon pricing on the Massachusetts economy and writing legislation to implement it in that state.

We have since expanded our efforts across the nation, helping policymakers and advocates to understand the issues in specifying a policy appropriate to their state; designing such a policy; projecting its impacts on households, industries, and emissions; and when appropriate drafting legislation. As our organization has grown, so has our staff, our aspirations, and most importantly, our impact. At a time when our federal government remains stagnant on climate action, states have the opportunity to make policy decisions that will bolster the well-being of communities and the economy. By providing policymakers and advocates the cutting-edge research and knowledge they need, we can work together to ignite a clean energy revolution and establish a stronger energy foundation for our economy.

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Each recommendation is listed on two different pages. The first is for Section II, where just the recommendation is given. The second is for Section III, where explanations and supporting evidence for the recommendations are also given.

EXECUTIVE SUMMARY

This study responds to the New Mexico State Senate's 2018 SM023, calling for a study to be done on "how a carbon fee could be implemented in New Mexico and its effects on the economy, jobs, health and greenhouse gas emissions." The present study provides recommendations and supporting evidence for the implementation question.

We make 24 recommendations, addressing four principal facets of a carbon fee policy: which sources of greenhouse gas emissions (GHGs) should be covered; what rate the fee should start at and how it should increase over time; how should the revenues be used; and how should the system be administered.

WHICH SOURCES OF GHG EMISSIONS SHOULD BE COVERED?

We recommend that fees should be placed on all fossil fuels combusted within the state, whether produced in-state or imported. Fuels exported from the state should be excluded because their emissions are the responsibility of the consuming states.[1] Electricity generation is responsible for close to half of emissions from in-state energy use, but other policies have been proposed to address this sector. Should those other policies be passed and found adequate, electricity could be exempted from the carbon fees.

Other GHG sources should be addressed if they are significant. This includes methane leakage from the stages of the natural gas industry prior to combustion; net lifecycle emissions from combustion of biomass and biofuels; other greenhouse gases such as refrigerant chemicals; and unusually high lifecycle emissions from particular fossil fuel sources.

WHAT SHOULD THE CARBON FEE PER TON OF CARBON DIOXIDE EQUIVALENT (CO_2E) BE OVER TIME?

We recommend that the fee begin at $10/ton and increase by $10 each year until it reaches $50, then increase by the general rate of inflation plus 5 percent each following year. However, given the state's target to reduce emissions 75 percent by 2050, recent scientific warnings concerning the intensifying dangers of climate change, and estimates of the social cost of carbon, higher rates would be justified.

HOW SHOULD THE REVENUES BE USED?

We recommend that the funds generated be used to: provide rebates (or exemptions) to vulnerable households and employers; transition assistance to workers and communities in fossil fuel-related industries; incentives to expand clean energy and low-emissions transportation; and funding for resilience to climate change impacts.

Of greatest importance is protection for low and moderate income households. Based on studies done for other states, we recommend that in the range of 60 percent of funds be used for household rebates, 20 percent for assistance to employers (particularly manufacturing and agriculture), and 20 percent for clean energy and the other purposes noted above. We also recommend that higher rebates be provided for rural residents, and that public transit agencies be exempted from the fees or fully rebated for their costs.

ADMINISTRATIVE ISSUES

There are a number of administrative aspects that are crucial to effective and equitable functioning of the system. Carbon fees should be collected at the first point of sale or transfer within the state. For fuel produced or consumed on tribal lands, different procedures may need to be negotiated. To ensure that low-income people are protected, state agencies should be mandated to see that all such households receive their appropriate rebates. For the same reason, legislation should exempt rebates from being considered in eligibility for other state programs that provide low-income assistance.

For both households and those employers designated to receive assistance, rebates should be provided in a timely fashion. To build support for the program, rebates should be provided in a manner that is highly noticeable to recipients, while also keeping administrative costs low. Finally, the Environment Department should have general responsibility for programs to incentivize clean energy, low carbon transportation, and resilience, but could devolve administration for portions of this to other agencies with the appropriate expertise.

1 Generally states that import fuels count them as part of the state's emissions. For electricity, the Western Climate Initiative counts imports from outside the region, but the Regional Greenhouse Gas Initiative does not.

I. INTRODUCTION

Climate change is the foremost environmental danger facing humanity and the planet, threatening our health, safety, and livelihoods. Virtually all nations, and many U.S. states, have made commitments to drastically reduce their greenhouse gas (GHG) emissions, based on a scientific consensus that emissions must be reduced 80 percent or more by mid-century or earlier in order to avoid drastic consequences.

The federal government and state governments have a variety of policies that are designed, at least in part, to reduce emissions, mainly of CO_2 from burning fossil fuels. These include policies to improve the fuel efficiency of vehicles and energy use in buildings, and to promote the development of renewable energy.

New Mexico Executive Order 05-033[2] sets statewide greenhouse gas emission reduction targets[3] of 2000 emission levels by 2012, 10 percent below 2000 levels by 2020, and 75 percent below 2000 emission levels by 2050.

The state has a renewable portfolio standard (RPS)[4] for electricity supply, that reaches 20 percent in 2020. It also has requirements and incentives to improve energy efficiency in state buildings and for larger buildings that receive state funding. The electric and gas utilities in New Mexico have various policies that provide technical assistance and rebates for installation of energy efficiency measures and purchase of efficient equipment. They also have incentives for renewable electricity, such as net metering. State government programs also provide tax incentives for renewable energy measures.[5]

Most analysis, however, shows that existing policies are inadequate to achieve the deep long-term GHG cuts that are necessary to stabilize our climate. There is a high level of recognition worldwide, especially among policymakers and economists, that putting a charge on GHG pollution that corresponds with the damage it causes to society is the most cost-effective means of reducing that pollution. Such "carbon pricing" is in effect today in many countries and in parts of the United States, either through fees or taxes per ton of CO_2 emitted, or through caps on emissions that decline over time (known as cap-and-trade systems).

In 2018 the New Mexico State Senate passed SM023, stating in part:

NOW, THEREFORE, BE IT RESOLVED BY THE SENATE OF THE STATE OF NEW MEXICO *that a study of carbon fee and dividend legislation be supported; and*

BE IT FURTHER RESOLVED *that the appropriate legislative interim committee study how a carbon fee could be implemented in New Mexico and its effects on the economy, jobs, health and greenhouse gas emissions*;

The present study, produced without state government funding, provides an initial answer to how a carbon fee could be implemented in New Mexico that is appropriate for conditions in the state. Since 2014, Climate XChange has worked extensively on the research, design, implementation, and evaluation of carbon pricing proposals and existing programs in several states, including Massachusetts, Maryland, Rhode Island, Connecticut, California, New Jersey, New York, and Colorado. Our report draws on research studies, policy designs, and proposed legislation from a number of other states during the past few years.

The primary goals of a carbon pricing system, toward which it should be designed, include:

MAKING a major contribution to reaching the state's GHG reduction targets

MAKING that contribution through both a price incentive and investment in programs that directly reduce emissions

PROTECTING low and moderate income households, and other vulnerable people such as those currently employed in fossil-fuel related industries, and helping them to transition to clean energy—while still providing a price incentive for households to reduce their emissions

PROVIDING assistance to or exempting employers who have high energy costs and face substantial competition from companies in areas that don't have carbon pricing

MAKING a positive contribution to employment and the health of the state's economy

FUNCTIONING administratively in a manner

2 Executive Order 05-033: http://www.emnrd.state.nm.us/ECMD/LawsRegulationsExecutiveOrders/documents/EO_2005_033.pdf
3 https://www.c2es.org/content/state-climate-policy/
4 https://www.c2es.org/content/state-climate-policy/
5 http://programs.dsireusa.org/system/program?state=NM

that is effective while not being overly burdensome or costly

The recommendations below are designed to reach these goals in the specific context of New Mexico's economy and other conditions. Following the recommendations in Section II, Section III provides explanations and supporting evidence for them.

II. RECOMMENDATIONS

A | WHICH SOURCES OF GREENHOUSE GAS (GHG) EMISSIONS SHOULD BE COVERED?

1 | Which fossil fuels should be covered by the fee?[6]

Cover all fuels that are consumed within New Mexico, including those that are imported. Exempt fuels that are exported from the state.

2 | How should electricity be handled?

A number of other policies to address the electricity sector have been proposed, including ones to incentivize renewable energy and to phase out coal-fired generation. If these policies move forward, exempt electricity use from the carbon fees. If such policies do not pass or are inadequate, consider including electricity consumed within the state in the carbon pricing system.

3 | Should methane leakage be included?

Include leakage to the atmosphere of unburned methane from all processes prior to burning within the CO_2e charge on natural gas consumed in the state. Use the best estimate available of leakage rate, and an average of the 20-year and 100-year global warming potential (GWP) of methane; the latter based on IPCC analysis.

4 | How should biomass and biofuels be handled?

Contrary to earlier thinking, burning of biomass and biofuels to generate electricity, heat buildings, or operate vehicles is not carbon-neutral, except in certain restricted cases. Each such fuel should be given a GHG rating per unit of energy produced, based on the best available evidence. Due to the complexity of making such ratings, which often need to be specific to the geographic source of the fuel, if possible rely on a trustworthy outside source, such as academic research or a government agency such as the California Air Resources Board.

5 | Should other greenhouse gases be included?

Include all other GHG's that each constitute, according to the best estimate available, more than one percent each of the state's overall emissions. Give the Environment Department the authority to exempt particular GHG's, based on a showing that covering them would be unfeasible.

6 | Should lifecycle emissions be included?

In addition to emissions during the actual burning of fossil fuels, include fees for emissions during earlier phases of the fuel cycle, if these constitute more than 10 percent of the emissions from burning, as occurs with petroleum from the Canadian Tar Sands.[7] Such a provision is only needed if these fuels are used in New Mexico.

B | SCHEDULE OF FEE RATE OVER TIME

7 | What should the fee schedule be over time?

Set carbon fees in accordance with widely-accepted estimates of the social cost of carbon pollution. Begin modestly at $10/metric ton of CO_2 equivalent and increase by $10 a year until it hits $50/ton in year five. After year five, increase by the general inflation rate plus 5 percent a year.

8 | Consider a higher fee schedule

The fee schedule in (7) above begins at a low price and rises gradually, in order to ease New Mexico's adjustment. But the state's target of a 75 percent emissions cut by 2050, along with the latest science and estimates of the social cost of carbon, would justify higher fees. Consider a higher initial rate per ton. Further, have the Environment Department conduct a review every three years and recommend that the legislature increase the rate above that given above if the best estimate of the social cost of carbon emissions is higher. See discussion in Section III below.

C | HOW SHOULD THE REVENUE BE USED?

9 | Use of funds in general

Use funds to protect vulnerable households and employers; provide transition benefits to workers

6 We use the word "fee" to indicate that this is a charge for imposing damage on society, which most or all of the revenue will be used to address in specific ways. A "tax" normally brings in revenues that are used anywhere in a state's budget. There remains the legal question of how New Mexico would classify the pollution charge.

7 California's cap-and-trade system does require petroleum and natural gas producers to purchase allowances for the emissions that occur during processing of these fuels within the state, even if they are ultimately exported. But allowances are not required for emissions during burning of the fuels after they are exported out of the state.

and communities who are impacted by shrinkage of the fossil fuel industry; incentivize clean energy and low-emissions transportation; and provide funding for resilience to climate change impacts.

10 | Rebates versus tax cuts

Evidence from other states has shown that rebates provide greater equity for low and moderate income households than cutting taxes, such as those on personal income, sales, businesses, or property. We therefore recommend returning money to households via rebates. Our preliminary analysis is that cutting other state taxes would not yield an equitable return to low/moderate income people.

11 | Percentage split of funds among different purposes

Determining the optimal split requires research studies on the impacts of the fees on households at different income levels and on industries of different types. Our analysis in other states suggests a distribution in the range of 60 percent to households, 20 percent to employers, and 20 percent to other purposes including clean energy. (See Section III for more detail on this subject.)

12 | Formula for distribution among households

To the degree that state law allows, rebate to low-income households (or provide equivalent tax reductions) enough funds to cover any increased costs for as high a fraction of such households as possible. For moderate-income households provide sufficient funds so that on average any increased costs are covered. For higher-income households provide rebates to the extent feasible after desired expenditures listed in item (9) above are provided.

13 | Transition benefits for workers and communities

Provide a sufficient share of the funds to allow workers who lose their jobs, and communities who lose tax revenue and economic activity, to make a smooth transition over time to other activities, to the extent allowed by law and the state Constitution. For older workers, this could mean partial or full replacement wages until retirement if needed.

14 | Funds for clean energy and transportation

Carbon pricing has two means of reducing emissions—the price incentive to switch to clean energy, and the use of revenues to directly invest in clean energy and transportation. We recommend that on the order of 20 percent of total revenues be devoted to the promotion of energy efficiency, renewable energy, and low-carbon forms of transportation. A portion of these funds should be reserved for the benefit of low-income households, such as one-third for the lower-income third of households.

15 | Funds for employers

Funds should be provided as needed and as constitutionally permitted to protect vulnerable industries, which include those that are "energy intensive and trade-exposed" (EITE), including manufacturing and agriculture; small non-profit organizations; and state and local government agencies. Base rebates, free allowances, or exemptions, on either output levels or number of employees.

16 | Legal issues in use of the revenues

It is our understanding that provisions in New Mexico's constitution could create obstacles to providing rebates to individuals, households, and employers. However, we also understand that a large fraction of households could be exempt from the provision; and that the Constitution may give the Legislature sufficient discretion to adopt these policies. Legal advice is needed to explore this question further.

17 | Should there be protection for particular groups, such as rural households or public transit authorities?

Households in rural areas generally need to drive more than those in cities or suburbs. We recommend considering a higher rebate level for such households based on an objective criterion such as (a) they live in a community where average miles driven are at least 30% above the statewide average, or (b) population is less than 500 per square mile (or whatever number/square mile would be appropriate for New Mexico's demography).

Public transit agencies, or other agencies that provide low-carbon forms of transportation, should either be exempt from the fees or be fully rebated for their higher costs.

D | ADMINISTRATIVE ISSUES

18 | Where to collect carbon fees

For all fuel or electricity that is to be consumed in the state, the fee should be collected at the first point of sale or transfer within the state, whether it originates in the state or is imported. For natural gas that goes through regulated utilities, the utilities should collect the fees on behalf of the state.

19 | Collection of fees and rebate distribution on tribal lands

Administrative mechanisms different from those in the rest of the state may be needed to handle energy sources produced or consumed on and around tribal lands. Rebates to households and employers probably do not require special treatment. Further research is needed on this topic.

20 | How can the bill ensure that all low-income people get rebates?

Instruct all state agencies to cooperate, including sharing their computer lists, to ensure that as close as possible to 100% of low-income people receive their appropriate rebates. Require that distribution methods be as convenient as possible for low-income households. This could include requiring that a state agency, such as the Department of Human Services, which administers SNAP benefits, add carbon rebates to their electronic benefit transfer (EBT) cards.

21 | How can the bill provide rebates on a time schedule that allows people and businesses to pay their bills?

Include a provision which requires that most residents and businesses/institutions get rebates early in the year and/or throughout the year such that they have the money to pay their bills when needed.

22 | To the degree possible, exempt rebates from being considered in eligibility for other public benefits

The state should be able to exempt carbon rebates (or tax reductions) from being considered in eligibility for state programs that provide benefits to low/moderate income people. For federal programs, this should be done to the extent that federal law allows the state to do so.

23 | Balance needs to publicize benefits and to keep administrative costs low

To build maximum public support for the program, rebates should be provided in a manner that is most noticeable to residents and employers, such as a periodic paper check in the mail. On the other hand, state governments often prefer to minimize administrative costs through the use of electronic payment transfers and including rebates within other transactions. We recommend that legislative wording should treat the first criterion as primary, but to balance that with cost considerations.

24 | How to administer funds used for clean energy and transportation

The Environment Department should be in overall charge of distributing these funds, with the authority to devolve administration over portions to agencies with the appropriate expertise, such as the Department of Transportation for low-carbon transportation investments and the Energy, Minerals, and Natural Resources Department for clean energy investments. One possibility is to have a portion of the funds provided as grants to municipal and county governments and to public transit agencies. Because local governments and transit agencies tend to be perpetually short of funds, this would have substantial public benefits in addition to reducing GHG emissions.

III. EXPLANATIONS AND EVIDENCE FOR RECOMMENDATIONS (WHICH ARE REPEATED FROM THE SUMMARY ABOVE)

A | WHICH SOURCES OF GHG EMISSIONS SHOULD BE COVERED?

1 | Which fossil fuels should be covered by the fee/tax?

RECOMMENDATION: Cover all fuels that are consumed within New Mexico, including those that are imported. Exempt fuels that are exported from the state.

EXPLANATION: About two-thirds of the CO_2 emissions from coal, natural gas, and petroleum that come from drilling or mining in New Mexico are contained in fuels that are then exported. Most of the coal is used in-state, but about three-fourths of the natural gas and petroleum is exported. These exports are important to the state's economy and tax revenues, and adding carbon fees to their prices would affect the competitive position of the state's exports relative to those of other states.

In addition, states that are considering carbon fees generally would impose carbon charges on all fuels and electricity consumed in the state, whether produced in-state or imported. For the cap-and-trade systems, the Regional Greenhouse Gas Initiative (RGGI) does not require that imported electricity hold emissions allowances, while the Western Climate Initiative does require them. The fact that importing states would take responsibility for emis-

sions that are due to their consumption of energy suggests that states exporting to them do not need to take responsibility for these emissions, and that doing so would constitute double-counting.

For these reasons, it seems reasonable for New Mexico to place fees only on fuels that are consumed in the state, and not on those exported. Electricity is more complicated than petroleum and natural gas, because it is difficult to precisely identify the sources of imported and exported power, and so to know how many tons of CO_2 are consumed in the state. See Recommendation #2 concerning electricity.

Table 1 Metric tons of CO_2 from each fuel source, to be covered by carbon fees (consumed in the state) and uncovered (exported)

Million Metric Tons CO2	Total covered	Non-electric consumption	Electric consumption	Process emissions	Total uncovered	Total energy produced in New Mexico
TOTAL	52.9	26.6	23.2	3.1	111.0	163.9
Coal	19.6	0.2	18.6	0.8	4.7	24.3
Natural Gas	15.8	9.2	4.5	2.0	63.1	79.0
Petroleum	17.5	17.2	.04	0.3	43.2	60.6

The table below shows the percentages of each energy source that would be covered by carbon fees if exported energy is not made subject to fees.

Table 2 Percent of emissions from energy produced in New Mexico that are due to consumption in the state[8]

% of production Emissions	Total covered	Non-Electric consumption	Electric consumption	Process Emissions	Total uncovered	Total energy produced in New Mexico
TOTAL	32%	16%	14%	2%	68%	100%
Coal	81%	1%	77%	3%	19%	100%
Natural Gas	20%	12%	6%	3%	80%	100%
Petroleum	29%	28%	0%	0%	71%	100%

2 | HOW SHOULD ELECTRICITY BE HANDLED?

RECOMMENDATION: A number of other policies to address the electricity sector have been proposed, including ones to incentivize renewable energy and to phase out coal-fired generation. If these policies move forward, exempt electricity use from the carbon fees. If such policies do not pass or are inadequate, consider including electricity consumed within the state in the carbon pricing system.

EXPLANATION: During the last legislative session a number of policies designed to increase the amount of renewable electricity produced and reduce the use of fossil fuels for electricity generation were proposed. While some made steps forward, none became law. But prospects for their passage appear greater during the next session. If these initiatives create a sufficient pathway to decarbonizing the electricity sector, then it can be excluded from the carbon fee system. The policies currently proposed include increasing the RPS to 50% by 2030 and 80% by 2040, which is supported by the newly-elected governor. Senate Bill 79, which proposed a tax credit for thermal and solar installations, passed both the senate and house last session before being vetoed by the former governor. Other proposed clean energy bills from last session, such as HB 196, HB 248, SB 7, SB 82, and SB 118, indicate that legislators are interested in pursuing renewable energy development and energy efficiency. If a strong RPS standard becomes law, then New Mexico could likely achieve long-term emission targets in the electricity sector without putting a price on those emissions.

8 Energy Information Administration (EIA) State Energy Data System (SEDS), 2016.

It is important to recognize that electricity accounts for close to half of emissions from in-state consumption of energy, as shown in Table 1 above. If electricity was included, there are greater complexities in identifying the sources of import than with petroleum, natural gas, and coal. If New Mexico utilities have firm purchase contracts for imports the sources, and emissions, can be identified. However, if power is bought on the spot market it can be difficult to identify the sources. In 2016, New Mexico consumed about 70% of its net electricity generation, sending 30% out of state.[9]

3 | Should methane leakage be included?

RECOMMENDATION: Include leakage to the atmosphere of unburned methane from all processes prior to burning within the CO_2e charge on natural gas consumed in the state. Use best estimate available of leakage rate, and an average of the 20-year and 100-year global warming potential (GWP) of methane; the latter based on IPCC analysis.

EXPLANATION: When burned, natural gas has lower CO_2 emissions than coal or petroleum, and this is enhanced because gas-fired plants tend to be newer and more efficient than older coal-fired plants. However, a small fraction of the gas leaks into the atmosphere before it is burned, at the wellhead, while traveling through transmission and distribution pipes to the ultimate points of consumption, and at other points in the distribution system. Methane is a much more powerful GHG than CO_2, so this leakage is a serious problem.

Other policies are being proposed in New Mexico to reduce the leakage rate and could succeed in doing so to the extent feasible. However, an estimate of the impacts of leakage should still be included in the carbon fees (better termed GHG fees) imposed on consumption of natural gas for electricity generation, heating, and other purposes. Adding the impact of leakage to the fee on natural gas increases the incentive to convert to renewables rather than to expand gas use.

There is substantial uncertainty concerning the leakage rate of methane during all stages prior to burning, and whether it is more appropriate to use its 20-year or 100-year global warming potential (GWP) number (methane leaves the atmosphere more quickly than CO_2, so its impact is higher over 20 years than over 100 years). Some researchers have also argued for a higher GWP of methane versus CO_2. Nevertheless, legislation should specify that regulators are to use the best estimates available of the impacts of methane leakage, given the particular conditions in New Mexico. The California Air Resources Board (CARB) has been using a 1.2 percent lifecycle leakage rate for gas produced from fracturing of shale rock;[10] while one recent academic study puts the leakage at 2.3 percent.[11] With CARB's leakage rate and GWP potentials for methane, and taking an average of the 20 year and 100 year potential numbers, methane leakage adds 21 percent to the CO_2e from combustion of natural gas.

4 | How should biomass and biofuels be handled?

RECOMMENDATION: Contrary to earlier thinking, burning of biomass and biofuels to generate electricity, heat buildings, or operate vehicles is not carbon-neutral, except in certain restricted cases. Each such fuel should be given a GHG rating per unit of energy produced, based on the best available evidence. Due to the complexity of making such ratings, which often need to be specific to the geographic source of the fuel, if possible rely on a trustworthy outside source, such as academic research or a government agency such as the California Air Resources Board.

EXPLANATION: In the past, it was commonly assumed that renewable biomass and biofuels derived from plant sources were carbon neutral, because trees, crops, and plants cut down for use as fuel would be replaced by re-planting. More recent research has found this not to be the case for many sources of biomass and biofuels. For trees, the actual combustion emits more CO_2 per unit of energy produced than does coal. Replacement trees do absorb CO_2, but it takes many years before the new tree absorbs as much as the tree which was cut down.[12]

9 https://www.eia.gov/electricity/state/newmexico/

10 Appendix C: CA-GREET 3.0 Technical Support Documentation, California Air Resources Board, Table C.2, Methane Leakage Assumptions.

11 "Assessment of methane emissions from the U.S. oil and gas supply chain," Ramon A. Alvarez et al., Science June 21, 2018, abstract [EDF], http://science.sciencemag.org/content/early/2018/06/20/science.aar7204

12 See for example, *Biomass Sustainability and Carbon Policy Study*, Manomet Center for Conservation Sciences, Thomas Walker et al, prepared for Massachusetts Department of Energy Resources, June 2010, https://www.mass.gov/files/documents/2016/08/qx/manomet-biomass-report-full-hirez.pdf.

For food crops, such as corn used for ethanol or soybeans used for biodiesel, the land available for growing food is reduced, which then tends to lead to forests being clear-cut to create more cropland, including in rainforests in tropical countries. Growing and processing certain crops, such as corn, also tends to be fossil-fuel intensive.[13] For these reasons, the lifecycle CO_2 emissions of biofuels and biomass need to be evaluated and carbon fees placed on use of the fuels.

5 | Should other greenhouse gases be included?

RECOMMENDATION: Include all other GHGs that each constitute, according to the best estimate available, more than one percent each of the state's overall emissions. Give the Environment Department the authority to exempt particular GHG's, based on a showing that covering them would be unfeasible.

EXPLANATION: There are several greenhouse gases besides CO_2 from fossil fuels, and methane, that contribute significantly to total GHG's in most states. These include refrigerants (HFC's), SF6 (used in electrical transmission equipment), CO_2 from burning biomass, biofuels, and solid waste, and nitrous oxides. Together they likely add up to several percent of New Mexico's total CO_2e from all sources. To the degree feasible, carbon fees should be placed on the release of such gases. To do so, reasonable estimates must be made of the extent of leakage of such gases as HFC's and SF6, which are normally contained within pipes and industrial materials. While such estimates may be difficult to make, including these gases within the system provides an incentive to limit leakage, which can be done through careful maintenance and proper disposal of old equipment.

6 | Should lifecycle emissions be included?

RECOMMENDATION: In addition to emissions during the actual burning of fossil fuels, include fees for emissions during earlier phases of the fuel cycle, if these constitute more than 10 percent of the emissions from burning, as occurs with petroleum from the Canadian Tar Sands. Such a provision is only needed if these fuels are used in New Mexico..

EXPLANATION: For some geographic sources and extraction methods of fossil fuels the emissions prior to combustion can be significantly higher than is typical for that fuel. Of greatest concern at present is oil from the Canadian Tar Sands in Alberta Province, much of which is exported to the United States. Because the crude oil is embedded in a sand-like geological formation, extracting the oil and separating it from the sands is an energy-intensive industrial process that adds 15 to 20 percent to its overall emissions. If any Tar Sands oil is consumed in New Mexico these process emissions should be included in the carbon fees. If this source is not used in the state then such a provision is probably unnecessary at present. If lifecycle emissions are included it would be expeditious to make use of calculations done by outside parties to quantify them, such as the California Air Resources Board.

Massachusetts House Bill 1747, 2017-2018 legislative session, would direct that state's energy agency or environmental agency to issue a report to the legislature within three years as to whether emissions that take place outside the state, from the extraction, refining, transportation, etc. of fossil fuels should be included in the carbon pollution fees.[14]

B | SCHEDULE OF FEE RATE OVER TIME

7 | What should the fee schedule be over time?

RECOMMENDATION: Set carbon fees in accordance with widely-accepted estimates of the social cost of carbon pollution. Begin at $10/metric ton of CO_2 equivalent and increase by $10 a year until it hits $50 in year five. After year five, increase by the general inflation rate plus 5 percent a year.

EXPLANATION: Bills last legislative session in various states begin with prices of $10 to $20 a ton and increase at various rates, ending up at $40 to $100 or more after a number of years. Generally we recommend that bills start relatively low in order to provide time for society to adjust and to accept the charges, then ramp up until they reach widely-used estimates of the social cost of carbon after a reasonable number of years.

8 | Consider a higher fee schedule

RECOMMENDATION: The fee schedule is based on political feasibility, not on what is needed to reach long-term emission reduction goals. If the political situation allows for higher rates, the latest science justifies them. Have the Environment Department

13 See for example, *Report of the Advanced Biofuels Task Force, Chapter 2: The Energy and Environmental Lifecycle of First Generation and Advanced Biofuels*, Executive Office of Energy and Environmental Affairs, Commonwealth of Massachusetts, April 2008.

14 Massachusetts House Bill 1747, legislative session of 2017-2018, lines 94 through 100.

conduct a review every three years and recommend that the legislature increase the rate above that given above if the best estimate of the social cost of carbon emissions is higher.

EXPLANATION: Since 2009, the U.S. Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) has developed comprehensive social cost estimates, which are widely used in regulatory assessments including the California Air Resources Board's (CARB) cap-and-trade design.

Table 3 U.S. Interagency Working Group Social Cost of Carbon (2018 dollars)

Year	3 percent discount rate	2.5 percent discount rate
2015	$43.31	$67.53
2020	$50.65	$74.76
2025	$55.47	$82.00
2030	$60.29	$88.03

Source CARB Staff Report – Initial Statement of Reasons (Sept 2018)

There is considerable expert consensus that this social cost is low.[15] But due to its rigorous methodology and process, it serves as the best estimate of a minimum price on carbon. The Stern-Stiglitz High-Level Commission on Carbon Prices concluded that the carbon price necessary to achieving the Paris temperature target is at least \$40-\$80/tCO_2 by 2020 and \$50-\$100/tCO_2 by 2030. Their estimates assume that complementary policies are in place, such as incentives for energy efficiency, renewable power, and efficient vehicles. As mentioned in this California discussion paper, California's 2017 Scoping Plan utilized a Social Cost of Carbon price of \$57 (\$2015) in 2030. Some studies have given substantially higher figures.[16]

C | HOW SHOULD THE REVENUE BE USED?

9 | Use of funds in general

RECOMMENDATION: Use funds to protect vulnerable households and employers; provide transition benefits to workers and communities who are impacted by shrinkage of the fossil fuel industry; incentivize clean energy and low-emissions transportation; and provide funding for resilience to climate change impacts.

EXPLANATION: Carbon fees will raise a large amount of money that can be used for various important purposes. Deciding how to use the funds is an important design feature of any carbon pricing program.

10 | Rebates versus tax cuts

RECOMMENDATION: Evidence from other states has shown that rebates provide greater equity for low and moderate income households than would cutting taxes, such as those on personal income, sales, businesses, or property. We therefore recommend returning money to households via rebates. Our preliminary analysis is that cutting other state taxes would not yield an equitable return to low/moderate income people.

EXPLANATION: Use of energy rises with household income levels, but does not rise as fast as income. As a result, energy costs constitute a higher share of household incomes the lower their income is, on average. Consequently, fees on carbon emissions will also have a greater percentage impact relative to income for lower income families.

In order for cutting an existing state tax to adequately compensate such households for their higher costs, the existing tax must be similarly "regressive," with low and moderate income households paying at least the same share of the total state revenues from the tax. In other states we have found that this is not the case for state income or sales taxes, and certainly not for taxes on business.

Table 5 below shows our estimates of the share of each state tax paid by each fifth of New Mexico

Table 4 Revenue raised from covered sources at different carbon prices – \$millions

2016 Emissions	\$10/ton	\$20/ton	\$30/ton	\$40/ton	\$50/ton
TOTAL	\$529	\$1,057	\$1,586	\$2,114	\$2,643
Coal	\$196	\$392	\$588	\$784	\$980
Natural Gas	\$158	\$316	\$474	\$631	\$789
Petroleum	\$175	\$349	\$524	\$699	\$874

15 Howard & Sylvan, May 2015. "The Economic Climate: Establishing Consensus on the Economics of Climate Change." http://ageconsearch.umn.edu/record/205761
16 https://www.nature.com/articles/nclimate2481#t1

households, classified by their income level. At the bottom is our estimate of the share of total carbon fees paid by households, from studies we conducted in Maryland and Massachusetts.

The first highlighted rows are the two state-level taxes that are likely candidates to cut in order to balance carbon fees on households - sales taxes on individuals and personal income taxes. Compare the figures here to those in the bottom two rows, carbon fee impacts in Maryland and Massachusetts. The lowest-income 5th of households pay a much smaller share of sales and income taxes than they would pay in carbon fees. As a result, trading carbon fees for reductions in either of these taxes would leave low-income households worse off, if the carbon fee impacts on households in New Mexico are similar to those in the other two states. This is likely to be the case, and a study could be conducted to determine numerical results, if the necessary data is available for New Mexico.

The only New Mexico state tax which low/moderate income households pay as much of as they would in carbon fees is "other sales & excise taxes - individual." We have not determined yet which taxes fall into this category and whether they would be an appropriate candidate for a tax reduction.

Pending (1) more information on this category, and (2) a study that estimates the percentage of carbon fees that would be paid by households at different income levels, we conclude that a rebate system would serve low/moderate income households better than a cut in any state tax. However, it may be possible to construct a tax cut in such a way that higher benefits are provided to lower income households, and this could be investigated.

It is possible that the share of carbon fees that would be paid by households in New Mexico differs significantly from that in Maryland or Massachusetts. Forecasting these shares requires conducting an economic study that is well beyond the limits of the present policy analysis.[17]

Table 5 Shares of total state and local taxes in New Mexico paid by each 5th of households by income; shares of carbon fees forecasted for Maryland, Massachusetts[17]

	Tax Revenue – % of Total by Income Level				
Description	Lowest 20%	Second 20%	Middle 20%	Fourth 20%	Top 20%
Total State & Local	**4%**	**10%**	**14%**	**23%**	**49%**
Sales & Excise Tax	**8%**	**15%**	**19%**	**24%**	**36%**
General Sales - Individuals	7%	14%	18%	24%	36%
Other Sales & Excise - Individual	13%	19%	22%	22%	24%
Sales & Excise on Business	8%	15%	20%	24%	33%
Property Tax	**6%**	**11%**	**15%**	**22%**	**46%**
Home, Rent, Car - Individuals	7%	12%	16%	24%	41%
Other Property Taxes	0%	0%	6%	10%	84%
Personal Income Tax	**-3%**	**1%**	**5%**	**20%**	**77%**
Personal Income Tax	-4%	-1%	5%	20%	80%
Corporate Income Tax	0%	0%	0%	0%	100%
Carbon fee estimates for other states					
Maryland[18]	12%	19%	18%	25%	27%
Massachusetts[19]	12%	13%	18%	22%	34%

Note: compare the highlighted rows for general sales and personal income taxes to those for carbon fees. Trading carbon fees for lower sales or income taxes would leave the lowest-income 20% worse off.

11 | Percentage split of funds among different purposes

RECOMMENDATION: Determining the optimal split requires research studies on the impacts of the

17 Derived from data published by the Institute on Taxation and Economic Policy. https://itep.org/new-mexico/

18 *An Analysis of Impacts on Households at Different Income Levels from Carbon Pollution Pricing in Maryland*, Marc Breslow and Chynna Pickens, Climate XChange, February 2018, Table 4, page 10.

19 *Analysis of a Carbon Fee or Tax as a Mechanism to Reduce GHG Emissions in Massachusetts*, Marc Breslow et al, prepared for the Mass. Dept. of Energy Resources,December 2014, Figure III, page 47.

fees on households at different income levels, and in different circumstances and on industries of different types. Our analysis in other states suggests a distribution in the range of 60 percent to households, 20 percent to employers, and 20 percent to other purposes including clean energy. If the state constitution prevents the distribution of funds to some households and some potentially vulnerable industries then a different split of the funds would need to be determined. (See Section II for more detail on this subject.)

EXPLANATION: Climate XChange has taken the view that the first use of revenues from carbon fees should be to provide sufficient rebates to low and moderate income households that on average the net impact of fees and rebates on them is a gain or break-even. For low income households, a large majority of households should at least come out ahead. To the degree feasible, higher income households should also receive rebates, although their fees are likely to exceed their rebates. Defining low/moderate income as the bottom three-fifths (quintiles) of households by income, our Maryland study found that at least 60 percent of the total revenues are needed to achieve this objective, if rebates are also provided to higher-income people. Studies done at the national level have yielded similar results.[20] The appropriate percentage (allowing for a degree of uncertainty), can be estimated through an economic study that looks specifically at available data for New Mexico. The percentage also depends on what fraction of low and moderate income households the state wishes to ensure will have a net benefit.[21]

However, proposals by legislators and advocates in some states allocate up to 100 percent of the funds to clean energy investment, transition benefits, and other purposes. For example, in California's cap-and-trade system about 35 percent of the value of emissions permits (allowances) is rebated to households at present, about 15 percent goes to specific industries via exemptions, and 45 percent is used by state agencies to fund investments that reduce GHG's and other pollutants and enhance economic equity.[22] Legislation proposed in New York State would devote 30 percent of carbon fee revenues to benefits for lower-income households and use the other 70 percent for clean energy investments, transition assistance, and other purposes.[23] A bill in Oregon would have the state join the Western Climate Initiative's cap-and-trade system (California and Quebec), and devote 100 percent of the funds to investment.[24]

12 | Formula for distribution among households

RECOMMENDATION: To the degree that state law allows, rebate to low-income households (or provide equivalent tax reductions) enough funds to cover any increased costs for as high a fraction of such households as possible. For moderate-income households provide sufficient funds so that on average any increased costs are covered. For higher-income households provide rebates to the extent feasible after desired expenditures listed in item (9) above are provided.

EXPLANATION: The lower a household's income the more vulnerable it is to increases in its living costs. Maximum efforts should therefore be made to see that the bottom 5th get rebates that fully cover their higher costs, and a similar effort should be made for the 2nd and 3rd (middle) 5th, who we define as moderate income. We have found that policymakers are highly concerned about the impacts on this 60 percent of households, particularly the bottom 20 percent. Most households in the top two 5ths (40 percent) can more easily afford carbon fees. However, for building political support it is also valuable to provide rebates to them. In any case, most will have rebates smaller than their costs, due to much higher levels of energy use than households with lower incomes.

As discussed further below, it is also important both for building public support and reducing emissions to use a portion of the revenues to finance investment in clean energy and low-carbon transportation. Such investments will also provide long-term cost savings to households. There is a tradeoff between using funds for rebates and for investment.

20 See for example, *A Short-Run Distributional Analysis of a Carbon Tax in the United States*, Anders Fremstad and Mark Paul, August 2017, Political Economy Research Institute, University of Massachusetts-Amherst.

21 *An Analysis of Impacts on Households at Different Income Levels from Carbon Pollution Pricing in Maryland*, Marc Breslow and Chynna Pickens, Climate XChange, February 2018, Sections VI and VII. See also Massachusetts Department of Energy Resources study cited above.

22 *Regional Cap and Trade: Lessons from the Regional Greenhouse Gas Initiative and Western Climate Initiative*, Jonah Kurman-Faber and Marc Breslow, Climate XChange, October 2018, page 18, Figure 13.

23 "Cut Pollution Fund Solutions for NY," New York Renews, 2018.

24 "Frequently Asked Questions & Answers," Renew Oregon.

A simple formula for distributing rebates, such as Citizens Climate Lobby (CCL) has advocated and had studies conducted on, is to provide an equal rebate per adult with a half-rebate per child; or a full rebate for all residents including children. Bills proposed last session in the Massachusetts Senate, along with bills in Rhode Island and Connecticut, used the CCL formula.[25] Research in Massachusetts, Rhode Island, Maryland and nationally has indicated that formulas of this nature can yield positive net impacts on low/moderate income households on average, with net losses for higher income households.

However, our research in Massachusetts and Maryland has also shown that while a majority of lower income households will be protected by such a formula, a significant fraction of low income people will come out behind. The main reason is that even among households with similar income levels, energy use varies greatly. Some of this is due to differences in the characteristics of their homes and their use of heating and electricity, but more is due to differences in the amount of gasoline use between households.

Public officials and advocates have predominantly felt that it is vital to protect as many low income families as possible, even before steps are taken to improve energy efficiency and convert to clean energy. To accomplish this, additional revenues should be shifted to low income people, using some of those that would otherwise go to employers, higher income people, and other purposes. The latter course was taken in both the Massachusetts House bill[26] and the Maryland bill.[27] Through the use of formulas, low and moderate income households are given larger rebates per person than high income ones. Our studies for both states have shown that satisfactory results for low and moderate income households can be achieved via such formulas. Table 6 below shows the results for one scenario in Maryland.[28] [29]

Existing studies in other states provide a sufficient basis for policy in New Mexico. A New Mexico-specific study could be done at some point to fine-tune the formula for distributing rebates.

Table 6 Maryland Scenario 1, $15/ton, electricity included. **Percentage allocation of revenues:** Climate-related investments and transition benefits: 10% | Households: 67.5% | Employers: 22.5%

Average impact per household	Carbon fee	Rebate	Net gain or loss	% net gain or even	% net loss
All households	$250	$300	$50	60%	40%
bottom 5th	$170	$320	$150	85%	15%
second 5th	$230	$360	$130	80%	20%
middle 5th	$240	$300	$60	70%	30%
next to top 5th	$290	$240	-$50	40%	60%
top 5th	$320	$280	-$40	40%	60%

Source: *An Analysis of Impacts on Households at Different Income Levels from Carbon Pollution Pricing in Maryland*, Marc Breslow and Chynna Pickens, Climate XChange, February 2018, Table 10A, page 24.

13 | Transition benefits for workers and communities

RECOMMENDATION: Provide a sufficient share of the funds to allow workers who lose their jobs and communities who lose tax revenue and economic activity to make a smooth transition over time to other

25 None of these bills passed the legislatures, although the Massachusetts bill did pass the Senate unanimously.

26 *An Act to promote green infrastructure, reduce greenhouse gas emissions, and create jobs, Massachusetts* House Bill 1726, Representative Jennifer Benson, January 18, 2017, lines 166 through 227 (which also include distributions for rural residents and home energy assistance).

27 Maryland House Bill 939, *Regional Carbon Cost Collection Initiative*, Delegates Ben Kramer and David Fraser-Hidalgo, introduced February 5, 2018.

28 *Analysis of a Carbon Fee or Tax as a Mechanism to Reduce GHG Emissions in Massachusetts*, Marc Breslow et al, prepared for the Mass. Dept. of Energy Resources,- December 2014,

29 *An Analysis of Impacts on Households at Different Income Levels from Carbon Pollution Pricing in Maryland*, Marc Breslow and Chynna Pickens, Climate XChange, February 2018, Table 10A, page 24.

activities, to the extent allowed by the State Constitution. For older workers, this could mean partial or full replacement wages until retirement if needed.

EXPLANATION: Under the policy design recommended here, exports of fossil fuels and electricity are exempt from the carbon fees, and these constitute the majority of New Mexico's production of natural gas and oil. However, since the goal of the policy is to have the state transition its consumption from carbon-emitting sources to clean energy, there will inevitably be shrinkage of fossil fuel industries over time. It is important that both workers and particular communities which depend on these industries are provided assistance to make a smooth transition away from them. For purposes of this policy analysis we have not conducted a quantitative forecast of how much funding might be needed for such programs, but such an analysis should be done. Other studies have been done at the national level and for other states that can be used for guidance, and appropriate language can be extracted from legislation introduced in other states.[30]

14 | Funds for clean energy and transportation

RECOMMENDATION: Carbon pricing has two means of reducing emissions—the price incentive to switch to clean energy, and the use of revenues to directly invest in clean energy and transportation. We recommend that on the order of 20 percent of total revenues be devoted to promotion of energy efficiency, renewable energy, and low-carbon forms of transportation. A portion of these funds should be reserved for the benefit of low-income households, such as one-third for the lower-income third of households.

EXPLANATION: In some formulations, all revenues are returned to households, and this would provide the greatest short-term returns to them. However, while relying on the important price incentive to convert from fossil fuels to cleaner energy forms, it does not provide investment capital that is also critical for the transition, such as electric vehicle charging infrastructure. Evidence from several states shows that there is a high level of public support for using at least part of the revenues for investment in clean energy and transportation.

30 See for example, *The Economics of Just Transition: A Framework for Supporting Fossil Fuel-Dependent Workers and Communities in the United States*, Robert Pollin & Brian Callaci, Political Economy Research Institute, University of Massachusetts-Amherst, October 2016.

The New Mexico state constitution, at Article IX, Section 14 D, allows the state to invest its funds in this way:

"Nothing in this section prohibits the state or a county or municipality from creating new job opportunities by providing land, buildings or infrastructure for facilities to support new or expanding businesses...."

To date, almost all of the carbon pricing bills introduced in the United States, and the two major cap-and-trade systems in existence (RGGI and the Western Climate Initiative), would use from small percentages to the entirety of revenues to fund investments. The decision on whether to return all funds to households, and possibly employers, or to use a higher or lower percentage for clean energy investment, is one for New Mexico's policymakers and advocates to make based on the particular political and economic conditions in the state.

The 20 percent of total funds is based on what would remain after the percentages that we estimate are needed for household rebates, transition benefits, and assistance for vulnerable employers, based on studies we have conducted for other states. Greater precision on what could reasonably be available depends on conducting economic studies for New Mexico, and on value judgements concerning the relative importance of devoting money to different purposes.

A portion of the clean energy funds should be reserved for lower-income households, because otherwise there is a tendency for higher-income households to make greater use of subsidies for such items as solar photovoltaic and hot water systems, heat pumps, and electric vehicles. For example, California requires that 35 percent of cap-and-trade investments benefit disadvantaged communities and/or low-income households.

15 | Funds for employers

RECOMMENDATION: Funds should be provided as needed and as constitutionally permitted to protect vulnerable industries, which include those that are "energy intensive and trade-exposed" (EITE), including manufacturing and agriculture; small non-profit organizations; and state and local government agencies. Base rebates, free allowances, or exemptions on either output levels or number of employees.

EXPLANATION: Evidence from other states indicates that many industries will not face large enough impacts

to require rebates or tax cuts, because energy use is a small fraction of their total operating expenses, and/or they are not particularly susceptible to interstate competition. This includes most service and information-based industries, such as health care, education, many professional services, and retail trade. Construction is a large industry that is energy-intensive but is not substantially trade exposed, in that neither commercial nor residential buildings are likely to be put in a different state due to the addition of carbon fees.

Vulnerable industries include those that are "energy intensive and trade-exposed" (EITE). This means that their energy purchases are a substantial fraction of their total expenses, and that they can easily lose sales to competitors in states or nations that do not have carbon charges. The European Union's Emissions Trading System and California's Western Climate Initiative both provide exemptions or free allowances to particular industries based on these considerations. Those included are primarily certain manufacturing sectors, including petroleum refining in California. At present about 15 percent of the allowances in California are used to provide exemptions to EITE industries.

Because a large portion of New Mexico's industrial base consists of energy-exporting industries, which we have already recommended excluding from the fees, these will not need additional assistance. In addition, small non-profit organizations and state and local government agencies have relatively inflexible revenue sources that cannot easily be raised to accommodate carbon fees, so we recommend that these be provided assistance.

The table below is drawn from our study for Maryland, showing 16 percent of total revenues as the maximum that we estimated might be needed for rebates to vulnerable employers (not counting small non-profits). A rough estimate for New Mexico would be sufficient for legislative design, with greater detail included in implementing regulations. Since New Mexico's economic structure is far different than Maryland's, a study could be performed if the state wishes to more precisely estimate the numbers.

For EITE companies, we recommend considering two possibilities for the size of rebates that go to an industry and the individual companies within it:

Employment—depending on its degree of energy intensity and trade exposure, the industry as a whole receives back a portion or the entirety of the fees that it is assessed, or receives part or all of its allowances for free. Within the industry, each company is given rebates, or free allowances, based on its number of full-time employees. Over time, the degree of protection is reduced as companies are expected to improve their energy efficiency and to transition away from fossil fuels.

Output—the industry receives rebates or free allowances based on the fees assessed. However, each company is provided assistance in proportion to its output, in order to ensure that assistance is not given while production is being shifted outside the state. In addition, California's system of setting emissions benchmarks per unit of output could be used, where relatively low-emitting firms get all their emissions covered while high-emitting firms do not. Canada is also considering such a system.[32]

Table 7 Maryland employers that could be vulnerable to impacts of carbon pricing[30]

Industry	2015 GDP $millions	% of total Gross State Product	% of total carbon fees on employers
Trade-sensitive industries	$21,890	6.0%	5.8%
Agriculture, forestry, fishing, hunting	$861	0.2%	0.7%
Manufacturing (energy-intensive or not)	$21,029	5.7%	5.1%
Other possibly vulnerable industries			
Non-profits below a certain size	not estimated	n/a	n/a
State & local government	$30,741	8.4%	10.6%
Maximum emissions from possibly vulnerable industries (not including non-profits)	$52,631	14.3%	16.4%

31 *An Analysis of Impacts on Households at Different Income Levels from Carbon Pollution Pricing in Maryland*, Marc Breslow and Chynna Pickens, Climate XChange, February 2018, Table 6, page 17.

32 See Canadian factsheet on output-based emissions allocation: https://ecofiscal.ca/2017/05/24/explaining-output-based-allocations-obas/

Output-based allocation can be administratively challenging at the state level—it requires extensive collaboration with industry stakeholders, deep understanding of industrial processes, and enough in-state facilities to make benchmarking statistically viable. However, extensive documentation produced by California, the EU ETS, and other organizations can be referenced to help create such a system in New Mexico. Some of these processes can be simplified and/or modified in order to function in New Mexico, although this question needs to be further investigated.

16 | Legal issues in use of the revenues

RECOMMENDATION: It is our understanding that provisions in New Mexico's constitution could create obstacles to providing rebates to individuals, households, and employers. However, we also understand that a large fraction of households could be exempt from the provision; and that the Constitution may give the Legislature sufficient discretion to adopt these policies. Legal advice is needed to explore this question further.

EXPLANATION: Experts in New Mexico have investigated some of the legal issues here and provided us with background documents. While there is a constitutional provision that bans donations from the state government to individuals, it contains exemptions, including for "indigent" people. It also appears that the courts have given deference to the legislature regarding interpretation of these exemptions, such as the definition of indigent.[33]

17 | Should there be protection for particular groups, such as rural households or public transit authorities?

RECOMMENDATION: Households in rural areas generally need to drive more than those in cities or suburbs. We recommend considering a higher rebate level for such baseholds based on an objective criterion such as (a) they live in a community where average miles driven are at least 30% above the statewide average, or (b) population is less than 500 per square mile (or whatever number/square mile would be appropriate for New Mexico's demography).

EXPLANATION: Legislators are often politically sensitive to the needs of rural voters. Working with state legislators, we have included such provisions in both the Senate and House bills in Massachusetts, and in the Maryland bill. The wording needs to be carefully crafted to include an appropriate portion of the state's households.

Public transit agencies, or other agencies that provide low-carbon forms of transportation, should either be exempt from the fees or be fully rebated for their higher costs.

D | ADMINISTRATIVE ISSUES

18 | Where to collect carbon fees

RECOMMENDATION: For all fuel or electricity that is to be consumed in the state, the fee should be collected at the first point of sale or transfer within the state, whether it originates in the state or is imported. For natural gas that goes through regulated utilities, the utilities should collect the fees on behalf of the state.

EXPLANATION: The collection of fees should be done in a manner that minimizes administrative costs and ensures that all fuels and electricity consumed in the state (with the possible exception of those sold on tribal lands, see below) pay the fees. Generally this can be done by charging fees as far "upstream" as possible, whether that is at a drilling site, mine-mouth, refining plant, wholesale distribution point, or regulated utility. Since most or all fuels already have taxes imposed on them, the state already has a collection mechanism that can be extended to carbon fees.

For electricity generated in-state, the utilities that operate the generating plants know and have to report on how much fuel of each type that they use. They also know how much power goes to end-users in New Mexico and how much they export. For natural gas utilities, they know how much gas goes through their system and whether it is distributed to end-users in the state or exported, and so can pay the appropriate fees to the state.

New Mexico is a large net exporter of natural gas, petroleum products, and electricity, so this minimizes the need to track imports. To the degree that there are imports, these need to be tracked at the first point of transfer, sale, or distribution. For liquid fuels and natural gas the CO_2 emissions from combustion are well known. Tracking the origin of the fuels would only be necessary if they might come from a high-carbon source, such as the Canadian Tar Sands. Electricity imports are more complex. If the

33 Conversations and documents provided by Paul Biderman. For background see "Anti-donation Clause: A Historical Perspective," Alan Hall Rody, May 23, 2014.

electric utilities have firm purchase contracts with particular generating plants, then the fuel mix used by these plants is known, and appropriate carbon fees can be charged by the utilities. If, however, electricity is purchased on "spot markets" the amount coming from specific generating plants may not be known. The Energy, Minerals and Natural Resources Department will need to make the best estimate possible of the average emissions from the unknown imports, and charge the utilities for them.

19 | Collection of fees and rebate distribution on tribal lands

RECOMMENDATION: Administrative mechanisms different from those in the rest of the state may be needed to handle energy sources produced or consumed on and around tribal lands. Rebates to households and employers probably do not require special treatment. Further research is needed on this topic.

EXPLANATION: American Indians constituted 10.5 percent of the state's population in 2016, one of the largest percentages of any state. There are 22 tribal lands in the state, including 19 Pueblos and 3 tribes spanning 5 reservations. Tribal lands are considered independent nations and have a large degree of independence from the U.S. government. As a result there are questions about the collection of carbon fees from fuel and electricity produced on tribal lands, the legality of the state charging fees for fossil fuel-derived energy consumed on tribal lands, and the distribution of rebates to households and employers on these lands.

Currently, two tribes have extractive industries. The Navajo Nation has coal, oil and gas operations on the reservation, while the Jicarilla Apache Nation has oil and gas. The Navajo nation owns a coal mine that provides the main fuel source for the Four Corners electricity generating station, the largest in the state. The Navajo have a 7 percent stake in 2 of the station's 4 generating units, but the economic future of the plant is in serious question. While they dedicate a portion of revenue to renewable resource development, coal remains a major source of revenue to the Navajo Nation. However, only about 1 percent of New Mexico's oil production and 3 percent of its natural gas is produced on tribal land.[34] Even if production from Indian lands is excluded from carbon pricing, the relatively small amount of production involved should not significantly compromise its impact.

In addition, the state has two petroleum refineries, one of which is on the southern border of the Navajo Nation. Our recommendation (following other states), is that the carbon fee on petroleum consumption and other fuels be collected at the first point of sale or transfer within the state above a certain threshold, meaning that these refineries would only be responsible for direct emissions from the refining process.

Under federal law, tribes have the ability to assess taxes on mineral and fossil fuel extraction on tribal lands. However, the state government can assess taxes on non-tribal member transactions. For many tribal governments, there are agreements to divide the revenues between the state and tribal government, so that the total collected is at the same rate as on non-tribal land. For the gross receipts tax, 75 percent of the revenue goes to the tribes and 25 percent to the state. 100% of gasoline taxes go to tribal governments, while 100% of special fuels taxes go to the state government.

Similarly, our preliminary research indicates that sovereign tribes have the right to impose and collect taxes on retail energy sales on their lands, but that the state government can do so also, depending on the seller and/or purchaser.

This leads to a question as to whether fuels and electricity consumed on tribal lands would be legally exempt from carbon fees, if they are exempt from other state taxes. This requires further research, but in any case would presumably affect only a small percentage of the state's total consumption, well less than the 10.5 percent of total population that Native Americans constitute in the state.

There are a small number of fuel racks (wholesale distribution points) in New Mexico, which are the source of gasoline on reservations. These fuel racks are where the carbon fee would be applied, meaning that the price would be passed along to tribal residents without direct taxation. More research is needed to ensure such a process does not violate federal or state frameworks that protect the sovereignty of reservations.

The Navajo government's opposition to Arizona's RPS ballot initiative, and interest in purchasing increased stakes in coal generating plants in Arizona and New Mexico, suggest that Navajo Nation officials

34 New Mexico: State Profile and Energy Estimates, EIA. https://www.eia.gov/state/analysis.cfm?sid=NM

in particular should be consulted regarding their attitudes on carbon pricing.[35]

The New Mexico Environment Department (NMED) has designed a Tribal Communication and Collaboration Policy to resolve disputes between the state and tribal governments. It would make sense to follow this procedure in order to seek agreement on a carbon fee system with the tribal governing bodies in all 22 tribal lands.

On the other end of the proposed fee system, it does not appear that there would be an issue with distributing rebates to people living on tribal land. State documents indicate that Native Americans are eligible for all federal and state benefit programs available to other U.S. citizens in the state, regardless of where they live, such as the Supplemental Nutrition Assistance Program (SNAP, formerly Food Stamps) and cash assistance for families. Recipients of benefits such as SNAP are issued electronic benefits transfer cards (EBT), which could be a convenient, low cost method of providing rebates on a frequent basis.

20 | How can the bill ensure that all low-income people get rebates?

RECOMMENDATION: Instruct all state agencies to cooperate, including sharing their computer lists, to ensure that as close as possible to 100% of low-income people receive their appropriate rebates. Require that distribution methods be as convenient as possible for low-income households. This could include requiring that a state agency, such as the Human Services Department, which administers SNAP benefits,[36] add carbon rebates to their electronic benefit transfer (EBT) cards.

EXPLANATION: The New Mexico Taxation and Revenue Department should be able to easily identify and get rebates to all households that pay state income taxes, or file tax returns even if they do not owe money. However, many low income households may not be on the state's tax rolls and would have to be located in other ways. State agencies that provide benefits and services to low income people are in the best position to provide information on them. Due to confidentiality rules, information may not be shareable among agencies unless the legislation specifically instructs agencies to share data in order to locate as many low income households as possible. When EBT cards are in use to provide benefits, this provides a method that has low administrative costs and is convenient for rebate recipients, to send benefits on a frequent time schedule.

21 | How can the bill provide rebates on a time schedule that allows people and businesses to pay their bills?

RECOMMENDATION: Include a provision that requires most residents and businesses/institutions get rebates early in the year and/or throughout the year such that they have the money to pay their bills when needed.

EXPLANATION: A concern raised often is that even if rebates or other assistance is provided, if it only comes at the end of year it will not be available when people need to pay their fuel and electricity bills. Particularly for low and moderate income households this can be a serious cash-flow problem. The legislation should require that state agencies provide funds on a timely basis. The strongest form of this is what British Columbia did, and what is in Rhode Island's proposed legislation,[37] to provide rebates at the beginning of the year. British Columbia accomplished this through borrowing funds prior to any of the carbon fees revenues being collected. Absent such a strong method, rebates could be provided periodically throughout the year, either through electronic means or with checks sent by mail. For employees who have state income taxes deducted from their paychecks, the deductions could be reduced on each paycheck based on the rebate. As noted above EBT cards could be an inexpensive and reliable way of sending rebates to low income people.

Massachusetts House Bill 1747, lines 265 to 274, says:

"The DOR [Department of Revenue] commissioner shall consider alternative calendar schedules for distribution of the rebates authorized pursuant to this chapter, including partial or whole distributions early in the relevant revenue cycle and on a regular basis throughout the revenue cycle. The method and schedule of distributions shall take into account (1) the needs of residents and employers, particularly low-income

35 RPS opposition: https://dailycaller.com/2018/10/31/navajo-nation-tom-steyer-energy-arizona/ Coal plant purchase considerations: https://tinyurl.com/y994rh7z

36 "Looking for Assistance: Supplemental Nutrition Assistance Program (SNAP)," New Mexico Department of Human Services.

37 State of Rhode Island, General Assembly 2018, H 7400, "Energize Rhode Island: Clean Energy Investment and Carbon Pricing Act of 2018," page 9, lines 22 through 26.

households, to obtain rebates corresponding to the time schedule in which they will be paying greenhouse gas pollution charges; (2) the need to make clear to residents and employers that they are receiving a rebate of pollution charges that is separate from other transactions they may have with the Commonwealth; and (3) the need to keep administrative costs of the system low, given that purposes (1) and (2) of this paragraph are also achieved."

22 | To the degree possible, exempt rebates from being considered in eligibility for other public benefits

RECOMMENDATION: The state should be able to exempt carbon rebates (or tax reductions) from being considered in eligibility for state programs that provide benefits to low/moderate income people. For federal programs, this should be done to the extent that federal law allows the state to do so.

EXPLANATION: There is significant concern that rebates could cause low-income residents to lose eligibility for certain benefits, or to have their benefits reduced. New Mexico legislation could require that rebates not be considered in calculating eligibility for state programs. For federal programs it is probably not possible for state legislation to affect the eligibility rules, but it may be possible in some cases, and the legislation should require that the state administration attempt to do so.

Maryland House Bill 939, page 21, lines 1 through 7, says:

(K) *Money distributed as a rebate under this section: (1) may not be included in taxable income for purposes of any state or local income tax; and (2) shall, to the extent feasible, be excluded from household income for purposes of determining eligibility for, or the level of, any form of public assistance.*

23 | Balance needs to publicize benefits and to keep administrative costs low

RECOMMENDATION: To build maximum public support for the program, rebates should be provided in a manner that is most noticeable to residents and employers, such as a periodic paper check in the mail. On the other hand, state governments often prefer to minimize administrative costs through the use of electronic payment transfers, and including rebates within other transactions. We recommend that legislative wording should treat the first criterion as primary, but balance that with cost considerations.

EXPLANATION: California has sent rebates on a quarterly basis through the electric and gas utilities using checks and an enclosed information piece which informs recipients that the rebate derives from the state's cap-and trade program for CO_2 emissions. This provides high exposure for the program, and is better than a rebate which only comes at the end of the year. However, it may still be too long a time period between checks to meet the cash flow needs of lower-income residents.

24 | How to administer funds used for clean energy and transportation?

RECOMMENDATION: The Environment Department should be in overall charge of distributing these funds, with the authority to devolve administration over portions to agencies with the appropriate expertise, such as the Department of Transportation for low-carbon transportation investments and the Energy, Minerals and Natural Resources Department for renewable energy and energy efficiency programs for clean energy investments.

EXPLANATION: Since this is a program whose principal purpose is to reduce environmental harm, primary authority should rest with the agency that has the environment as its mandate. However, other agencies may be more capable of actually administering specific portions of the funds, given clear guidelines that come from the legislation and the Environment Department.

One possibility for how to distribute funds is to have a portion provided as grants to municipal and county governments and to public transit agencies. Because local governments and transit agencies tend to be perpetually short of funds, this can be a way of building local support among public officials and the general public for the carbon fees. Such grants can be conditioned on submission of applications that show the local government has a clear plan to make effective use of the funds. On the other hand, state agencies may have more expertise and capability to utilize the money directly in their own programs. Per recommendation 14 above, both local governments and state agencies should be required to devote at least a proportional share of the funds to households that are classified as low income.

Massachusetts House Bill 1747, legislative session of 2017-2018, directs that 20 percent of the revenues go into a Green Infrastructure Fund. Lines 112 through 115 state:

(1) The Green Infrastructure Fund shall distribute 85 (eighty-five) percent of its funds to municipalities, or to groups of municipalities acting together, or to regional agencies that represent municipalities or provide services to residents of municipalities, to accomplish the following purposes…