THE CLASS OF 1964 POLICY RESEARCH SHOP

COMMUNITY POWER AGGREGATION

PRESENTED TO THE OFFICE OF THE NEW HAMPSHIRE CONSUMER ADVOCATE

Donald Kreis, New Hampshire Consumer Advocate

This report was written by undergraduate students at Dartmouth College under the direction of professors in the Nelson A. Rockefeller Center. Policy Research Shop (PRS) students produce non-partisan policy analyses and present their findings in a non-advocacy manner. The PRS is fully endowed by the Dartmouth Class of 1964 through a class gift given to the Center in celebration of its 50th Anniversary. This endowment ensures that the Policy Research Shop will continue to produce high-quality, non-partisan policy research for policymakers in New Hampshire and Vermont. The PRS was previously funded by major grants from the U.S. Department of Education, Fund for the Improvement of Post-Secondary Education (FIPSE) and from the Ford Foundation and by initial seed grants from the Surdna Foundation, the Lintilhac Foundation, and the Ford Motor Company Fund. Since its inception in 2005, PRS students have invested more than 70,000 hours to produce more than 200 policy briefs for policymakers in New Hampshire and Vermont.

PRS POLICY BRIEF 2023-24-01
March 12, 2024

PREPARED BY:
Cooper Hyldahl
Carly Walther-Porino
Chase Kamikawa

NELSON A. ROCKEFELLER CENTER FOR PUBLIC POLICY AND THE SOCIAL SCIENCES
Contact:
Nelson A. Rockefeller Center, 6082 Rockefeller Hall, Dartmouth College, Hanover, NH 03755
http://rockefeller.dartmouth.edu/shop/ • Email: kristin.e.smith@dartmouth.edu

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Our research explored the concept of Community Choice Aggregation (CCA), which empowers local governments to procure electricity on behalf of their communities. CCA, alternatively termed Municipal Aggregation or Community Power Aggregation (CPA), is an energy supply model founded on the principle of collective demand. By harnessing the strength of bulk purchasing, these models secure power from alternative suppliers while upholding the essential transmission and distribution services provided by existing utility companies. This approach holds the potential to provide communities with greater control over their energy sources, access to more sustainable power options, and lower electricity costs. We have also noted the stark disparities in CCA outcomes across different U.S. states, with some experiencing steady growth in participation, while others encounter stagnation or even a decline. This variation prompts our research to delve deeper into the underlying factors that drive these outcomes.

Additionally, our preliminary analysis highlights the relevance of CCA programs, especially in regions like New Hampshire, where residents grapple with high electricity costs due to heavy reliance on imported fossil fuels, volatile energy prices, and challenging climatic conditions. These factors underscore the importance of exploring the intricacies of CCA systems, regulatory frameworks, and the lessons that can be drawn from states with successful programs. Through several case studies, we aim to provide a comprehensive analysis to glean insights for New Hampshire and offer actionable insights for shaping more sustainable, cost-effective, and resilient energy systems in the future.

1. INTRODUCTION: COMMUNITY CHOICE AGGREGATION

Community Choice Aggregation (CCA) has emerged as a promising approach to granting more power to consumers over utility companies in the energy industry. CCA, also known as Municipal Aggregation or a Community Power Aggregation (CPA) in various states, empowers local governments to procure power on behalf of their residents and businesses from alternative suppliers, all while continuing to receive transmission and distribution services from existing utility providers.[1] It offers a compelling solution for communities seeking greater control over their energy sources, a greener energy mix, and potentially lower electricity costs.[2] The concept relies on the collective strength of aggregated demand, which provides leverage for negotiating favorable rates with competitive suppliers and selecting more sustainable energy sources.

Across the United States, the adoption of CCA has taken shape in different ways, leading to a striking divergence in outcomes.[3] While some states have seen a continuous increase in the number of participants within these systems, others grapple with stagnation or even a decline in participation.[4] This perplexing contrast has raised questions that demand in-depth analysis, as it holds the key to understanding the dynamics of CCA and its ability to catalyze change.

This project sets out to explore the factors contributing to both the success and failure of Community Choice Aggregation programs in various states, with a focus on discerning the underlying factors. By investigating the structural, legal, economic, and social elements that influence the growth or stagnation of CCA initiatives, we aim to unravel the complex dynamics at play. Understanding this phenomenon is critical for shaping future energy policies, guiding regulatory frameworks, and informing communities that seek to harness the potential of CCA for a more sustainable and cost-effective energy future.

2. PROBLEM STATEMENT: DETERMINANTS OF CCA SYSTEM TRAJECTORY

Community Choice Aggregation is currently authorized in California, Illinois, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Rhode Island, and Virginia, however, the adoption and impact of CCA programs in the United States vary significantly from state to state, raising critical questions about the determinants of growth and decline in different regions.[5] For example, in Illinois, upwards of 90 percent of the state was enrolled in a CCA program by 2013, but that number has since fallen to around 50 percent.[6] Conversely, Ohio has seen steady growth in program enrollment since 2005, raising questions about structural or contextual differences that lead to these varied outcomes (see Appendix A).[7] Our research seeks to address the following core questions:

1. **What are the key determinants of success for Community Choice Aggregation in different states?** This question serves as the crux of our investigation, as we aim to uncover the critical legal, economic, and social factors that play pivotal roles in either fostering the growth of CCA initiatives or leading to their stagnation. A comprehensive understanding of these determinants is essential for elucidating the multifaceted nature of CCA outcomes.

2. **How do different state regulatory frameworks influence the adoption and impact of CCA?** The legal structures governing CCA programs vary from state to state, influencing their adoption and outcomes. Our research seeks to shed light on the regulatory barriers and incentives that shape the trajectories of CCA initiatives. By examining these diverse regulatory frameworks, we aim to provide insights into the policy landscape that either supports or hinders the success of CCA.

3. **What are the broader implications of increasingly prevalent CCA programs for communities and the energy sector as a whole?** The effects of CCA programs extend beyond individual communities, with potential ripple effects on electricity costs, environmental goals, and energy resilience. Understanding the broader implications of successful or failed CCA initiatives is vital for shaping effective energy policies and strategies, as it offers insights into the wider impacts of these programs.

4. **What lessons can be learned from states with thriving CCA programs that can be applied to less mature or faltering programs?** By identifying best practices and areas for improvement within states with thriving CCA initiatives, our research aims to provide actionable insights for states that are encountering challenges or stagnation in their CCA programs. These lessons can serve as a guide for states seeking to revitalize their CCA efforts and make them more effective.

In summary, our research seeks to address these fundamental questions to glean insights into why Community Choice Aggregation is successful in some states while it falters in others, and to provide guidance for shaping more sustainable, cost-effective, and resilient energy systems in the future.

3. PRELIMINARY INFORMATION

3.1 What is Community Choice Aggregation?

A Community Choice Aggregation (CCA) is established either through a local governmental body's decision to aggregate its retail electricity base or via a public referendum. The process for establishing a CCA varies depending on the jurisdiction, but it generally involves local government officials passing ordinances or resolutions that determine the CCA structure, governance, and operational specifics. Most CCAs function on an 'opt-out' basis, which means all customers in a municipal area are automatically enrolled. CCAs can negotiate large energy supply contracts that grant residents greater control over their energy portfolios at lower and less volatile rate costs.[8] Utilities are responsible for transporting electricity while energy suppliers sell power. They control fixed capital, meaning generators, transmission and distribution lines, and interaction with retail customers.[9] Typically, energy service areas have incumbent utilities which are usually monopolies and set the default service rates. However, under a CCA model, electric distribution utilities (e.g., Eversource, Liberty Utilities, NH Electric Cooperative, and Unitil) continue to deliver electricity to customers via their transmission distribution systems, but local customers have more control over electricity rates and where their energy is sourced. Thus, customers have more negotiating power than they would if they remained with their incumbent utility or third-party supplier.

3.2 How does the electricity supply work?

Typically, under non-CCA models, utilities offer default electricity service rates, which reflect the amount it pays generators for the power that customers use. In New Hampshire, a deregulated energy state, the price customers pay for electricity is determined twice a year, by an auction run by ISO New England, a Regional Transmission Organization.[10] Power producers bid into the auction and normally the lowest bidder is selected. The utility most often does not profit from the set rate. This process leaves utility companies with little incentive to provide consumers with low rates.[11]

Customers may also procure power from third-party suppliers. These suppliers are companies that provide electricity to both residential and commercial customers, but are not the established utility provider. Over half of the states in the U.S. operate under deregulated electricity markets, meaning that customers within these states have access to third-party energy suppliers. Third-party suppliers serve as middlemen between customers and the energy generator/utility. They purchase energy from the utility in bulk and then sell that energy to consumers at a different rate, which can be cheaper and/or offered with more flexible agreements than incumbent utilities offer. However, customers face greater risk with third-party providers because they operate under less regulation than incumbent utilities, meaning the offered rates could be initially cheaper but could be raised at any time, or they may lock customers into a set rate that turns out to be higher than the region's average.[12]

3.3 Why are CCAs relevant to New Hampshire?

New Hampshire is disproportionately feeling the impact of recent electric volatility in New England and the state's residents have recently been exposed to some of the highest electricity rates in the country.[13] Increasing electricity prices has to do with New England's dependence on fossil fuels and the region's harsh climate, making opportunities for more control of electricity supply and access to less volatile and lower utility rates extremely relevant to New Hampshire.

New Hampshire residents face significantly higher electricity costs compared to the national average. As of February 2024, state residents spend $251 monthly on electricity on average, totaling $3,012 annually. This figure stands 25 percent higher than the national average. In October 2023, average statewide electricity costs were even higher, amounting to a 35 percent increase from national electricity costs.[14,15] Moreover, the average electric rates in New Hampshire stand at 25 ¢/kilowatt-hour (kWh), marking a 32 percent increase from the national average rate of 19 ¢/kWh.[16] These elevated costs are driven by the region's heavy reliance on imported fossil fuels like natural gas for electricity generation, which is especially worrisome in light of rising fossil fuel prices. This reliance is further exacerbated by the challenges of transporting these fuels over long distances, resulting in even higher costs. Additionally, current state policies that support natural gas, makes New Hampshire residents more vulnerable to price fluctuations. Moreover, residents face higher utility costs, in part due to the lack of robust energy efficiency programs and clean energy requirements for utilities.[17]

New England's dependence on imported liquified natural gas makes residents vulnerable to price inflation linked to geopolitical conflicts. For example, New England residents faced the highest electricity rates in the country this winter after the disruption of energy supply lines amidst Russia's invasion of Ukraine.[18,19] New England's harsh climate also contributes to volatile electricity prices that respond to major peaks in energy consumption during cold months. During extreme cold weather, high demand for heating, thus natural gas, can take up most of the capacity in New England's pipelines, leading to increased prices for the natural gas that is used to generate electricity. Power plants are

forced to pay substantially more for the natural gas which causes the rise in electricity prices for residential customers.[20, 21] While some of these factors are outside of state regulatory control, they all highlight the importance of achieve affordable and reliable electricity rates for New Hampshire consumers

3.4 Case Study States

Currently, ten states have enacted legislation to authorize CCA. After Massachusetts enabled CCA 1997, CCA advocates in the state leveraged the ongoing debates on electric sector restructuring during the 1990s and early 2000s as an opportunity to introduce the concept of CCA into the policy discussions of other states. Electricity restructuring efforts in other states quickly led to legislation enabling CCAs.[22] Overtime, key differences in CCA formation emerged. One distinction that has had notable consequences for the formation and potential renewal of aggregation programs over time is that Massachusetts, New Jersey, New York, and California permit elected officials of municipal governments to initiate aggregation efforts, while Ohio and Illinois mandate voter approval through a referendum. Some states, including Connecticut have investigated or are actively investigating CCA.[23] In Connecticut, multiple municipalities have urged the state legislature to take up this issue, however it hasn't been adopted and the Connecticut Energy Committee, Office of Consumer Council and the Department of Energy & Environmental Protection all remain uninterested in considering the resolution.[24] Our study will analyze Massachusetts, California, Illinois, and Connecticut as case studies due to their varied adoption timelines and policy maturity levels with CCAs. We aim to understand the factors driving the appeal of CCAs and the determinants of successful CCA models.

4. METHODOLOGY

We used background research, eight elite interviews (see Appendix B), as well as comparative case studies to present lessons learned from different states that both implemented and attempted to implement CCA. These research methods, when used together, create a solid foundation and understanding to make meaningful recommendations that will assist in the growth and development of New Hampshire's relatively new CCA programs.

4.1 Background Research

Background research, including articles, reports and preliminary interviews, was crucial to understand CCA structures and its implications for participant citizens. This phase helped us define research questions, identify confounding factors, and understand variations in CCAs across states, shedding light on factors influencing participation trends.

4.2 Elite Interviews

We interviewed administrators from our case study states to gather qualitative data on their experience with CCA, informing recommendations for CCA programs in New Hampshire. Their insights provide a broader understanding of program implications and factors influencing participation trends and program variations nationwide. Additionally, interviews with officials involved in existing and upcoming CCA initiatives in New Hampshire will help us assess program effectiveness and inform policy recommendations for potential CCA expansion.

4.3 Comparative Case Study

Synthesizing all of the information gathered through existing data sets, background research, and elite interviews, we have examined several case studies in Illinois, California, Massachusetts, Connecticut and New Hampshire to demonstrate the actions and mechanisms that lead to the success, failure, growth and decline of CCAs in various states and communities throughout the country. Through examining the policies and factors that states and communities have implemented in their specific CCA programs, we have been able to gather meaningful insights and recommendations that will serve to strengthen CCA programs in New Hampshire.

5. CASE STUDY STATES

5.1 Illinois

Comprehensive Overview of Energy Deregulation in Illinois

Since the passage of the Electric Service Customer Choice and Rate Relief Law in 1997, Illinois's electric industry has undergone significant transformation, embracing deregulation to empower consumers with the ability to choose their electric suppliers.[25] This shift, overseen by the Illinois Commerce Commission (ICC), introduced competition, allowing companies known as Alternate Retail Electricity Suppliers (ARES) to vie for consumers' business.[26]

In the years following 2007, after the enactment of the Illinois Power Agency Act and the establishment of the Illinois Power Agency, the landscape of Illinois's electric sector saw increased flexibility for consumers.[27] Prior to deregulation, Illinois residents faced some of the highest power rates in the country and were limited to obtaining energy solely from the utility company servicing their area.[28] Residents now have the authority to change their electricity suppliers, offering them the opportunity to lower their electric rates.[29] The entry of competitively priced suppliers into the market allows for the diversification of business models, including those that incentivize residents with more than just cheap rates, like investing in green technologies or supporting charitable organizations.[30] Unfortunately, this deregulation also opened the door to energy companies that supplied unreliable service. New firms began to face more stringent regulatory oversight after numerous issues with fraud and overpricing in the deregulated market, taking away from some of the appeals of deregulation but protecting consumers from deceitful business practices.[31]

Entrance of Municipal Energy Aggregation (MEA) in Illinois

The integration of ARES into Illinois's energy market was primarily facilitated through the adoption of Municipal Energy Aggregation (MEA) agreements with localities, which are functionally the same as CCAs in New Hampshire. In Illinois, voters must be given a chance to voice their opinion on MEAs through referendums before municipalities can enter into contracts with energy suppliers. An in-depth analysis, based on insights from Professor Hugh Bartling of DePaul University, provides an understanding of the various factors influencing the growth, challenges, and political dimensions of MEAs in the state.

Voter Influence and MEA Support

In the beginning of the surge of support for MEAs across Illinois, there was a distinct price advantage that made them very attractive. Additionally, Professor Bartling highlighted that Illinois voters

perceived MEAs as a mechanism to exert influence over the composition of their energy supply, particularly the proportion derived from environmentally-friendly sources. The framing of MEAs as a vehicle for environmental impact played a crucial role in shaping voter perspectives, particularly in the high-income, liberal suburban communities of Chicago.

Political Ideology and MEA Support
The qualification that MEAs may be more favorable in communities prioritizing clean energy raises intriguing questions about the policy's resonance in regions where environmental concerns may not be a top priority, like more conservative areas in New Hampshire. Professor Bartling underscored that the variation in support for MEAs observed in different parts of Illinois—more liberal areas focusing on green energy, while red regions maintain flexibility—emphasizes the importance of understanding the diverse political landscapes within a state and tailoring messaging accordingly.

Impact on Traditional Power Suppliers and Energy Costs
Addressing the impact of MEAs on traditional power suppliers and energy costs, Professor Bartling also provided insights into the relationship between MEAs and the broader energy landscape. The threat of communities turning to power aggregation might have influenced traditional suppliers to adjust rates, but concurrent fundamental changes in fuel technology, such as fracking and reduced reliance on coal, also played a pivotal role in shaping pricing dynamics. Because of these complex factors, when asked if the cheaper prices offered by MEA systems could have lowered prices for everyone through increased competition, Professor Bartling was unable to provide a confident answer.

That being said, after checking the energy mix of New Hampshire's energy supply, Professor Bartling was somewhat skeptical about the chances of a large-scale CCA Joint Powers Agency in New Hampshire because the energy mix is already rather clean, dominated by nuclear power and natural gas and only about 1 percent of energy coming from coal. When MEAs took off in Illinois, this was not the case and the unclean and expensive energy mix contributed greatly to the rapid growth of MEAs.

5.1.1 Navigating the Illinois CCA Landscape from the Perspective of a Private Firm

Insights from MC Squared Energy Services
Chuck Sutton, the President of MC Squared Energy Services, offers valuable insights into the factors influencing Illinois consumers' preferences for MEA systems and the strategic considerations within the alternative retail electric supply market. Sutton shed light on MC Squared's role in adapting to changing needs, promoting renewable energy, and navigating regulatory complexities within Illinois's distinctive energy framework. He also explained that the factors driving Illinois consumers to choose MEA systems are intricately linked to competitive pricing and a commitment to sustainable energy practices.

Competitive Pricing and Renewable Energy Goals:
Historically, the primary driver for consumer participation in MEA programs in Illinois has been access to a more competitive electricity supply offer compared to the utility's default tariff supply rate. MC Squared strategically tailors its product offerings to provide municipalities with compelling options, emphasizing cost-effectiveness to attract residents.

Moreover, the ability to offer voluntary Renewable Energy Certificates (RECs) plays a pivotal role in meeting the "green" sustainability goals of municipalities by allowing communities to demonstrate a commitment to renewable energy. MC Squared, as a Green-e certified supplier, actively engages in the purchase of wind and solar RECs, aligning with the environmental objectives of aggregation programs.

Promoting Renewable Energy Products and Community Solar:
MC Squared leverages its Green-e certification to promote and enhance the adoption of renewable energy products within CCA programs. By purchasing and retiring green RECs in conjunction with aggregation programs, MC Squared enables communities to actively support the development of renewable energy projects. The company extends its influence into the rapidly growing renewables generation market in Illinois by providing subscriber management services for community solar developers.

Subscriber Management for Community Solar:
In the context of the Illinois Shines Adjustable Block Program administered by the Illinois Power Agency, MC Squared takes on the role of a subscription services manager for community solar project owners. This strategic move allows MC Squared to offer guaranteed savings subscriptions to residents participating in aggregation communities. These subscribers have the opportunity to opt into community solar programs, fostering both renewable energy adoption and financial benefits for participants.

Navigating Regulatory Diversity:
Given the regulatory diversity among states, MC Squared strategically focuses its operations exclusively within the State of Illinois. Despite the complexity of regulations governing MEA programs, the company allocates substantial resources to ensure compliance with the legal structures in place. This commitment underscores the importance of aligning with state-specific regulations, demonstrating the intricate balance between adapting to local contexts and ensuring operational success in the alternative retail electric supply market.

5.2 California

A Brief History of CCA in California
CCA legislation was passed in California after Pacific Gas & Electric (PG&E) declared bankruptcy amid the energy crisis in California in 2001.[32] CCAs in California have diverse objectives, including acquiring renewable energy at competitive prices, creating local employment opportunities, fostering local governance, and developing new energy resources. The longest-standing CCA, MCE (formerly Marin Clean Energy) launched in 2010, has achieved substantial capacity development, investing in utility-scale solar projects on brownfield sites with job guarantees, participating in statewide energy pilot programs, and aligning local distribution planning with transportation and land use planning. Established CCAs have gained credibility as investment-grade partners for long-term clean energy contracts, while newer CCAs face uncertainties. For instance, Western Community Energy recently filed for bankruptcy after less than two years of operation, yet CCAs continue to emerge in response to customer demand for cleaner energy beyond what traditional utilities offer in California. Beginning in 2010, there was a steady incline in percentage of California's population forming CCAs, then there was a steep incline in 2019 (see Appendix A). Currently, California boasts 25 operational CCA programs, serving over 14 million customers across more than 200 cities and counties statewide.

5.2.1 Case Study: Ava Community Energy (Formerly East Bay Energy)

Insights from Nick Chaset, CEO AVA Community Energy

Achieving Critical Mass in California

In California, Community Choice Aggregation (CCA) has become the predominant energy provider model. According to Nick Chaset, CEO of Ava Community Energy, a CCA serving Alameda County and the City of Tracy, the opt-out framework has been instrumental in achieving critical mass for CCAs in California (New Hampshire has also adopted the opt-out framework). Unlike in states such as Illinois and Ohio, where only municipal accounts default to CCAs, in California, 100 percent of accounts default to CCA services, termed as the default service model or opt-out. This framework has facilitated the rapid adoption of CCAs especially as new CCA programs form, with roughly 35 percent of Californians in total currently utilizing CCA services, and up to 90 percent of California residents in areas where CCAs are available. Chaset also highlighted a notable difference from New Hampshire, as some CCA communities have a 100 percent renewable service as their default option.[33] He noted that in these communities, approximately 80 percent of customers have chosen to stick with this renewable option, despite its higher cost. Moreover, very few have opted down and very few residents have opted-out.

As successful CCAs emerge, neighboring communities are inspired to join or establish their own programs, further bolstering the proliferation of CCAs across the state. Chaset emphasized that California CCAs have always been able to operate cheaper than the state's investor-owned utility and that they are also in a better financial position, particularly due to Collateral Posting Credit requirements that ensure sufficient funds are set aside for CCA operations.

Importance of Customer "Stickiness"

Building up financial reserves and attaining customer "stickiness" are key strengths of the California CCA model. With the opt-out model, customers are less likely to switch providers frequently, which benefits the financial stability of CCAs. This contrasts with customers in Ohio and Illinois, where only municipal customers are enrolled in CCA as their default service. Chaset expressed that while California customers have the option to opt-out at any time, the process is not commonly pursued, even when CCA rates get more expensive. Customer behavior in California presents a disparity from Illinois CCAs, where a history of customer loyalty is less pronounced. When CCAs were first introduced in Illinois, utility prices were considerably high. However, as these prices normalized and became more affordable than CCA rates, their customers swiftly transitioned back to traditional utility providers.

However, Chaset highlighted that the reality is that many people, up to a certain rate increase, do not pay close attention to their utility bill or who is procuring their power, in large part due to the opt-out nature of CCA programs. He presumed that in other states, like Texas, where consumers are more informed and responsive to price differentials, switching rates may be higher, suggesting that there is a threshold beyond which customer stickiness cannot overcome the price difference, prompting consumers to seek out better rates from either their default utility or another electricity provider.

Despite potential short-term fluctuations, the stickiness of consumers and long-term cost savings contribute to the resilience of CCAs in delivering affordable and reliable power to their communities.

Regulatory Barriers

Chaset noted that it is not surprising that CCAs have encountered regulatory barriers that have limited their operations. Like all other states that have established CCA, CCA operations are relatively new to the state compared to utilities which have served many areas for over a century. This has resulted in entrenched regulatory practices, and regulators, accustomed to the operations of traditional utilities, coupled with the effects of lobbying efforts, tend to default to favoring the large incumbent utilities over CCAs. Additionally, state regulators aren't familiar with overseeing self-supporting, and relatively self-governing entities like CCAs. Thus, California CCAs have faced more restrictive regulations and changing regulatory regimes. For example, Chaset commented on the California Public Utilities Commission's (CPUC) decision to restrict CCAs from expanding to new communities.[34] Chaset noted that his Joint Powers Agency, Ava Energy, wanted to expand its services to the city of Stockton, but during the expansion process, the CPUC changed the rules and Ava had to push the project off for another year.

Future of CCAs in CA and Advantages over Utilities

Chaset anticipates that the prices offered by CCAs will remain competitive in the future, although he acknowledges the possibility of price fluctuations. As public agencies, CCAs inherently possess certain cost advantages, such as lower overhead costs attributed to the absence of highly paid executives, in comparison to traditional utilities. Additionally, being tax-exempt entities, CCAs can capitalize on their tax-exempt status, thereby enhancing the competitiveness of their costs when compared to Investor-Owned Utilities (IOUs).

Moreover, CCAs have the capacity to make localized investments, such as offering their own local energy programs aimed at facilitating the installation of clean energy technologies for customers. Additionally, they can invest directly in the community through grants and sponsorships. These public interest initiatives not only contribute to community development but also streamline pathways for customers to upgrade appliances, transition to electric transportation, enhance home resilience during power outages, and more.

5.2.2 Case Study: CleanPowerSF

Insights from Barbara Hale, Assistant General Manager of Power at San Francisco Public Utilities Commission (CleanPowerSF)

Reasons Behind Establishing CleanPowerSF

In an interview with Barbara Hale, the Assistant General Manager of Power at San Francisco Public Utilities Commission (CleanPowerSF), she revealed that economic reasons were not the main driver for San Francisco communities. Clean energy was the primary motivator for CCA participation, with economic factors of secondary importance. Residents sought the ability to influence regulatory decisions directly, and establishing CCA was a way for residents to prioritize local governance. Given that the CPUC governs all utilities in the state, opting for a CCA program provided a means to navigate bureaucratic channels more effectively.

These preferences were made against the backdrop of wildfires and safety incidents involving Pacific Gas and Electric Company (PG&E), one the largest utility companies in the United States, which has faced legal consequences for its negligence. Notably, PG&E's involvement in catastrophic events, including a gas main explosion resulting in fatalities and previous safety lapses, led to diminished trust

and creditworthiness. Hale noted that, in San Francisco, other specific incidents further underscored the community's desire for change. The CCA program allowed residents to align their preferences with their spending, expressing a collective desire to support local communities rather than contribute to large corporations. This sentiment was reflected in the program's staggering 96 percent participation rate and minimal opt-out rates, demonstrating widespread community support for CleanPowerSF's initiatives.

Current CCA Customer Base Overview

Similar to Chaset's observations, Hale noted that many people lack comprehensive awareness of their enrollment in the Community Choice Aggregation program. A significant portion of customers do not actively review their electricity bills. When engaging with individuals, Hale often finds that while people have a vague awareness of their participation, they are not always fully certain if they are enrolled in the program. She notes that it is important for customers to recognize that their CCA is their default power provider so they can better understand their electricity bill and have the opportunity to make more informed decisions.

In California, where CCA programs have become the dominant energy provider model, Hale mentioned that constant turnover in cities like San Francisco, necessitates ongoing education efforts to inform new residents about the program. Another challenge she has encountered is that many individuals pay their electric bills as part of their rent, with landlords serving as the account holders rather than the residents themselves. This leads to a lack of a one-to-one match between account holders and residential addresses within the program.

Net-Metering

Unlike New Hampshire, California's net metering customers receive benefits from CCAs. PG&E, the region's default utility, has modified its net metering program. Under the old program, net metering customers were able to avoid distribution costs along with supply costs when they were net generators, receiving the full retail rate for their exported energy. However, under the new program, customers are only paid for the supply portion, not the distribution. This change was made to address the inequity inherent in the previous approach, where solar customers were essentially avoiding distribution and supply costs that other customers without solar, had to pick up, many of whom were lower income. CCAs in California have mirrored the old program and continue to provide net metering customers with the full value of their generation. While they will eventually have to modify their programs to address equity issues, they have not done so yet. However, Hale said that the equity issue is not as significant in San Francisco due to the existence of a low-income, zero-down solar program. As a result, net metering customers in San Francisco currently receive a better deal through their CCA than they would through the utility after the net-metering changes made by PG&E.

Appeal of CCA to Commercial Properties in California

Hale highlighted differences between commercial and residential properties regarding their energy concerns. Commercial properties are particularly focused on energy stability, needing to plan for the year and anticipate energy prices. CleanPowerSF has committed to modifying rates at most once per year, ideally once every two years, and the prospect of having rates change only once per year is a significant selling point for CCAs in California. Additionally, many commercial properties are eager to showcase their use of greener energy supplies, often collaborating with CCAs on promotional materials to emphasize their commitment to green energy.

Challenges with Utilities and Regulatory Barriers
Prior to the emergence of Community Choice Aggregation, Investor-Owned Utilities (IOUs) were the dominant model in California, however, with the rise of CCAs, IOUs now only represent 25 percent of service providers. Most of California's population is concentrated in areas where CCAs are operating. Despite these factors, CCAs have not necessarily received more empowerment or regulatory space. Political and regulatory entities are still grappling with their presence and authority.

Initially, power sellers were hesitant to engage with CCAs. However, as CCAs gained credit ratings and demonstrated their capabilities, they garnered more market power and trust from producers. Nonetheless, regulators remain skeptical. While they attempt to impose regulations on CCAs, CCA entities operate with a degree of autonomy, governed locally rather than by state mandates. This dynamic has led to tensions between IOUs, regulators, and CCAs, with the latter asserting their ability to self-govern and meet the needs of their communities independently.

California Case Studies Overview: Rate Setting Overview and Establishing Robust Financial Reserves
Financial reserves play a crucial role in the stability and competitiveness of CCA programs. Each CCA is different but Hale highlighted that for CleanPowerSF, establishing a robust financial reserve was a priority so they could offer stable and competitively priced electricity to their customers. The CCA was established in 2016, and by 2022, they were able to offer programs. Hale said that their current objective is to have 150-180 days of cash on hand. She explained that this policy has been difficult to sustain when prices of wholesale electricity have increased.

Expanding on the information Hale provided, Chaset noted that building up reserves during the startup phase is crucial to mitigate the risk of potential financial shortfalls. Hale detailed that when CleanPowerSF sets its rates, they look at all their costs, and contribute to the reserve embedded in those costs. When faced with unexpected cost increases, such as higher-than-anticipated generation rates, this allows them to tap into their reserves to cover expenses. To offset these costs, they have implemented modest rate increases for their customers, striving to keep increases below double digits. Currently, with these rate increases they still offer a marginally competitive rate when compared to the average standard utility customer, but only by about eight dollars per month. Once their reserve policy is fulfilled, CleanPowerSF anticipates having the flexibility to allocate revenue towards various initiatives such as programs, rate reductions, and subsidies for low-income customers. This financial stability will allow them to maintain low and stable rates year over year and increased cost savings for their customers. Hale emphasized this point, particularly in light of their prediction that standard utility rates, especially those of PG&E, would continue to rise, meaning the savings margin would increase overtime. She noted that since 2014, PG&E's rate increases have outpaced inflation two-fold, while CleanPowerSF is planning on increasing rates at the same rate as inflation.

5.2.3 Special Programs and Incentives Offered by California CCA Communities

California has a highly developed system of Community Choice Aggregation programs which cover a significant portion of the state and serve the state's biggest metro areas. Because the programs are older and more developed than New Hampshire's CCAs, they have had the opportunity to develop special programs that offer monetary incentives for certain behaviors that have to do with saving energy and energy usage. Interviews with Nick Chaset and Barbara Hale, offer insights into the planning and implementation costs of these local incentive programs.

AVA Energy, serving Alameda County, pioneers its own set of local energy programs. These initiatives extend beyond the traditional energy supply model, embracing a holistic approach to community well-being. Residents are empowered and incentivized to install clean energy technologies, upgrade appliances, transition to electric transportation, and fortify homes against power outages. These types of incentives both reduce the energy demand because of the increased efficiency of newer appliances and technologies, and reduce the upfront costs for consumers to pursue changes to their homes that can save them money in the long run.

In our interview with Barbara Hale, she discussed CleanPowerSF's goal to tailor their public interest programs to issues that were not being addressed by the region's standard utility (PG&E) programs and implement programs that were unique to their customer base. She mentioned some of their program offerings including multi-family building electrification, a heat pump program, and San Francisco's "Electrify My Ride" program. An incentive scheme targeting income-eligible customers, the Electrify My Ride program offers a $1000 dollar subsidy for the purchase of an electric bike. This program reflects the unique needs of the city of San Francisco as one of their primary goals as a city is to reduce congestion and incentivize more people to take non-car forms of transportation. While most cities approach this problem through incentivizing public transportation, having a robust and popular CCA in the city gives them another tool through which they can provide economic nudges to incentivize other means of transportation.

Special programs serve as a strategic asset for CCAs, furnishing them with a mechanism to offer benefits competitive with incumbent utilities and incentivize customer migration towards CCA-provided energy solutions. The inherent flexibility of CCAs allows for the customization of programs to align with local priorities and address specific community needs. This stands in stark contrast to utilities, which, due to their broader service areas, often provide standardized programs that may not adequately reflect the nuanced requirements of individual communities. The ability of CCAs to offer targeted and community-centric initiatives enhances their competitive edge, presenting a distinct value proposition grounded in a localized, responsive approach. In cultivating a portfolio that resonates with customers on both practical and community-oriented levels, CCAs position themselves to meet the evolving demands of local consumers.

In the context of New Hampshire, towns have a unique opportunity to design and implement local programs through CCAs that cater specifically to the needs and priorities of their communities. Given New Hampshire's diverse landscape, the focus on locally-driven initiatives can play a pivotal role in fostering sustainability, resilience, and economic development. Local programs could encompass energy efficiency projects tailored to the distinct characteristics of each town, ranging from weatherization initiatives for older structures to the implementation of renewable energy systems. Additionally, incentives for electric vehicle adoption, community solar projects, and programs encouraging the use of energy-efficient appliances could be customized to align with the preferences and objectives of individual towns. Emphasizing local control and decision-making, New Hampshire towns could further explore initiatives that enhance energy security, such as microgrid development, with various local benefits including the potential to mitigate possible electricity disruptions.

5.3 Massachusetts

The History of CCA in Massachusetts

Following years of high electricity prices, disputes over the use of nuclear energy throughout the state and an overdependent use of outdated and harmful fossil fuels, Massachusetts passed the Electric

Industry Restructuring Act in 1997. This piece of legislation allowed for customers to be in control of where their electricity came from and further eliminated an electricity monopoly, paving the way for the establishment of Community Power programs. After numerous years of delays regarding the successful implementation of Community Power throughout the state, traction began to increase in 2018 with multiple municipalities adopting these programs.

The Cape Light Compact was the first CCA in Massachusetts, and the United States, incorporating 28 communities along the state's cape. The compact operates as a joint power entity, enabling its consumers to purchase energy efficient additions to their home. Their success is mainly derived from targeted programs that incentivized the addition of energy efficient measures on homes, while taking control of local energy efficient funds. The Cape Light Compact served as an integral first-step for the CCA model in Massachusetts, with many communities following thereafter, Boston being one of them. The lessons learned from the Cape Light Compact greatly influenced and guided the subsequent CCA programs in Massachusetts, and throughout the nation.

5.3.1 Case Study: Boston Community Choice Electricity

Insights from David Musselman, Director of the Municipal Energy Unit in Boston

Boston Community Choice Electricity (BCCE)
Starting in early 2021, the Boston Community Choice Electricity (BCCE) program began operating as an opt-out CCA system that addressed years of varying concerns ranging from the staggering prices of electricity in an already expensive city to concerns regarding the harmful sourcing of fossil fuels to power the city. David Musselman, the director of the Municipal Energy Unit in Boston, oversees this program and has spearheaded efforts to ensure the success of a CCA system in a large municipality. By operating as an apparatus of the municipal government and serving over 220,000 residents, they have been able to supply electricity at competitive rates, often undercutting the rates and services of private companies. Since its establishment, the BCCE has also been able to provide continuous months of relative price stability in a highly volatile market, which has seen dramatic price increases due to extenuating factors related to oil supply such as the Russian-Ukrainian conflict.

The BCCE offers three different levels of service that accommodates consumers' economic and environmental preferences. Consumers are automatically enrolled in the default and standard product, which is a cheaper option than private service, that also has environmental benefits, with 39 percent of that product being sourced renewably. There is also a lower-cost tier known as the 'Optional Basic' plan which is $0.001/kWh less than the default plan, as well as the greenest tier known as the 'Optional Green 100' that is entirely sourced from renewable energy. Musselman, in his interview, explained that about 94 percent of consumers choose the default plan with about 4 percent and 2 percent of consumers choosing the Optional Basic and Optional Green 100 plans, respectively. Over the past three years of the program, consumers in Boston have saved over $250 million in electricity costs, with over half made up of commercial consumers.

Consumer factors influencing objectives of the BCCE
As mentioned above, there were a number of factors that contributed to the establishment of the BCCE. In our interview with David Musselman, he explained that the chief concern among Boston electricity consumers were the predatory practices by third-party energy suppliers which led to inflated prices. Third-party providers would send representatives door to door in communities that have low

levels of English-speaking customers and high elderly populations to coerce customers into opting out of the BCCE or in some cases, remaining with third-party energy suppliers. In addition to the excessive electricity costs, prices were not stable and frequently varied depending on the season and outside factors related to oil supply.

Since being instituted in early 2021, the BCCE program has consistently met these challenges that were being shared amongst the large municipal population in Boston. For the past three years, CCA electricity prices have remained below the rates of investor-owned utilities like Eversource. In addition to lower prices, the BCCE has been successful in shielding customers from harmful jumps in electricity rates. The entire eastern region of the United States saw an extreme energy price increase at the onset of Russia's invasion of Ukraine. Consumers enrolled in the BCCE were fortunately locked into favorable rates that continue to remain stable until December 2025, due to a special fixed price contract that was uniquely negotiated due to Boston's large energy load.

Musselman noted how their program allows for consumers to join and leave the BCCE at any time, which further allows for greater flexibility in a traditionally restrained industry. Since the BCCE is incorporated into the larger Boston municipal apparatus, the program is able to offer no penalty options for those looking to leave the BCCE. The Boston Department of Utilities (DPU) regulates the structure of the BCCE, and therefore controls the mechanisms that make this program accessible and flexible to all.

Through the incorporation of a CCA into an existing large municipality, this program was able to effectively address the challenges, chiefly economic, that were experienced by the large population of Boston. The BCCE addresses a myriad of issues related to energy cost that continually alleviates the economic burden that was once felt throughout the state by both residential and commercial consumers of energy.

Political motivations surrounding the BCCE

While economic concerns were the main challenge that the BCCE sought to resolve, a top priority of the Wu Administration was to seek out more renewable and cleaner sources of energy. Boston is a Green New Deal city, so the BCCE was also seen as a way to address the climate concerns outlined by Mayor Wu. While the majority of consumers are enrolled at the default level, the city is able to ensure that 39 percent of that particular product is sourced renewably, and therefore addresses both economic and environmental concerns.

A downside to the BCCE being a part of the DPU is the strict government control that is exercised over the program. For example, the BCCE does not have the authority to make decisions on the incentivization of energy efficiency in homes, unlike the Cape Light Compact. While the Cape Light Compact has 15 people working full time on their staff, the BCCE does not have a full-time staff and is managed by people within the Wu administration with additional responsibilities.

Methods for success

Boston's energy load is unique in that it provides power to around 300,000 metered customers, including commercial consumers which consume energy at an exponentially higher rate than residents. This has proven to provide both benefits and downsides when adopting a CCA model. First, the BCCE was introduced following the establishment of CCAs in other communities in Massachusetts,

which allowed Boston to follow previous communities' best practices. They noticed that using a consultant that was solely focused on the acquisition of energy for communities on a CCA model would allow consumers to reap the benefits of this system. The consultant acts as a broker for the BCCE program, and solely monitors energy price trends to provide the most favorable rate for customers.

Additionally, a huge educational initiative was undertaken to provide information about community power and the potential benefits that consumers could see on their energy bills. While these programs and initiatives sought to increase knowledge on this form of energy, it also was intended to undue predatory practices that third-party energy companies employed to misinform and coerce residential consumers to stay enrolled with their services, according to individuals familiar with these practices. These predatory techniques were targeted in neighborhoods with low levels of English proficiency and communities with high levels of elderly people. To this day, the BCCE continues its educational practices that provide consumers with the relevant information they need to make informed decisions regarding their energy providers.

David Musselman noted that Boston uniquely experiences a high turnover rate of residents due to the presence of many major universities and other establishments situated in the city center. To address this issue, the BCCE sends out quarterly mailings to educate new residents on their CCA system and the benefits they may receive. This initiative has proven challenges for the BCCE, as the information for new residents is sometimes not shared with them. As a subset of the DPU, the BCCE is continually collaborating with the Department on a way to efficiently gather the relevant information they need to further educate and inform new residents to the city.

Future of CCAs in Massachusetts

While the BCCE has provided great benefits to many commercial and residential energy consumers in Boston, they are continually looking for new ways to save customers money and provide a greener product. One of the newer projects, known as MassSave, provides consumers with subsidies to improve their energy systems attached to their homes that increase efficiency and promote environmentally-friendly options. However, there are challenges that were mentioned above, dealing with the authority of the DPU over the BCCE.

In addition to the MassSave project, the BCCE is looking at ways to incorporate time-of-day rates into their offerings to further alleviate the economic burden of energy rates on their consumers. However, this initiative requires smart meters to be installed, which leads to complications due to the sheer volume of customers that are being served.

5.4 Connecticut

The History of CCA in Connecticut

CCAs in Connecticut have a brief history, yet there are valuable lessons related to education of the public about CCAs and Advocacy that are relevant to our analysis of community power around the country.

In 2018, Peter Millman was interested in the environmental implications of CCAs and joined forces with Mike Uhl and Dan Knudsen to create the People's Action for Clean Energy (PACE). Through their mutual interest for community power, they worked with municipalities around the state to educate them on the potential benefits that these programs would have for their citizens. CCAs were not widely understood or known about at the time in Connecticut, but through support from peers and organizations throughout the state, they sought to get legislation passed that would allow for the establishment of CCAs. Although they demonstrated support and interest from organizations, consumers and municipalities, they were unsuccessful in getting state approval for CCAs. To this day, legislation has not passed in Connecticut allowing for the establishment of CCAs after the numerous cases that proved economic and environmental benefit.

Challenges encountered in Connecticut

While there was a plethora of challenges that the PACE team encountered in their goal of approval for CCAs, three main areas proved to be unsurmountable to their efforts: a lack of education and understanding of CCAs, the political landscape and turnover rates and timing.

While the PACE team significantly turned the tides on CCAs in Connecticut and did their best to educate the public and legislators on the positive implications of CCAs, there was an overwhelming number of people throughout the state that had a lack of information and interest, leading to stalled bills and unapproved measures to get these systems implemented. This lack of education led to an unwillingness by larger organizations to help in PACE's lobbying efforts and broader education schemes to inform the lawmakers about the potential benefits of CCAs. There was an additional unwillingness due to the environmental concerns that were put in the spotlight. While many of the economic and environmental benefits go hand-in-hand, the potential economic benefits might have been unclear to relevant parties when there was such a heavy focus on the environmental benefits of CCAs.

The PACE team, in their interview with us, explained the political barriers they faced when dealing with various legislative bodies in the state and municipalities. First, CCAs and the overhaul of current energy systems in the state was not on the agenda of any legislators, thus, there was no incentive and not enough traction that could move a bill through committee and then to the legislature. Second, there were instances when members of city councils or municipality boards would change, thus posing a difficult challenge in their education of both new and existing members of those boards.

Timing was another factor that ultimately ended the reality of CCAs in Connecticut. Starting in 2018, it took years to bring these educational initiatives and CCA-related programs to the attention of stakeholders. The implementation of CCAs in Connecticut never rose to the level of importance that other issues did, including the COVID-19 pandemic. PACE's efforts were disrupted by the urgency and importance of COVID-related measures, thus ending any traction that was left for the implementation of CCAs in the state.

5.5 New Hampshire

A Brief History of CCA in New Hampshire

New Hampshire underwent electricity restructuring in 1996 and introduced retail choice in 1996, initially with an opt-in option (RSA 374-F), which had limited effects on the state's electricity market.

In 2019, the state addressed this by introducing an amendment to the law, RSA-53E, which permitted an opt-out choice, aiming to have a more substantial impact on the electricity market. The state initiated its first CCA programs in the Spring of 2023 with 14 participating communities, and has since expanded to 64 CCA communities, a testament to the growing appeal of Community Choice in the state.[35] Several factors have propelled the rapid adoption of CCAs over the past year. Firstly, the nature of CCAs, which prioritizes decision-making at the state and town level, aligns with the governance structure of New Hampshire. Furthermore, this synergy is enhanced by CPCNH's combined expertise. Secondly, municipal officials and staff, who are dedicated and knowledgeable in their sectors, initially facilitated the growth of CCAs. The vision for CCAs in New Hampshire evolved from thorough research, particularly regarding existing CCA models, education, and outreach initiatives statewide. This led to the strategic formation of CPCNH as a Joint Powers Agency (JPA) aimed at supporting its prospective member communities. Thirdly, following the commencement of operations by CPCNH, other towns witnessed the success achieved by the initial member towns under the Joint Powers Agency. With the ability to showcase tangible evidence, namely consistently lower rates, it is easier for CPCNH and other CCAs to demonstrate their achievements and showcase operations that prospective New Hampshire towns can trust.

Insights from Dr. Sarah Kelly and Assistant Mayor Clifton Below

The subsequent excerpts from interviews with Dr. Sarah Kelly, a post-doctoral researcher in the Dartmouth Department of Anthropology and Co-Director of the Energy Justice Clinic at Dartmouth College, along with Clifton Below, Assistant Mayor and City Councilor of Lebanon and Board Chair of CPCNH, offer valuable insights into Community Choice Aggregation in New Hampshire and CPCNH operations.

Establishing CCA in NH

In New Hampshire, much of the mobilization effort in establishing CCA stemmed from local energy committees, which have gained considerable traction since 2007. Following a grassroots call for their establishment, 93 committees were formed within a year, marking a significant milestone in the state's energy landscape.[36] Their motivation for forming CPCNH in New Hampshire largely emerged from the desire to have greater involvement and influence in shaping their energy future and recognizing CCA's potential in lowering household energy burden. Climate action has been a significant driving force, inspiring local advocates to view CCAs as a pathway toward achieving a more sustainable energy mix with the long-term vision of promoting local renewables. However, one of CCA's key attributes attracting communities is its ability to offer its customers lower electricity rates.

The local outreach initiatives carried out by CPCNH members have played a pivotal role in garnering support and momentum for the organization. Dr. Sarah Kelly emphasized Clean Energy NH's role in educating town residents and CPCNH members on effectively communicating the concept of CCA. Through workshops offered across the state, this collaboration has significantly enhanced local capacity-building efforts. Additionally, CPCNH has targeted outreach to communities with fewer resources. Towns without energy committees and local expertise are not equipped with the same local capacity to establish CCA, and this acted as a barrier especially in the early stages of CPCNH. With CPCNH now established and gaining momentum, the threshold for participation in initiating CCA initiatives has significantly decreased.

CPCNH, Broker Model and CCA Structure Overview

CCAs function as self-regulated subdivisions within the state. CPCNH's regulating body members are appointed by local governing boards accountable to and subject to recall by state municipalities. CPCNH's decisions are internally determined, yet they must operate within the confines of legal parameters. Most CCAs function on an opt-out basis, meaning that customers residing in towns that have enacted CCA and who receive power from the area's default electricity provider, will be automatically enrolled if they do not opt-out in 30 days. However, customers who receive power from a third-party competitive supplier will not be automatically enrolled. Enrolled CCA customers may opt-out at any time, as soon as the next billing period.

There have been low opt-out rates in New Hampshire and other states with active CCAs, due to the fact that CCAs are committed to only launching when they can immediately offer lower electricity rates (even though the particular rate is not guaranteed in the long-run). Thus, joining a CCA typically means that electricity customers will automatically pay lower rates. CPCNH actively manages a portfolio of supply resources, so they can adapt easily for market transactions. In their model, they handle internal transactions and reconcile differences between actual load and production in real-time, leveraging the market structure facilitated by ISO New England. Four New Hampshire communities, Keene, Marlborough, Swanzey and Wilton, have opted to establish CCA through a private broker model, mainly before CPCNH had gained traction and streamlined the process of launching a CCA. Procuring power on behalf of the CCA through a private broker offers a seemingly simpler Electric Aggregation Plan, and towns do not have to enter a Cost Sharing Agreement and other contracts required through CPCNH. Assistant Mayor Below commented that the broker model looked 'easier', before CPCNH was operational. Now, onboarding communities have minimal commitments other than placing trust in the Board of Directors.

There have been some concerns about CCA price competitiveness in New Hampshire after utilities lowered their rates and the four communities using the private broker model were locked into rates higher than those offered by their default utility. CPCNH rates remained lower than all default utility rates but only 2 percent lower than Eversource rates. The broker model employs a middleman, essentially a consultant, who puts the load out to bid through ISO-New England's wholesale power market and for-profit electricity suppliers respond. It is important to note that the broker model should not be confused with a third-party energy supplier, as energy brokers solely act as intermediaries. They are not permitted to sell energy directly to consumers, nor do they own the energy or distribute it.[37] The broker seeks out the most favorable contract offer, but in the recent New Hampshire case, broker-model customers were tied to a fixed rate higher than those offered by Eversource. Furthermore, the private broker earns a profit upon deal closure. CPCNH's Joint Powers Agency model bypasses the for-profit middlemen employed in broker models, giving CPCNH greater operational control and allowing profits usually directed to brokers and suppliers to be allocated to building financial reserves. Despite this, Clifton Below, Board Chair of CPCNH, anticipates CCA rates to remain competitive with the standard utility rate (on CPCNH's Granite Basic Plan).

Struggles with Utilities

Both Clifton Below and Dr. Sarah Kelly noted that CCAs have struggled to overcome institutional barriers regarding monopoly utilities that are typically resistant to change, particularly regarding local markets for municipal energy resources. CCA staff in New Hampshire and other states such as Massachusetts and California have faced similar issues with Utilities which are notorious for being slow to provide data that would otherwise be useful to CCA operations, and refuse to share data

altogether because it is not in the utility's best interest, nor is it how they are accustomed to operating. Investor-Owned Utilities (IOUs) wield significant power and operate with a large customer base, but they often lack agility. Often, these entities claim that many changes are too arduous and costly, thus limiting timely advancements and innovations in CCA services.

However, utilities are nominally ambivalent towards CCAs because they do not profit from electricity prices, but rather, only on their distribution services which most utilities remain in charge of under CCAs. In most cases, the utility is still in charge of metering each customer's usage, distributing power and sending customers their utility bill which incorporates distribution and transmission fees, as well as public interest programs and value-added services. Utilities control the consumer and resident data that CCAs need and are mostly concerned about controlling the use and cost of the distribution services and CCA value added services. For instance, Clifton Below expressed that utilities would like to be the only entity that can manage Electric Vehicle charging, but CCAs would like to offer that service as well. Additionally, the cost of energy fluctuates constantly throughout the day in response to electric load (demand), but utilities have resisted giving people and CCAs access to these price signals.

Future of CPCNH, CCA Design, and CCA Programs in New Hampshire

CPCNH is somewhat following California's highly successful CCA model, often referred to as the 3.0 model. California's advanced approach, characterized by substantial progress in battery storage and energy development projects, is credited to the accumulation of robust financial reserves. A key objective for CPCNH is to attain investment-grade status by similarly accruing financial reserves, which also ensures that not all savings are directed solely to ratepayers. Below notes that, with several million in reserves already, CPCNH is quickly establishing financial stability and attaining an investment-grade credit rating will further lower borrowing costs and enable the organization to become self-supported.

The future of Community Choice Aggregation design in New Hampshire presents an opportunity for CPCNH to intervene in the domain where utilities traditionally hold a monopoly on value-added efficiency programs. An important aspect of the organization is that they provide advocacy at the state level in a way that hasn't been done before. CPCNH can advocate for things like demand response, battery storage and electric vehicle charging. Although CPCNH has yet to prioritize the incorporation of energy efficiency programs, local power projects, or energy storage into its offerings, it is anticipated that the organization will pursue public interest programs in the future. Since becoming operational in April 2023 and establishing its initial staff members in May 2023, CPCNH remains in the early stages of staffing and is in the process of hiring for a position to manage local energy projects.

Below focused on a particular program of interest, Property Assessed Clean Energy financing for Commercial building (C-PACE), which facilitates the financing of energy efficiency investments through energy bonds, potentially enabling local, on-site, renewable energy generation. This financing mechanism places a tax lien on the property rather than the property owner, ensuring that investments remain tied to the property even if ownership changes. C-PACE offers property owners the advantage of undertaking energy upgrades and energy retrofits without upfront costs, with the option to repay the loan through savings on energy bills. This arrangement proves advantageous for temporary residents or short-term property owners, as it enables them to implement energy upgrades while ensuring that the associated loan remains tied to the property. Notably, this arrangement also benefits property buyers, as the loan obligations transfer with the property, enhancing its value over time.

Below also addressed the potential for CCA to integrate electricity storage and demand response into local energy projects. Demand response programs provide customers with time-of-use pricing, allowing prices to fluctuate throughout the day based on electric load, as opposed to the current system where all transmission charges are allocated based on a total of 12 hours per year. However, utilities do not currently provide the data and billing services necessary for CCAs to offer these rates to their customers. Below expressed frustration with Eversource's resistance to establishing a competitive market with appropriate price signals.

Net-Metering Challenges

Net metering is an electricity billing mechanism where households or small entities generate their own energy from a renewable source (usually solar). The surplus power generated is exported to the grid, and in return, the household is credited for that energy in the form of reduced electricity bill costs. A significant obstacle for CCAs in New Hampshire arises from their inability to provide benefits to these net-metering customers. The issue stems from rules that utilities have pushed for. Distribution utilities do not share information on the net power exported to the grid by net metering customers (though they are legally required to share this information) and do not account for these exports as "load reduction." Consequently, net-metering CCA members are unable to receive credit for the electricity they generate through a reduction in their utility bill costs. Therefore, CCAs cannot accommodate net metering because they cannot reduce the amount of power that the procure overall, despite local power being produced by net-metering households, therefore, CPCNH advises such customers to remain on their region's default energy service.[38] Additionally, utilities prohibit households from using battery storage systems if they are exporting energy into the grid. This restriction prevents them from utilizing stored energy during times when electricity prices are higher, such as using solar power generated during the day at night.

Moreover, during an interview with Carol Schutte, a New Hampshire resident who catalyzed the Community Choice Aggregation efforts in her town, she disclosed that she is a net-metering electricity customer and has opted not to enroll in her local CCA. She noted that net metering individuals who cannot reap the benefits of CCAs are passionate about the issue. Currently, the town has about 1000 electricity accounts, with 40 homes utilizing net metering, meaning 4 percent of homes cannot receive CCA benefits.

5.4.1 Case Study: Hampton Falls, New Hampshire

Importance of having a local champion

Carol Schutte, the woman who spurred the Community Power Aggregation of Hampton Falls, revealed that at the heart of any successful initiative is a local champion. Schutte became this champion for the town's Community Choice Aggregation process, bringing her experience with the Department of Energy to a place that otherwise lacked the expertise to successfully create a CCA system. Given the complexity of CCA systems and the actors and regulations involved, the local champion—like Schutte—takes on the responsibility of spearheading the educational phase and making sure a community understands the benefits and process involved.

Beyond education, a local champion's commitment becomes instrumental in overcoming obstacles and mobilizing community support. In Hampton Falls, where time constraints limited potential collaborators, Schutte's decision to lead the initiative showcased the role a local champion must play:

they serve as the point of contact, navigating administrative procedures and ensuring a smooth transition from conceptualization to implementation. Even if a community wanted to start a CCA, without a person willing to invest significant time and effort, it would not be possible. This is especially true in small towns where local governments lack the budget to hire someone meant to initiate the CCA on the government's behalf.

Importance of having surrounding towns that have already gone through the process

Establishing a CCA system is smoother when a town can leverage the experiences of neighboring communities that have already navigated the process. This is particularly crucial for smaller locales which may not have the resources to put towards special projects, as connections with other towns gives them access to a wider network of shared knowledge, resources, and support. Hampton Falls, for instance, received invaluable assistance from its neighbor, Exeter, in starting their CCA system; Exeter's enthusiasm and greater resources made the CCA initiation process more feasible for Hampton Falls.

Embracing the Joint Power Agency (Coalition) Model

Hampton Falls' decision to join the Community Power Coalition of New Hampshire (CPCNH) exemplifies the strategic advantages of the Joint Powers Agency (JPA), offering a range of upsides for the town's CCA efforts when compared to alternative models, such as hiring an individual energy broker or consultant to purchase energy on behalf of the town. These benefits are as follows:

1. *Shared Expertise and Resources:*

The JPA model, such as the one employed by the CPCNH, serves as a collaborative platform where member towns pool their expertise and resources. For Hampton Falls, this meant tapping into a collective knowledge base that included insights from towns with prior experience in CCAs. The sharing of best practices, templates, and procedural know-how streamlined Hampton Falls entry into the community power landscape.

2. *Template Development and Streamlined Processes:*

Highlighted by Carol Schutte was the CPCNH's role in developing a template for CCA plans. This template, specifically designed for CCA in New Hampshire, provided Hampton Falls with a structured framework upon which they could build their program. The town could efficiently fill in the necessary details, accelerating the planning phase and reducing administrative burden, which is particularly useful when you consider the one-person operation that defined much of the locale's process. The ability to leverage pre-established templates demonstrates the efficiency gained through collaborative efforts within the Coalition.

3. *Transparency and Joint Decision-Making:*

When done right, using a JPA model can foster transparency and inclusivity. Through CPCNH, for example, Hampton Falls had the opportunity to observe committee meetings and actively participate in decision-making processes. This level of transparency ensures that each member town has a voice in the direction and decisions of the Coalition, promoting a sense of collective ownership and shared responsibility. Additionally, allowing prospective members to sit in on meetings gives an idea of the kind of organization they will be joining and what they can expect from membership.

4. Collective Advocacy in Legislative and Regulatory Matters:

CPCNH, as a unified entity, represents the shared interests of its member towns in legislative and regulatory forums. This collective advocacy enhances Hampton Falls' ability to navigate the landscape of energy policies and regulations. By aligning with other towns, Hampton Falls contributes to a stronger voice in the legislative and regulatory environment, favoring the long-term sustainability of locally run CCA systems. This is particularly important given the hurdles CCAs still have to jump in New Hampshire, such as the issue of net metering and including those who net meter in CCAs.

Hampton Falls' engagement with the JPA reflects a strategic choice to maximize the upsides offered by collective efforts. From shared expertise to streamlined processes and collective advocacy, the CPCNH played a crucial role in advancing Hampton Falls' CCA goals and made the JPA model much more attractive than hiring an individual energy consultant.

Understanding the town environment:

In the pursuit of establishing a successful CCA program, Hampton Falls recognized the importance of understanding its unique environment and aligning initiatives with the priorities of its residents.

1. Tailoring Solutions to Local Priorities:

The significance of crafting community power solutions that resonate with local priorities cannot be understated. As highlighted by Carol Schutte, understanding the needs and preferences of residents played a pivotal role in Hampton Falls' CCA process, particularly because she had recently moved from Washington, D.C. and did not want to seem like she was working on behalf of the federal government to change the way the town procures its energy. Therefore, Hampton Falls engaged in outreach efforts to gauge community interest, ensuring that the proposed CCA aligned with the values and concerns of its residents. This approach contributed to a more receptive community and fostered a sense of ownership of the process.

2. Political-Economic Considerations and Fiscal Responsibility:

In a politically conservative town like Hampton Falls, economic factors took center-stage in the decision-making process, rather than environmental issues, which tend to be important in more liberal locales. Acknowledging the fiscally conservative stance of the community, the energy committee strategically framed the CCA initiative as a means to reduce electricity costs for residents. This emphasis on economic benefits helped garner support within the town, despite CCAs often being perceived as liberal policies.

3. Balancing Economic and Environmental Goals:

While economic considerations took precedence, Hampton Falls also recognized the importance of environmental goals. Carol Schutte's background in greenhouse gas reduction informed the understanding that, over time, residents could be encouraged to opt for a cleaner energy mix. This approach acknowledges the diverse priorities within the community and allows for a gradual shift toward a more sustainable energy future.

4. Community Outreach and Communication:

Effective communication and community outreach emerged as crucial components of understanding the town environment. Hampton Falls utilized mechanisms like blast emails to keep residents informed and engaged. The energy committee's outreach efforts, including soliciting participation

through emails, contributed to building awareness and dispelling potential concerns, ensuring a more informed and supportive community.

5. Lessons in Timing and Community Dynamics:
A valuable insight shared by Schutte was the importance of timing and community dynamics; waiting too long or moving too quickly could impact the reception of the initiative. Hampton Falls recognized the need to strike a balance, ensuring that the community had ample time to absorb information and make informed decisions, allowing the town's energy committee to gather feedback. By doing this, the community is less likely to perceive the CCA as being imposed on the town, instead viewing it as a community implementation decision.

5.4.2 Insights for New Hampshire

1. Importance of Financial Reserves and Stability
If the objective is to prioritize long-term financial stability and mitigate risks associated with market fluctuations, it may be wise to consider establishing financial reserves. Drawing insights from California's experience, New Hampshire CCAs could prioritize building reserves to mitigate the economic risks from changes in the electricity market and ensure continued price competitive service and reliability.

CCAs cannot guarantee lower rates due to the inherent uncertainty of electricity markets. However, if economic factors and CCA cost-competitiveness are some of the most important considerations in New Hampshire, this strategy could ensure continued service reliability and resilience, particularly during the startup phase, when CCAs are more likely to face financial challenges. Moreover, having access to reserves can enable CCAs to subsidize rates during energy price upticks, thereby enhancing financial flexibility. Therefore, could be particularly beneficial to have access to liquidity and be capitalized initially to weather any uncertainties.

New Hampshire CCAs aiming to prioritize long-term savings and sustained cost-effectiveness, despite short-term fluctuations when traditional utilities may offer cheaper rates, could ensure their ability to deliver sustained value over time. While CCAs cannot always guarantee lower rates due to market uncertainty, prioritizing long-term savings can cultivate customer trust and loyalty. Therefore, exploring approaches that balance financial stability with a focus on long-term savings could align with New Hampshire CCA goals.

2. Program Development and Energy Efficiency
Building up financial reserves will enable CCAs to ensure their long-term stability and their ability to offer public interest programs including energy efficiency programs, local power projects, and energy storage. Once sizeable financial reserves are established, CCAs could have more flexibility to allocate revenue towards various programs, rate reductions, and subsidies for low-income customers. Program development could be a valuable element to incorporate in New Hampshire CCAs to improve customer experience. However, this cannot happen overnight, as evidenced by CleanPowerSF's experience, which took four years to establish programs after its inception. By incorporating energy efficiency programs, local power projects, and energy storage into their offerings, New Hampshire CCAs could enrich their value proposition. This diversification allows CCAs to appeal to a wider customer base and deliver tangible benefits to communities. Furthermore, energy efficiency initiatives

can empower customers to lower their energy consumption and costs, aligning with broader sustainability objectives.

3. Education, Outreach and Precedent

Educating the public and adequately informing relevant stakeholders on the benefits of CCAs as well as engaging in outreach initiatives could be helpful methods to drive participation and success. A possible way to enhance participation is to prioritize investment in robust education campaigns, particularly in those that target towns with limited resources and those lacking energy committees. Our case studies have highlighted the significance of local champions in establishing CCAs, underscoring the need for additional support in communities without such advocates.

It is crucial to acknowledge that some towns may require evidence of success in CCA implementation before committing to participation. This could be demonstrated through lower rates, price stability, local benefits, and a commitment to prioritizing local governance and advocacy. While initial skepticism may exist, particularly in areas lacking precedent, it is anticipated that this barrier may diminish over time, as awareness of CCA benefits grows and successful CCA programs accumulate, especially through CPCNH. Additionally, in promotion, it is crucial to acknowledge different arguments having varying levels of salience with different audiences. As it currently stands, CCAs are perceived by New Hampshire residents as being aligned with liberal policy, as demonstrated by its greater adoption in more liberal areas, so using arguments that appeal to conservative values will likely help other populations of the state appreciate the benefits of CCAs (see Appendix C).

4. Navigating Regulatory Challenges

To establish an enabling environment for CCA growth, it will be helpful to proactively engage with regulatory bodies and policymakers to address regulatory hurdles and secure the essential support needed for the successful operation of CCAs. Advocating for utility changes, particularly regarding net metering policies, can help CCAs provide more benefits to their customers and promote renewable energy adoption. Addressing these regulatory challenges is crucial if you want to ensure that all residents in New Hampshire can reap the benefits of CCAs without having to compromise their enrollment to participate in net metering. This requires collaborating with utilities to establish fair compensation mechanisms that do not unfairly burden non-solar customers. By navigating these net metering challenges effectively, CCAs can promote renewable energy adoption while maintaining equity and accessibility for all customers.

In navigating tensions between IOUs and regulators in New Hampshire, where local control and governance are typically prioritized, CCAs have the opportunity to assert their ability to self-govern and meet the needs of their communities independently.

5. Establishing Customer Loyalty or "Stickiness"

Building customer "stickiness" is crucial for maintaining long-term relationships and ensuring customer retention. While customer stickiness may keep individuals from switching providers in the short-run, CCAs could prioritize delivering cost savings and value-added services if the goal is to maintain customer loyalty over time. By offering competitive rates, innovative programs, and exceptional customer service, New Hampshire CCAs could establish themselves as preferred energy providers in their communities.

6 CONCLUSIONS: CCA SUCCESS IN NEW HAMPSHIRE

Leveraging lessons from various case studies, New Hampshire can harness the potential of CCAs for the benefit of its residents, businesses, and municipalities. Our research underscores the importance of financial stability, program development, education and outreach, regulatory navigation, and customer loyalty in the successful implementation and growth of Community Choice Aggregation programs. By establishing robust financial reserves, New Hampshire CCAs can potentially mitigate risks associated with market fluctuations and ensure long-term stability while offering valuable public interest programs such as energy efficiency initiatives. Additionally, education and outreach efforts are paramount for driving participation and gaining community support, particularly in areas lacking precedent. Moreover, effective navigation of regulatory challenges, including advocacy for policy changes, could be beneficial in enabling an environment for CCA growth. Finally, building customer loyalty through competitive rates, innovative programs, and exceptional service is another potential tool to be harnessed for maintaining long-term relationships and ensuring customer retention. New Hampshire CCAs can leverage these insights as powerful tools to bolster operational strategies, thereby enhancing CCA effectiveness, promoting sustainable energy practices, and better serving community needs. This approach aims to pave the way towards a more sustainable and cost-effective energy future for New Hampshire.

APPENDIX A: CCA GROWTH IN VARIOUS STATES

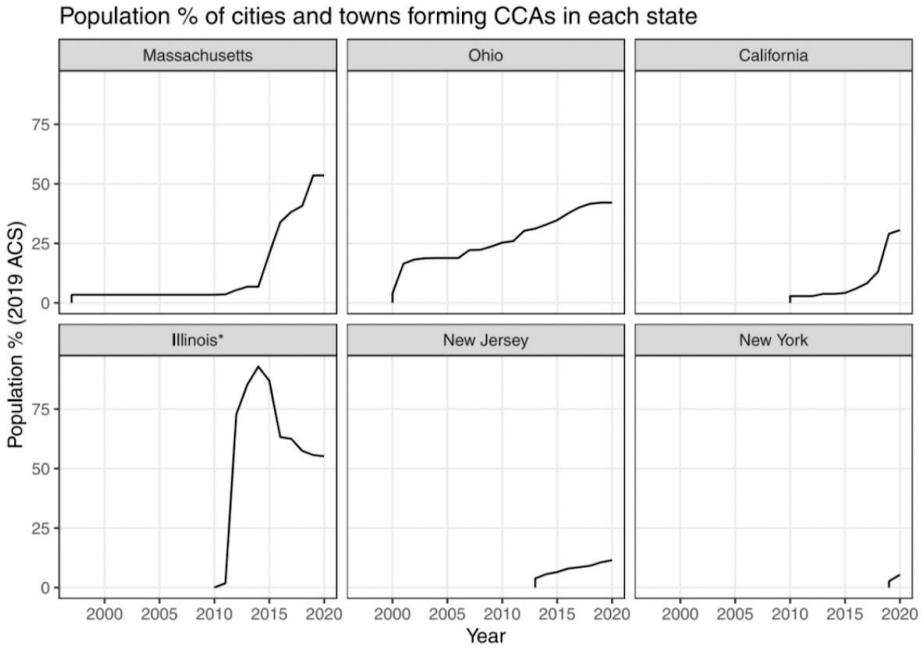

Fig. 2. Percentage of population forming CCAs in six states, based on total population from the 2019 American Community Survey. Asterisk (*) for Illinois indicates lapsed CCA contracts, which has occurred rarely in other states and is discussed in Section 7.3. These figures are not adjusted for customers opting-out.

APPENDIX B: INTERVIEW LIST

- **Clifton Below,** Assistant Mayor and City Councilor of Lebanon, New Hampshire, Board Chair of the Community Power Coalition of New Hampshire
- **Chuck Sutton,** President of MC Squared Energy (supplies power to CCAs in Illinois)
- **Sarah Kelly,** Program Manager of the Energy Justice Clinic at Dartmouth College
- **Hugh Bartling,** Associate Professor at DePaul University
- **David Musselman,** Director of the Municipal Energy Unit of Boston
- **Nick Chaset,** CEO of Ava Energy (CA)(formerly East Bay Community Energy)
- **Barbara Hale,** Assistant General Manager of the San Francisco Public Utility Commission's Power Enterprise (CleanPowerSF)
- **Carol Schutte,** Hampton Falls' representative to the Community Power Coalition of New Hampshire

APPENDIX C: QUANTITATIVE ANALYSIS ON CCAs IN NEW HAMPSHIRE

In our quantitative analysis exploring the partisanship of towns with Community Choice Aggregation programs (referred to as Community Power Aggregation (CPA) in this study) in New Hampshire, we investigated how political ideas influence the adoption of CPAs in New Hampshire. A primary motivation for adopting a CPA, as echoed in our qualitative research, is the desire to harness clean energy opportunities, which led us to speculate that the practice would be more common in left-leaning areas. If this were the case, it would impact the most successful strategies to promote CPAs to a wide audience in New Hampshire. We did this analysis by measuring the relationship between whether a town has a CPA and the partisanship of the town, measured through the results of the 2020 election in New Hampshire at the town level.

The calculated Pearson chi-squared statistic (χ^2) indicated that there is a statistically significant link between having a CPA and the political leaning of a town (χ^2) = 22.2508, p = 0.000). The small p-value means that the likelihood of this association occurring by chance is extremely low.

The Cramér's V statistic, which we used to gauge the strength of this association, yielded a value of 0.3136. A value near 1 would indicate a strong association, while a value of 0 suggests no association. In our case, the value of 0.3136 suggests a moderate association, meaning there is a discernible connection between a town's political orientation and its decision to adopt a CPA.

We also observed that, among towns won by Biden, 46 (or 41 percent) have or are actively launching a CPA, while 65 do not. In contrast, among towns won by the opposing candidate, 16 have or are launching a CPA (13.6 percent), while 102 do not (Figure 1). This means that of towns with CPAs, an astounding 74.19 percent of them voted for Biden. These proportions indicate a notable discrepancy in CPA prevalence based on the political leanings of the town in the 2020 election.

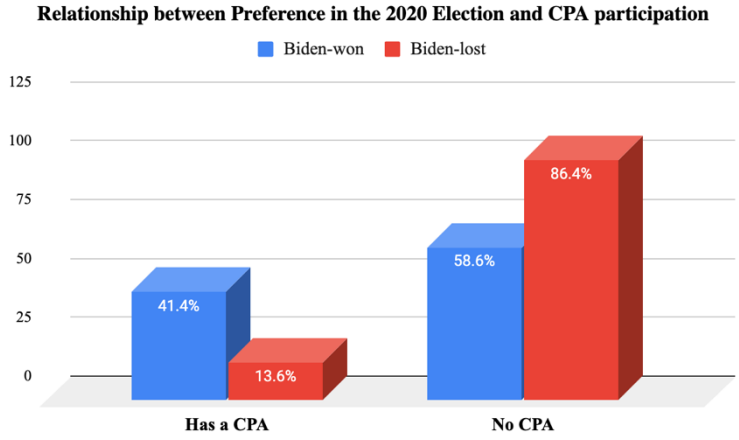

Figure 1. Relationship Between Preference in the 2020 Election and CPA Participation (towns)

We also divided the share of votes Biden received into 5 quintiles to examine the relationship between electoral preference and CPA participation more fully. This test looks specifically at how magnitudes

of political preference influence CPA adoption. By looking at the Biden vote share in quintiles instead of a binary win or loss variable, we will see if towns that are overwhelmingly liberal or conservative behave differently from towns that only marginally favored one candidate in the 2020 election and get more insights into the CPA preferences of more politically aligned localities. The quintiles are as follows:

Quintile	Mean Biden share of the 2020 vote	Standard Deviation
0	36.61%	4.81%
1	43.48%	1.53%
2	49.08%	1.91%
3	55.36%	2.01%
4	68.71%	10.06%

Figure 2. Mean 2020 Biden Vote Share per Quintile

An ANOVA test, a statistical method used to analyze variations in group means by comparing the variability within and between groups, produced a very noteworthy F-statistic ($F = 14.51$, $p = 0.000$), signifying statistically significant differences in mean Biden vote shares across quintiles. This implies that the observed variations are not random, indicating a substantive relationship between political inclinations and CPA participation. The significance of the F-statistic emphasizes that the observed differences in mean Biden vote shares are not mere chance, reinforcing the credibility of this observed relationship.

Additionally, to assess the consistency of variations in CPA participation across different political leaning quintiles, we conducted a Bartlett's test. The chi-squared statistics (χ^2 (4) = 56.8567) with associated probabilities (Prob > χ^2 = 0.000) from this test reveal that the differences in CPA participation among various voting quintiles were statistically significant.

Specifically, as Biden vote shares increased, there was a discernible upward trend in the towns engaged in CPA programs. The lowest quintile exhibited a 2.17 percent CPA participation, contrasting starkly with the highest quintile, where 63.04 percent of towns were involved in CPAs. Breaking down the vote share into quintiles allows us to see this stratification and makes the partisan differences in CPA adoption clearer (Figures 3 and 4).

Quintile	Towns without a CPA	Towns with a CPA	Total	Percent with a CPA
0	45	1	46	2.17%
1	38	8	46	17.39%
2	33	13	46	28.26%
3	35	11	46	23.91%
4	17	29	46	63.04%

Figure 3. CPA Participation by 2020 Presidential Preference Quintile

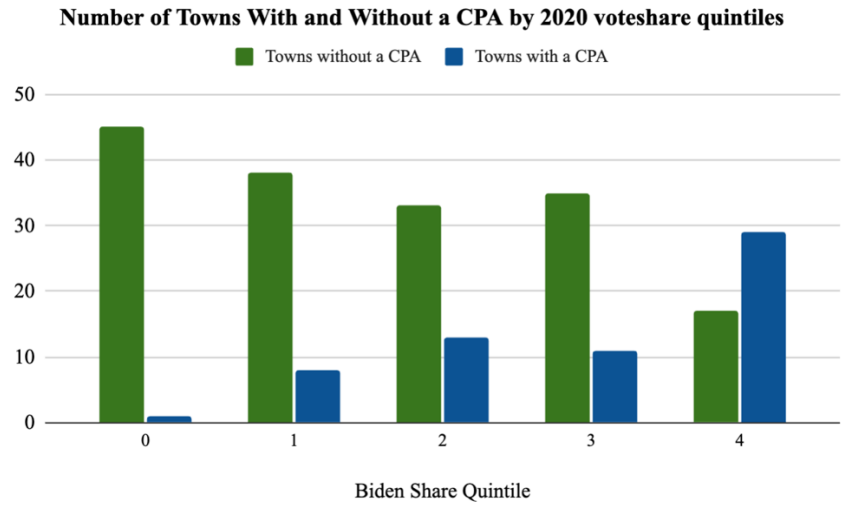

Figure 4. Graphical Representation of Figure 3

Confounding Variable Analysis: Population

In an effort to explore potential confounding variables and enhance the robustness of our analysis, we introduced data about the population of each town into the analysis. Given the prevailing trend that larger cities, typically associated with higher population densities, tend to lean more left politically, it became imperative to ascertain whether the observed correlation between political preference and CPA participation might be influenced by town size.

Dividing New Hampshire towns into population quintiles based on 2020 census data, we produced a table (Figure 5) illuminating the distribution of CPAs across different population strata. Notably, larger towns appear to exhibit a higher prevalence of active CPA programs, with percentages ranging from 13.6 percent in the lowest quintile to 40.0 percent in the highest quintile.

Quintile	Towns without a CPA	Towns with a CPA	Total	Percent with a CPA
0	38	6	44	13.6%
1	34	10	44	22.7%
2	28	17	45	37.7%
3	33	11	44	25%
4	27	18	45	40.0%

Figure 5. NH CPAs by Population Quintile

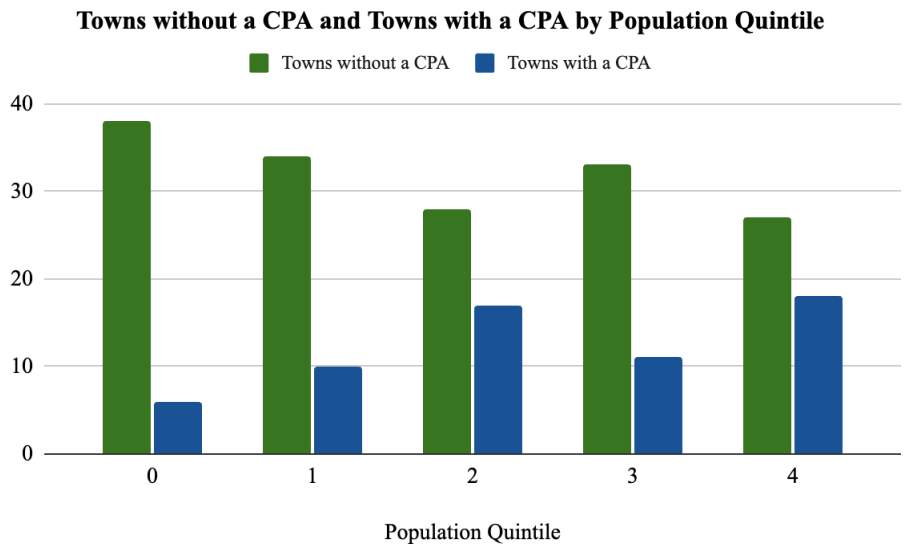

Figure 6: Graphical Representation of Figure 5

To assess whether the variations in CPA presence across different town population quintiles were consistent, we conducted a Bartlett's test. The results, expressed through chi-squared statistics ($\chi^2(4) = 6.6444$) with associated probabilities (Prob > $\chi^2 = 0.156$), indicate that these differences were not statistically significant. Thus, the Bartlett's test suggests that the observed diversity in CPA presence across town population quintiles did not exhibit a consistent or statistically meaningful pattern. The lack of statistical significance implies that any variations observed could likely be attributed to random chance rather than a systematic and significant relationship.

However, the subsequent ANOVA test, evaluating the relationship between town population and CPA presence, provided meaningful insights. We obtained an F-statistic of 2.74 with a p-value of 0.0297, which indicates a statistically significant relationship between average town population and the presence of CPA programs. Although the strength of this association is not as robust as the relationship observed between political preference and CPA adoption ($F = 14.51$, p-value = 0.000), the statistical significance reinforces the relevance of town size in understanding the dynamics of CPA participation.

Conclusion:

Our analysis reveals a clear and statistically significant association between political preference and CPA adoption. The Pearson chi-squared statistic (χ^2) demonstrated this robust link ($\chi^2 = 22.2508$, $p = 0.000$), and the Cramér's V-value of 0.3136 indicated a moderate yet discernible connection between a town's political orientation and its decision to adopt a CPA. This finding underscores that political preference plays a substantial role in shaping the landscape of CPA programs.

Breaking down the results by examining the quintiles of Biden's vote share further enriches our understanding. The ANOVA test unveiled significant differences in mean Biden vote shares across quintiles ($F = 14.51$, $p = 0.000$), emphasizing a substantive relationship between political inclinations and CPA participation; as Biden vote shares increase, so does CPA prevalence. The observed disparities are not random, reinforcing the credibility of the connection between political leaning and the adoption of CPA programs.

Larger towns also exhibit a higher prevalence of active CPA programs. While Bartlett's test suggests no statistically significant consistency in CPA presence across different town population quintiles, the subsequent ANOVA indicates a statistically significant relationship ($F = 2.74$, $p = 0.0297$) between town population and CPA presence. Though not as robust as the relationship between political preference and CPA adoption, the significance emphasizes the relevance of town size in understanding CPA dynamics. However, it is essential to acknowledge that population dynamics could play a role and should be considered in future analyses to disentangle the intricate factors influencing CPA participation. There are potentially other confounding variables at play, and many factors go into why a locality politically leans the way it does. All this to say, being left-leaning is not a perfect indicator of a town having a CPA and there are many other underlying factors at play.

ENDNOTES & REFERENCES

1. US EPA. "Community Choice Aggregation," January 13, 2022. https://www.epa.gov/green-power-markets/community-choice-aggregation.
2. Hondros-McCarthy, Mikaela, and Larry Chretien. "Green Power at Lower Cost: Green Municipal Aggregation in Massachusetts." Barr Foundation. Accessed October 30, 2023. https://www.barrfoundation.org/blog/green-power-at-lower-cost-green-municipal-aggregation-in-massachusetts.
3. Hsu, David. "Straight out of Cape Cod: The Origin of Community Choice Aggregation and Its Spread to Other States." Energy Research & Social Science; Social Science 86 (April 2022): 102393. https://doi.org/10.1016/j.erss.2021.102393.
4. ibid.
5. US EPA. "Community Choice Aggregation," January 13, 2022. https://www.epa.gov/green-power-markets/community-choice-aggregation.
6. Hsu, David. "Straight out of Cape Cod: The Origin of Community Choice Aggregation and Its Spread to Other States." Energy Research & Social Science; Social Science 86 (April 2022): 102393. https://doi.org/10.1016/j.erss.2021.102393.
7. ibid.
8. US EPA. "Community Choice Aggregation," January 13, 2022. https://www.epa.gov/green-power-markets/community-choice-aggregation.
9. ibid.
10. Resources for the Future. "US Electricity Markets 101" n.d. https://www.rff.org/publications/explainers/us-electricity-markets-101/
11. Resources for the Future. "Transmission 102: Building New Transmission Lines," n.d. https://www.rff.org/publications/explainers/transmission-102-building-new-transmission-lines/.
12. Enstrom, Kirk. "Utilities Plan Significant Cuts to Electricity Rates in New Hampshire." WMUR, June 15, 2023. https://www.wmur.com/article/eversource-unitil-cut-electricity-rates-61423/44213724.
13. Constellation. "What Is a Third Party Electric Supplier?," n.d. https://www.constellation.com/energy-101/energy-education/what-is-a-third-party-electric-supplier.html.
14. Wolf, Sara. "Third-Party Energy Suppliers: Do I Need One?" Accessed October 30, 2023. https://www.paradisesolarenergy.com/blog/third-party-energy-suppliers-do-i-need-one.
15. EnergySage. "Electricity Cost in New Hampshire: 2023 Electric Rates." February 25, 2024. https://www.energysage.com/local-data/electricity-cost/nh.
16. Cunningham, Greg. "New England Electricity Prices Are Rising This Winter – Here's Why." Conservation Law Foundation, January 5, 2023. https://www.clf.org/blog/why-new-england-electricity-prices-are-increasing/.
17. EnergySage. "Electricity Cost in New Hampshire: 2023 Electric Rates." February 25, 2024. https://www.energysage.com/local-data/electricity-cost/nh.
18. Cunningham, Greg. "New England Electricity Prices Are Rising This Winter – Here's Why." Conservation Law Foundation, January 5, 2023. https://www.clf.org/blog/why-new-england-electricity-prices-are-increasing/. ; Krakoff, Nick. "Here's Why New Hampshire Electricity Prices Are Doubling This Summer." Conservation Law Foundation, August 9, 2022. https://www.clf.org/blog/heres-why-new-hampshire-electricity-prices-are-doubling-this-summer/.
19. EnergySage. "Electricity Cost in New Hampshire: 2023 Electric Rates." February 25, 2024. https://www.energysage.com/local-data/electricity-cost/nh.

20. NH Department of Energy. "Information Related to High Energy Costs." Accessed October 30, 2023. https://www.energy.nh.gov/consumers/help-energy-and-utility-bills/high-energy-prices.
21. Cunningham, Greg. "New England Electricity Prices Are Rising This Winter – Here's Why." Conservation Law Foundation, January 5, 2023. https://www.clf.org/blog/why-new-england-electricity-prices-are-increasing/.
22. United States Environmental Protection Agency. "Community Choice Aggregation" January 22, 2024. https://www.epa.gov/green-power-markets/community-choice-aggregation
23. Udasin, Sharon. "The Hill." The Hill, January 8, 2023. https://thehill.com/policy/equilibrium-sustainability/3802915-new-england-grapples-with-sky-high-electricity-rates-as-ukraine-war-squeezes-gas-supply/.
24. Community choice aggregation. (2022, January 13). US EPA. https://www.epa.gov/green-power-markets/community-choice-aggregation
25. Interview with Peter Millman, Vice President of People's Action for Clean Energy (PACE); https://files.constantcontact.com/3a9e2e77001/5465ccd8-11c8-4845-aa43-8642becd1ba9.png
26. Illinois energy deregulation, IL electricity deregulation. (n.d.). Retrieved March 3, 2024, from https://www.maketheswitchusa.com/illinois-electricity-deregulation
27. The History of Deregulation in Illinois. (n.d.). Direct Energy. Retrieved March 3, 2024, from https://www.directenergy.com/learning-center/illinois-history-deregulation
28. Illinois energy deregulation, IL electricity deregulation. (n.d.). Retrieved March 3, 2024, from https://www.maketheswitchusa.com/illinois-electricity-deregulation
29. ibid.
30. Vestel, Leora. (2023, July 6) "CalCCA Seeks Rehearing of CPUC's Unlawful Decision to Restrict CCA Expansions". https://cal-cca.org/calcca-seeks-rehearing-of-cpucs-unlawful-decision-to-restrict-cca-expansions/
31. Lean Energy US. "New Hampshire." https://www.leanenergyus.org/new-hampshire
32. ibid.
33. Bartling, H. (2018). Choosing community choice aggregation: The experience of Illinois municipalities in the electricity market.
34. Community Power Coalition of New Hampshire (2024, February 6). "Net Energy Metering Frequently Asked Questions." https://www.communitypowernh.gov/_files/ugd/202f2e_6cabe07b743d40ee8830c3543499e32e.pdf?index=true.
35. LEAN Energy US. "New Hampshire." Accessed October 30, 2023. https://www.leanenergyus.org/new-hampshire.
36. Stephenson, R. (2008, July). Energizing ideas: The emergence of local energy committees. New Hampshire Municipal Association. https://web.archive.org/web/20220718022451/https://www.nhmunicipal.org/town-city-article/energizing-ideas-emergence-local-energy-committees
37. Brooks, D. (2024, January 5). Savings from community power become slimmer as NH utilities cut electric rates. NHPR. https://www.nhpr.org/environment/2024-01-05/savings-from-community-power-become-slimmer-as-nh-utilities-cut-electric-rates?mc_cid=e7f3fbb978&mc_eid=df74dde794
38. "Net Energy Metering Frequently Asked Questions." Community Power Coalition of New Hampshire, February 6, 2024. https://www.communitypowernh.gov/_files/ugd/202f2e_6cabe07b743d40ee8830c3543499e32e.pdf?index=true.