

The Political Viability of Carbon Pricing: Policy Design and Framing in British Columbia and California

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Abstract

The adoption of climate policies with visible, substantial costs for households is uncommon because of expected political backlash, but British Columbia's carbon tax and California's cap-and-trade program imposed such costs and still survived vigorous opposition. To explain these outcomes, this article tests hypotheses concerning policy design, framing, energy prices, and elections. It conducts universalizing and variation-finding comparisons across three subcases in the two jurisdictions and uses primary sources to carry out process tracing involving mechanisms of public opinion and elite position-taking. The article finds strong support for the timing of independent energy price changes, exogenous causes of election results, reducing the visibility of carbon pricing, and using public-benefit justifications, as well as some support for making concessions to voters. By contrast, the effects of the use of revenue, industry exemptions/compensations, and making polluters pay are not uniform, because the effects of revenue use depend on how it is embedded in coalition building efforts and a middle path between exempting or compensating industry and burdening it appears to be more effective than pursuing just one or the other approach.

KEY WORDS: climate change, comparative governance, developed countries, energy, environment, pollution, regional governance

鉴于可预期的政治反对，采用给家庭带来显著成本的气候政策并不常见，然而，不列颠哥伦比亚省实行的碳政策与加利福尼亚州的碳排放总量管制与交易计划却强制施加了这类成本并仍然挺过了强烈反对。为解释这些结果，本文检验了有关政策设计、政策制定、能源价格和选举的假设。本文对这两个管辖区中的三个子案例进行了一般化比较和差异识别比较，并使用原始数据执行一项追踪过程，后者涉及与舆论和精英政治立场相关的机制。本文发现，独立的能源价格变化，选举结果的外部起因，碳定价可见性的减少，使用有益于公众的正当理由等方面存在强烈支持，对选民做出让步也存在部分支持。相反的是，税收使用、产业豁免/补偿机制、以及让污染者买单所产生的效果并不统一，因为前者取决于其如何被置于联盟建构工作，而在豁免或补偿产业及烧碳之间选择一条中间路径似乎比仅追求其中一种方法更为有效。

关键词: 气候变化, 比较治理, 发达国家, 能源, 环境, 污染, 区域治理

La adopción de políticas climáticas con costos visibles y sustanciales para los hogares es poco común debido a la reacción política esperada, pero el impuesto al carbono de la Columbia Británica y el programa de tope y comercio de California impusieron tales costos y aún sobrevivieron a la oposición vigorosa. Para explicar estos resultados, este documento prueba hipótesis sobre el diseño de políticas, la elaboración, los precios de la energía y las elecciones. Realiza comparaciones de universalización y búsqueda de variaciones en tres subcajas en las dos jurisdicciones y utiliza fuentes primarias para llevar a cabo el rastreo de procesos que involucran mecanismos de opinión pública y toma de posición de élite. El documento encuentra un fuerte apoyo para el momento de los cambios independientes en los precios de la energía, causas exógenas de los resultados electorales, la reducción de la visibilidad de los precios del carbono y el uso de justificaciones de beneficio público, así como cierto apoyo para hacer concesiones a los votantes. Por el contrario, los efectos del uso de los ingresos, las exenciones / compensaciones de la industria y hacer que los contaminadores paguen no son uniformes, porque el primero depende de cómo se integra en los esfuerzos de construcción de coaliciones y parece un camino intermedio entre eximir o compensar a la industria y cargarla. para ser más efectivo que seguir solo uno u otro enfoque.

PALABRAS CLAVE: cambio climático, gobernanza comparativa, países desarrollados, energía, medio ambiente, contaminación, gobernanza regional

Introduction

Since the 1990s, industrialized democracies have adopted a very wide range of policies intended to reduce greenhouse gas emissions and hence to curb global warming and climate change. While some national governments, such as in Germany, have adopted relatively ambitious national targets and vigorous sectoral policies, even in laggard countries such as Canada and the United States, some subnational governments have pursued far-reaching climate policies (Compston & Bailey, 2016; Harrison, 2012; Karapın, 2016; Raymond, 2016).

Most climate policies adopted so far do not involve large, visible, clearly understood, persistent costs. Many policies involve costs that are recouped after foreseeable payback periods, such as building codes and energy-efficiency standards, or that involve relatively small amounts of public spending out of general revenue, such as for alternative energy research and development. Others aim to force technological development or fuel switching through regulations that place the costs of adjustment on businesses, such as fuel efficiency standards in transportation, requirements for hybrid or electric car development, and power plant and road fuel standards. In those cases, the costs are usually uncertain and are balanced by economic opportunities and long-term advantages for companies that are successful at the required innovations.

By contrast, climate policies with substantial, clearly understood, ongoing costs for households, such as carbon-pricing systems, seldom make it to the later stages of the policy-making process—although they attract much of the academic attention on climate policies (e.g., Cramton, MacKay, Ockenfels, & Stoft, 2017; Mildenerger, 2016; Rabe, 2018; Raymond, 2016). Climate policies that target household emissions represent an important subset of the climate change policy repertoire since households are directly responsible for a large proportion of greenhouse gas emissions through residential heating, residential electricity consumption, and passenger car use. Those activities contribute more than one-third of the emissions in the United States and Germany.¹ Yet, democratic electoral politics and voters' reluctance to bear new costs combine to make climate policies with large, diffuse costs politically difficult to adopt and carry out (Compston & Bailey, 2008, p. 267; Harrison, 2010, p. 512; Rabe, 2010b). Nonetheless, there are some cases where relatively costly policies have been adopted and have even survived political backlash that focused on their costs.

This article examines what happens when attempts are made to adopt and implement policies that substantially increase the price of residential electricity, home heating, or road fuels. Climate policies with these kinds of costs include carbon and other broad energy taxes, cap-and-trade systems for carbon dioxide, and feed-in-tariffs or quota requirements for renewable-source electricity. I will focus on examples of these policies that have relatively large costs: at least \$10 per ton CO₂-equivalent or about 5% of the retail price. For simplicity, I will call them “costly climate policies,” a concept that overlaps with what Rabe (2010b) calls “direct cost imposition,” but also includes policies with costs less visible than those of taxes.

Since relatively little is known about the politics of costly climate policies, I will use a small-N, comparative case study approach to test and develop hypotheses intended to be applicable outside the two cases of successful adoption presented here: British Columbia's carbon tax and California's cap-and-trade system. The core question is: What

explains the ability of governments in these jurisdictions to adopt costly policies, defend them politically, and carry them out? A major focus will be on the effects of policy design and framing decisions, which affect political viability through the mechanisms of public opinion, interest-group mobilization, election results, and ultimately the key governmental decisions concerning policy adoption and survival. Secondary sources on the British Columbia case generated additional hypotheses about the timing of exogenous energy price changes and external influences on election results, which will be tested both in the California case and with new primary data on British Columbia.

Hence, the method of theory development used here is interactive and recursive rather than purely deductive or inductive. It involves a deductive use of the existing literature and an inductive use of one case study to generate hypotheses that are tested in both case studies through process tracing involving previously identified mechanisms and counterfactual reasoning (George & Bennett, 2005, pp. 21, 131–49; Karapin, 2016, pp. 69–70).²

In the next section, I will review the scholarship on direct cost imposition in climate policies, which focuses on how policy design and framing affect public acceptance. I will summarize its main arguments in terms of hypotheses about costly climate policies in democratic systems, adding hypotheses about energy prices and elections that emerged during initial research on the British Columbia case. I will also describe the rationale for selecting British Columbia and California. Then, the bulk of the article presents the case studies, in which I test the hypotheses. Finally, the conclusions summarize and assess the evidence for those hypotheses and suggest reformulating some of them.

Theory and Hypotheses

The literature on the political viability of costly climate policies, which has focused on carbon pricing³ through cap-and-trade systems or carbon taxes, reaches several theoretical conclusions about policy design, framing, and acceptability to the public and to interest groups. In the first place, such policies are difficult to adopt in democratic systems because consumers (and voters) have a strong aversion to economic losses. Even if all revenues are recycled to them, voters will not appreciate this as much as they dislike the increase in energy prices (Harrison, 2010, p. 512). While there is a general resistance to policies that harm constituents in a democracy, this holds especially for climate policies, since their benefits (helping to prevent climate change) are not as immediate and obvious as their costs (Rabe, 2010b, p. 585).⁴

Policy Design Features

Nevertheless, the literature expects that the political viability of carbon pricing will vary, depending on certain aspects of policy design and framing. Regardless of the form of carbon pricing, public acceptance is increased if the price is either kept very low, as in the Regional Greenhouse Gas Initiative (RGGI) in the northeastern United States, or starts low and is raised only gradually (Carl & Fedor, 2016, p. 54; Geroe, 2019, pp. 12–4; Rabe, 2010b, pp. 587, 589). Also, cap-and-trade programs are more politically viable than carbon taxes because the latter's costs are more readily noticed (Carl & Fedor, 2016, p.

51; Jaccard, 2012, p. 175; Raymond, 2016, p. 150). Because carbon taxes typically cannot avoid being called “taxes,” they are more vivid (i.e., have higher consumer salience) than cap-and-trade pricing (Carl & Fedor, 2016, p. 51 n. 10). Specifically, carbon taxes present highly visible costs for voters at the gas pump and on electricity bills (Rabe, 2010a, p. 133). Terms used in cap-and-trade and other regulatory systems, such as “social benefits charge” or “climate contribution” are more acceptable than “tax,” which is clearly the most politically problematic label to apply to a costly climate policy (Baranzini & Carattini, 2017; Peet & Harrison, 2012, p. 118; Rabe & Borick, 2012, p. 379).

These considerations produce the following hypotheses:

Avoid taxes. Costly climate policies are more politically viable if they are not taxes. Hence, cap-and-trade systems are more politically viable than carbon taxes; feed-in tariffs and renewable-energy quotas occupy an intermediate position if they produce identifiable surcharges.

Minimize the visibility of costs. Anything that increases the visibility of a climate policy’s costs for households—including government or opponents calculating its size and communicating this to the public, or being included as a separate, easily seen item in consumer bills—will reduce its public acceptance. The type of instrument (cap and trade, carbon tax, feed-in tariff) will influence but not determine the visibility of costs.

Another major set of claims in this literature concern how industry is treated by cap-and-trade programs and how revenues are used. A clear theoretical statement on both scores comes from Raymond (2016), with others largely agreeing. Underlying Raymond’s “public-benefit” model is the normative position that the atmosphere is owned by the public at large; it follows that polluters should pay and the public should benefit from the use of the commons through consumer benefits, climate protection benefits, and public health benefits (Raymond, 2016, pp. 139, 149). More specifically, the model has two main elements: first, if a cap-and-trade system is used, allowances are auctioned, not given away for free; and second, auction or tax revenue is used to materially benefit all citizens or ratepayers in an egalitarian way (Compston & Bailey, 2008, p. 281; Raymond, 2016, p. 124; cf. Skocpol, 2013, pp. 52, 125). The polluters pay element of this model is confirmed by public opinion research, which shows the highest support for those climate policies that regulate or impose other costs on the industry (e.g., Borick & Rabe, 2012, p. 4). This produces the next hypothesis, which I have extended to include carbon taxes and feed-in tariffs:

Make polluters pay. Carbon-pricing systems are more likely to get public acceptance if they impose costs on the jurisdiction’s major polluting business sectors. For cap-and-trade systems, this means that the program includes those sectors and requires them to buy allowances at auction rather than receiving them for free. For carbon taxes and feed-in tariffs, this means that major polluting sectors are not given exemptions or reduced rates.

The public-benefit model stands in contrast to the argument that the adoption and survival of carbon-pricing programs depend on protecting or even delivering benefits to organized producer groups, which I will call the interest-group model (cf. Compston & Bailey, 2008, p. 284; Mildenberger, 2016; Raymond, 2016, p. 144). If business groups mobilize against a carbon-pricing program by arguing that it will raise costs for consumers (directly or indirectly), harm the economy, or lead to job losses, this is also likely to reduce public acceptance of the policy, especially since this probably will lead at least one major political party to oppose the policy. Many implemented carbon taxes, including the earliest and most expensive ones, largely follow

the interest-group model, especially for energy-intensive industries and domestic fossil-fuel industries, leaving the bulk of the tax burden to fall on households through their consumption of heating and transportation fuels (Friberg, 2008, pp. 168–9; Harrison, 2010, p. 525).

The two models also are in sharp conflict in cap-and-trade systems. The public-benefit model requires the auctioning of pollution permits so that polluters pay and the public can benefit through the revenue that is returned to them, while the interest-group model requires the free allocation of permits. Freely allocated permits can benefit firms that are able to reduce their emissions more rapidly than the emissions cap declines or that receive over-allocations of permits in the first place. These considerations lead to a hypothesis that is a rival to the polluters pay hypothesis:

Exempt or compensate industry. Costly climate policies that avoid imposing high costs on polluting businesses are less likely to provoke business opposition and hence are more likely to be adopted, have public support, and persist. For carbon taxes and feed-in tariffs, this means that political viability is enhanced if they provide generous exemptions for major polluting businesses, even though this concentrates costs on households. For cap-and-trade programs, this means they allocate allowances to major polluting business sectors for free or exempt them from participation.

Turning to the second element of the public-benefit model—the ways in which revenue use from carbon-pricing systems affects public acceptance—Raymond offers two versions. In the narrow version, consumers get the benefits on a roughly equal basis, such as through equal per-capita tax rebates or per-household electricity bill rebates. In a broader version, revenue is used for spending that benefits consumers and voters more indirectly, such as on renewable-energy, energy-efficiency, climate protection, or public health programs (Geroe, 2019, pp. 14–6; Rabe, 2010a, p. 152; Raymond, 2016, pp. 124, 179–80). Much polling data show that green spending is popular in the United States and Canada (e.g., Baldassare, Bonner, Paluch, & Petek, 2015; Borick & Rabe, 2012; LaChapelle, Borick, & Rabe, 2012; Rhodes, Axsen, & Jaccard, 2017, p. 12), although others find mixed evidence for the public acceptability of green spending (Carl & Fedor, 2016, pp. 54, 57–8).

It is argued that these uses of revenue are more effective in gaining public support for carbon pricing than are income tax rate cuts because the latter are less egalitarian and it is difficult to convince the public that they really offset the energy price increases (Carl & Fedor, 2016, p. 56; Raymond, 2016, pp. 148, 149, 152). Similarly, Gunster argues that tax cuts are ineffective in gaining public support because, unlike green spending, they reinforce a self-interest frame in which climate protection and climate policy will not be valued as much as the personal inconvenience or hardship of higher fuel prices will be resented (Gunster, 2010, pp. 190, 201–3). If revenue is used to reduce income taxes, then it is important to communicate clearly how the tax cuts offset the carbon tax increases. Finally, business is likely to oppose the use of revenue for general spending and to prefer revenue neutrality (Carl & Fedor, 2016, pp. 56, 50).

Hence, this part of Raymond's model yields the following set of hypotheses:

Egalitarian revenue use. Costly climate policies are more likely to gain public acceptance if the revenue generated is used to materially benefit all residents or ratepayers in an egalitarian way. More specifically, political viability will be: (1) greatest if flat per-capita or per-household rebates are used; and (2) somewhat less but still relatively high if revenue is used to fund renewable-energy, energy-efficiency, mass transit, or other climate protection programs. By

contrast, political viability will (3) suffer somewhat if revenue is used to offset broad income tax reductions; and will (4) suffer the most if revenue is put into governments' general funds.

Finally, the British Columbia case suggests another design feature that may increase public acceptance of a carbon-pricing policy. There, opposition by local politicians in rural and northern municipalities led the provincial government to implement special tax credits for homeowners in those areas (Enchin, 2009; Peet & Harrison, 2012). This produces the following hypothesis:

Make concessions to voters. A costly climate policy is more likely to maintain adequate public acceptance and hence to survive if concessions are made to groups of voters who initially oppose it or are seen as likely to oppose it.

Policy Framing and Communication

Beyond questions of policy design, certain framing and communication strategies are complementary to the public-benefit model. Emphasizing the cobenefits of a costly climate policy, such as for energy security, employment, or the reduction of air pollution and congestion, is generally considered helpful for gaining public acceptance (Compston & Bailey, 2008, p. 275), but in the case of costly policies, their resonance with the public-benefit justification may be especially useful. Similarly, it may help to maximize the transparency of the policy by explaining its intended outcomes in terms of emissions reductions (Compston & Bailey, 2008, pp. 280–1). Together with the above considerations about policy design, this leads to the following hypothesis about framing:

Public-benefit justification. Costly climate policies are more likely to get public acceptance if they are accompanied by a clearly and vigorously communicated public-benefit justification, which asserts that the public owns the atmospheric commons, polluters should pay, and revenues should benefit everyone directly or through climate protection and policy cobenefits.

Other Economic and Political Processes

In addition to policy design and framing considerations, my initial research using secondary sources on the British Columbia case study suggested that two additional processes might strongly influence the political viability of costly climate policies (Harrison, 2012, pp. 392, 398–9; Jaccard, 2012, p. 186). These will be tested with primary sources in both case studies. First, public support for policies that increase energy prices depends on whether those prices are rising. Changes in energy prices are largely unrelated to the costly climate policies themselves, since they respond mainly to economic conditions and other factors that influence global supply and demand for energy sources. Therefore, the following hypothesis is warranted:

Stable or falling energy prices. Costly climate policies will receive more public support if energy prices experienced by households are stable or falling, than if those prices are rising rapidly. Hence, the timing of policy introduction in relation to energy price movements will affect the policy's political viability.

Second, election results matter, and they depend largely on factors exogenous to the climate policy system. The literature has noted that the commitment of political leaders and their success in winning elections strongly affect the prospects for ambitious climate

policies (Karapin, 2016, p. 58). In British Columbia, Gordon Campbell's re-election as premier in 2005, together with his increased interest in climate policy, made that province's carbon tax possible (Harrison, 2012, p. 389). But the survival of a costly climate policy also depends on the result of the election following its introduction, and election results typically hinge on factors unrelated to climate or environmental policy. In British Columbia, the start of an economic recession in 2008 facilitated the re-election of Campbell's Liberal government in the 2009 provincial elections and hence the survival of the carbon tax there (Jaccard, 2012, p. 186). More generally, factors affecting election results include economic conditions, opposing candidate popularity, the partisan lean of a jurisdiction, and the rise of other issues (Karapin, 2016, pp. 236–8; Kingdon, 2003, p. 153). The importance of these factors leads to this hypothesis:

Exogenous causes of election results. The survival of a costly climate policy will depend on election results, and hence on factors specific to each election and unrelated to the policies in question.

Case Selection and Methods

Although costly climate policies have also been adopted in Europe and Oceania (Karapin 2017), Canada and the United States present an interesting and usefully delimited domain for this investigation. Both countries have federal political systems with weak national climate policies and a large number of provincial and state jurisdictions potentially able to adopt costly climate policies. In addition, the Trudeau government's recent adoption of a nationwide carbon-pricing policy to be implemented differentially by the provinces makes the political viability of previous Canadian efforts of current interest. Within North America, I sought cases that met basic criteria related to the research design: substantial costs for households, relatively long implementation periods, high political conflict, and survival of the policies. The British Columbia carbon tax case (2008–15) and the California cap-and-trade case (2010–17) have larger consumer costs and more conflict than the other long-lived carbon-pricing cases in North America (RGGI and Quebec); they also have had longer implementation periods than the carbon-pricing programs in Ontario and Alberta, which were adopted in 2017 and then reversed after elections in 2018 and 2019. In short, the two cases chosen are the most significant, long-lived, high-conflict cases of costly carbon-pricing policies in North America.

These two subnational cases have some additional similarities that will aid in the analysis, by reducing the number of background variables to consider and making them relatively tough cases for the adoption and survival of costly climate policies. They both have pluralist rather than neocorporatist interest-group systems, political cultures relatively unsupportive of government intervention, and green parties with negligible support, compared to many countries in Western Europe. They possess additional structural conditions that make carbon-pricing and climate policies more difficult: in California, fossil-fuel and manufacturing industries are moderately strong, and in British Columbia, center-right governments held sway during the 2001–17 period. They also have some commonalities that facilitate climate policy making, including strong environmental organizations and (in British Columbia) strong environmental public opinion (Blake, Guppy, & Urmetzer, 1997, pp. 455–6; Karapin, 2016, p. 94; Vogel, 2015).⁵

At the same time, they have important differences that support the basic design of a universalizing comparison, in which one seeks common causes for a similar outcome in cases that otherwise differ (Tilly, 1984, pp. 97–115). The British Columbia and California cases unfolded in different national contexts, have different political institutions (parliamentary vs. separation of powers), concern different basic kinds of carbon pricing (tax vs. cap and trade), have different consumer costs (higher in British Columbia), and have a different role for the center-right party (broadly supportive vs. hostile).

Finally, there is also some variation between the cases, and between two subcases that I delineate within the California case. As will be shown, political opposition endangered carbon pricing more in British Columbia than in California, and, in the latter case, more in transportation than in electricity. This permits conducting variation-finding comparisons (Tilly, 1984, pp. 116–24).

I used standard methods to create and analyze each case study and the two California subcases. I defined the time period in terms of conflict over the adoption and the later development of the policy, and constructed chronologies of major contestation events. To investigate specific hypotheses, I conducted systematic searches of government documents and newspapers, as described below; the secondary literature on British Columbia was also helpful in that case. The use of primary sources involved both content analysis (i.e., counts of newspaper articles or of words in articles and documents) and careful reading of the sources as appropriate. To help distinguish the effects of policy design and framing features from those of other variables, I tried to trace the effects of the identified features on intervening variables (public opinion, interest-group mobilization, party positions, and election results) and hence on policy outcomes (Collier, 2011; George & Bennett, 2005). However, given the large number of hypotheses to be tested on only three subcases, it is difficult to reach definitive conclusions about the effects of any particular variable.

British Columbia Carbon Tax Case

Adoption, Opposition, and Survival

The provincial government of British Columbia adopted a revenue-neutral carbon tax in 2008 as part of a broader set of climate policies that included a 33% reduction target for greenhouse gas emissions over the 1990–2020 period, a goal of zero emissions from electricity generation by 2016, and transportation policies that would match California's tailpipe emissions standards and its low-carbon fuel standard (Harrison, 2012, p. 389). The carbon tax started at C\$10/tonCO₂ that July and rose in \$5 increments each year to \$30 per ton in 2012, where it remained until April 2018, when a new series of annual \$5 raises began, planned to end with a price of \$50 per ton in 2021.⁶ The latter increases began in the context of the federal government's carbon-pricing policy under Justin Trudeau, which required all provinces to adopt a carbon price of \$50 per ton by 2022 or have one imposed by the federal government. British Columbia's carbon tax covers the province's CO₂ emissions from fossil-fuel combustion, which make up about 70% of its total greenhouse gas emissions. Hence, the tax excludes CO₂ and other greenhouse gas emissions not due to fossil-fuel combustion, such as from agriculture, forestry, landfills, industrial processes (e.g., from cement and aluminum production), and fugitive

emissions (mainly from natural gas). Since 2012, it also excludes emissions from agricultural fuel use, and if large new liquid natural gas facilities are constructed, their fuel use will be exempt from all but the first \$30/ton of the tax (Murray & Rivers, 2015, p. 4; Shaw, 2018). The carbon tax affects households mainly through purchases of transportation and heating fuels; while electricity is included, this barely affects consumer prices since about 90% of the province's electricity is generated from hydropower. The politically most salient effect was on gasoline prices. In 2015, the carbon tax contributed about 6.7 cents/liter to the price of gasoline, which was about 6% of the retail price (Murray & Rivers, 2015, p. 5; data from gasbuddy.com).

Until 2018, revenue from the carbon tax was returned to the public through cuts to personal income taxes and corporate income taxes, a quarterly tax credit for low-income earners, and a one-time rebate of C\$100 per household in 2008 (Harrison, 2012, p. 391; Jaccard, 2012, p. 181; Komanoff & Gordon, 2015, p. 6). Initially, two-thirds of the revenue went to personal income tax cuts, but the proportion going to business tax cuts rose to 58% in 2011–12 (BCMOF, 2013, p. 61). The carbon tax was reported to be revenue-negative by the government, with \$959 million in revenue more than offset by \$1.141 billion in related tax breaks in 2011–12 (BCMOF, 2013, p. 61). The gap between revenue and offsets that are officially attributed to carbon tax revenue increased further in recent years, but many of the newly attributed tax expenditures actually originated in the late 1990s (including a large one for the film production services tax credit) and hence did not depend on the adoption of the carbon tax (Lamman & Jackson, 2017, pp. 10–1). When the government raised the carbon tax beginning in 2018, its budget provided that 24% of the new revenue (above \$30 per ton) would be used for green initiatives and 15% would be rebated to low-income households through increased tax credits (BCMOF, 2018, p. 75; data from BCMOF 2019, pp. 16–8, 28).

The carbon tax was subject to highly public conflict for about one year leading up to the May 2009 provincial elections. Premier Gordon Campbell, the head of the center-right government formed by the Liberal Party, announced the tax in February 2008. Campbell and his party had been in office since 2001, and had been returned to power with a reduced, but comfortable, parliamentary majority of 46 to 33 seats in the 2005 election. Although environmentalists and the public initially supported the tax and businesses accepted it, the left-wing New Democratic Party (NDP) immediately criticized it for sparing industry and supposedly disadvantaging northern, rural residents. The NDP in British Columbia conducted an “axe the tax” campaign through online petitions and public rallies from June to October 2008, a period when the national NDP was also opposing the national Liberal party's carbon tax proposals during the federal election campaign. The next year, the British Columbia NDP prominently included opposition to the tax in its election platform for the May 2009 provincial elections.

The New Democrats, though previously closely aligned with environmentalist groups and generally in favor of carbon pricing, argued that the Liberals' tax was too easy on industrial polluters and unfair to working people (James, 2008). Moreover, mayors representing residents of rural and northern areas, which are more reliant on road transport and have colder winters, took a leading role in speaking out against the tax (Peet, 2010, pp. 15, 17). By June 2008, public opinion, which initially had been favorable, had swung to oppose the carbon tax by a 60% to 38% margin (see Figure 1). By a 75% to 19% margin, British Columbia voters preferred a carbon-pricing policy that would target large polluters rather than a broad-based carbon tax, and 72% did not believe that

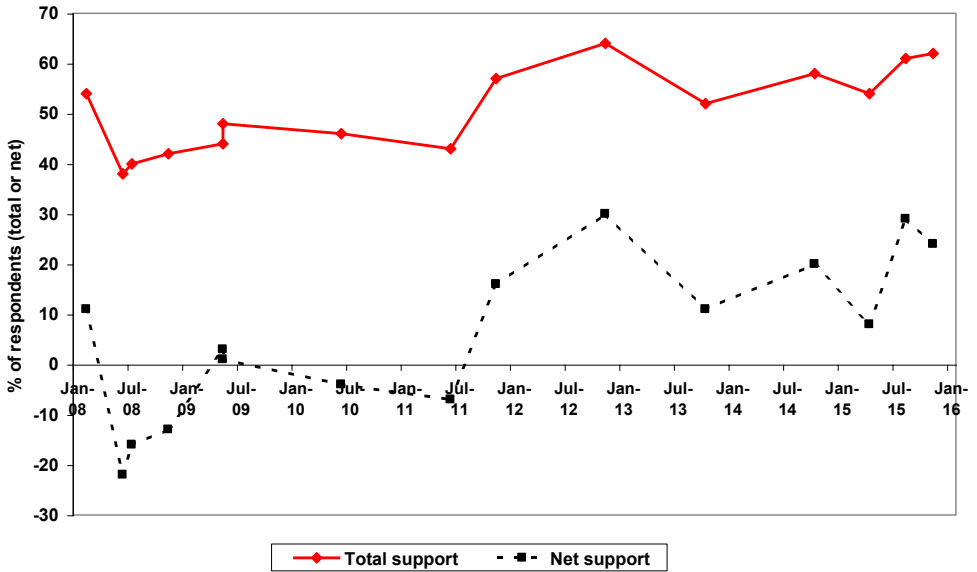


Figure 1. Public Support in British Columbia for the Provincial Carbon Tax, 2008–15
Note: Net support is the difference between those supporting and those opposing the carbon tax.
Sources: Data from Environics; Ipsos Reid; Mustel; and Angus Reid.

the government’s tax would really be revenue neutral (Harrison, 2012, pp. 393, 391–2; Hogben, 2008). Moreover, the Liberals, who had a polling lead over the NDP that varied between 8 and 18 percentage points from November 2007 to March 2008, saw their lead shrink to a statistically insignificant 2 points in November 2008 (Mustel data).

However, the Liberal government and the carbon tax survived the campaign against it. Public opinion on the tax swung back to a slight plurality in favor of it by May 2009, when elections were held. The popular vote result was nearly identical to that of 2005; the Liberals defeated the New Democrats by 3.6 percentage points and were confirmed in power with a slightly enhanced majority of 49 to 35 seats. The NDP responded by immediately dropping its opposition to the carbon tax. Campbell was replaced as premier in March 2011 by Christy Clark due to an unrelated controversy over Campbell’s plans to reform provincial sales taxes. However, although she was less favorable to climate policy than Campbell, Clark retained the carbon tax and its remaining scheduled increases, partly because reversing the carbon tax would have required rolling back the income and business tax cuts with which it was paired (Harrison, 2012, p. 401). A review by the provincial government for the 2012–13 budget concluded that the tax was functioning as intended and did not require major changes; at least seven studies concluded that it helped to reduce fuel use and greenhouse gas emissions in the province (Murray & Rivers, 2015, pp. 4, 8–9). As shown in Figure 1, by November 2011, public opinion on the carbon tax shifted back to double-digit levels of net support, which continued through 2015, the last year for which polling data are available. While a margin of 56% to 40% had opposed it in July 2008, a 61% to 32% majority favored it in 2015 (Environics Institute, 2015, p. 7).

In the following, I will attempt to explain several things: Why did public opinion turn against the tax in 2008? Why did the carbon tax survive the 2009 provincial

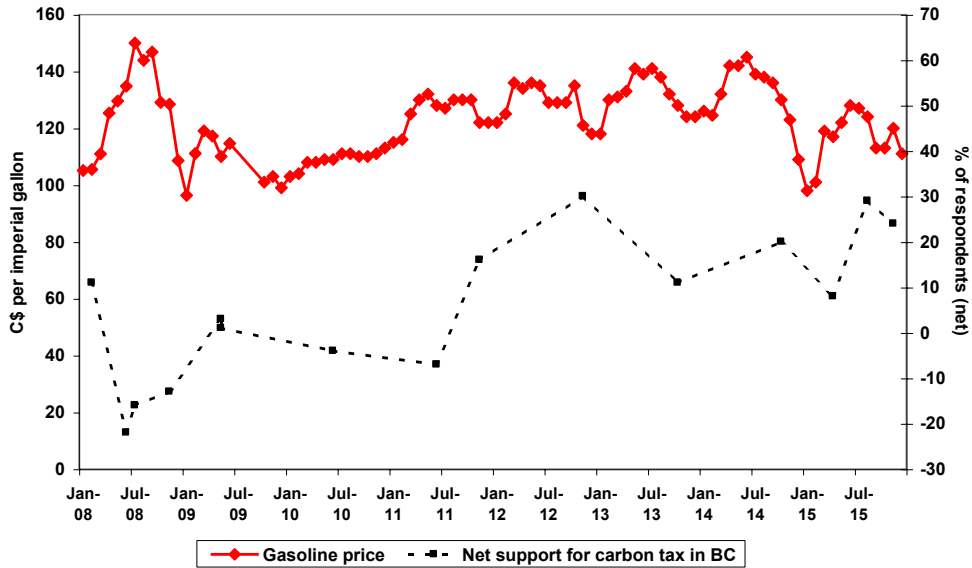


Figure 2. Gasoline Price and Public Support in British Columbia for the Carbon Tax, 2008–15

Note: Net support is the difference between those supporting and those opposing the carbon tax.

Sources: Data from gasbuddy.com; Environics; Ipsos Reid; Mustel; and Angus Reid.

election and Campbell's 2011 departure from office? Why did public opinion become more favorable to the tax in 2009, and again in 2011 and later years?

Explanation: Energy Prices, Elections, Policy Design, Framing

The *energy prices* and *exogenous causes of election results* propositions receive clear support in British Columbia, which is perhaps not surprising since those hypotheses originated primarily in secondary sources on this case (Harrison, 2012; Jaccard, 2012). However, I tested both hypotheses against types of data not used in those sources and found that the strength of the energy-price effect also depends on the degree of partisan differences on the carbon tax. Gasoline prices rose sharply from C\$1.05 to \$1.50/liter (a 43% increase) from February to July 2008, just after the tax was announced, and net support for the tax fell sharply (by 27 percentage points) in the same period, during which the NDP strongly opposed the tax (see Figure 2). Although the carbon tax impact was small relative to the exogenous price movements, the fact that prices were increasing rapidly allowed opponents to claim or imply that the carbon tax would lead to intolerably high gas prices. But then gasoline prices dropped dramatically from July 2008 to January 2009 (back to \$0.95/liter), while net support for the tax rose sharply (by 24 percentage points). However, in the next period in which gasoline prices increased, 2009–11, the NDP no longer opposed the carbon tax, and a large increase (of about 30 cents/liter) was accompanied by a relatively small (9 percentage point) decline in net support.⁷

Second, a content analysis of five Canadian newspapers confirmed the energy prices hypothesis. A search of news articles mentioning the carbon tax, gasoline prices, and British Columbia showed a strong spike in June 2008 (26 articles/month), as gasoline prices reached their peak; later peaks in coverage were much smaller: in September–October

2008 during the federal election campaign (8.5 articles/month); and in April–May 2009 during the provincial election campaign (3.5 articles/month).⁸ Third, public opinion data on issue salience shows that fuel costs became the top issue of concern in June 2008 (named by 17% of respondents to an open-ended question) before falling to seventh place (just 1% mentioning it) in November (Mustel Group, 2009, p. 2).

In short, public support for the carbon tax was falling while gas prices were rising, the public was becoming concerned about gas prices, and opponents were using the gas-price issue to criticize the tax.⁹ The decline in gasoline price after June 2008 evidently drove public opinion more than the NDP's continuing campaign against the carbon tax, since public support for the tax increased after June 2008.

The carbon tax's survival depended on whether Campbell's Liberal Party would be re-elected in the May 2009 provincial parliamentary elections, since the NDP was campaigning on a call to repeal the tax. Harrison and Jaccard both argue that the Liberals' re-election was largely due to the economic recession, since most voters trusted the Liberals more than the New Democrats on economic issues (Harrison, 2012, pp. 398–9; Jaccard, 2012, p. 186). Their argument generated the *exogenous causes of election results* hypothesis, which I tested in the British Columbia case with issue-salience and other public opinion data, confirming the hypothesis. There had been multiple issues of top concern in the province during the first half of 2008, with the economy (at around 10%) slightly trailing health, environmental, and social issues, as well as, briefly, fuel costs, all of which were mentioned by 10% to 20% of respondents. The picture changed dramatically beginning in November 2008, when 40% named the economy and no other issue got more than 12% (Mustel Group, 2009, p. 2); this pattern continued through May 2009, when the election was held. Not surprisingly, this shift was driven by economic developments: unemployment rose in the last months of 2008, and the Bank of Canada officially declared a recession in December 2008 (Wyld, 2008). The timing of the recession clearly aided the Liberals, whom respondents trusted more than the NDP on economic issues, by a 56% to 22% margin (Mustel Group, 2009, p. 2).

Finally, the exogenous causes of elections hypothesis is also supported in the case of the British Columbia carbon tax increases that began in 2018, which were mainly due to the Liberal Party's federal election victory in 2015 and the Trudeau government's ensuing federal carbon-pricing policy. The Liberals won nationally not because of their climate policy positions, but mainly because Trudeau was personally more popular than Prime Minister Harper, Trudeau's call for three years of deficit spending for infrastructure was popular, and Harper's use of immigration issues backfired (Angus Reid Institute, 2015a, 2015b). Trudeau's victory and adoption of a national carbon price led the Liberal government in British Columbia to agree to raise the province's carbon tax to \$50 per ton by 2022; in turn, this made it possible for the British Columbia NDP, when it gained office in 2017, to increase the tax and even to move up the timetable slightly, without incurring criticism from the opposition Liberal Party in the province.

As important as the timing of gasoline price changes and economic recession were for the outcome in 2009, policy design and framing also affected the carbon tax's political viability, as seen by examining the linkages from the independent variables identified in those hypotheses to public acceptance, other political processes, and policy outcomes.

The *avoid taxes* hypothesis holds that since carbon taxes involve highly visible costs, it is more difficult to get public acceptance for them than for emissions trading. Although the carbon tax survived in British Columbia, the case arguably supports

this thesis. The province's carbon tax was always referred to as a tax by both sides, which made it more credible for opponents to label it a "gas tax" and to refer to their campaign as "axe the tax." This probably contributed to the decline in net public support in the first half of 2008, which fell by 30 percentage points, compared to a much smaller, 6-point drop in public support for the cap-and-trade system in California in the face of rising gasoline prices in 2014 (see Figure 4 below).

The *reduce the visibility of costs* hypothesis is also supported in the British Columbia case concerning government calculations of costs, which probably helped to fuel the NDP's axe-the-tax campaign in June–October 2008. From the time of its initial announcement in February 2008, the provincial government calculated the carbon tax's impact on households and publicized those figures in ways that were readily understandable, for example as estimated average annual costs for households and as the size of the tax per liter of gasoline (e.g., Fowlie & Anderson, 2008). The cost that was mentioned most often in newspapers was the gasoline tax increase of 2.4 cents/liter (in 2008), expected to rise to 7.2 cents in 2012.

But the visibility hypothesis is not supported concerning the effects of the tax's visibility on consumer bills. The carbon tax was listed separately at the point of sale for gasoline and on bills for home heating fuels. An online search of images found that in 2010 and 2012, the carbon tax was displayed as a separate item on standard labels placed prominently on gasoline pumps (Mooney, 2014; Zentrader, 2011). It is unclear whether such labels were in place in 2008, since they are not mentioned in news sources that year. Home heating fuel bills also gained an extra line for the carbon tax in Winter 2008–09 (Brethour, 2009; Curry, 2009). But in both instances, the visibility of costs evidently did not negatively affect public support much, if at all. The carbon tax listed on gasoline pumps kept increasing through 2012, and yet public support for it rebounded sharply in 2011 and went even higher in 2012 (see Figure 1). In the case of heating bills, at the time when costs were made visible there, prices for all types of fuel were falling and public support for the carbon tax was rising.

The British Columbia case provides mixed, partial support for both the *exempt or compensate industry* and *make polluters pay* hypotheses, suggesting that a policy design of partial exemption or compensation may be ideal for maintaining both business and public support. Since the tax did not apply to sources of CO₂ other than from fossil-fuel combustion or to emissions of other greenhouse gases, most emissions from forestry and agriculture were not taxed, and agriculture even gained an exemption for its fuel use in 2012; greenhouse growers also gained an 80% rebate on the carbon tax they paid on their natural gas and propane use. Moreover, the natural gas industry's fugitive emissions were not taxed, which meant that this industry's projected growth was not impeded by the carbon tax (Jaccard, 2012, pp. 175–6; NEB, 2016, p. 12). By largely sparing these major sectors, the provincial government may have headed off opposition from business in general, which remained supportive because of the carbon tax's revenue neutrality and link to income and business tax cuts.

However, the province's industries and other businesses paid the full amount of carbon tax on their fossil-fuel combustion. This may have helped the government to maintain support for the carbon tax from environmental organizations, which showed concern about curbing industrial pollution along with household emissions (e.g., Campbell, Bruce, & Smith, 2009). Environmental organizations strongly endorsed the carbon tax and criticized the NDP's axe-the-tax campaign during the

2009 election campaign, which probably helped to maintain public support for the Liberals and their carbon tax policy. Despite their opposition to the tax, concessions were not made to trucking companies and to energy-intensive industries, such as lime and cement manufacturing, which had argued that they would lose foreign market share because of the carbon tax (Jaccard, 2012, pp. 183–4).

The *egalitarian revenue use* hypothesis is supported concerning the relative ineffectiveness of income tax cuts in gaining initial support for a carbon tax, but is contradicted concerning the long-term impacts of the income tax cuts. Initially, the personal income tax cuts did not shore up support for the carbon tax, because most people did not think that the tax cuts they received would offset their increased energy costs; 71% believed they would be net losers and less than 15% that they would be net winners (Gunster, 2010, p. 194). But the personal income tax cuts did help to insulate the carbon tax from possible repeal by the Clark government beginning in 2011, since repeal presumably would have required raising income taxes. Moreover, the low-income tax credit part of the tax cuts had a positive effect on support for the carbon tax since it led an important leftist think tank, the Centre for Policy Alternatives, to announce that poor people would be net beneficiaries during the tax's first two years; this defused initial opposition on the grounds of its possible impacts on economic inequality (Jaccard, 2012, p. 184).

By contrast, the revenue use hypothesis is contradicted concerning the effectiveness of flat rebates. The one-time flat rebate backfired during the 2008–09 debate on the carbon tax, as it was widely criticized as a kind of political bribe that the government was handing out to gain support and for being too small relative to the contemporaneous gasoline price increases (Gunster, 2010, p. 204; Sodero, 2011, p. 1478).

The evidence is mixed on whether spending on climate protection programs would have been more popular than cuts to tax rates in British Columbia. When considered in isolation from other factors, green spending was very popular; public opinion was much more favorable toward spending on wind and solar power (47% favorable) or energy efficiency (16%) than toward tax cuts (11%; Pembina Institute, 2008, p. 2). However, if the Liberal government had used carbon-tax revenue for green spending, it is likely that business would have opposed the tax from the outset, since the carbon tax's revenue neutrality feature was key to business support (Harrison, 2012, p. 391). If business had opposed the tax, especially while the 2008–09 recession unfolded and the provincial elections loomed, the government probably would have been forced to withdraw or postpone the tax, or else would have lost to the NDP, which at the time promised to repeal the carbon tax if elected.

However, under John Horgan's NDP government, elected in 2017, British Columbia began using substantial shares of new carbon-tax revenue for green initiatives, mainly incentives for industry to reduce emissions, zero-emission vehicle programs, and energy efficiency in buildings (BCMOF, 2019, pp. 16–18). Although no polling data are available, these are likely to be popular measures, and since the Liberal party supports the recent carbon tax increases, Horgan's government has been free to use the new revenue in these ways, and in others, such as increased low-income tax credits and social spending. This allocation of revenue has helped the NDP to build a coalition in support of the carbon tax, which it began doing during the 2017 election campaign (Shaw, 2017). Given big business's support for the increased carbon tax, Horgan so far has not had to deal with a backlash from that quarter, either (Hoekstra, 2017).

The *make concessions to voters* hypothesis receives mixed support in British Columbia. It is disconfirmed concerning public opinion and public statements, but partly supported concerning the defusing of potential opposition from northern municipal officials who spoke on behalf of their residents in 2008. In British Columbia, the government made concessions to northern and rural homeowners in the 2009 budget, which included a new property tax credit of up to C\$200/year beginning in 2011; this redistributed 6% of the total carbon tax revenue over the next four years (Beck, Rivers, & Yonezawa, 2016, pp. 125–6). Politicians representing these groups had complained that colder temperatures and the unavailability of public transit disadvantaged them relative to other British Columbia residents, although data from utilities and on commuting distances belied these claims (Beck et al., 2016; Jaccard, 2012, p. 131). But in terms of public opinion, the tax credit seems to have backfired. Rural residents were not more opposed to the tax than urban residents in 2008, but rural residents became about 9 percentage points *more* opposed to the carbon tax after the new tax credit was adopted; their opposition rose from about 50% to about 60%. Beck and colleagues theorize that the northern and rural homeowners tax credit made rural residents more aware of the argument that the tax unfairly burdened them (2016, pp. 132–4).

These new tax credits did not lead to statements of support or to reduced opposition from northern and rural officials in the news media.¹⁰ But given that northern mayors had opposed the carbon tax so vigorously in early 2008, apparently, with large political results (media coverage, a shift in opinion, and the NDP's anti-tax campaign), the new tax benefit for northern homeowners may have helped to prevent a later insurrection by the same forces. By 2012–13, prior to the next provincial election, the issue had vanished from the press.¹¹

The *public-benefit justification* hypothesis receives support in the British Columbia case. Secondary sources argue that the government's poor selling of the carbon tax weakened its chances; they argue that the government had no plan to communicate with the public about the tax and emphasized its economic rather than environmental benefits, as the finance ministry overshadowed the environmental ministry (Gunster, 2010, pp. 190, 198, 205; Houle, 2015, pp. 267–8; Sodero, 2011, pp. 1478–9). This view is supported by my content analysis of carbon tax justifications in three provincial newspapers and the Liberal party platform during 2008–09, which showed that the government emphasized the tax's economic rationale more than its environmental benefits and did not assert that industrial polluters should pay.¹² The government's main public arguments in favor of the carbon tax were that it would make possible personal income and business tax cuts; secondarily, it would be good for the economy, promote a transition to a green economy, and reduce greenhouse gas emissions. Overall, only 32% of justifications were environmental, while 68% concerned tax cuts and broader economic benefits. Government references to polluters and pollution made up only 3% of the justifications, and the government never referred specifically to large or industrial polluters.

Perhaps in part because the government did not make a stronger environmental argument for the carbon tax, there was widespread disbelief that the carbon tax would be effective at reducing greenhouse gas emissions. Critics, including the Canadian Taxpayers Federation, argued that the tax was too low to affect individual behavior, since recent, large gasoline price increases had not led to reduced driving—and that the government's own projections indicated that the tax ultimately would reduce emissions only by 3 megatons per year, which was only about 10% of the reductions required by its target of a 33%

reduction from 1990 to 2020. Published opinion surveys showed that only 13% of respondents planned to drive less as a result of the tax and that three-quarters of them thought the tax would not be effective at reducing the province's greenhouse gas emissions. The lack of public confidence is perhaps not surprising since it is difficult to explain to the public that prices will affect marginal behavior over time (Gunster, 2010, p. 198).

In short, the government's lack of environmental justifications may have constituted a missed opportunity to win over public opinion during the period from 2008 to 2011, when support for the carbon tax fell sharply and remained relatively low. But the government's poor framing did not prevent net support for the tax from rising more than 30 percentage points after Summer 2011 (see Figure 2). That rise may have been due to the economic recovery, which picked up steam in 2010 and 2011,¹³ and the NDP's post-2009 acceptance of the carbon tax. With the two major parties in agreement, British Columbia residents received fewer anti-carbon tax messages and hence were able to forget the carbon tax controversy. Also, studies published by environmental organizations, the British Columbia government, and academics in the early 2010s (Murray & Rivers, 2015, p. 8) showed that the carbon tax had reduced energy and especially gasoline use, and hence greenhouse emissions; reports on these findings may have led the public to see the carbon tax as successfully addressing climate change.

California Cap-and-Trade Program Case

Adoption, Opposition, and Survival

Since 2013, California has operated a mandatory cap-and-trade program that now covers 85% of the state's greenhouse gas emissions. The program was authorized by the 2006 Global Warming Solutions Act, which was passed by a Democratic-controlled state legislature and signed by a Republican governor, Arnold Schwarzenegger. This legislation authorized the state's air pollution control agency, the California Air Resources Board (CARB), to explore cap and trade as an option to meet a target of stabilizing statewide greenhouse gas emissions over the 1990–2010 period, which required a cut of 13% from the 2004 emissions level (Karapin, 2016, p. 32). The 2006 law (which was extended in 2016 and 2017) and the many sectoral policies that support it have made California's climate policies pre-eminent among the U.S. states (Rabe, 2009). CARB issued a scoping plan in 2008 that included a multi-sector cap-and-trade program for all six Kyoto gases, and it issued a final cap-and-trade regulation in 2012; only large entities (with at least 25,000 megatons CO₂-equivalent annual emissions) are included, and agriculture and forestry are not included. Under the regulation, electric power producers and importers as well as large industrial plants have been covered since January 2013 (including process and fugitive emissions), and transportation and heating fuel distributors since January 2015. The oil, natural gas, and manufacturing industries have received free allowances for about half their emissions, while the electricity and fuel sectors have been required to buy allowances for all their emissions at auction. For the large electricity utilities, a somewhat complex procedure was adopted: they were given allowances for free, but the California Public Utilities Commission (CPUC) in 2012 required them to sell those allowances at special consignment auctions, return the revenue to ratepayers in flat rebates, and then buy new allowances at auction (Raymond, 2016, p. 135).

CARB set a price floor of \$10 per ton CO₂-equivalent, rising slowly with inflation, and auction prices gradually rose from \$11 to \$15 over the 2013–17 period. This translated into household impacts of about 11 to 15 cents/gallon of gasoline (4–5% of the retail price) and an estimated 2–3% of the retail residential price of electricity in the 2015–17 period. However, retail electricity prices did not rise due to cap and trade, because the flat, per-household rebates on electricity bills (“climate credits”), which began in April 2014, have been slightly larger than the increased electricity costs; the rebates were about \$50–70 per household per year, or 3–4% of the residential bills.¹⁴ Revenue from the cap-and-trade program is now roughly \$2 billion per year, although it has fluctuated recently. Leaving aside the rebates given to electricity customers, California laws require that the money be spent on climate change mitigation and adaptation programs, and that 25% of the total spending will benefit disadvantaged communities (Carl & Fedor, 2016, pp. 62–63). About 25% of the revenue has gone to high-speed rail and the remainder to spending on energy efficiency and renewable energy programs (CCI, 2017).

While the cap-and-trade program in general was controversial beginning in 2006, its application to electricity has generated virtually no public opposition, and its application to transportation fuels triggered opposition only starting in 2014. During the legislative process, Governor Schwarzenegger was a champion of cap and trade as an efficient, business-friendly form of climate policy making, while Democrats were skeptical; the compromise legislation directed CARB to consider but not necessarily adopt such a program. Opponents of the Global Warming Solutions Act then tried to suspend the law in a 2010 ballot proposition (Proposition 23), but they failed by a decisive margin of 62% to 38% after a campaign in which environmental organizations and wealthy donors spent three times as much as their (mainly oil) industry opponents did (Karapin, 2016, pp. 152–63). The next phase was litigation, in which business opponents, led by the state Chamber of Commerce, claimed that cap and trade was a tax and hence had been illegally adopted, since a two-thirds majority is required for tax increases under the California constitution. The lawsuit was initiated in 2012, but failed in a lower court in 2013, in an appeals court in April 2017, and finally at the state supreme court in June 2017 (Lifsher, 2012; Megerian, 2017; Silverstein, 2017).

In Summer 2014, with gasoline prices having risen above \$4/gallon and road fuels due to be included in the cap-and-trade system the following January, opposition to their inclusion emerged suddenly, as shown by news coverage of the issue in Figure 3.¹⁵ Several groups backed by the oil industry, such as the California Drivers Alliance and Fed Up at the Pump, conducted an expensive advertising campaign online, on radio, and in print, calling cap and trade a hidden gas tax (Lifsher, 2014a; Richman, 2014). Their allies in the legislature—Republicans and moderate Democrats led by Democratic Assemblyman Henry Perea—lobbied CARB and proposed legislation to delay the cap-and-trade expansion for three years (Lifsher, 2014b, 2014c). However, other Democrats wrote to CARB in support of the original implementation plan, and Democratic leaders did not allow the bill to come up for a vote before the legislative session ended in August. Governor Jerry Brown’s Republican opponent, Neel Kashkari, made the impact of cap and trade on gasoline prices an issue in the 2014 gubernatorial campaign, linking it to Brown’s preference for spending a large share of the program’s revenue on high-speed rail (Finnegan, 2014). The issue came up in the sole televised debate between the two candidates, in September; the moderator pressed Brown, who strongly defended the program, its purpose, and its use of

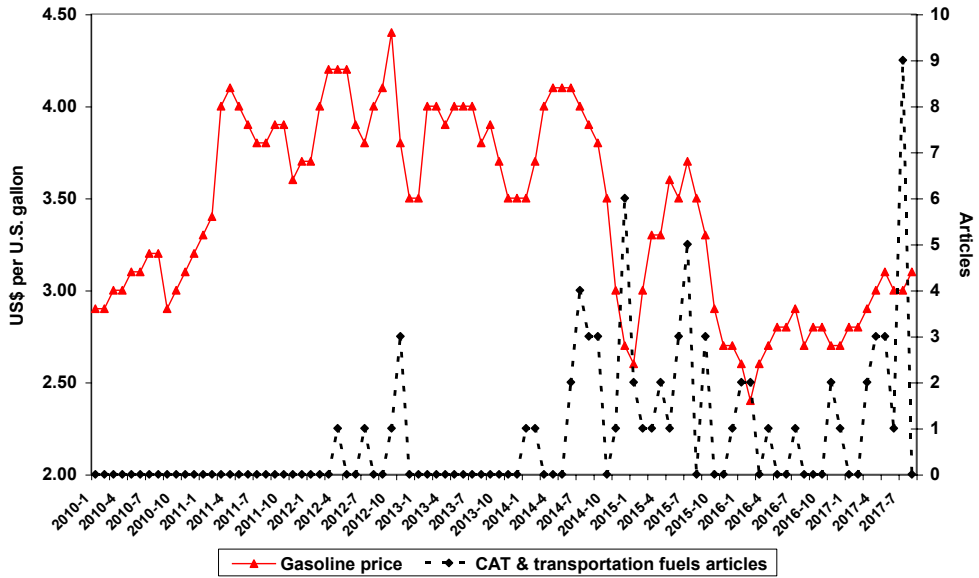


Figure 3. Gasoline Price and Newspaper Coverage of the California Cap-and-Trade Expansion to Transportation Fuels, 2010–17

Sources: *Los Angeles Times*, *San Jose Mercury News*, *Orange County Register*, *Contra Costa Times*; data from gasbuddy.com

revenue, while attacking the automobile and oil companies (CSPAN, 2014). Three weeks later, Kashkari staged a campaign event at a gas station, where he took a hammer to a toy train, handed out \$25 gas cards, and said “Jerry Brown, don’t raise our gas prices to fund [the] crazy train” (Mehta, 2014).

In November, Brown was re-elected easily, although Republicans picked up enough seats to take away the Democrats’ two-thirds supermajorities in both legislative chambers. By 2015, although Republicans still spoke out against the impact of cap and trade on gasoline prices, they also tried to direct the revenues generated by the program to highway repairs (Oberholte, 2015; Skelton, 2015). But opponents had some influence in curbing Brown’s attempts to make California climate policy more ambitious in his second term. In 2015, the legislature considered a measure to give CARB authority to reduce gasoline consumption by 50%, but it failed to get enough support for passage, although the next year legislators passed SB 32, which extended CARB’s mandate to a 40% reduction in greenhouse gas emissions over the 1990–2030 period (Megerian & Mason, 2016; Megerian & McGreevy, 2015). Then, in July 2017, after intense negotiations, the legislature passed AB 398, which extended the cap-and-trade program to 2030; it did so by a two-thirds majority that will insulate the program from future court challenges that might claim that the cost of emissions allowances constitutes an illegal tax. But in order to secure the votes of eight Republican legislators, proponents made concessions, including strong, detailed provisions for a ceiling on allowance prices at auction (Mason, 2017a). According to the text of the bill, this was done “to avoid adverse impacts on resident households, businesses, and the state’s economy”—through the program’s effects on gasoline and electricity prices (AB 398, 2017, Sec. 4b9c2AiI).

Throughout the 2009–17 period, the cap-and-trade program enjoyed net positive support in public opinion polls conducted by the Public Policy Institute of California (PPIC), with an average margin of 52% to 37% in favor, although it was somewhat

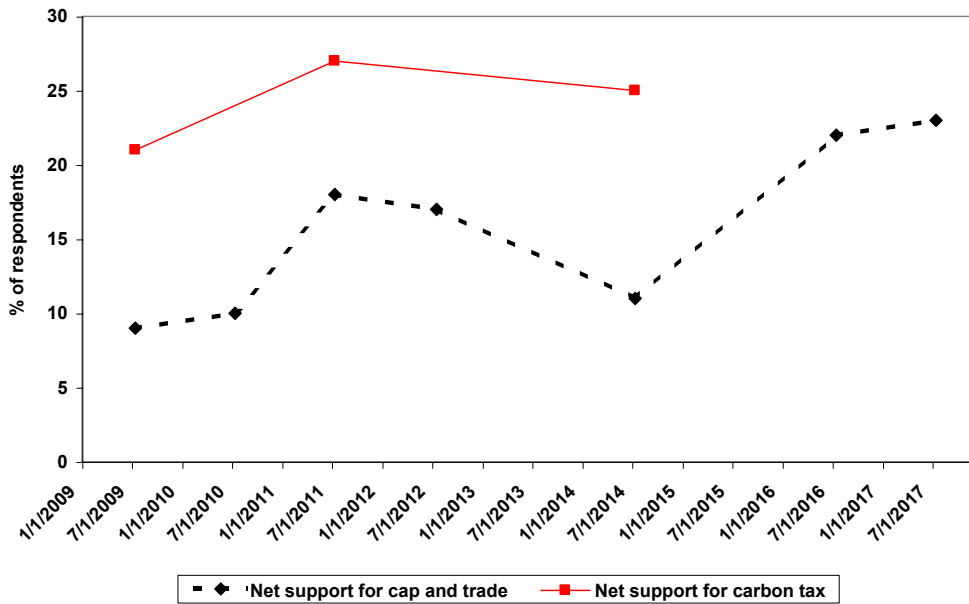


Figure 4. Public Support in California for the Cap-and-Trade Program and a Hypothetical Carbon Tax, 2009–17
Note. Net support is the difference between those supporting and those opposing the policy.
Source: PPIC data.

less popular than a hypothetical carbon tax (Figure 4). Net support declined from 17% in July 2012 to 11% in July 2014 as opponents mounted a public campaign that summer against the “hidden gas tax.” But net support reached new highs, above 20%, during the 2016–17 period, including in a poll taken in July 2017, during the legislative debate on extending the program. Moreover, public opinion remained supportive when the cap-and-trade program was described as funding high-speed rail and other projects to reduce greenhouse gas emissions *and* adding 11 to 15 cents/gallon to the price of gasoline; clear majorities still favored the program, with the margin averaging 56% to 35% in 2016–17 (PPIC data; see the top line in Figure 5 below). In 2012, a different poll that gave arguments for and against cap and trade (including gas price increases among the latter) also found majority support for the program, by a 63% to 32% margin (Greenberg Quinlan Rosner Research, 2012). By contrast, opinion on high-speed rail was strongly divided when its large projected costs (\$64 to \$100 billion over 20 years) were mentioned, with an average margin of only 50% to 46% in favor during the 2012–17 period (PPIC data; see the bottom line in Figure 5).

In the following, I will focus on several questions: Why did opposition to the inclusion of transportation fuels emerge and fail, and why was there virtually no opposition to the inclusion of electricity? Why did public opinion continue to support the cap-and-trade program, even given its widely understood impact on gasoline prices?

Explanation: Energy Prices, Elections, Policy Design, Framing

The *energy prices* hypothesis receives strong support from the California case, at least in the context of Republican opposition to the state’s carbon-pricing program. When gasoline prices rose in Summer 2014 (increasing from \$3.50 to \$4.10/gallon from the

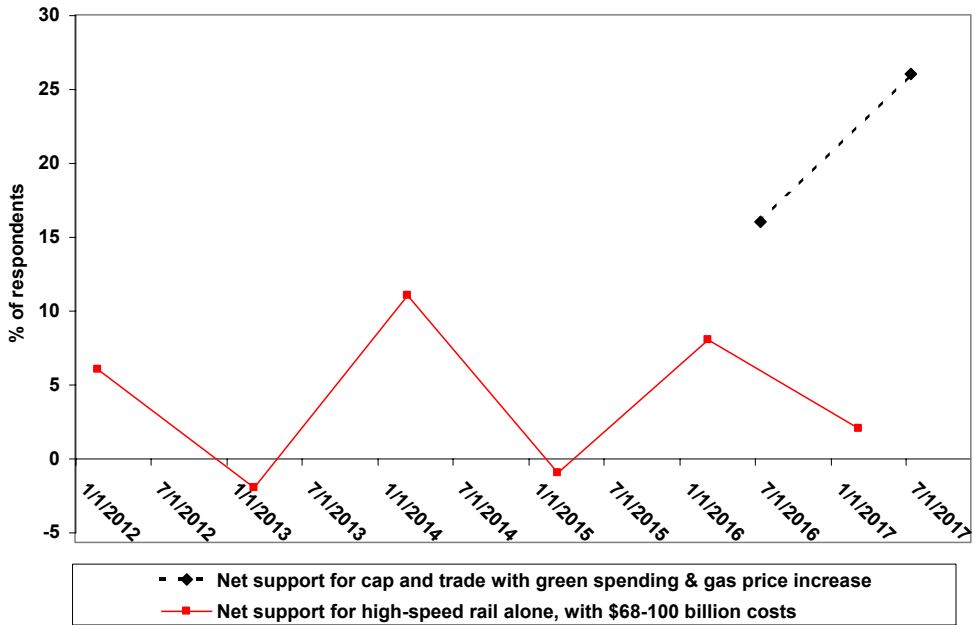


Figure 5. Public Support in California for Cap-and-Trade Revenue Spending, 2012–17
 Note: Net support is the difference between those supporting and those opposing the policy.
 Source: PPIC data.

previous December to June), opposition to the cap-and-trade program’s expansion to transportation fuels erupted (see Figure 3)—and net support for the program as a whole dropped by 6 percentage points compared to the previously available survey, two years earlier (see Figure 4). Then, a decline in the gasoline price to \$2.60/gallon in January 2015 was followed by a drop-off in elite opposition as reported in newspapers immediately after December 2014 (see Figure 3). By the time of the next public opinion survey, in July 2016, net support for cap and trade had risen 9 percentage points, to a positive 20 points.

The price and public opinion movements in this period were both smaller than in British Columbia in the 2008–09 period, as was the salience of the fuel price issue; in California, that issue was never mentioned as an important problem by more than 2% of respondents to open-ended questions during the 2013–17 period (PPIC data). But as in British Columbia, the timing of energy price movements in California was favorable to policy implementation. When transportation fuels began to be included in cap and trade starting in January 2015, gasoline prices were at low point, and the program’s effect on prices—an estimated 11 cents a gallon—was very small compared with the large, independent decline of \$1.50/gallon that had begun a few months earlier.¹⁶

The *exogenous causes of election results* hypothesis is also clearly supported in this case. The 2014 gubernatorial election was crucial for the state’s cap-and-trade system, since Jerry Brown made the expansion of climate policy, including cap and trade, a high priority in his two terms in office. After his re-election, he announced accelerated targets, and after Donald Trump became president in 2017, Brown made strong efforts to defend the state’s climate policies against federal interference. By contrast, Neel Kashkari campaigned in 2014 against the effects of cap and trade on gasoline and electricity prices, at the same time that Republicans and moderate Democrats in the

legislature were trying to block the expansion of cap and trade to transportation fuels. Had Kashkari won the governorship, he and the strengthened Republican minority in the legislature could have rolled back or even ended cap and trade when it came up for renewal, which was required before 2020.

However, Brown won the election, by a 20-point margin, mostly for reasons that are outside the politics of climate policy. Brown was a popular governor, who had been elected by a 13-point margin four years earlier and had a net job approval rating that averaged a positive 21 points among likely voters in 2014 (PPIC data). California leans toward the Democratic Party, a lean that increased as partisan polarization increased nationally during the 2010s; no Republican has won a statewide office in California since 2006. Moreover, Kashkari was a weak candidate: a newcomer to electoral politics who raised only one-third as much money as Brown did and who failed to get the endorsement of two other statewide Republican candidates (Ballotpedia, 2014; Mehta, 2014). In addition, Kashkari's efforts to attack Brown's climate policy were ill-timed, because a sharp peak in the state's decade-long drought occurred in the July–November 2014 period, creating the worst conditions since before 2000 (U.S. Drought Monitor data). This led to a sharp rise in public concern about drought and water supply, making it the first- or second-place issue—and 64% believed that global warming contributed to the drought (PPIC data).¹⁷

Turning to policy design, the California case largely supports the *avoid taxes and reduce the visibility of costs* hypotheses. Since the costs for households in California resulted from a cap-and-trade program, not a carbon tax, government agencies were able to use other terms for the costs, such as “GHG costs” in electricity and “compliance costs” or “additional fuel costs” in transportation (e.g., CPUC, 2016, p. 25). Although opponents referred to a “hidden gas tax,” proponents did not need to defend a tax or argue for extending a tax to 2030 in the debate on AB 398, which probably increased their chances of winning public and legislative support compared to British Columbia.

The visibility of costs due to carbon pricing was much lower for electricity than for transportation fuels. Any electricity price increases due to cap and trade were buried deep in customers' bills under the broader, jargon-y headings of “State Mandated Non-Bypassable Charge” or “Public Purpose Program” fees, without further itemization, among a number of other charges that make up a substantial part of most residential bills (e.g., PGE, 2017; SCE, 2017). Indeed, quantifying the electricity charges due to cap and trade requires using the annual report from CPUC to the legislature, where only aggregate costs are given (e.g., CPUC, 2016, p. 25). By contrast, the CPUC requires that the rebate from the cap-and-trade program be listed as a separate line item called the “California Climate Credit” on customer bills every six months (CPUC, n.d.; PGE, 2019).

For gasoline, CARB specifies that suppliers can include the “compliance cost” on their bills, but that this is not a tax (CARB, 2014, p. 2). However, the impact of cap and trade on road fuels was readily quantified, since in response to queries from legislative opponents, CARB published formulas and the Legislative Analyst's Office provided estimates for the impacts; the short-term estimate was 11 cents/gallon of gasoline in 2015, while the long-term estimate was 16 to 70 cents expected by 2021, depending on allowance prices (CARB, 2014, p. 3; Taylor, 2016, 2017). As a result, the impact of

expected allowance prices on gasoline and diesel prices were widely reported in news sources, and opponents used the long-term estimates to argue that cap and trade could have large effects on the gas price. Yet Democrats in the legislature in 2014 blocked efforts to require the cap-and-trade charges to be displayed on gas pumps, so they were not included there at least until July 2016, when a trade association for oil distributors began to distribute labels that included a line item for the “state cap-and-trade obligation”—though not for a tax (Mulkern, 2016). By that time, the best opportunity for opposing cap and trade probably had passed.

The rival hypotheses concerning *make polluters pay* and *exempt or compensate industry* both receive partial support from the California case, since the electric power and transportation fuels industries have been required to buy allowances at auction, but other large industrial facilities were compensated by receiving free emissions allowances. CARB allocates the free allowances on an industry-by-industry basis. The agency gave away about 54 million allowances to industry (other than electric utilities) in 2014, when industry emitted about 105 million tons of CO₂eq (CARB, 2013; CARB data). The largest beneficiaries were the oil and natural gas industries (including refineries), which got 41 million free allowances in 2014; the cement, food, glass, and paper manufacturing industries were also given high proportions of free allowances, while the chemical industry and industries using ozone-depleting substances did not (CARB, 2017, pp. 153–9). The free allowances were intended to protect trade-exposed sectors and prevent carbon leakage, depriving opponents of additional arguments against cap and trade; this may have helped lead the Chamber of Commerce to support the passage of AB 398 in 2017, after its lawsuit to block the program had failed and carbon price ceilings were adopted. At the same time, the inclusion of industry, as well as the transportation and electricity sectors, allowed the program to cover 85% of the state’s emissions, giving it credibility among environmentalists as a climate-policy measure.

The *egalitarian revenue use* hypothesis is supported by the California case, since the use of revenue for flat rebates and green spending probably helped to secure public support there. In electricity, the CPUC (under pressure from state legislators) required the large utilities to sell their free allowances and return the proceeds to their customers; residential consumers get flat, semiannual rebates and small business customers get monthly rebates related to usage (Hull, 2014). However, the flat rebates are not large or easy to understand. They average around \$25 to \$35 every six months, vary greatly across utilities and years, and appear as bill credits rather than rebate checks. Yet they have been moderately well publicized through advertising campaigns by CARB and the utilities, they appear as clearly labeled items on customer bills, and local news stories about them have appeared at rebate time every spring and fall (e.g., Roth, 2014). News searches showed that virtually no political attention was paid to the rebates, which suggests that they were not major selling points for cap and trade. However, the impact of cap and trade on electricity prices also received virtually no attention in the news, probably because the rebates more than canceled out the utilities’ “GHG costs” from allowance purchases and hence the costs that could potentially be passed on to consumers. In short, the rebates acted to pre-empt any effect of cap and trade on electricity prices, which rose for other reasons by 18% over the 2012–17 period (USEIA data), and hence to pre-empt any backlash based on the program’s costs to consumers.

Aside from 4% for program administration, all remaining revenue from cap and trade, much of it coming from the transportation fuel portion, has been used for green spending, which was evidently popular with both the public and legislators. Over the 2013–17 period, the main categories of spending were high-speed rail (\$800 million), various low-carbon transportation programs (\$695 million), an affordable housing and sustainable communities program (\$570 million), and public transit and intercity rail (\$381 million; CCI, 2017, p. iii). When told that cap and trade is used to fund these programs while increasing gasoline prices by 15 cents/gallon, respondents favored cap and trade by a 60% to 34% margin in 2017; the previous year, there was a 52% to 36% margin (Baldassare, Bonner, Paluch, & Petek, 2017, pp. 18–9). These margins of support are about the same as the net support for cap and trade in general, when no mention is made of either revenue use or price increases (PPIC data).

Green spending also has made cap and trade more viable in California because legislative discretion over this kind of revenue use has been a political resource available to proponents. Legislative interest in how to spend cap-and-trade revenues has been intense, especially since the expansion of the program in 2015. There was sharp conflict between the legislature and Governor Brown (who favored high-speed rail), and criticism from the left (which favored spending on disadvantaged communities rather than electric car rebates) and the right (which favored highway repairs). The availability of revenues helped to divert Republicans' opposition to cap and trade into advocacy for using its revenues for highway repairs in 2015 and later years (Skelton, 2016). It also gave the governor and his legislative allies bargaining chips that they used to secure the votes needed to pass AB 398 (Mason, 2016). A key concession to gain Republican votes for the extension of cap and trade was the use of its revenues to fund a fire prevention program, coupled with the cancellation of a fire prevention fee that was unpopular with Republicans' rural landowning constituents (Mason, 2017b).

The *make concessions to voters* hypothesis is also supported by the California case. The CPUC's 2012 ruling on utilities' allowances was a major concession in advance to residential electricity customers, sparing them the impact of any price increase due to cap and trade. In transportation, there was no such concession; the price impact went into effect in January 2015 and drivers paid about 10–15 cents/gallon more after then. But AB 398 made a concession to voters by requiring CARB to implement effective price ceilings on future allowance prices, which will put a limit on how much gasoline prices can rise due to cap and trade. CARB has estimated that the ceiling will be about \$70/ton in 2021, which would translate into a gas price impact due to cap and trade of 63 cents/gallon (Taylor, 2017). While the price ceiling was a concession to opponents of the gas price increase and to business (Mason, 2017a), it also enhances the long-term political viability of cap and trade in California. The ceiling insures against the possibility of very large increases in retail gasoline prices due to spikes in California's carbon price, which could lead to public backlash against the program; it also insures against surges in costs for electric utilities, which could endanger their financial viability and ability to ensure electricity supply (Skelton, 2014).

The *public-benefit justification* hypothesis is strongly supported in the California case for both electricity and road fuels. Given the popularity of climate policy in California, proponents' frequent use of the global warming issue to justify the cap-and-trade program probably helped prevent public support for carbon pricing from dropping as much as it did in British Columbia. In electricity, the CPUC requires that the value

of the utilities' free allowances be used for ratepayer rebates, and in a bill insert, it describes the rebate to consumers in these terms: "This payment comes from a California program that is fighting climate change. Your Climate Credit is designed to help you join in these efforts" (CPUC, n.d.). CARB and the large utilities have both made public relations efforts to explain the rebate program.

In the transportation fuels area of the cap-and-trade program, government officials and other proponents used mainly public-benefit arguments centering on environmental protection rather than economic arguments. CARB's public justifications for cap and trade, as reported in newspapers, emphasize addressing climate change through greenhouse gas reductions (e.g., De Atley, 2015; Hull, 2014). This basic point was often echoed in other news coverage, where the purpose of cap and trade (greenhouse gas reduction) was often described briefly when the program is mentioned (e.g., Megerian, 2015). When cap and trade came under attack for its impacts on gasoline prices and the use of revenue for high-speed rail, proponents defended it by referring to renewable energy, green spending, and California's leadership in climate policy (e.g., Greenberg Quinlan Rosner Research, 2012; Lifsher, 2014d; Skelton, 2014, p. 14). Finally, a content analysis of reporting in the 2012–14 period showed that 80% of justifications for cap and trade were environmental (mainly about addressing climate change), 6% concerned energy security (e.g., reducing fossil fuel dependency), and only 14% were economic.¹⁸

Finally, a high-profile defense of cap and trade came in the September 2014 gubernatorial debate, when, in the second question directed at Brown, he was asked, "How do you defend increasing gas prices to hard-working families who may be struggling, in California?" In the resulting exchange, Brown made six different kinds of public-benefit arguments for cap and trade. Brown discredited the opposition by linking it to car manufacturers and oil companies, which are unpopular in California; asserted that climate change threatens the California way of life and that fossil fuels damage public health; explained that cap-and-trade revenues go to green spending; accused the oil companies of price fixing; blamed them directly for climate change; and asserted California's national and global leadership in climate policy (CSPAN, 2014).

Conclusions

The foregoing case-study analyses suggest that many of the causal factors identified in the hypotheses affected public and elite support and hence the chances of policy adoption and survival. Since there are nine variables and only three subcases, it is difficult to distinguish their relative impacts, but some hypotheses received more support than others, to the extent that: the evidence is of high quality and quantity, including mechanisms; the evidence all points toward confirmation rather than disconfirmation; and the causal factor helps to explain differences among the cases as well as their similarities. Table 1 in the Appendix presents a summary of the amount of support received by each hypothesis.

Five hypotheses receive the strongest support: *energy price changes* (confirmed in two cases and help to explain the California-British Columbia differences, though disconfirmed in California's electricity sector); *exogenous causes of elections* (confirmed in all

cases); *avoid taxes* and *reduce the visibility of costs* (confirmed in most cases and help to explain differences among them); and *use public-benefit justifications* (confirmed in all cases and help to explain differences among them). In addition, the *make concessions to voters* hypothesis is mostly confirmed, although there is mixed evidence in British Columbia.

The evidence also shows that three hypotheses encountered much disconfirming evidence and should be redefined for use in further research. Types of *revenue use* do not have uniform effects because the effects depend on how revenue use is embedded in coalition-building efforts. Both the *exempt or compensate industry* and the *make polluters pay* hypothesis were supported only partially; a middle path between exempting or compensating industry and burdening it appears to be more effective than pursuing just one or the other approach.

While costly climate policies survived in both cases, the British Columbia carbon tax was more endangered than the California cap-and-trade system. The campaign against the carbon tax led to a large drop in public support for it and for the Liberals, leaving that party virtually tied with the NDP six months before the 2009 provincial election; by contrast, Brown's polling lead over Kashkari never fell before 16 percentage points in 2014. Several factors identified in the hypotheses can help explain this difference. British Columbia's rise in gasoline prices was about three times as large as in California, the provincial government was defending a tax rather than cap and trade-related charges, and it did not vigorously use environmental justifications. Some of the factors considered can also explain why there was less opposition to cap and trade in electricity than in transportation in California. In electricity, costs were less visible, rebates were generous (more than covering the price impact), and they were implemented on an ongoing basis, unlike those in British Columbia.

The *energy prices* and *exogenous causes of election results* hypotheses received strong support. Gasoline price increases endangered the British Columbia carbon tax in 2008 and stirred bipartisan opposition to the California cap-and-trade system in 2014; then, in both cases, price declines in the ensuing months deflated the opposition. However, in later years in British Columbia, the size of this effect also depended on the willingness of the opposition party to oppose carbon pricing because of its effects on gasoline prices. Price movements, the salience of energy costs, and shifts in net public support were all larger in British Columbia than in California. Furthermore, the 2009 British Columbia and 2014 California elections were crucial for the survival of their costly climate policies, and the re-election of the Campbell government and the Brown administration depended largely on factors outside the climate policy system: the economic recession and the NDP's poor reputation for economic management in the former case, and Brown's popularity, the state's Democratic lean, and Kashkari's weak candidacy in the latter case. Similarly, the 2015 federal elections in Canada, which led to a major increase in the British Columbia carbon tax, depended on factors such as Justin Trudeau's personal popularity.

The *avoid taxes* and *reduce visibility* hypotheses were strongly supported and also help to explain differences across the cases. The costs of the British Columbia carbon tax were harder to sell than those of California's cap-and-trade program, largely because of the negative associations with the "tax" label. But details of visibility also mattered; since cap-and-trade costs were buried in California electricity bills, they were unlikely to come to the public's attention, and in both cases, the prominence of

gasoline pricing on roadside signs helped make gas price impacts a much larger focus of opposition than those in electricity or home heating fuels. Timing mattered, too: in British Columbia, itemization on heating bills and labels on gas pumps appeared too late to have much impact, since energy prices were already falling (in the former case) and the NDP had dropped its opposition (in the latter case); similarly, in California, the gas pump labels appeared too late to help the opposition much.

The use of *public-benefit justifications* improved political viability when they were present and communicated, which occurred more in California than in British Columbia. While both governments asserted the link between their carbon-pricing programs, greenhouse gas emissions reduction, and climate protection, California officials and advocates did so much more consistently (80% of the time, vs. 32% in British Columbia); they also used polluters-pay justifications more frequently (44% of the time, compared to only 3% in British Columbia). In addition, the CPUC asserted a public-benefit rationale for the use of cap-and-trade revenue by directing California utilities to return the revenues from consignment auctions to their residential customers through flat rebates. California's more vigorous use of these arguments probably helped it maintain more stable support for its carbon-pricing policy than in British Columbia. However, Raymond's full model could not be tested, since neither government asserted public ownership of the atmospheric commons.

In addition, *concessions to voters* were made in all the subcases, and although there is no evidence that they directly increased public support, they probably acted as political insurance policies. In the California electricity subcase, the adoption of rebates at the start of the program probably pre-empted early opposition, which might have emerged given the independent rise in electricity prices in this period. Moreover, the allowance price ceiling included after 2017 will help to curb the politically damaging effects of any future spikes in the cap-and-trade allowance price. In British Columbia, special rebates for northern and rural homeowners surprisingly did not increase support from those voters, but they may have headed off later opposition from northern mayors.

By contrast, several hypotheses received a mix of confirming and disconfirming evidence that suggests it would be productive to redefine them for further research, including in ways that account for the nature of the advocacy coalitions. On the face of it, the *exempt or compensate industry* and *make polluters pay* hypotheses both received partial support, since industrial polluters as a whole were made to pay to some extent, but not the full extent, in both cases. In British Columbia, the natural gas industry's fugitive emissions were not taxed, which fit with the Liberal government's priority on expanding that sector, and agricultural fuel use received later exemptions; prospectively, the current NDP government has partially exempted new liquid natural gas facilities from the carbon tax. However, energy-intensive manufacturing and trucking industries, despite their complaints, did not receive concessions. In California, there was a somewhat different pattern. Since the cap-and-trade system covers all greenhouse gases emitted by large facilities, exemptions (via free allowances) have been granted on an industry-by-industry basis, justified by reference to competitiveness and carbon leakage. However, in both jurisdictions, the oil and natural gas industries received substantial relief (while end users of transportation fuels paid the full carbon price), and agriculture and forestry were also excluded from paying.

Where industries received exemptions or compensation through free allowances, this may have helped to prevent them from strongly opposing the policies and rousing public opinion against them. And yet the selectiveness of the relief given to industry also may have helped these two governments to show that they were being serious about putting a price on carbon and applying it broadly across the economy in order to combat climate change. Hence, rather than completely exempting/compensating or completely including industry, the middle path that was chosen by both governments seems to have been optimal for political viability. Partial exemption or compensation also may be optimal for political viability because it allows government to use those measures to build support or defuse opposition.

The type of *revenue use* also affected public support in both cases, but in this issue, too, there was no universal formula that was most effective. Rather, tailoring revenue use to particular circumstances in each jurisdiction seems to offer the greatest chances of gaining acceptance. Green spending was useful in California; it was popular with the public and helped to buy legislative support for the 2017 cap-and-trade extension. But this approach probably was not possible for the Liberal government in British Columbia, because business, the Liberals' core constituency, opposed increased government spending, and because a major official justification for the carbon tax was that it would promote economic growth by lowering taxes. By contrast, California was governed by its center-left party, and the bulk of business in the state was already opposed to cap and trade during the 2012–17 period, when the state Chamber of Commerce attempted to block the program through litigation. The NDP government in British Columbia since 2017 is in a somewhat similar position, aiming to use new carbon tax revenue for green initiatives and social spending in order to shore up support among its electoral constituencies.

The case studies also give some support to the potential effectiveness of consumer or taxpayer rebates. Flat, ongoing, semi-annual electricity rebates probably helped to pre-empt opposition in that sector in California. While the rebates in British Columbia backfired, they were ill-timed and badly implemented; ongoing, visible rebates might have helped to gain support or curb opposition to the carbon tax. The evidence on income tax cuts is mixed. They were unhelpful early in the British Columbia case, in line with theoretical expectations, but they became a backstop to the carbon tax later, after Clark became premier and might have rolled back the tax had that not entailed a need to raise income taxes.

Finally, the case studies also show that many factors other than appropriate design and framing facilitate the adoption and defense of costly climate policies. These include leadership on the issue by key elected officials, election results that put and keep them in power, mobilization by strong environmental organizations, and the presence of capable government agencies such as California's Air Resources Board. Many jurisdictions do not have these factors to the degree that British Columbia and California do. And yet these two cases also show that carbon pricing can succeed even where some structural conditions are not favorable—where fossil-fuel and manufacturing industries are moderately strong (California); center-right governments hold sway (British Columbia in 2001–17); and business interest groups have ready access to government, green parties are weak, and the political culture is relatively skeptical of government intervention (both cases).¹⁹

Hence, the lessons from British Columbia and California may be broadly relevant to carbon-pricing efforts elsewhere in North America and beyond. True, during the last decade, carbon pricing was defeated nationally in Canada (Dion's carbon tax proposal was rejected in the 2008 federal election) and the United States (the Democrats' cap-and-trade legislation in Congress failed in 2009–10), and it has run into much political resistance in U.S. states and Canadian provinces. In recent years, Washington state voters twice voted against a carbon tax in referendums, and voters in Alberta and Ontario replaced governments that had just adopted carbon taxes, leading to their immediate repeals. In North America so far, only Quebec has durably embraced carbon pricing, by joining California's emissions trading system in 2013. As Marc Jaccard has argued, there is much evidence that regulatory approaches to greenhouse gas emissions are both more effective and more politically viable than climate policies that are costly for households (e.g., Jaccard, Hein, & Vass, 2016).

But carbon-pricing policies are still being adopted or intensified in democratic countries, and where they are attempted, design and framing factors appear relevant to the pressing question of how to maximize political acceptance. Eight democratic countries have adopted carbon taxes since 2014 (World Bank Group, 2019, p. 14), and the EU reformed its Emissions Trading System in 2015 in ways that stabilized and increased its carbon price. Those reforms also moved the system toward a public-benefit model through more auctioning and green spending, which has increased support from member governments and the European Parliament (Raymond, 2019, pp. 4–5). In Canada, the Trudeau government adopted a national carbon-pricing policy in 2016, and although it provoked a severe backlash from provincial governments and the Conservative Party, the government successfully used rebates to regain majority public backing for the policy in October 2018. Moreover, in the 2019 federal elections, 63% voted for one of the four parties that support carbon pricing. Although Trudeau's policy survived the electoral process, at this writing (March 2020), challenges by three provincial governments have led to split decisions by appellate courts, so the constitutionality of the policy will be decided by the Canadian Supreme Court.

Notes

- 1 Using data in USEPA (2016) and Ziesing (2014), I estimate that 34% of U.S. emissions in 2014 and 41% of German emissions in 2012 were due to these activities.
- 2 Most hypothesis tests in this article are of the "straw in the wind" type; when I check for correlations between public opinion movements and other data, these can be considered "hoop" tests (Collier, 2011).
- 3 For simplicity in referring to carbon taxes and cap and trade, I use the term "carbon pricing," although the California cap-and-trade system applies to all six Kyoto greenhouse gases and hence actually produces a greenhouse-gas price.
- 4 Arguably, the success of energy-efficiency policies that are pursued as part of comprehensive climate policies, such as in California, could make household cost increases due to carbon pricing more palatable by decreasing energy bills. However, the efficiency gains in California have been much smaller than energy price increases since the 1990s; hence, average household bills for electricity and heating rose 44% in real (inflation-adjusted) terms over the 1993–2009 period despite declining per capita consumption, and an 8% decline in per capita gasoline consumption was more than offset by a 26% increase in the real gasoline price in the 2000–17 period (USEIA data).
- 5 For a fuller discussion of the factors summarized in this paragraph, see Karapin (2017, pp. 4–5, 21–3, 43–5).
- 6 In the British Columbia case study, all prices are in Canadian dollars or cents; elsewhere in this article, they are in U.S. currency.

- 7 Although gasoline prices increased by about \$1.00 per gallon in 2017–18 while the provincial government began raising the carbon tax again, unfortunately no polls of public support for British Columbia’s carbon tax (as opposed to the federal carbon-pricing plan) are available. However, the price increases did not trigger political statements linking gasoline price increases to the provincial carbon tax increases; I found none in the *Vancouver Sun* from January 2017 to September 2019.
- 8 The newspapers, searched with Nexis Uni, included three in British Columbia—the *Vancouver Sun*, *Vancouver Province*, and the *Times-Colonist*—as well as the Toronto-based *Globe and Mail* and *Toronto Star*; 76% of the 2007–10 articles were in the *Vancouver Sun* and the *Globe and Mail*. The raw data from this keyword searching described in the text produced a meaningful view of trends in publicly expressed opposition; my further analysis of the articles from the *Globe and Mail* showed that 73% of the articles that mentioned the terms searched for during the period of rising gas prices and falling public support were in fact reporting on the use of the gasoline-price issue by opponents (mostly in the NDP) to criticize British Columbia’s carbon tax.
- 9 Author’s analysis of articles in the *Vancouver Sun* mentioning the carbon tax and the NDP, 2008–09; the latter’s anti-carbon tax campaign was strong in September–October 2008 and April–May 2009.
- 10 A search of five newspapers in 2008–12 shows only six articles that mentioned the rebate, none of which included any political response to it. Northern mayors who had opposed the carbon tax early in 2008 were not described as saying anything about the concession that the provincial government had made in response to their opposition.
- 11 An examination of five newspapers in the 2008–09 and 2012–13 periods, shows that while there were 75 articles mentioning “mayor” or “municipal” as well as the carbon tax in the first period, there were only 19 in the second period, and none of those articles actually described municipal opposition to the carbon tax.
- 12 I searched for articles in three British Columbia newspapers (*Vancouver Sun*, *Vancouver Province*, and *Times-Colonist*) to identify government statements justifying the carbon tax during the February 2008 to May 2009 period. I found nine substantive articles, which I analyzed along with the Liberal Party platform published early in 2009 (BC Liberals, 2009); analysis consisted of classifying, and counting words in, sentences or clauses that offered different kinds of justification.
- 13 Provincial GDP grew at 4.5% in 2010 and 5.7% in 2011, while the unemployment rate fell from 8.1% in April 2011 to 6.9% in April 2012; data from Statistics Canada and British Columbia (2012, p. 20).
- 14 Author’s estimates from data in CPUC (2016, p. 25; 2017, p. 25). These are based on aggregate cap-and-trade compliance costs and spending on rebates, divided by total revenue, for the three large privately owned utilities during 2015 and 2016.
- 15 Articles in four newspapers (the *Los Angeles Times*, *San Jose Mercury News*, *Orange County Register*, and *Contra Costa Times*) were first identified using keyword searches for “California,” “cap and trade,” and (“transportation fuel*” or “gas price*” or “at the pump” or gasoline or diesel). I then read all the articles and counted only those that actually concerned the expansion of the cap-and-trade program to transportation fuels, which were 53% of the raw count.
- 16 On the other hand, electricity prices rose a total of 18% in the 2012–17 period, yet this did not provoke opposition to the inclusion of electricity in cap and trade. As will be discussed later, the lack of opposition is probably because the electricity rebates more than covered the price impact and electricity prices are much less visible than gasoline prices.
- 17 However, this does not show that Brown’s climate policy was necessarily a cause of his strong electoral result. Those seeing global warming as a very serious problem rose only marginally, from 50% to 53%, over the 2013–14 period. Although Brown’s climate policy was popular, global warming as such consistently has had lower salience than other environmental issues and very low salience compared with all issues on open-ended survey questions in California (PPIC data).
- 18 Moreover, the latter often were “economic” in that they described the use of program revenue for green spending. I searched for articles in four California newspapers (*Los Angeles Times*, *San-Jose Mercury News*, *Orange County Register*, and *Contra Costa Times*) to identify government and proponent statements justifying the cap-and-trade system in relation to transportation fuels during the 2010–14 period. I found 19 substantive articles, which I analyzed along with the transcript of the Brown-Kashkari gubernatorial election debate, using the same procedures to classify and count words in justifying statements as I did for the British Columbia case.
- 19 However, the British Columbia Green Party’s electoral success in 2017 (17% of the vote) helped to accelerate and perhaps shore up the recent increases in the provincial carbon tax.

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Appendix

Table 1. Degree of Support for the Hypotheses in This Study

Hypothesis label	British Columbia		California transportation		California electricity		
	Overall quality and quantity of evidence: types (mechanisms or correlation)	Explains similarities or differences from other cases	Overall quality and quantity of evidence: types (mechanisms or correlation)	Direction of evidence	Explains similarities or differences from other cases	Overall quality and quantity of evidence: types (mechanisms or correlation)	Direction of evidence
Energy prices	<i>High: prices, public opinion, news, issue salience</i>	Confirmed (but depends on partisan differences) <i>Confirmed</i>	<i>High: prices, public opinion, news issue salience, news opinion</i>	<i>Confirmed</i>	Similarities; differences from BC	<i>Medium: prices, news</i>	<i>Disconfirmed</i>
Exogenous causes of election results	<i>Medium: salience, trust in parties</i>	<i>Confirmed</i>	<i>High: news; public opinion</i>	<i>Confirmed</i>	Similarities	<i>High: news; public opinion</i>	<i>Confirmed</i>
Avoid taxes	Low: news (elite language)	<i>Confirmed</i>	<i>Medium: government documents, news</i>	<i>Confirmed</i>	Differences from BC	<i>Medium: government documents, news</i>	<i>Confirmed</i>
Visibility of costs	<i>High: news, labels, public opinion</i>	Confirmed for government calculations; disconfirmed for labelling	<i>Medium: government documents, news</i>	<i>Confirmed</i>	Similarities	<i>Medium: government documents, news</i>	<i>Confirmed</i>
Make polluters pay	<i>High: policy details, business support, counter-factuals</i>	Mixed: confirmed and disconfirmed; hypothesis needs revising	<i>Medium: policy details, counter-factuals</i>	Mixed: confirmed and disconfirmed; hypothesis needs revising	Similarities	Low: policy details	Mixed: confirmed and disconfirmed; hypothesis needs revising
Exempt or compensate polluters	<i>High: policy details, business support, counter-factuals</i>	Mixed: confirmed and disconfirmed; hypothesis needs revising	<i>Medium: policy details, counter-factuals</i>	Mixed: confirmed and disconfirmed; hypothesis needs revising	Similarities	Low: policy details	Mixed: confirmed and disconfirmed; hypothesis needs revising

(Continues)

Table 1. (Continued)

Hypothesis label	British Columbia			California transportation			California electricity		
	Overall quality and quantity of evidence: types (mechanisms or correlation)	Direction of evidence	Explains similarities or differences from other cases	Overall quality and quantity of evidence: types (mechanisms or correlation)	Direction of evidence	Explains similarities or differences from other cases	Overall quality and quantity of evidence: types (mechanisms or correlation)	Direction of evidence	Explains similarities or differences from other cases
Egalitarian revenue use	<i>High: public opinion (short-term income tax effects, rebates, green spending); news (rebates); counter-factuals (long-term income tax effects, green spending)</i>	Mixed for income taxes; disconfirmed for rebates: mixed for green spending; hypothesis needs raising	<i>Similarities and differences (coalition building)</i>	<i>High: policy details, news, public opinion, counter-factuals</i>	<i>Confirmed for rebates; confirmed for green spending</i>	<i>Similarities and differences (coalition building)</i>	<i>High: utilities' documents, news, counter-factuals</i>	<i>Confirmed</i>	<i>Differences from BC and CA transportation</i>
Make concessions to voters	<i>High: public opinion, news, counter-factuals</i>	Mixed: confirmed and disconfirmed	Similarities	<i>Medium: news, government documents, counter-factuals</i>	<i>Confirmed</i>	Similarities	<i>Medium: government documents, news</i>	<i>Confirmed</i>	<i>Differences from BC and CA transportation</i>
Public-benefit justification	<i>High: news, documents, public opinion</i>	<i>Confirmed</i>	<i>Differences</i>	<i>High: government documents, news, election debate</i>	<i>Confirmed</i>	<i>Differences</i>	<i>Medium: government documents, news</i>	<i>Confirmed</i>	<i>Differences from BC</i>

Note: *Italicized entries* lend the strongest support to the conclusions.