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Constraints on policy learning: designing the Regional Greenhouse Gas Initiative in Pennsylvania

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ABSTRACT

Much policy diffusion and learning research examines macro-level patterns of policy spread. However, micro-level case studies can reveal nuances in how learning occurs, particularly when innovation originates within the executive branch, not the legislature. This case study of Pennsylvania's effort to join the regional greenhouse gas initiative (RGGI) illuminates the legal constraints faced by administrators who must innovate within the bounds of existing authority. The study also shows that legal constraints can reduce an agency's ability to maximize the political durability of major policy reform. The case yields insights for both policy designers and scholars of policy diffusion and learning.

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Climate change; policy learning; policy diffusion; subnational policy; state politics

1. Introduction

Much of our scholarly understanding of interstate policy learning is derived from observing patterns in how policies spread (Mallinson 2021; Carley and Nicholson-Crotty 2018), how text is shared (Linder et al. 2020), and the convergence between policies over time (Heichel et al. 2005). Of course, state convergence on common innovations does not mean that learning necessarily occurred (Volden et al. 2008). It is difficult for scholars to drill down to the micro-level processes that occur during interstate policy learning, though experimental research has revealed some details of policy and political learning (Butler et al. 2017). Due to the largely macro-level focus of this research, it is challenging to fully understand the constraints and conflicts that shape learning. State policymakers take both political and policy lessons from other states (Grossback et al. 2004; Mallinson and Hannah 2020), but what factors shape what information can be used? How do institutional dynamics shape the learning process when a policy is being designed? What does this mean for policymakers trying to design a new policy? Finally, how can policies be designed to sustain support?

We seek answers to these questions by examining a case of policy learning, namely Pennsylvania's effort to join the regional greenhouse gas initiative (RGGI). RGGI was

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established in 2009 and has eleven member states. Interstate cooperation, including RGGI and regional transmission organizations, has emerged as an important force for collaboration and policy learning in energy policy (Lenhart et al. 2016; Carley and Nicholson-Crotty 2018; Stafford and Wilson 2016). In 2019, Pennsylvania Governor Tom Wolf (D) ordered the PA Department of Environmental Protection (DEP) to promulgate a rule for joining RGGI. The Republican-held General Assembly has consistently criticized and fought rulemaking since.

We discuss how real and perceived legal constraints are shaping DEP's ability to learn from other RGGI member states. The agency is operating in tension between the potential for innovation and the conservative force of political controversy. Using May's three types of learning (social, political, and instrumental) and policy feedback theory as a framework, we evaluate the constraints faced by DEP in drawing lessons from other RGGI states and the resulting challenges for sustaining the policy. This study has implications for scholars of policy learning and practitioners engaged in policy design.

We begin by briefly reviewing May's three facets of policy learning, as well as relevant research on the diffusion of innovations, anticipatory feedback, and policy design. We then describe the context of Pennsylvania's effort to join RGGI. After establishing the details of our case, we discuss the evidence of instrumental, social, and political, learning to date and how statutory constraints are particularly shaping political learning and coalition building by DEP. Finally, we discuss the implications of this case for both practitioners and scholars.

2. Policy learning and design

As political actors seek to solve policy problems, they draw lessons from their own experience with a policy (Albright and Crow 2021) and the experiences of actors in other governmental jurisdictions (Karch 2007). Such learning is one pathway through which policy innovations spread (Gilardi 2010), including between states. There are three facets of policy learning: *instrumental, social,* and *political* (May 1992). *Instrumental learning* involves understanding how well specific policy instruments work in addressing a problem. This can mean assessing the technical and/or economic feasibility of potential instruments. Policy failures can be particularly informative and drive the search for solutions that improve a policy's performance. Failure can lead to actors redesigning a policy, but, as May (1992) points out, redesign may not constitute true instrumental learning, as policies are adapted from one jurisdiction to another for a host of reasons. Failure may also lead to the abandonment of a policy, which stunts its spread to other governmental jurisdictions (Volden 2016).

Social learning occurs when political actors either reinforce or change their beliefs about a policy. Instead of addressing the policy's *how* (instrumental learning), social learning addresses the policy's *why*. In response to social learning, policy designers may alter the problem framing, a policy's goals, or its scope. Further, changing the social construction of the problem and the groups targeted by the policy can result in changes to the relative balance of benefits and burdens conferred on those groups (Schneider and Ingram 1993). Finally, *political learning* entails drawing lessons about the political feasibility of a policy. This can mean adopting or adapting political strategies for coalition building, issue framing, and venue shopping based on what worked or did not work in other states. Actors may use cues like electoral success and ideology in this type of learning (Grossback et al. 2004).

Within American federalism, governments learn from policy experiments undertaken by other governments (Karch 2007). A state (or local or national government) considering a new policy may look to other states for instrumental, social, and political lessons instead of conducting their own trial and error process. Such lessons are shaped, however, by the domestic political, economic, and technical context in the learning state (Hays 1996). Yet, adaptation and policy reinvention requires resources that not all states or localities possess (Jansa et al. 2019). Whereas a wide range of policy options may be best for effective policy design (Linder and Peters 1988), political, technical, and economic constraints will pare down the options open to consideration (Öberg et al. 2015).

In designing new policies, actors do their best to anticipate both positive and negative feedback that may occur after implementation (Schneider and Ingram 2019). One means for avoiding negative feedback and harnessing positive is to build coalition support for a policy through the choice of policy tools (May 2005). This "anticipatory feedback" recognizes that policy formulation and adoption set the stage for future political conflicts (Mettler and SoRelle 2018). Indeed, sustaining a policy once it is in place can be more difficult than attaining its original passage (Patashnik 2008). And the stakes can be high. When reforms fail, the economy can be damaged, political resources lost, and public trust undermined (Patashnik 2008). Design elements that increase the durability of reform include a realignment of institutions, positive feedback, and when creative destruction from market forces alters the policy's political cleavages (Patashnik 2008). Thus, legislative or administrative policy designers must be mindful of these features if they desire the long-term durability of a policy.

The case of the sulfur dioxide (SO₂) trading system presented by Patashnik (2008) is instructive for RGGI. Emissions trading reconfigured the interesting landscape by creating incentives for some private sector actors (e.g. utilities) to support the policy while also providing short-term particularistic benefits for affected industries (i.e., coal workers and their companies) that opposed the policy. The emergence of a market for emissions credits, as well as allowances for credit banking, giving companies flexibility in how to reduce SO₂ emissions and created value for private actors engaged in the allowances market. This reconfiguration was necessary for the policy's durability as diffuse benefits and concentrated costs created an entrepreneurial politics with proponents arguing in the public interest and those bearing the cost using their political resources to push back (Wilson 1973). Reconfiguring the interest space and encouraging creative destruction through the market, however, weakened opposition to the policy. Doing so prompted positive feedback instead of negative. This case is instructive, but one key difference emerges when considering RGGI: executive adoption and design instead of legislative.

We argue that the research on feedback, policy design, and constraints on learning tends to focus on legislators as opposed to career bureaucrats. The case of RGGI's adoption in Pennsylvania shows how *bureaucratic* policy learning is further subject to legal constraints that can inhibit the kinds of political lesson drawing and coalitionbuilding necessary to ensure a policy's sustainability. Cases like SO_2 are instructive, but the circumstances of unilateral executive policy innovation can limit the options for bureaucrats in designing a policy for long-term durability. We now turn to flesh out the RGGI case before examining learning, its constraints, and the impact on policy durability. We focus mainly on learning regarding revenue reinvestment strategies because they can be a useful tool for building a supportive coalition and promoting the policy's durability.

3. Pennsylvania joins RGGI

Founded in 2009 as a cooperative interstate market, RGGI aims to cut carbon dioxide (CO_2) emissions in participating states through a cap-and-trade mechanism. RGGI Inc., the nonprofit program administrator, sets a regionwide CO_2 emissions cap for members. Emissions allowances are then sold via quarterly auctions to electricity generators throughout the region. Allowance holders are permitted to emit one metric ton of CO_2 per allowance purchased. Save for the administrative costs incurred by each state and fees paid to RGGI Inc., proceeds from these allowance auctions are retained at the state level. RGGI states have invested auction revenues in a variety of programs, but clean and renewable energy, energy efficiency, and ratepayer assistance are among the most common strategies.

A "model rule" that is periodically updated by RGGI states serves as the regulatory template for prospective entrants. Though, the template allows state administrators the opportunity to tailor various aspects of the system (e.g. offsets programs, emissions caps, allowance auction protocols, etc.) to fit localized needs. While the model rule covers much of the ground required for states to promulgate the regulation, all members except for New York have gained legislative authorization to join the pact. Except for a few states (e.g. New Hampshire and Rhode Island)¹, legislators simply grant administrators the authority to promulgate RGGI regulations without much specific guidance. Thus, administrators in RGGI states have had considerable latitude in crafting key components of the policy.

Eleven states have joined RGGI: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey (left in 2011 and rejoined in 2020), New York, Rhode Island, Vermont, and Virginia. Pennsylvania, however, has embarked on a markedly different path to join the agreement. Pennsylvania will also have an immediately outsized position in RGGI due to is robust energy and electricity sectors.

3.1. Pennsylvania's energy and electricity profile

Pennsylvania's status as a major energy producer makes its position in RGGI unique. Pennsylvania is the second-largest natural gas producer and third-largest coal producer in the U.S. (US EIA 2020). The state is also the second-largest coal exporter to foreign markets and the third-largest net supplier of energy. Both the diversity and quantity of energy production in Pennsylvania are unrivaled by any current RGGI state.

Pennsylvania is also a major player in electricity generation, exportation, and consumption. It is the nation's third-largest electricity producer, trailing Texas and Florida (US EIA 2020). No state in the country exports more electricity than Pennsylvania. Further, Pennsylvania would be the fourth RGGI member with ties to the PJM Interconnection (joining DE, MA, and NJ). Acting as an Independent Service Operator (ISO), PJM provides electricity to over 65 million people in the Northeastern and Mid-Atlantic regions. Thus, Pennsylvania's RGGI entrance markedly increases the region's exposure to RGGI's regulatory framework for electric distribution companies because of its outsized role in the wholesale electric market.

3.2. Administrative context: entering RGGI via executive order

Elected in 2014, Pennsylvania Governor Tom Wolf's (D) first term in office saw his administration frequently at odds with the state's Republican-dominated General Assembly. Among the most notable clashes were delayed annual budgets, sparring over privatization of liquor sales, and an annually proposed severance tax on natural gas. A year after his reelection to a second term, Governor Wolf signed the executive order directing DEP to promulgate a rule for joining RGGI. According to Wolf's timeline, the rule would be finalized in late 2021 so that Pennsylvania could begin participating in 2022. Pennsylvania's General Assembly quickly criticized the Governor as well as RGGI itself, citing Wolf's executive overreach as a breach of constitutional checks and balances. Republican legislators also expressed grave concern for the impacts that RGGI would have on the livelihoods of Pennsylvanians.

Despite unsuccessful efforts from the General Assembly to block the Governor's order and several disapproving (albeit, non-binding) votes from citizen advisory boards, DEP pushed forward with joining RGGI. In September 2020, DEP's Environmental Quality Board (EQB) approved a modified draft rule and advanced the regulation to a period of public comment. The final rule has now been reviewed by the state's Independent Regulatory Review Commission and is awaiting the final form. Thus, Pennsylvania joins New York as the only state to enter RGGI without legislative approval.

The RGGI case is one of several executive mandates undertaken by Wolf. Unilateral executive action – including addressing the opioid epidemic, banning fracking in state parks, implementing COVID mandates, and joining RGGI – have been Wolf's means for circumventing stalemates with the legislature. Strong governors using executive orders when they cannot pass their agenda otherwise is not uncommon (Sellers 2017), particularly when governors face a divided government (Cockerham and Crew 2017). The question is how durable these actions are, particularly when they include major policy reforms like RGGI.

4. Policy design: revenue investment options and constraints

Among the many decisions that DEP needs to make in joining RGGI is how to spend auction revenues. This is a useful feature to focus on in identifying policy learning and understanding its constraints because revenue investments are a powerful means at DEP's disposal for building supportive coalitions in a fraught political context. As May (2005) points out, such coalition-building is imperative for increasing the political feasibility of a policy. Further, revenue reinvestment is where DEP's legal constraints lie.

Table 1 provides a comprehensive list of policy design options for spending RGGI revenues in Pennsylvania. This list includes the major categorical spending patterns of the incumbent RGGI states and California. California is not part of RGGI but operates its own cap-and-trade program with revenue reinvestment strategies that offer feasible policy design options. The list was compiled from state legislative statutes, regulatory provisions, strategic spending plans, data from RGGI Inc, and California's Air Resources Board.

While the RGGI model rule does not direct how states should spend auction revenues, there is considerable overlap in terms of both individual spending categories and their broader policy themes. Home weatherization, solar energy deployment, and clean energy workforce development are prominent, reflecting RGGI's goal of cultivating clean and efficient energy. While less ubiquitous, programs like carbon emissions abatement and clean public transportation are common means of doubling down on RGGI's commitment to improving air quality. The revenue recipients most tangential to clean air and energy – dairy methane mitigation and promoting safe drinking water – are exclusive to California.

Direct bill assistance (DBA), however, is one common recipient of RGGI revenues that has a complicated relationship with air quality and clean energy. It does not directly reduce greenhouse gas emissions and may potentially increase them. Nevertheless, DBA is useful for increasing the political feasibility of RGGI due to its intent of alleviating potential electricity rate hikes. Yet, hard legal constraints in Pennsylvania prevent DBA from appearing in the field of feasible policy design options.

4.1. Legal constraints

The Air Pollution Control Act (APCA), DEP's originating legislation, sets boundaries for the department's activities and makes promoting air quality the department's preeminent goal. While the legislation does not provide a wholly inclusive list of permissible activities for DEP to utilize in achieving this goal, PA Code Title 25 Chapter 143 places limitations on how the department can disburse money from its Clean Air Fund (CAF). Most notable is the mandate that CAF can only fund clean air projects. Beyond that, Chapter 143 ostensibly grants the DEP considerable latitude in funding its "full and normal range of activities."

The APCA and Chapter 143 present constraints for dispensing RGGI revenues. Per Executive Order 2019-07, DEP was directed to draft a rule that would enter Pennsylvania into RGGI under the extant legislative authorization of the APCA. Under this pretense, any revenue investment strategy would have to be channeled through existing policy infrastructure in the APCA, such as the CAF. Thus, the ability to emulate policy tools used in other states is, arguably (Blumsack et al. 2020), constrained by

Investment option	Description	Legal feasibility under APCA
Direct bill assistance	General rate relief, targeted (low-income, small business, etc.), or both	No
Weatherization (residential and/ or C&I)	Including appliance removal and rebates. Home performance with energy star for an in-home consultation.	Yes
Electric vehicle initiatives (consumer-level)	Rebates, public information, tax credits	Yes
Solar (residential and/or C&I)	Rebates, consultation, technical assistance	Yes
State forest health	Fire prevention, controlled burns, soils treatment, etc., that enhance carbon sequestration	Yes
Urban forestry	Mitigating heat islands, reducing electric demand, raising property value, and sequestering carbon through residential and/ or municipal tree planting	Yes
Clean energy workforce development	Training and public information as clean energy transition strategies	Yes
Clean public transportation	Investing in an EV or ZEV fleet of buses	Yes
Wind capacity	Offshore wind	Yes
State university system	Funding research and/or clean energy curriculum	Yes
Economic development incentives	Competitive funding to attract green businesses	Yes
"Green communities" program	The clean and renewable prerequisite-based entry that yields further opportunity for grants	Yes
Green bank investment	For commercial, industrial, and municipal energy efficiency and clean energy projects	Yes
Federally funded, state administered programs	Low-income home energy assistance program (LIHEAP) and weatherization assistance program (WAP)	Yes for WAP but no for LIHEAP
Competitive grantmaking	For commercial, industrial, and municipal energy efficiency and clean energy projects	Yes
Carbon emissions abatement	Research and development, project financing, and technical assistance	Yes
Dairy methane	Mitigation via dairy digester research, technological development, and installation financing	Yes
Safe drinking water	Providing household filters in at-risk communities, municipal projects (line replacement, corrosion control/treatment), public information	No
Municipal projects	E.g. replacing bulbs in streetlamps with LEDs	Yes

 Table 1. RGGI revenue investment options from member states and California and their legal feasibility in Pennsylvania.

the legal context within which Pennsylvania is adopting this policy innovation (Gilabert and Lawford-Smith 2012). This means that instead of a dismantling or displacement of the prior institutional framework, DEP must layer RGGI onto an existing institutional structure that has some conflicting principles. This is the *least* effective institutional reform for ensuring policy sustainability (Patashnik 2008).

Nowhere is this policy design constraint more evident than with DBA. The APCA is Pennsylvania's example of a localized context that takes precedence in the design of policy innovation. With clear language in existing statutes directing DEP to only spend Clean Air Fund monies on programs that *promote better air quality*, it is hard to advance an argument that supports DEP's discretion to spend RGGI revenues on keeping ratepayers' energy bills in check. Even this lone constraint bears significant implications for Pennsylvania's adoption of RGGI, including its medium-term political feasibility and sustainability. We turn now to examine the extant signs of instrumental, social, and political learning and the APCA's limits on political learning.

5. Dimensions of policy learning in RGGI implementation

5.1. Instrumental learning

DEP can look to other RGGI states for lessons from policy successes and failures in revenue investment but must do so knowing that the policy was authorized and implemented in a wholly different political context. Compromise and some degree of bipartisan support was necessary for those states to navigate the legislative process. Pennsylvania is counting solely on DEP to design and promulgate the RGGI rule and develop an investment strategy.

A policy design emphasis on efficiency and effectiveness opens the door for *instrumental learning* to occur. Much of the conversation surrounding RGGI's general policy design has gravitated toward instrumentality. While a majority of the RGGI rulemaking effort at the time of this writing has been devoted to finalizing the model rule, the ongoing revenue investment design certainly will not end with a simple list of what *could* be done, even if those options are justified by their utilization in other states. DEP will likely pay a great deal of attention to understanding *how* funds are distributed to various programmatic ends, the existing policy infrastructure in Pennsylvania that could be leveraged to spend RGGI funds, and the relative success of investment options in other RGGI states. Further, DEP's contract with the Delta Institute – a nonprofit environmental programs and services consultant – signals a desire to implement revenue investments that effectively address environmental justice goals. Consideration of local administrative, legal and technical contexts remains important in drawing lessons from other states, but instrumental learning provides the greatest opportunity for DEP to learn from revenue investment successes and failures.

5.2 Social learning

Social learning has been evident throughout DEP's rulemaking process. Some of that learning is statutorily mandated by virtue of task force hearings, citizen advisory board meetings, and public comment periods that iteratively resurface throughout the policy design process. DEP's Environmental Justice Advisory Board (EJAB) has clearly impacted the administration's thinking about the policy's goals and problem framing.² EJAB proposed "equity principles" for RGGI's regulatory framework, including plans for distributing the state's auction proceeds.³ EJAB called on DEP to ensure procedural inclusivity, prevent the perpetuation of structural racism, and distribute auction proceeds to communities that are disproportionately impacted by air pollution. Governor Wolf acknowledged EJAB's recommendations in his 2021 Proposed Budget. Wolf proposed that a newly founded "Energy Communities Trust Fund" should serve as the repository for RGGI auction proceeds, and suggested that those funds be distributed to the families and workers most impacted by RGGI (PA DEP 2021). DEP concurrently announced that it had adopted RGGI Equity Principles to guide the agency's continued rulemaking efforts and that its contractual partnership with the Delta Institute would

solidify a "just and equitable transition for all Pennsylvania residents" (PA DEP 2021). This contract is a sign of social learning, as Delta's staff have experience working in government and nonprofits surrounding energy and the environment. DEP has also voluntarily engaged in social learning by welcoming input on economic and health modeling, legal opinion, and revenue investment options from a third party (university) research team (Blumsack et al. 2020).

There is much opportunity for further social learning in DEP's case. Social learning tends to occur through professional ties to bureaucrats in other states (Arnold 2014) or through cross-state career mobility (Teodoro 2009) and high bureaucratic discretion tends to facilitate policy learning and diffusion (Parinandi 2013). Even when considering the DEP's constraints as imposed by the APCA, the agency could directly interact with New York's State Energy Research and Development Authority (NYSERDA) and Department of Environmental Conservation (DEC), for example, to better understand how it administratively promulgated rules for revenue investment.

5.3. Political learning

Agencies like DEP are not immune to political pressure and can employ political strategy in rulemaking to "insulate their rule-making proposals from political scrutiny and interference" (Augustine Potter 2019, 5). Pennsylvania's status as an administrative entrant to RGGI amplifies, in some ways, and reduces, in others, the discretion afforded to DEP in promulgating the cap-and-trade rule. DEP is uninhibited by legislative mandates, like those imposed by the legislature in New Hampshire, but DEP must also rely on existing statutory authority (and its legal boundaries) to implement the policy. This provides a fair amount of bureaucratic discretion for political learning, but there are important limits.

Political and legal feasibility meet at a crossroads in Pennsylvania with DBA. By making ratepayer relief a cornerstone of its RGGI revenue investment strategy, DEP would address a recurring complaint with cap-and-trade systems: that the increased cost of emitting carbon dioxide is passed on to ratepayers (Edelston et al. 2009). Small businesses and low-income residential customers, two frequent recipients of DBA in RGGI states, stand to experience the greatest burden from increasing rates. Thus, DBA plays a critical role in cultivating and maintaining support for an economically contentious policy shift – as the case of California's cap-and-trade system shows (Karapin 2020).

At face value, DEP has plenty of reasons to consider including ratepayer assistance in its RGGI revenue investment policy design. Doing so would assuage the concerns of both traditionally vulnerable ratepayers and the expanding pool of residents adversely impacted by the COVID-19 pandemic. Meaning, in the face of low political resources, DEP can alter the distribution of RGGI's costs and benefits in a way that maximizes political feasibility (Majone 1975). Yet, the constraining institutional framework of APCA and Chapter 143 effectively tie DEP's hands in the matter. What is feasible from a political perspective in a decidedly hostile policymaking environment is at odds with what is legally feasible. This political-legal stalemate could carry significance much farther than RGGI's initial implementation phase. Pennsylvania will hold a gubernatorial election in 2022 to replace the term-limited Wolf administration. A state looking to rebound from a pandemic-induced recession may take a long look at a program like RGGI. If residential and small business electricity rates increase in response to Pennsylvania's carbon cap, gubernatorial candidates could conceivably run on the promise of withdrawing from RGGI during their first days in office. At that juncture, voters will have had little time to evaluate RGGI's public health benefits or the results of auction proceeds investment. New Jersey, which left RGGI under the Christie administration, offers ample precedent for how quickly a state can withdraw.

RGGI revenue investment presents DEP with perhaps its strongest means of developing political sustainability. Auction revenue investments also serve as a critical fulcrum in delivering on RGGI's promise to reduce greenhouse gas emissions. While the cap-and-trade mechanism itself sufficiently addresses the goal of curbing emissions, the second-order effect of investing proceeds in clean and efficient energy reaches well beyond the electricity generating sector. That reach can encompass such ends as efficient public transportation, urban tree cover, commercial insulation, and home renewable energy alternatives.

Policy learning theory would suggest that DEP might be compelled to explore DBA as a best practice for cultivating political support, especially in a turbulent rulemaking environment. DEP, however, faces hard legal constraints and soft institutional and political constraints (Gilabert and Lawford-Smith 2012) to political learning when considering how it would design the revenue reinvestment portion of the policy. This results in more of a *mud-dling through*, where agencies work around the edges of existing policy constructs (Lindblom 1959), particularly if Wolf is unable to advance his spending priorities through the Republican General Assembly. In Pennsylvania, RGGI's long-term sustainability cannot be taken for granted. A politically divided government and existing statutory constraints can act as deterrents to policy learning in the context of administrative rulemaking.

In sum, the barriers to implementing DBA as part of Pennsylvania's RGGI revenue investment strategy are twofold. What is politically feasible in supporting vulnerable ratepayers is legally infeasible thanks to the constraints imposed by the APCA on Clean Air Fund expenditures. This legal constraint, when taken in view with Pennsylvania's administrative rulemaking context for designing RGGI, hinders policy learning from actualizing. Where political, instrumental, and social policy learning might point to the viability of featuring DBA in RGGI spending plans, DEP's legal boundaries prevent them from political learning. The required pivot from political viability to instrumentality risks the long-term sustainability of the policy, largely thanks to Pennsylvania's political climate. This micro-level case of policy learning, while replete with implications for the ongoing development of the RGGI policy itself, also bears macro-level implications for policy practitioners and scholars.

6. Implications for policy designers and scholars

We conclude with four takeaways for practitioners and scholars: (1) the effect of divided government on policy design; (2) the disproportionate legal barriers to learning between administrative and legislative policy innovation; (3) the practical tradeoffs in political and legal feasibility; and (4) the implications for policies beyond RGGI.

6.1. Divided government and policy design

When states experience divided government, each side uses the levers of power at their disposal to shift policy in their preferred direction (Clarke 1998; Breunig and Koski 2009; Barrilleaux and Berkman 2003). However, a divided government tends to slow state innovation (Sellers 2017; Mallinson 2020), especially for high-conflict policies (Bowling and Ferguson 2001). In the case of RGGI, the governor used his executive order power to direct DEP to join in the face of a recalcitrant legislature. The problem with this approach is that such action may not be sustainable. As the rapid demise of President Obama's Clean Power Plan under President Trump shows, unilateral action by executives can be undone by future executives of the opposing party. RGGI in Pennsylvania may be particularly vulnerable to political winds, as its first year of operation will be a gubernatorial election year. Republican gubernatorial candidates will surely be opposed to RGGI and may promise to remove Pennsylvania from the pact, as Governor Christie did in New Jersey. Should RGGI become an election issue, even a Democratic candidate may have to temper their support to retain the support of unions that oppose the policy. Ultimately, legislative approval of RGGI would vastly improve its political sustainability, including allowing for direct bill assistance. Such approval is presently unlikely, however, which increases the stakes for DEP in designing the policy. Changes in political winds do not automatically result in the repeal of a policy (Patashnik 2008), but executive policymaking is especially vulnerable to begin undone by a change in administrations. DEP is constrained in its ability to generate positive feedback on the policy before a change in administration.

6.2. Legal barriers to learning: administrative vs. legislative contexts

Pennsylvania's effort to join RGGI illuminates the complexities of policy learning at the micro-level. Much of the research on interstate policy learning is conducted at the macro-level by examining patterns of policy spread, policy adoption networks, and text sharing. While this research is valuable in understanding the broad dynamics of policy innovation and learning, it is difficult to surface nuances that emerge in a micro-level study. In this case, we find that legal barriers constrain administrative learning when the executive is the innovator instead of the legislature. Much of the policy innovation literature focuses on innovations that are adopted either by the popular initiative or the traditional legislative process, yet some innovations are adopted via gubernatorial fiat. The executive, however, is restricted to operating within previously established statutory bounds. This is different than a legislative innovation that is only restricted by the necessity of compromise. Legislatures enjoy more latitude than bureaucrats in lesson drawing and in restructuring governmental institutions in ways that can make a policy more durable. Legislators must operate within constitutional boundaries, but within those, they can legislate as they wish. Administrators are further constrained by operating within existing statutory authority whose goals may conflict with the policy innovation they wish to adopt from another state (Patashnik 2008).

6.3. Policy sustainability tradeoffs in political and legal feasibility

Also emerging from the limits on administrative policy learning is the prospect that administrators may be constrained in maximizing the political and legal feasibility of a program. In the case of RGGI, DEP has wide latitude in adopting many revenue reinvestment methods from other states, but it faces substantial obstacles to adopting one of the most common political strategies among RGGI states (DBA). The General Assembly has the latitude to direct RGGI spending wherever it wants, but it does not presently support joining RGGI. Thus, DEP faces the challenge of dispensing RGGI funds in ways that are not as politically advantageous. This matters for the long-term political sustainability of the program, as rising electric prices without rate relief, could bring RGGI under further political fire from disgruntled ratepayers and their representatives in office. While ratepayers' interests alone do not inclusively account for RGGI's political feasibility, even their tacit support for the program could make a difference with a gubernatorial election on the horizon. In sum, agencies need to consider political sustainability, not just policy effectiveness and instrumentality, when designing controversial programs like RGGI.

6.4. Beyond RGGI

These lessons are not simply restricted to the case of RGGI in Pennsylvania. While much attention has been paid to the increased use of executive authority during the Obama, Trump, and early Biden administrations for substantive policymaking (Waslin 2020), governors also wield substantial power in fundamental policy matters. Governors use executive authority to circumvent oppositional legislatures, particularly when there is a divided government (Cockerham and Crew 2017; Sellers 2017). But what happens after a governor acts? How sustainable are these unilateral actions? The RGGI case suggests that executive agencies are limited by existing legal authorities in using design elements like coalition building; institutional dismantling; and providing short-term incentives to achieve buy-in from opponents - tools that legislatures have at their disposal for crafting durable policy reforms that lead to positive feedback (May 2005; Patashnik 2008). Executive action increases with political polarization and legislative gridlock (Edward and Matthew 2017), two forces to which states and governors are not immune (Shor and McCarty 2011; Jensen 2017). Much like Patashnik's (2008) call for scholars to pay more attention to what happens after major reform adoption through the legislative process, more attention is needed to what happens after governors act, particularly when there is little hope of legislative legitimation.

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