

# Climate Change Policymaking in the States: A View at 2020

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Climate change policymaking has stalled at the federal level in the United States, especially since Donald Trump's election as president. Concurrently, extreme weather, rising sea levels, and other climatic effects have increased the salience of climate change in the mass public and among elected officials. In response, legislators in state governments increasingly introduce and adopt policies associated with climate change. In this article, we evaluate the state of climate change policymaking in state legislatures, with a focus on overall trends in climate mitigation and adaptation innovation and cases of policy retrenchment. We document an increased level of climate legislation introduced in U.S. states since President Trump's election, particularly in states under Democratic Party control. We evaluate patterns of introduced legislation across the states between 2011 and 2019 and consider the factors associated with bill sponsorship. Our results demonstrate the increased partisan nature of climate change policymaking in U.S. states.

Climate change policymaking has stalled at the federal level in the United States, particularly during the Trump administration. As a result, conflicts over policy have shifted to subnational governments, accelerating the race to the top and the bottom that already exists in state environmental regulation. While the Obama administration made some concerted efforts to address climate change through the president's powers as chief executive (see [Konisky and Woods 2016](#); [Cook 2018](#)), the Trump administration has largely dismantled these actions ([Konisky and Woods 2018](#)). Since President Trump's inauguration, he shifted the course of national climate change policy in the United States. Among these changes are President Trump's announced withdrawal from the Paris Climate Agreement, a rescinding and revamping of President Obama's signature Clean Power Plan, and rolling back planned reductions in fuel economy standards. In addition, the Trump administration has indicated opposition to certain state efforts to address climate change; for example, the federal government is seeking to curtail California's ability to set stricter automobile emissions standards.

While the federal government has often evaded or struggled to adopt meaningful climate change legislation, state and local governments have been quite active in the climate policy sphere (Rabe 2011; Bromley-Trujillo et al. 2016). Since the early 1990s, state and local governments moved to fill some of the climate policy void left by the federal government's inaction (Rabe 2011; Gilmore and St. Clair 2017; Boussalis, Coan, and Holman 2018, 2019). The 2010s are no exception: U.S. policy activity on climate change has largely taken place via state and local governments.

This article provides an overview of state climate policy during the last decade. We begin with a discussion of recent policy trends on climate change in U.S. states. We document increased efforts by some state governments to engage in proactive climate adaptation and mitigation policies, while other state governments have engaged in policy retrenchment, particularly on energy policy. In doing so, we discuss both the overall state of climate policy in the 2010s and how these legislative efforts have changed since the 2016 election. We evaluate when the states craft policy to address increasingly pressing climate demands and the types of policies they are pursuing.

What factors are associated with efforts to address climate change by state legislatures in the 2010s? To evaluate this question, we move to an analysis of the agenda-setting stage in state legislatures using bill introductions in the 2011–19 legislative sessions as an indicator of the climate-related issues under consideration. Poisson-count models suggest that political variables are increasingly associated with agenda setting on climate change in state legislatures since Trump's election. At the same time, key factors like the level of concern about climate change in the population, professionalism, and chamber ideology are all positively associated with climate change activism in state legislatures across the entire time period.

## Subnational Climate Change Policy Efforts

Climate policy activity in the 2010s includes a continuation of earlier policy efforts, new policy innovations, and policy retrenchment or reversals. Several states previously set themselves up as leaders in the climate policy space (Matisoff 2008; Rabe 2008; Bromley-Trujillo et al. 2016) and simply continue that trend in recent years. These continued policies often reflect maintained or increased Democratic majorities in those states as well as a high degree of climate issue salience.

State legislatures are also sites for climate policy innovation in the 2010s, as indicated by bill introductions and adoptions. These state efforts include policies aimed at limiting carbon output and promoting carbon capture, the regulation of energy sources within the state and state-owned utilities, and dictates to bureaucratic agencies and local governments to engage in climate adaptation and mitigation efforts. Several states have considered bills that financially incentivize

renewable energy development, including the use of public funds or utilities to invest in renewable energy sources. States have also considered ways to adapt to climate change effects, including coastal protection and fire prevention measures. Although there is a wide variety of policy options that states can pursue, a major focus of recent legislation revolves around greenhouse gas (GHG) reduction targets and monitoring, changes to renewable portfolio standards (RPS), net metering and climate adaptation. We consider each of these policy categories in turn.

### **GHG Reduction Targets**

A central goal in climate mitigation policy is to reduce GHG emissions that contribute to global climate change. As such, states have set up GHG targets that call for reducing emissions to a specified percentage by a target date. These broad policies incentivize investment in renewable energy and energy efficiency and tend to include policy recommendations for achieving the goal. In the previous decade (2000–10), states adopted GHG reduction targets and emissions inventories, beginning with Maine in 2003. From 2011 to 2019, we see these early adopters increasing their reduction targets as well as new states signing on to emission standards.

Most states already active in adopting climate policy by 2010 did not remain stagnant, but instead updated their standards to more aggressive targets. For example, Maryland first adopted a GHG target in 2009 aimed at reducing emissions to 25 percent below 2006 levels by 2020. In 2016, the state extended and increased its target to 40 percent below 2006 levels by 2030. California, long known for its aggressive efforts to mitigate climate change, passed SB100 in 2018 requiring the power grid to be carbon free by 2045.

A number of other states created GHG emission targets for the first time during this period, particularly when the Democratic Party gained a majority or increased their majority in state legislatures. Prominent examples of new adopters in this area include Colorado and New York. Colorado enacted GHG emission targets and mandatory emissions reporting in 2019, when the state enacted the “Climate Action Plan to Reduce Pollution.” This legislation requires a statewide emissions reduction below 2005 levels of 90 percent by 2050, with gradual increases required in intermediate years. New York is one of the few states that passed legislation committing the state to achieve net-zero GHG emissions by 2050. To achieve this ambitious goal, the state requires the Department of Environmental Conservation to establish recommendations for achieving this target within two years. The state is also pursuing offshore wind turbines and is making efforts to provide the necessary infrastructure for vast rooftop solar programs.

### Utility Regulation: RPS and Net Metering

State legislatures have a high degree of control over utility regulation (Stokes 2020). Two primary tools by which states engage in climate-related policies associated with utilities are RPS and net metering. The vast majority of RPS policies, which establish targets for the percentage of electricity a state generates from renewable sources by a specified date, were adopted in the late 1990s to the mid-2000s, with considerable variation in stringency (Carley and Miller 2012). In more recent years, states pursued a series of revisions that expanded upon these earlier targets. For example, Maryland first adopted its RPS in 2004 with an initial target of 7.5 percent by 2022. Maryland's newest standard was set in 2019 requiring a 50 percent target by 2030 and included specific increases in offshore wind and solar. In 2019, New York increased its RPS to 70 percent by 2030 (originally set in 2004 at 25 percent). These examples reflect actions of a large swath of states that revised their RPS policies.

Only two states, Indiana and South Carolina, became new adopters of an RPS in the last decade, and both have set modest standards in comparison with early adopters. In 2011, Indiana set a voluntary RPS at a goal of 10 percent by 2025, while South Carolina adopted its RPS in 2014, requiring 2 percent renewable energy generation by 2021. RPS also represent a common site of retrenchment attempts. Though several states have tried to get rid of their state RPS entirely, only one state has succeeded: West Virginia repealed its RPS, established in 2009, six years later in 2015, after the state legislature flipped from Democratic majorities to Republican majorities in both chambers. In addition, Ohio has weakened its RPS, reducing the standard from 12.5 percent to 8.5 percent in 2019.

Net metering programs allow individuals that generate renewable energy, such as solar or wind, to connect to the public energy grid and receive credit for excess energy produced. These programs are a product of policy efforts in the 1990s and early 2000s (Stoutenborough and Beverlin 2008). Net metering policy in the 2010s primarily consists of policy reversals or changes that are more restrictive, though some states have adjusted their policies to encourage renewable energy expansion. For example, Oregon established a community net metering program in 2016 that allows compensation for subscribers to community solar programs.

### Climate Adaptation Policies

Climate adaptation efforts began in earnest in 2008 and 2009 with several states (including Florida, Virginia, Maryland, and California) creating comprehensive climate adaptation plans. The early adapting states are generally states that face considerable risk from sea-level rise, flooding, and storm-related water events associated with coastal locations. The policy tools used in these adaptation plans depend in part on the target population (Koski and Keating 2018); for example,

Florida's adaption plan includes a requirement for local governments to engage in flood risk calculations when making redevelopment decisions.

State and local governments often begin their climate resiliency efforts by assessing their risk. For example, California created the "Cal-Adapt" tool that brings together data from the state's research community. The California Natural Resources Agency is then tasked with using this data in their adaptation recommendations. Maryland has followed a similar method by developing comprehensive data on its wetlands and predicting areas of vulnerability for targeted adaptation efforts (Georgetown Climate Center n.d.).

Between 2011 and 2019, an additional sixteen states created climate adaptation plans, while local governments also created their own tailored plans (Boussalis, Coan, and Holman 2019). While adaptation plans are heterogeneous across state and local governments, plans often include emergency preparedness, land management components, efforts to create natural or artificial barriers to prevent coastal flooding, forest management, and ways to reduce heat island effects. The variation in these policies reflects the climate-associated risks elected officials perceive as most consequential to their state. For instance, in 2015, Virginia passed legislation aimed at incorporating projected sea-level rise into local planning in Hampton Roads, a community that includes coastal cities like Norfolk and Virginia Beach.

As is clear from this discussion of state-level climate policy, states were active on climate efforts well before Trump's election in 2016. At the same time, we do see an increase in state efforts since 2016, particularly in states with an existing climate policy base. Rhetoric from state leaders following the 2016 election certainly suggests that Trump is a motivating factor in shaping state action; for example, the United States Climate Alliance, an organization of twenty-five states, was founded in direct response to the Trump administration's withdrawal from the Paris Accords. In a statement the alliance noted, "We are now a bipartisan coalition of 25 governors and must stand up—once again—to reaffirm our commitment to supporting climate action and to *strongly oppose the Administration's decision to formally withdraw from the Paris Agreement*. We believe all leaders have a critical responsibility to address the global climate crisis" (United States Climate Alliance 2019, emphasis added).

### Unsuccessful Policy Attempts

The policy adoptions just described tend to occur in states that were previously active and that have Democratic majorities in state legislatures and the governor's office. This does not suggest, however, that environmentally protective climate policies always pass in favorable political arenas. For instance, Washington state's most recent attempts to pass a carbon tax failed through the state legislature and

through a ballot initiative in 2018. Electric utilities in the state poured money into defeating this initiative. Similarly, Oregon's attempt to pass carbon cap-and-trade legislation failed despite Democrats boasting a trifecta of control in the state legislature and governor's office. Oregon Republicans in the state legislature have taken advantage, both in 2019 and 2020, of that state's super-majority quorum requirement, whereby a minority of members of a chamber can walk out of the legislature and thereby prevent votes on climate legislation that would otherwise pass. In this case, the intense polarization on climate change is on full display. Moreover, these examples show the difficulties associated with state carbon pricing, particularly when electric utilities are opposed to such changes (Stokes 2020).

### **Policy Retrenchment and Anti-Climate Mitigation Policy**

Though many states progressed toward environmental-protective policies, a fair amount of anti-climate policy activity also occurred from 2010 to 2019, particularly in states with Republican leadership. These efforts span a range of policy proposals, including resisting the Obama administration's Clean Power Plan, rolling back previous climate policy efforts, establishing legislative checks over any bureaucratic effort to engage in climate-related rulemaking, and enacting preemption laws limiting local governments from engaging in some types of climate-related policymaking. In addition, states further subsidized their fossil fuel industries and reduced previous incentives for renewable energy usage and development.

The following examples of policy retrenchment align with arguments made in the state energy and climate change literature: partisan composition of state governments plays an important role in shaping state climate change and energy policies (Bromley-Trujillo et al. 2016; Bromley-Trujillo and Poe 2018), and lobbying efforts by electric utilities and other interest groups can play a powerful role in policy retrenchment (Stokes 2020).

Ohio presents a particularly significant example of policy retrenchment. Ohio's state government has been under unified Republican control since 2011 and the utility companies in the state have aggressively lobbied the state legislature to save their coal and nuclear power plants. In 2019, the Ohio state legislature passed HB-6, a comprehensive energy law that subsidizes nuclear and coal power plants paid through a utility surcharge to consumers. The law also cuts energy efficiency and renewable energy programs while reducing the state's RPS from 12.5 percent to 8.5 percent by 2026. Utility companies and conservative lawmakers applauded this decision as a way to protect their struggling fossil fuel industries while environmentalists and those supportive of renewable energy refer to the policy as a fossil fuel bailout associated with climate denial (Stokes 2019).

States have also adjusted their net metering laws in ways that curb the advancement of renewable energy usage. It is common under net metering for individuals to sell excess renewable energy back to the grid at market rate. Recently, several states, under Republican leadership, enacted laws that reduce the rate individuals receive for the excess energy generated. These laws often reflect arguments made by interest groups like the American Legislative Exchange Council (ALEC). In 2014, ALEC adopted model legislation that encourages states to alter their net metering policies by charging fees associated with grid maintenance (ALEC 2014). The typical argument for reducing rates is that customers with solar roofs are not covering the costs associated with maintaining grid infrastructure, though such arguments tend to leave out potential benefits of renewable energy (Tabuchi 2017).

As an example of retrenchment via net metering, a 2019 net metering law in Kentucky allows regulators to reduce the rate rooftop solar owners get for their surplus energy. The law permits utilities to charge fees to consumers that use the net metering program (DSIRE 2019). This policy change is reflective of the political and economic context in the state as well as concerns over volatility in state energy markets. Kentucky's electricity generation comes primarily from coal-fired power. Furthermore, the state legislature shifted from Democratic to Republican control in 2016. This political change provided the opportunity for the state legislature to pursue net metering retrenchment.

Some states have gone even further by phasing out their net metering programs entirely. For instance, utility lobbyists successfully made the case to Indiana lawmakers that renewable energy credits were driving up the costs for other consumers. As a result, Indiana passed a law in 2017 reducing the amount that solar consumers would receive for the excess energy they produce; the law also phases out net metering by July 2022, though consumers already under net metering contracts can continue beyond this date (DSIRE 2019). In another case, Hawaii's public utility commission replaced net metering in 2015 with a more limited compensation program for customers that produce excess energy from renewable sources.

Not all retrenchment is permanent: Nevada and Maine also phased out their net metering programs through legislation but have since restored the ability of consumers with renewable energy sources (like solar panels) to feed electricity back to the grid. In both cases, these recent policy changes took place after partisan control shifted in the state governments. In Maine's 2018 gubernatorial contest, Janet Mills, a Democratic, replaced a Republican incumbent. Mills had championed environmental policy in her campaign and reinstated the net metering program upon taking office. Nevada removed its net metering program under a Republican trifecta in 2015 and then restored it under Democratic leadership in 2017.

Other states underwent similar back-and-forth policymaking regarding climate change commitments. For example, Republican Governor Chris Christie withdrew New Jersey from a 10-state carbon emissions trading system, the Regional Greenhouse Gas Initiative (RGGI) in 2012. Governor Christie argued that RGGI functioned as a tax on consumers that did not produce reductions in GHG emissions. More recently, Democratic Governor Phil Murphy announced New Jersey's return to RGGI in the summer of 2019, citing concerns over sea-level rise and other adverse effects to the state from climate change.

The current landscape of climate change policy adoptions in the states highlight three major trends: increased activity in response to federal government rollbacks and high climate issue salience, the importance of partisan control of state government in shaping policy, and the path-dependent nature of state environmental policymaking (i.e., race to the top, race to the bottom). In these ways, state activity in the 2010s conforms to previous work on environmental policy in the states and represents an escalation of existing trends.

## Explaining State Climate Policy Authority

Previous work tells us a great deal about state policy efforts on climate change; but climate change policy and the context that surrounds it has changed in important ways since 2010, necessitating an update to previous scholarship. Over the last decade, the United States has seen increased public concern over climate change (Gustafson, Leiserowitz and Maibach 2019), a higher frequency of extreme weather events and temperature anomalies (Sisco, Bosetti, and Weber 2017; Bromley-Trujillo, Holman, and Sandoval 2019), and political shifts in state legislatures (Caughey, Warshaw, and Xu 2017). Major changes in national leadership across the Obama and Trump administrations also provide opportunities for states to engage in more robust climate change policymaking.

State and local governments move into policy vacuums created by federal inaction as policy entrepreneurs seek out favorable venues for policy change (Baumgartner and Jones 1993). Independent policy activity by the states is often a reaction to federal policy signals and climate change policymaking in the 2010s should follow. When the national government sends strong, clear policy signals about the actions they may take or the preferences they hold, states react (Allen, Pettus, and Haider-Markel 2004). State and local climate change activity ramped up in the years after President George W. Bush announced that the United States would not ratify the Kyoto Protocol in 2001. Indeed, states passed a series of aggressive climate mitigation policies between 1998 and 2007, such as net metering, RPS, and climate action plans.

In the case of climate change in the 2010s, the federal government repeatedly signaled a lack of willingness to pursue climate mitigation strategies (Rabe 2008,



2011). Under the Obama administration, congressional gridlock and the perpetuation of climate change denial by congressional representatives on key committees indicated that the federal government was not going to be the primary actor on climate change. Moreover, President Obama struggled to achieve legislative victories on climate change, highlighted by the administration's failure to pass carbon cap-and-trade legislation during the early years of his presidency (Konisky and Woods 2016). Under President Trump, the United States has begun the withdrawal process from the Paris Climate Agreement; gutted the Clean Power Plan; and rolled back rules for fuel economy standards, energy-efficient appliances, and other commercial goods. Trump has also appointed climate deniers to key environmental positions, reduced Environmental Protection Agency EPA staff and funding, and curtailed states' attempts to engage in aggressive climate policy. Given the patterns identified by Rabe (2011) and the clear policy signals of inaction and policy rollback from the Trump administration, *we anticipate that state agenda setting on climate change would increase during the 2010s, particular in the post-2016 era.*

Not all states are likely to equally react to the policy opportunities left by federal inaction. The literature on climate change and state policymaking offers us insight into the importance of these contextual changes in shaping state legislative agenda setting on climate change. For instance, scholarly work provides evidence that partisanship (Bromley-Trujillo et al. 2016; Egan and Mullin 2017; Benegal and Scruggs 2018), economics (Huang et al. 2007; Chandler 2009; Matisoff and Edwards 2014), exposure to climate change effects, and increased salience of the issue (Bromley-Trujillo and Poe 2018; Bromley-Trujillo, Holman, and Sandoval 2019) affect whether a state engages in climate change policymaking. Here, we detail expectations for which states will engage in more (or less) climate-related policymaking through bill sponsorship.

State climate policy adoptions often occur in states with Democratic leadership and a liberal citizenry (Chandler 2009; Bromley-Trujillo and Poe 2018). This also applies to policy diffusion: states are more likely to emulate the climate policies of ideologically similar (liberal) states (Chandler 2009; Bromley-Trujillo et al. 2016). In addition, Bromley-Trujillo, Holman, and Sandoval (2019) find strong partisan differences at the agenda-setting stage, with Democrats much more likely to sponsor climate-related legislation compared to their Republican colleagues, and Democrats in state legislatures more likely to respond to temperature anomalies in their district. Additionally, the presence of a Republican veto point in state government reduces the likelihood of a state adopting climate change policies (Bromley-Trujillo and Poe 2018).

These results are not particularly surprising given the partisan nature of climate change. Partisanship and ideology shape preferences on specific climate change policies (Dunlap, Xiao, and McCright 2001; Coan and Holman 2008). Democrats

and liberals express greater concern over climate change than do Republicans or conservatives (McCright and Dunlap 2011; Benegal and Scruggs 2018). Partisanship also shapes the degree to which an individual believes that there is a scientific consensus on the existence and causes of climate change (Leiserowitz, Bromley-Trujillo, and Vedlitz 2015) and on individual support for specific climate policy proposals (Stoutenborough, Bromley-Trujillo, and Vedlitz 2014). Differences in climate attitudes in the general public and among elites suggest that partisanship plays—and will continue to play—an important role in understanding state-level climate agenda setting and policy outcomes (Benegal and Scruggs 2018; Bergquist and Warshaw 2019). As such, *we expect increased levels of activity in states where the Democratic Party is in power, where the legislature is more liberal (as measured by Berry et al. [2010]), and where there is a more liberal citizenry (as measured through the vote for Obama in 2012).*

In addition, issue salience has the potential to shape state government responsiveness (Lax and Phillips 2009). Climate change effects in the form of extreme weather, temperature anomalies, and sea-level rise appear to increase the probability that leaders will discuss climate change issues (Boussalis, Coan, and Holman 2018) and act through bill introductions or policy adoptions (Rabe, Roman and Dobelis 2005; Bromley-Trujillo, Holman, and Sandoval 2019). Negative effects of climate change increase the salience of the issue among the public (Konisky, Hughes, and Kaylor 2016; Bergquist and Warshaw 2019), which can influence adoption decisions of state-elected officials (Bromley-Trujillo and Poe 2018). Bromley-Trujillo and Poe (2018) find that when individuals are concerned about climate change (as indicated in public opinion surveys) and attentive to the issue (demonstrated through Google search patterns), state legislatures are more likely to adopt climate change policies. Individual-level concern about climate change has increased in recent years (Gustafson, Leiserowitz, and Maibach 2019). This concern may activate members of state legislatures to consider legislation and adopt climate change policy; for instance, states appear to adopt RPS that are congruent with public support for such policies (Stokes and Warshaw 2017) and state legislators are more likely to introduce climate bills as public support increases (Bromley-Trujillo, Holman, and Sandoval 2019). *As the public becomes more concerned about the dangers posed by climate change, we would expect increased levels of state-level activity in response.*

## State Legislative Agenda Setting

While state climate policy literature primarily focuses on the adoption stage of the policy process, it is important to consider the agenda-setting stage in state legislatures, as measured through bill introductions. Though relatively few scholars have considered state-level bill sponsorship (though see Bratton and Haynie 1999;

Whitaker et al. 2012; Bromley-Trujillo and Karch 2019; Bromley-Trujillo, Holman, and Sandoval 2019), the policy process literature emphasizes the importance of getting items on to the agenda in order to create policy change (Kingdon 1984). Addressing climate change will require that governments keep engaging in proactive action to address climate change for the near future (Pralle 2009). Examining bill introductions offers an important glimpse into the behavior of state legislators in the initial stages of the policy process.

At the agenda-setting stage, we can see the relative importance of climate change, even in cases where bills are unlikely to pass due to lack of Democratic majorities in either chamber. It is possible that a broader set of contextual factors will be relevant in the agenda-setting stage, while politics and interest group pressure may play a stronger role in policy adoption. Bill introductions are perceived as more symbolic, while the adoption stage requires a specific set of conditions to achieve bill passage. For example, previous scholarship on state minimum-wage laws finds that a wide variety of political and economic variables influences bill introductions, while minimum-wage adoptions primarily reflect the ideological makeup of the state (Whitaker et al. 2012). With these considerations in mind, we conduct a quantitative analysis of bill sponsorship in the 2010s with an emphasis on potential differences following Trump's presidential election.

## Data and Descriptive Results

To evaluate recent climate change activity at the state legislative level in the United States, we started with the universe of bills considered in regular sessions in state legislatures from the 2010–11 session to the 2018–19 session. We downloaded all bill introduction data from Legiscan for any regular legislative session that began in 2010 to those that ended in 2019. We then supplement this with information from other sources, described below. We construct the database by coding legislatures that are out of session that year as “missing” in the dataset; as a result, our dataset has 289 observations of state legislative session-years.

We identified the climate bills in the entire bill dataset via a series of keyword (adapted from Boussalis, Coan, and Holman [2018]) searches in the titles of legislation. The full list of terms includes climate change, global warm\*, greenhouse, clean power plan, fossil fuel, climatic, carbon, CO<sub>2</sub>, and emission. We evaluated each bill to validate the topic and then compared our list to the National Conference of State Legislatures list of legislation relating to climate change. In total, we identified 1,912 bills introduced across the time period that relate to pro-climate mitigation activity. Table 1 provides the average, median, and maximum number of bills introduced per state by year of legislative session.

As is clear from table 1, the level of legislative activity on climate change has increased over the course of the 2010s, with increases in the average, median, and

**Table 1** Climate change bill introductions in U.S. states

Legislative session	Average <i>N</i>	Median <i>N</i>	Maximum <i>N</i>
2011	3.85	2	31
2012	2.95	1	17
2013	3.81	2	37
2014	4.52	2	35
2015	6.35	2	86
2016	8.79	2.5	63
2017	8.18	3	72
2018	12.3	7	106

*Notes:* Number of bills introduced per legislative session per year. Data assembled by authors from Legiscan legislative histories; verified against the National Conference of State Legislatures.

maximum number of bills introduced, particularly in the 2015—forward period. The rise in legislative activity is not particularly surprising given the increased salience of climate change in U.S. politics resulting from temperature anomalies and extreme weather events associated with climate change and the reporting of scientific consensus in the media (Boussalis and Coan 2016). In addition, states may be responding to national activity on the Clean Power Plan and Trump’s election and subsequent actions to roll back environmental policies. These trends provide evidence to support our expectation that states will have increased their climate change agenda setting through the 2010s, with concentrated efforts under the Trump administration.

We next look at the geographic distribution of pro-climate mitigation agenda setting. Figure 1 provides an overview of where intense agenda setting on climate change legislation is happening in U.S. states. Some of these concentrations are in the states we would expect to be particularly active on climate change: Hawaii, Oregon, California, and Washington on the West Coast and New York, New Hampshire, and Vermont, among others. But we also see frequent activity in Texas, Michigan, and Minnesota and at least *some* activity in most states. The variation in the number of bills introduced by states provides an opportunity to understand what potential state-level effects are associated with these levels of activity. We also see clear regional patterns, with states in the West and Northeast introducing more legislation than states in the Midwest and South.

Our descriptive statistics also demonstrate differences in pro-climate bill sponsorship between states with Republican and Democratic partisan control of the state legislature. As we expected, the partisan nature of the current climate change debate (Benegal and Scruggs 2018), combined with the Trump administration’s rollback of many federal attempts to address climate change,



## Analysis

To evaluate the state-level factors associated with climate change agenda setting, we estimate a Poisson-count model with session year fixed effects. We use a Poisson-count model because of the count nature of our data (i.e., the dependent variable is the number of bills introduced in each state-legislative session). Our data is not over-dispersed, and the variance is similar to our mean, so we chose a Poisson-count model over a negative binomial model.

### Key Independent Variables

Our primary independent variables aim to capture the partisan nature of climate change and the increased salience of climate change in the public. [Table 2](#) provides the full list of variables and their measurement. Here, we draw on extant scholarship that finds a consistent relationship between political factors and state climate change policy (e.g., [Huang et al. 2007](#); [Matisoff 2008](#); [Lyon and Yin 2010](#); [Bromley-Trujillo et al. 2016](#); [Bromley-Trujillo and Poe 2018](#); [Bromley-Trujillo, Holman, and Sandoval 2019](#)). We expect more Democratic or liberal states to introduce more pro-climate change bills; our model includes Republican control of the state legislature, chamber ideology, and the share of the population that voted for Obama in 2012 ([Chandler 2009](#); [Bromley-Trujillo and Poe 2018](#)). State legislatures pass more climate policies in places where climate change is more salient and the public expresses higher levels of concern ([Bromley-Trujillo and Poe 2018](#)). We incorporate a state-level measure of worry from the Yale Climate Survey about climate change (measured yearly) to capture the increased salience of climate change.

### Controls

Studies on broad environmental policy commitment and climate change policy often find a relationship between economic factors and policy activity ([Ringquist and Garand 1999](#); [Matisoff 2008](#); [Chandler 2009](#)). Subnational scholarly work also finds that the same populations that support environmental policymaking generally ([Coan and Holman 2008](#)) also support climate change policymaking: states that are wealthy, have large environmental interest group populations, and have a previous history of legislating in the policy venue ([Newmark and Witko 2007](#); [Matisoff and Edwards 2014](#); [Bromley-Trujillo and Poe 2018](#)). We thus include measures of median household income, Sierra Club membership, and the policy baseline in 2010 (a count of climate policy adoptions from [Bromley-Trujillo et al. \[2016\]](#)).

State economies with a sizable resource extraction industry are typically less likely to pass environmental protection policies ([Ringquist 1993](#); [Bromley-Trujillo et al. 2016](#)). To capture state economic conditions associated with these findings, we include a standardized measure of the number of resource-dependent firms

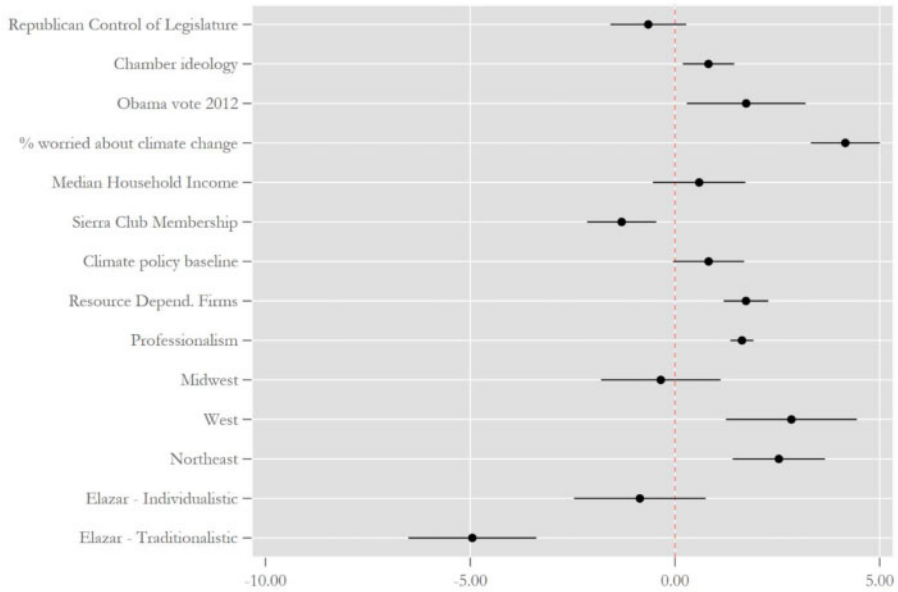
**Table 2** Variables descriptions

Variable	Measurement
Partisanship, ideology, and salience	
Republican Control	Measure of whether the Republican party controls either chamber in the state or the Governor's office
Government ideology	Berry et al. (2010) measure of state legislative ideology
Obama vote 2012	Percentage of the population in the state that voted for Obama in 2012
Percentage worried about climate change	Yale Climate Survey: Standardized percentage of state that reported that they were worried about climate change
Economy, interest groups, and previous environmental policy	
Median Household Income	Standardized median household income
Sierra Club Membership	Sierra Club's reported membership in the state in 2012
Climate Policy Baseline	Measure of state climate regulations in place in 2010
Resource Depend. Firms	Standardized number of agriculture, mining, and logging firms
State controls	
Professionalism	Measure of state professionalism, including staff, salary, and time in office
Region	Controls for Midwest, West, and Northeast, with South as the baseline
Elazar's Political Culture	Dummy of traditional and individualistic political culture

(mining, logging, and agriculture) from the U.S. Census Bureau's 2011 Business Patterns report.

State politics scholarship often finds a relationship between legislative professionalism and general policy innovation (e.g., Berry 1994) and a positive relationship between professionalism and climate change policy adoptions specifically (Bromley-Trujillo et al. 2016; Bromley-Trujillo, Holman, and Sandoval 2019). Logically, representatives in states with larger staffs and more time to devote to legislation may be more likely to engage in policy activity overall *and* about climate change. As such, we control for legislative professionalism using Bowen and Greene's (2014) index.

Regional effects for climate adaption are clear from the geographic distribution of our dependent variable (see figure 1). Scholars of environmental action have also frequently found regional effects, with states in the South being particularly unlikely to engage in environmental policy advocacy (Crotty 1987; Lester and Lombard 1990; Layzer 2012). We thus control for region (South, Midwest, Northeast, and West) in our models. We also control for Elazar's political culture measure to capture a general willingness in the state to engage in interventionist policies.



**Figure 3** Factors associated with the introduction of pro-climate bills.

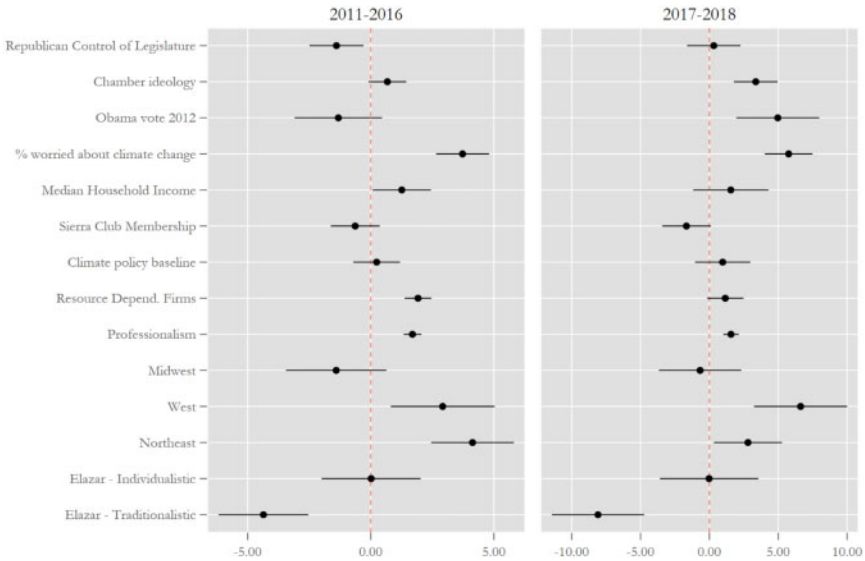
*Notes:* Model is estimation results from Poisson regression model of the count of the number of bills introduced into each legislative session. Time fixed effects. We standardized all continuous variables with a mean of zero and a standard deviation of one to help in interpretation of coefficients. Table of results available in Appendix.

## Results

Starting with our measures capturing the political landscape, we find that chamber ideology and citizen partisanship are both significant and positive, as expected; states with more liberal governments and Democratic citizens are more likely to introduce pro-climate mitigation bills. We see the strongest effect on bill sponsorship from public opinion about climate change. States where the population is more worried about climate change have a higher probability of introducing pro-climate bills, even when controlling for the partisan balance of the state legislature and other state and population characteristics. [Figure 3](#) presents coefficient plots of our independent variables with a count of the number of bill introductions in state legislatures, with year fixed effects.

We also see a positive relationship between a baseline of policy activity in 2010 on climate change and efforts to address climate change, suggesting that climate activity today is somewhat path dependent and reliant on past activity. Like previous research, we find that more professionalized legislatures are more likely to introduce climate-related legislation.





**Figure 4** Pre- and post-Trump factors associated with climate change introductions.

*Notes:* Estimation results are from the Poisson regression model of the count of the number of bills introduced into each legislative session including time fixed effects. We standardized all continuous variables with a mean of zero and a standard deviation of one to help in interpretation of coefficients. A table of results is available in Appendix.

Contrary to some past scholarship on climate policy adoption, we see a positive relationship between resource-dependent firms and bill sponsorship. These results may reflect differences between the adoption and agenda-setting stages of the policy process. It is possible that climate-related issues are more salient in locations where these firms exist, prompting legislators to introduce bills tackling the environmental problems associated with them. At the adoption stage, the existence of these firms may hamper any ability to pass effective legislation (e.g., Bromley-Trujillo et al. 2016). We also see a surprising negative relationship between the rate of Sierra Club membership and the number of bills sponsored; the measure is highly correlated with variables associated with the political context of the state, particularly the vote for Obama in 2012 (and it is measured at the same time and represents two of the few time-invariant measures in the model), which suggests that there may be methodological reasons for the direction of this measure. It is also possible that environmental organizing has a more direct and positive association with adoption, rather than agenda setting.

As we have noted, the politics of climate change may have changed in the post-Trump era. To evaluate whether the same factors shape state-legislative bill introductions before and after Trump's election, we split our sample to look at the 2011–16 legislative sessions and the 2017–18 sessions. Figure 4 presents the

coefficient plots of these two models, side-by-side, to provide an opportunity to evaluate which variables might have shifted in the post-Trump era. Many variables operate in the same direction and statistical significance across the two eras (professionalism, political culture, and region), though there are also variables that differ in significance and magnitude. Surprisingly, while Republican party control is significant in the earlier model, it is not in the later years; but chamber ideology and a measure of state partisanship both become significant in the late years. This suggests an increased ideological basis for climate policy in the post-2016 era (Benegal and Holman 2020). We also find an increase in the substantive effect of worry about climate change, suggesting that a rise in public issue salience is particularly important during the last few years.

## Conclusion

This article illustrates the variation in state-level policy agendas on climate change and provides evidence that climate change policy in the 2010s is operating in a manner consistent with expectations drawn from scholarship on national policy signals and state-level policymaking (see Allen, Pettus, and Haider-Markel 2004; Rabe 2011). States with strong existing climate policy pathways continue to aggressively pursue climate mitigation strategies, with ramped up efforts over the last few years. Our descriptive statistics indicate that state legislatures have the highest number of bill sponsorships during the Trump era; this is also a time period where climate change concern was particularly high (Gustafson, Leiserowitz and Maibach 2019). As such, causal explanations for this shift may be associated with a variety of factors, including President Trump's policy rollbacks, changes in public opinion, and increased salience due to extreme weather events and temperature changes. Moreover, state legislatures have shifted in their partisan composition, providing varying opportunities for either climate policy retrenchment or pro-mitigation efforts.

It appears that we have returned to a period of "state domination" on climate change policy that resembles the 1998–2007 era described by Rabe (2011). Of particular interest is state-level activism on energy policy: numerous states have introduced legislation that would increase the use and development of renewable energy, put a price on carbon, and invest in technology to capture GHGs. In addition, most states that were active during the first period of state domination are proposing expanded renewable energy targets and other more stringent policy goals during the time period we explore.

Despite the heightened attention to climate change issues, many states are still unwilling to consider climate change legislative strategies, reflecting the highly partisan nature of climate change policy. Furthermore, some states have considered and passed policies that run counter to climate mitigation goals, particularly in

states where Republicans have control of the state legislature and where the fossil fuel industry and utility companies have a strong lobby. Given this, it is unlikely that states acting alone will be able to achieve targets set by the Paris Agreement; however, states have the capacity to produce significant reductions in GHGs (Lutsey and Sperling 2008).

Our results suggest that climate change concern in the population can push state legislatures to consider climate policy, even in some traditionally conservative states. Moving forward, we might expect even more states to act, as temperature anomalies and negative externalities associated with climate change increase the salience of the issue and continue to drive concern. This is not a guarantee; research is mixed on whether extreme weather events consistently lead to a lasting increase in concern about climate change (Konisky, Hughes, and Kaylor 2016; Bergquist and Warshaw 2019). In addition, it may be difficult to sell government action on climate change to conservative Republicans that argue climate change is not the result of human activity. Yet, public opinion polling strongly suggests that Americans are becoming increasingly worried about climate change (Gustafson, Leiserowitz and Maibach 2019), which may keep this issue on state governmental agendas. And, as we have seen in other scholarly works (e.g., Bromley-Trujillo and Poe 2018), concern also drives the adoption decision. Future research might consider the ways that changing levels of concern about climate change may accelerate policymaking unevenly across state legislatures, much in the same way that the race to the top and bottom reflected differing interests in state populations to generally address environmental protection.

A review of climate change policymaking by state governments would be amiss if we did not consider the bottom-up nature of federalism as well. States are not acting in isolation, as cities engage in mitigation and adaptation efforts to address climate-related concerns (Boussalis, Coan, and Holman 2018, 2019). We also have seen efforts by states, particularly conservative states with liberal cities (Einstein and Glick 2017), to engage in preemption on climate policy, limiting the ability of local governments to engage in a variety of climate activities. Future research might consider how and why states adopt these policies and the degree to which this reflects a more general opposition to climate activism or is more in line with other general preemption activities (Fowler and Witt 2019; Goodman 2019).

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## Appendix

**Table A1** Climate change bill introductions in the states

Variable	Count of climate bills
Republican Control of Legislature	-0.10 (0.08)
Chamber ideology	0.13** (0.05)
Obama vote 2012	0.30* (0.12)
Percentage worried about climate change	0.66*** (0.07)
Median Household Income	0.08 (0.10)
Sierra Club Membership	-0.22** (0.07)
Climate policy baseline	0.15 (0.07)
Resource Depend. Firms	0.28*** (0.04)
Professionalism	0.24*** (0.04)
Population 2010	0.02 (0.04)
Midwest	-0.05 (0.12)
West	0.47*** (0.13)
Northeast	0.42*** (0.09)
Elazar—Individualistic	-0.14 (0.13)
Elazar—Traditionalistic	-0.78*** (0.13)
time=2	-0.03 (0.16)
time=3	-0.01 (0.11)
time=4	0.41** (0.14)

(continued)



**Table A1** Continued

Variable	Count of climate bills
time=5	0.57*** (0.10)
time=6	0.61*** (0.11)
time=7	0.79*** (0.09)
time=8	0.74*** (0.11)
time=9	0.78*** (0.10)
Constant	0.86*** (0.16)
Observations	289

Note: Standard errors in parentheses. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Table A2** Climate change bill introductions pre- and post-Trump

Variable	2011–16	2017–
Republican Control of Legislature	−0.16 (0.12)	0.01 (0.12)
Chamber ideology	0.17* (0.08)	0.38*** (0.09)
Obama vote 2012	−0.05 (0.20)	0.53** (0.18)
Percentage worried about climate change	0.56*** (0.13)	0.65*** (0.10)
Median Household Income	0.11 (0.13)	0.32* (0.16)
Sierra Club Membership	−0.15 (0.10)	−0.13 (0.10)
Climate policy baseline	0.16 (0.10)	−0.01 (0.12)
Resource Depend. Firms	0.45*** (0.06)	0.14^ (0.08)
Professionalism	0.19** (0.06)	0.34*** (0.07)
Population 2010	0.23*** (0.06)	−0.19** (0.07)
Midwest	−0.24 (0.22)	−0.06 (0.17)
West	0.66** (0.22)	0.74*** (0.19)
Northeast	0.99*** (0.18)	0.22 (0.14)
Elazar—Individualistic	0.03 (0.22)	0.03 (0.20)
Elazar—Traditionalistic	−0.66*** (0.19)	−1.01*** (0.19)
time1=2	−0.01 (0.17)	
time1=3	−0.03 (0.11)	
time1=4	0.42** (0.14)	
time1=5	0.55*** (0.10)	

(continued)

**Table A2** Continued

Variable	2011–16	2017–
time1=6	0.54*** (0.11)	
time2=8		0.19* (0.10)
time2=9		0.13 (0.10)
Constant	0.68** (0.24)	1.49*** (0.20)
Observations	200	89

*Note:* Standard errors in parentheses. Dependent variable.  $\hat{p} < 0.10$ ,  $*p < 0.05$ ,  $**p < 0.01$ ,  $***p < 0.001$ .