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A Green New England? Regional Implementation of Grant-Based Provisions of the Inflation Reduction Act in the Northeastern U.S.

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Introduction

The Inflation Reduction Act of 2022 (abbreviated here as “the Act” or “IRA”) was signed into law on August 16, 2022 by President Biden, whose government has described it as “the most significant action Congress has taken on clean energy and climate change in the nation’s history” (The White House, 2023a). The Act is estimated to contain some $370,000,000,000 in climate-related investment for the next 10 years, spread across 134 provisions covering everything from household rebates to industry incentives, research funding, and project grants, managed by just as wide an array of federal agencies (The White House, 2023a). The magnitude and breadth of the IRA has proved a challenge for many past summaries and analyses, and indeed it is hard to find a single agreed-upon estimate of the cost, as the majority of the spending is in the form of open-ended tax credits whose ultimate cumulative cost will depend on adoption over the next 10 years. While there is no public repository for tax credit data, there is considerable information on public grant-funded projects, which are now partway through their second full year. And yet, given the complexity and novelty of the legislation, and the necessary challenge of estimating the substantial tax credit element, existing research has not yet attempted to track the IRA’s progress at the local scale, nor the current level of interest from potential recipients.

Even though the specific beneficiaries and programs of greatest attraction are only vaguely known, the success of the Act even just over a year into effect has already been widely extolled, with glowing federal communications declaring hundreds of billions in declared investments, at a rate quicker than anticipated by the IRA’s architects (The White House, 2023b). A substantial body of research has also blossomed in the past year, with efforts to quantify the carbon emission reduction implications of these incentives and other direct federal actions (Bistline, et al., 2023), and the real prospects for economic growth (Bistline, Mehrota, & Wolfram, 2023). In policy circles, meanwhile, think tanks from both sides of the political spectrum have issued their own assessments of the ramifications for individuals, especially with regards to new job creation, health and other co-benefits of pollution reduction, and the proportional cost of the measures (Roy, et al.,

2022; Brashers, 2023). There are, in short, many angles through which to approach the IRA and, although much of the commentary is positive, there remain many questions as to the real-world effectiveness and actual implementation of the Act over the next decade. As such, amidst all this conversation, it is timely to take stock of how funding allocation as well as national concerns about implementation impacts (both positive and negative) can be observed regionally.

Focusing on the New England area (Massachusetts, Connecticut, New Hampshire, Maine, Rhode Island, and Vermont), this research addresses many of these gaps by examining the variation across and within the six states, and in relation to the national priorities of the IRA. Of particular interest are the locations and types of projects underway in the region because these reveal the relative capacities of applicants opting for and/or competing for opportunities. The ultimate purpose of this thesis is to help to develop an understanding of who and where the leaders are within key sectors of climate action, in order to illustrate and suggest how to better align recipients with funding opportunities in the coming years, in New England and beyond.

First, this paper reviews the context of the Inflation Reduction Act within the timeline of U.S. climate action in the 21st century and prior policy research to date. Second, it describes the data sources and methods used to provide a comprehensive breakdown of the Act and its distribution of funding by various categories. Third, the paper illustrates the locations of IRA-funded projects using federal reporting data on the distribution of grant program funding, alongside in-depth analysis of case studies. Finally, these findings are synthesized and described alongside policy recommendations to help reduce identified barriers to implementation and build on the progress of the IRA with potential future U.S. climate legislation.

Research Questions

1. What are the overarching purposes and specific priorities of the Inflation Reduction Act? How is funding distributed across its provisions and principal focus areas?
2. Where is Inflation Reduction Act funding going in New England? Who appears to be benefiting and who might be adversely impacted?
3. What barriers to implementation are contributing to these allocation patterns? How might these be overcome in the context of New England?

Historical Contextualization

To assess the magnitude and relevance of the Inflation Reduction Act, it is first necessary to review the progress of U.S. climate policy, which has varied in emphasis and political support for about two decades, with often stark differences between the various levels of government.

At the federal level, there has been relatively little in the way of dedicated climate change legislation. The only approved direction of congressional funds towards renewable energy and residential home efficiency improvements prior to the IRA were in the Energy Policy Act of 2005 and the American Recovery and Reinvestment Act of 2009, the former creating incentives for solar and the latter resulting in $90 billion for renewables (IRS, 2006; Farber, 2023). Except for an ultimately unsuccessful attempt to pass a nationwide emissions cap-and-trade program (the Waxman-Markey Bill of 2009), there was no major legislative action for a decade after these modest advancements. Instead, the vast majority of climate action at the federal level has been fought in the executive and judicial domains, largely over the extent to which prior federal regulations can be extended to carbon pollution. Since the 2007 ruling in *Massachusetts vs. EPA*, the Environmental Protection Agency has been primarily responsible for managing carbon dioxide from automobiles, power plant emissions, and specific point sources, using authority granted it under the Clean Air Act (Farber, 2023). The degree to which the EPA prioritizes this responsibility varies by administration, with the most aggressive policymaking occurring under President Obama and the Clean Power Plan introduced in 2015 to reduce carbon emissions from electricity generation by 32% by 2030, which saw little support under the subsequent Trump Administration and was struck down by the Supreme Court in 2022 (Farber, 2023). In short, federal climate action of either the legalistic or monetary variety has been relatively lacking and inconsistent, especially compared to the sheer size and breadth of the Inflation Reduction Act and international policies.

Nonetheless, it is worth noting that a substantial amount of progress has occurred at other levels of U.S. governance – namely, at the state and local level. New England in particular has a proud place among the pioneers of regional climate policy. The Regional Greenhouse Gas Initiative (RGGI) was established in 2009 as a cap-and-trade system that still stands to this day, featuring all six New England states in addition to New York, New Jersey, Delaware, Maryland, and Virginia. RGGI is notable as the first legally binding cap-and-trade framework in the country, governed by a collaborative non-profit, with proceeds from trading invested back into regional member communities (RGGI, n.d.). In the most recent report from 2021, some $374 million was

invested that year into energy efficiency, clean and renewable energy, electrification, abatement and adaptation measures, and energy bill assistance (RGGI, 2021, p. 3). Over its lifetime, the majority (55%) has gone to energy efficiency improvements for households and businesses, with each of the other categories receiving the remaining 45% between them (RGGI, 2021, p. 3).

On the legislative side, Massachusetts and Connecticut were some of the earliest states to publish their own decarbonization targets and plans to reach them, both enacted in 2008 (Israel and Field, 2022). In Massachusetts, with its current target of reducing carbon emissions by 50% by 2030 (relative to 1990), and to reach net zero by 2050, there is a clear ambitious intent, coupled with strong green building standards and programs to expand renewable investment and home energy efficiency via Mass Save and the Massachusetts Clean Energy Center (Israel and Field, 2022, p. 14). However, there is also some fair criticism that these goals are still not as rigorously pursued across state government functions as is needed to meet them in time, further limited by barriers to implementation common to New England at large, including a lack of technical and financial resources, as well as complications dealing with reluctant local municipalities and equitably meeting all their needs (Israel and Field, 2022, p. 26). It is also worth highlighting that funding generally flows down a federal pyramid, with municipalities generally dependent on state funding – which is true to an even greater extent in many New England states which do not have an intermediate county-level government – and states in turn are limited by a lack of federal support. This is not to say that larger local governments are not funding their own programs (Boston, for instance, has substantial resources of its own and climate plans that predate the IRA), but that states often perform a significant facilitating role at the local level, though not every state has the same priorities or means in absence of federal leadership.

California, the complementary leader on the West Coast, as well as the most populous and wealthy state in the union, has been the perennial trend-setter since the 1970s, using its economic clout to singlehandedly regulate national industries (most notably, refrigerants and automobile efficiency standards) and trial large-scale solutions even without federal legislation (Farber, 2023). In fact, many federal actions are based directly on California's early regulatory actions, reversing the typical relationship – to the extent that successive federal administrations have flip-flopped on permitting California to do so (Farber, 2023). In any case, its actions to limit the CO_2 emissions of cars sold in the state have had a notable impact on industry behavior, not least with the growth of hybrid and EV car sales, boosted most recently by the state's latest ban on all new gasoline cars

by 2035 (CARB, n.d.). Following the Northeast example, California has had its own cap-and-trade program since 2013, which has become one of the largest carbon markets in the country, generating as much as $6.3 billion in auction proceeds in the 2022-23 fiscal year (CARB, 2022). Remarkably, the state has managed to expand its renewable share to half its electricity production as of 2021, compared to a fifth nationwide, including California (U.S. EIA, 2023a; U.S. EIA, 2023b). Having met its original goal set in 2006 to reduce emissions to 1990 levels by 2020 six years early in 2014, the state has since expanded its goal to carbon neutrality by 2045, one of the first legally-binding targets in the country, to be achieved via a $54 billion investment in renewables, home efficiency, clean vehicle incentives, and carbon removal (Office of Governor Gavin Newsom, 2022).

While this is not intended to be an overly detailed summary of climate policy in the U.S., and the more modest efforts enacted by many other states across the country are not explored here, suffice it to say that the history of climate policy in the U.S. has revolved primarily around state level politics. Even in the absence of consistent federal leadership, the U.S. as a whole has benefited from these disparate efforts, even achieving the emission reduction goals of the since-mooted Clean Power Plan eleven years early in 2019, despite no active implementation of it by the Trump Administration (Komanoff, 2020). Moving into the 2020s, with the inauguration of the Biden Administration and the introduction of its Investing in America platform, a suite of infrastructure policy and COVID-19 pandemic emergency recovery legislation, this trend seems to have been reversed, with trillions of dollars committed via the American Rescue Plan, Bipartisan Infrastructure Law, CHIPS and Science Act, and, of course, the IRA (The White House, 2024a).

Entering onto the scene in 2022, the Inflation Reduction Act is remarkable as the first truly extensive and multi-sectoral legislation on climate change to come from the federal level, ever. Leveraging federal tax dollars, the IRA is unsurprisingly much larger than any state-level equivalent – more than six times larger than California's commitment – representing an opportunity for far-reaching action, especially in areas with less ambitious or well-resourced state and local governments. While no law is perfect, and there are already plenty of critiques published from all sides of the debate, the existence of the IRA is a hopeful sign for U.S. climate action. Remembering that what is learned from this iteration will factor into the next phase of federal and local legislation over the coming decade, we turn next to examining existing literature that react to the Inflation Reduction Act and its place within broader national climate and justice efforts.

Literature Review

In the year and a half since its passage, the IRA has been a source of great attention across many disciplines, from scholarly attempts to measure its impacts on carbon emissions to various efforts to assess its social justice and economic implications, intended and otherwise. This literature review performs a brief survey of this existing body of research, starting with previous endeavors to summarize its contents and model its potential climate, economic, and social impacts.

Existing reviews of the Inflation Reduction Act are few and limited in detail but provide a helpful grounding in the overall allocation of funds and include some speculative analysis of tax credit leveraging not covered in this paper. The consulting firm McKinsey & Company provides graphical summaries of the Act – which it estimates at $393.7 billion, including tax credits – in an online resource page open to the public (Badlam, et al., 2022). Below are three helpful figures provided from that analysis, which subdivide the funding by sectors, funding mechanism, and theme, alongside relevant sections of the Bipartisan Infrastructure Law:

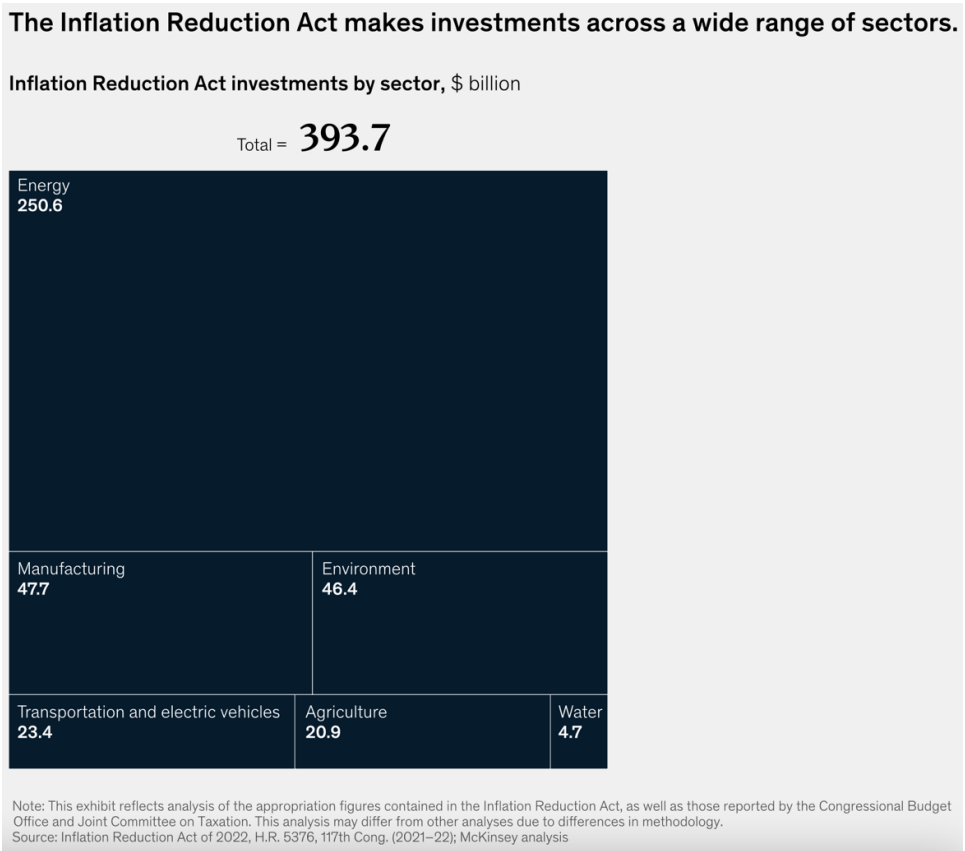

Figure A: Breakdown of entire IRA by sector, including tax credit estimates (Badlam, et al, 2022).

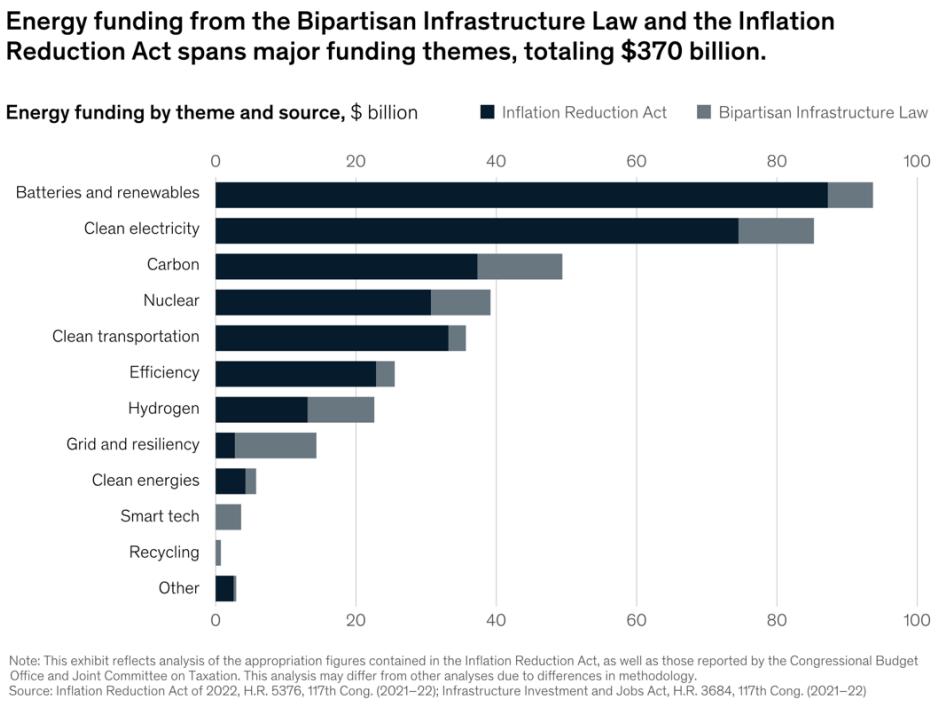

Figure B: Energy funding from the IRA and BIL by assigned funding theme (Badlam, et al., 2022).

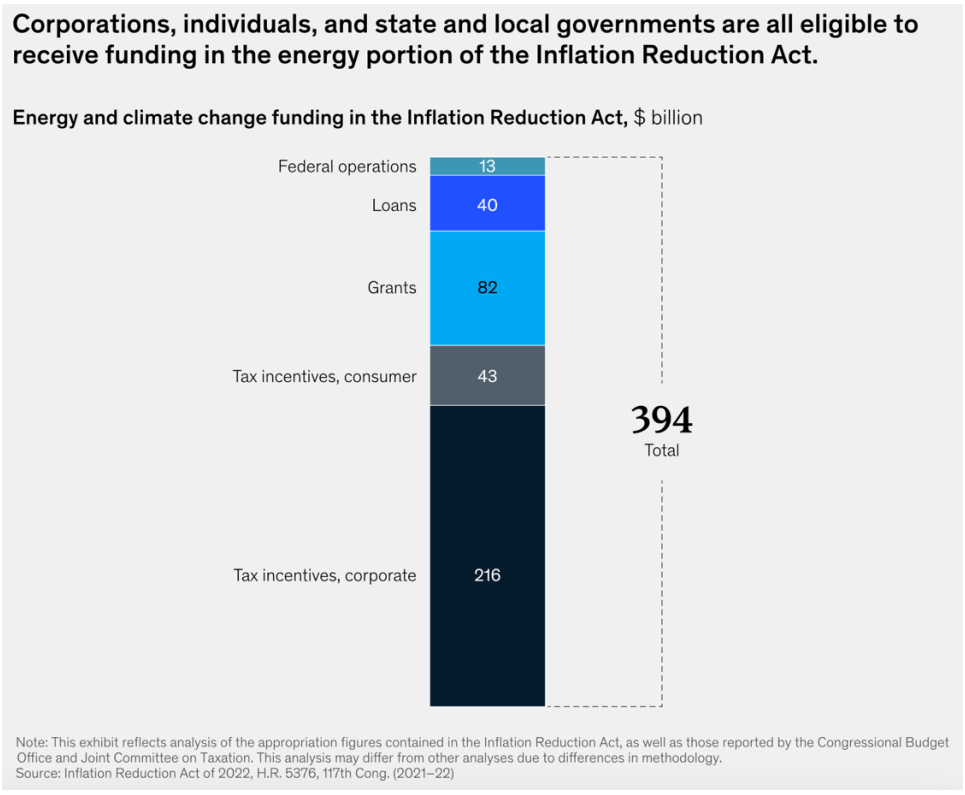

Figure C: Breakdown of entire IRA by funding mechanism, using estimates (Badlam, et al, 2022).

First, it is worth noting from Figure A that, including tax credits, energy is the largest category. While it is not made immediately clear what the process for allocation was, nor the exact definition of each sector (e.g., "environment" likely refers to conservation, but how this is clearly distinct from "agriculture" or other nature-based projects is not specified), the emphasis on energy is both unmistakable and unsurprising. After all, the energy sector is the largest single contributor to carbon emissions and the necessary energy transition involves significant infrastructure costs.

Figure B subdivides the energy and transportation sectors (in the IRA, these account for about $300 billion) into more specific themes and demonstrates the lesser, though no less significant, $70 billion contribution of the Bipartisan Infrastructure Law. It is imprecise as to whether tax credits are the primary reason for the distribution of funding, but the graph does illustrate the predominance of renewables, clean energy, and carbon capture, which collectively account for almost $200 billion alone. Notable also is the substantial investment in supporting nuclear energy and hydrogen fuels, which signal an interest in diversifying the energy transition.

Figure C makes clear just how much of the IRA is packaged in the form of incentives and tax credits – in fact, as much as $259 billion, or 65% of the total. This demonstrates, first and foremost, an emphasis on market-based interventions, as tax credits are intended to incentivize private investment as compared to expenditure on public works projects wholly funded and supported by the federal government. These incentives are overwhelmingly dedicated to corporate recipients, primarily in manufacturing, transportation, and clean energy deployment, though there are some substantial household benefits for heat pumps, home efficiency, and electric vehicle rebates. For the sake of this analysis, the dominance of tax credits is also important to note because only the remaining $135 billion in grants, loans, and direct federal expenditures are publicly reported in any specific detail, including geographic information of funding recipients.

The Bipartisan Policy Center produced a more extensive textual summary which, though lacking graphics, provides brief explanations of the majority of energy and climate provisions, including many of the major tax credit announcements (Bipartisan Policy Center, 2022). Similar information is found in the White House guidebook referred to throughout this research, but the presentation of this resource is moderately more helpful in so far as it is streamlined into bullet list format with full descriptions of applicable bonus credits. As a nonpartisan think tank, the Bipartisan Policy Center is rather pragmatic in its critique, critical of its hodgepodge construction via the reconciliation process but concluding that it makes much-needed progress in reducing

energy prices and global emissions, as well as towards strengthening American innovation and the economy (Bipartisan Policy Center, 2022).

On the hard conservative side of the spectrum, think tanks like the Heritage Foundation are far less forgiving. For instance, the paper by Preston Brashers spends most of its time rejecting the idea that the IRA has anything to do with reducing inflation, quibbling with its corporate taxation overhaul, and accusing it of hypocrisy by granting green corporations tax credits (Brashers, 2023). On the environmental and social outcome side, however, the main critique fundamentally boils down to a belief that unhindered market forces and innovation will deliver better than government subsidies, and claims that any progress on emissions is negligible compared to growth overseas (Brashers, 2023). Even excusing the dismissive view on the 13% reduction in U.S. emissions likely to come from the Act (which, granted, could be larger but is not insignificant), this manner of fiscal conservativism does at least somewhat value the goal of introducing cleaner and more efficient energy – provided it occurs via unsubsidized and untaxed market innovation (Brashers, 2023). The solution, according to this perspective, is to simply to keep the government out of the economy. However, we may also note that there is no equivalent critique of expanded fossil fuel subsidies in the IRA. To a substantial degree, this resulted from compromises needed to secure the support of Senator Joe Manchin of West Virginia, who has been triumphant in declaring how the Inflation Reduction Act will accelerate fossil fuel extraction over the next 10 years (Manchin, 2023).

Conversely, the liberal perspective is generally far more enthusiastic and focused on the positive social and climate impacts. Josh Bivens of the Economic Policy Institute, for instance, lauds the IRA's tandem economic stimulus and emission reduction effects, putting the U.S. on the path to achieving its international commitments and supporting whole swaths of American industry and society in the process (Bivens, 2023). While more controversial abroad, the protectionist proviso put on many tax credits that some or all of parts manufactured for clean energy or vehicles must be made in the United States is also beneficial on balance, he argues, as a way to ensure that industrial regions left behind by globalization are not outcompeted again, and to gain broader political support (Bivens, 2023). For U.S. manufacturing, this has certainly had an impact, as Bivens demonstrates with St. Louis Federal Reserve data demonstrating a 54% increase in manufacturing investment in the year immediately following the IRA's passage – an increase that has since continued to 70% relative the end of 2022 (Bivens, 2023; FRED, 2024). Furthermore, many programs include bonus credits for meeting prevailing wage requirements, a

win for labor, though an equivalent unionized labor bonus was scrapped (Bivens, 2023). The main critique, in short, is that that the IRA is a huge step forward but has missed some opportunities.

In terms of outcomes, Resources for the Future performed economic modeling of electricity prices, emissions, and related health benefits across various scenarios (Roy, et al., 2022). For electricity prices, they modelled a reduction of 5.7% to 7.8%, which would save households a combined total of $288-$345 billion compared to a non-IRA scenario. Emissions-wise, carbon emissions from electricity production are found to be 61% to 68% below 2005 levels by 2030, as shown in Figure D below, in large part a result of a modelled increase of renewable energy share of 75% (compared to 38% now) (Roy, et al., 2022). As other harmful pollutants are also reduced from the shift from fossil fuels, they further model a $12-22 billion benefit to society from reduced premature death (Roy, et al., 2022). However, neither the price nor health benefit is equally distributed between groups, though not necessarily in a negative way. For price, we see in Figure E that lower income households save more, indicative of progressive redistribution (Roy, et al, 2022). Emissions reductions are influenced geographically by preexisting energy infrastructure type, as shown in Figure F, as the greatest CO_2, SO_2, NO_x reductions occur in the Midwest and South, where coal presently predominates, as opposed to New England, where natural gas remains ubiquitous – though these benefits may also be felt further downwind (Roy, et al., 2022, p. 17).

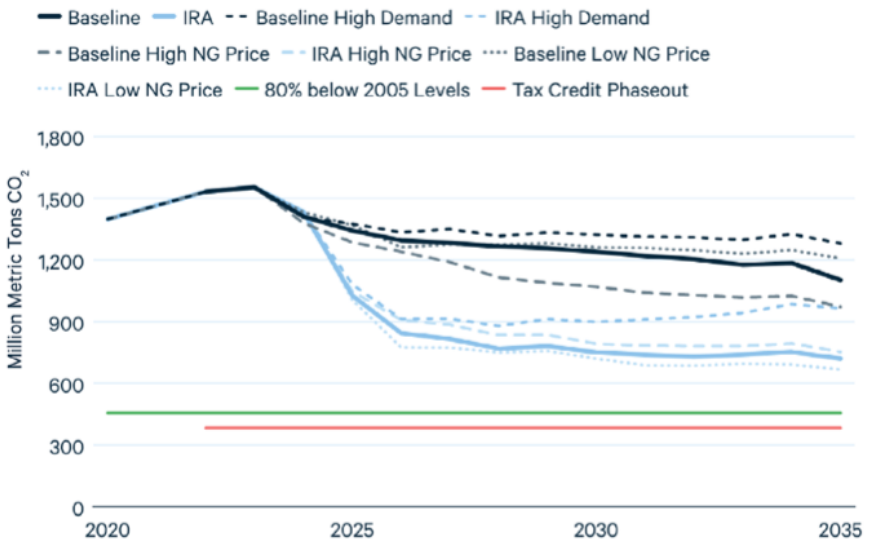

Figure D: Modelled emissions trajectories to 2035 with and without the IRA (Roy, et al., 2022).

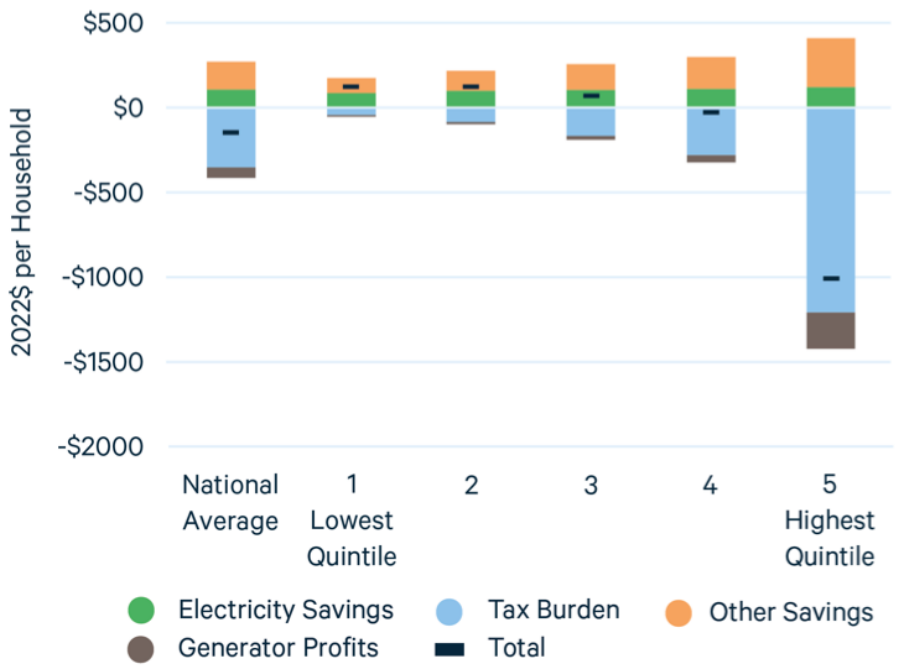

Figure E: Distribution of changes in electricity rate by household quintile (Roy, et al., 2022).

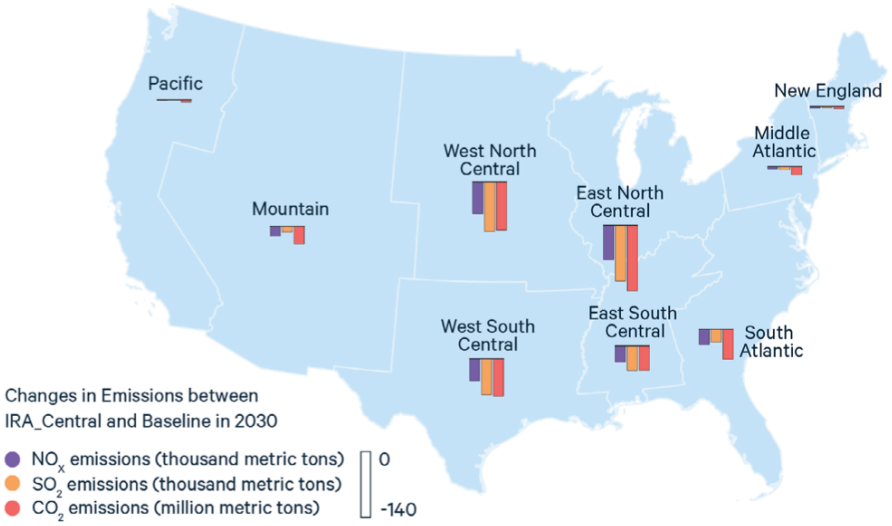

Figure F: Changes in NO_x, SO_2, and CO_2 emissions by 2030, by U.S. region (Roy, et al., 2022).

In the peer-reviewed domain, modelers, economists, and policy analysts have performed similar assessments, refining projections of anticipated emissions reductions and seeking to parse the geographic distributions and justice implications of the IRA.

Bistline, et al., in their paper "Emissions and energy impacts of the Inflation Reduction Act," leveraged nine different models to project economy-wide emissions and clean energy deployment, finding a 43% to 48% reduction in GHGs taken together by 2035 compared to 2005, or 33% to 40% by 2030 (Bistline, et al., 2023). In absence of guidance from federal agencies, the approach they used attempts to capture the IRA thorough multiple different conceptualizations of the U.S. energy system and power sector, and with only certain subsets of IRA provisions, perhaps explaining some of the difference with the Resources for the Future report (Bistline, et al., 2023). The power sector analysis showed large variation but pointed to large increases of solar and wind deployment, in the realm of 58 GW/yr. on average for solar and wind versus 27 GW/yr. without the IRA, and similar increases in storage rollout of 1 to 18 GW/yr. versus the present 0 to 8 GW/yr. (Bistline, et al., 2023). In all, they found that, by 2030, renewables, nuclear, and carbon capture could account for between 49% and 82% (or an average of 68%) of generation share, compared to 40% in 2023 and a projected 46% to 65% (or 54% average) without the IRA (Bistline, et al., 2023). Thus, though the IRA is not likely to completely meet the '50% reduction by 2030' target, it does produce significant progress on renewables deployment, in addition to an estimated $44 billion to $220 billion annual social benefit from climate benefits, not including health benefits from non-GHGs and accepting imperfections in measuring the social cost of CO_2 (Bistline, et al., 2023).

Bistline, Mehrota, and Wolfram perform a follow-up assessment dedicated to these economic implications, with expanded interest in down-stream market effects (Bistline, Mehrota, & Wolfram, 2023). In electricity markets, for instance, they found low and even negative prices of electricity are incentivized by renewable electricity tax credits, as these subsidies make it economical for wind and solar projects to sell energy even when prices are unfavorable (Bistline, Mehrota, & Wolfram, 2023). This, they reason, could further result in easier entry of new companies, and manage the increase of electric load from large-scale end use electrification (e.g., vehicles, heat pumps, etc.) and hydrogen production (Bistline, Mehrota, & Wolfram, 2023). Some macroeconomic effects in addition to these electric price decreases of these clean energy subsidies that they found include increased "output, investment, wages, and labor productivity" (Bistline, Mehrota, & Wolfram). Though the paper primarily focuses on these analyses, it also makes careful note of the inconsistency in other literature in estimating the price tag of IRA tax credits, which range from around $250 billion to $1.2 trillion, substantially larger than the Congressional Budget Office estimates (Bistline, Mehrota, & Wolfram). At any rate, the nationwide economic signs are

encouraging, even if the exact geographic distribution of cost and benefit is indeterminable at these macroeconomic scales.

Beyond the Inflation Reduction Act specifically, another major line of inquiry in energy policy is the local implications of the clean energy transition, bringing in concerns of social justice, which is hard to account for nationally. A common feature of these social studies is the concern for historically marginalized communities and former fossil fuel producing and manufacturing centers in largely rural, working-class areas.

Roemer and Haggerty address the fiscal risks to legacy fossil fuel communities from the clean energy transition, trying to understand how communities with reliance on fossil fuel revenues have come to be fiscally vulnerable and measure impacts to improve decision-making (Roemer & Haggerty, 2022). Focusing on the community of Colstrip, MT, the researchers conducted interviews and reviewed fiscal data to gauge the degree of social service dependency on coal-industry tax revenues and extent of fiscal transition required to sustain the town once the two coal power plants in the county close (Roemer & Haggerty, 2022). For towns like Colstrip, where revenue from coal accounts for half the municipal income, the results of the study were not encouraging, as public infrastructure spending and community services soon come under threat and there are few local options for economic diversification (Roemer & Haggerty, 2022). One particular issue they identify is the lack of federal direct revenue replacement programs – which could be partially mitigated by some of the IRA tax credits, as identified by Bivens, among others (Roemer & Haggerty, 2022; Bivens, 2023). While not under the purview of this thesis, this is an oft-observed situation in much of the U.S., and it is unclear at this time without additional research how or to what extent communities like Colstrip will benefit from the Inflation Reduction Act.

More relevant to the New England example, Oksan Bayulgen investigates the unequal progress of the clean energy transition across Connecticut, attempting to determine through interviews and observations the factors that distinguish leading local towns (Bayulgen, 2020). Among the factors she identifies, towns with higher wealth and education levels, greater administrative capacity, and many passionate proponents in both elected and volunteer positions are more likely to be leaders in adopting renewable energy and efficiency measures (Bayulgen, 2020). Research of this sort in mostly small and rural towns is especially important for New England, where practically all local government occurs at the town level, as towns are substantially empowered to self-govern but in many cases are more resource-limited than comparable cities

elsewhere (Bayulgen, 2020). As Bayulgen reasons, since town governments and planning agencies hold ownership of municipal buildings and vehicles, authority over transit and building codes, and are primary distributors of public education on available choices for households, they are an essential domain that needs to take the lead on localized energy transitions (Bayulgen, 2020). To do so, barriers such as insufficient administrative and financial support from the state and/or federal government, as well as unmaintained interest and advocacy from communities and their leaders, will need to be addressed (Bayulgen, 2020). However, overall, the passage of clean energy initiatives in local towns is clearly identified as an effective route to pursue, as it is largely undetermined by partisan affiliation, town size, or ethnic profile, and the barriers that do exist can be met with regional support (Bayulgen, 2020).

From these community-based examples, we see that justice and equity considerations and ground-up solutions to the renewables-led economic transition are of prime concern at present, and that limitations that feature throughout such efforts are a lack of fiscal resources and/or accessible alternatives. Indeed, metanalyses such as that by Bhattarai, Maraseni, and Apan, who look at the issue from a global perspective rather than a national one, consistently highlight the need for a participatory, grassroots approach (Bhattarai, Maraseni, & Apan, 2022). Particularly, they identify a consensus that local communities must generate their own desire to transition, rather than just be provided with options and funding, in order for the transition to proceed successfully (Bhattarai, Maraseni, & Apan). This concern for what is called a "just energy transition" – succinctly defined as "a *managed* [emphasis added] shift toward a low-carbon energy system that prioritizes secure, family-sustaining jobs and healthy communities" – has found widespread interest around the world (Henry, Bazilian, & Markuson, 2020). Originating with labor movements concerned by being left out of well-funded Superfund efforts on former oil, chemical, and atomic sites, and movements in low-income and communities of color, where many such sites are located, it is only recently that the term has found use in the clean energy transition (Henry, Bazilian, & Markuson, 2020). This is important to highlight in the context of the Inflation Reduction Act, which (as will be assessed later in this research) includes several provisions dedicated to marginalized communities.

In the United States, the concept of the Green New Deal is highly engaged with just energy transition concerns, highlighting the need for job retraining and development support for adversely impacted communities and measures to ensure benefits from the transition are distributed equitably

(Carley & Konisky, 2022). While never passed as a law, the Green New Deal itself has had a large impact on shifting the debate within political circles and with the general public to consider what "energy justice" looks like, and what can be leveraged to achieve it (Carley & Konisky, 2022). Contained in the idea of "energy justice" are three familiar terms used in social justice literature: distributional justice (that is, distribution of costs and benefits), procedural justice (who is included in decision-making and what that decision-making process is), and recognition justice (identifying historical inequities and seeking to rectify these) (Carley & Konisky, 2022). Chiefly, these are achieved by reducing disproportionate burdens on specific communities ill-positioned to cope with the change, creating access to energy transition opportunities, and building future adaptive capacity through economic diversification and long-term community development (Carley & Konisky, 2022). This, naturally, requires government intervention across several levels of government, from local planning offices to federal tax spending, and the participation of affected communities in order to achieve more socially efficient and procedurally just outcomes (Carley & Konisky, 2022).

Whether the IRA will achieve these goals remains to be seen, but, as the spiritual successor to the Green New Deal (that is, as the direct inheritor of the movement's social justice ambitions), it has certainly adopted the language and some of the methods of the energy justice approach, including dedicated programs for affected communities on both the reactive (adaptation-focused) and proactive (mitigation- and deployment-focused) sides of the challenge. The extent to which the IRA is likely to directly contribute to emissions reduction and social welfare has been addressed by other literature already reviewed here, which generally showed substantial gains, but not large enough to meet emissions reduction targets.

The question of how to close this gap is likewise receiving attention. Jordan, et al. assess the potential of carbon taxation, stricter efficiency requirements and electrification standards, as well as mandated zero-emission vehicles and clean fuels (Jordan, et al., 2022). By running models of scenarios with these implementations on top of the existing IRA, the authors found any of the above could reduce emissions to the '50% by 2030' target, but only stringent standards and high carbon taxation could continue these reductions through to 75% by 2050 (Jordan, et al., 2022). It is worth noting that these results did *not* suggest that these solutions in addition to the IRA could achieve the ultimate aim of net-neutrality by 2050, emphasizing the necessity of future legislation beyond the IRA's lifetime (Jordan, et al., 2022).

In conclusion, the existing literature has well identified the main challenges of the IRA and made progress modeling the national economic and social implications, drawing on insights from earlier social studies of justice and equity considerations in underserved communities. However, despite this, there is little in the way of publicly-available data and shortcomings with prior summaries, which are largely limited to the more superficial advisory domain. Additionally, there is no regional analysis nor comprehensive study of grant-based opportunities, as the main focus of these early efforts is on tax credit provisions, primarily at the national level. As such, this research offers a valuable contribution to expand on these earlier summaries and assessments of the Inflation Reduction Act, comprising of original analysis and much-needed presentation of reported public project data, as described in the subsequent sections.

Methodology

This research consists of three principal sections: a categorical spreadsheet summary of all climate-related provisions of the Inflation Reduction Act; a spatial analysis of all reported projects within the New England region; and a brief textual review of some pertinent case studies of projects, drawn from available online press releases and planning documents.

The first portion of the research is intended to provide a broad sense of what types of funding opportunities exist and how they are categorized and prioritized (in real dollar amounts) at the federal level. The summary process was conducted by systemically reading through the White House's *Building a Clean Energy Economy* guidebook – designed as a comprehensive review of the original legislation that devotes about a page to describing each provision, organized into thematic chapters – and translating the reported information into spreadsheet format.

The full list of information collected in the final spreadsheet for each provision of the Act is as follows: Federal Agency (and Bureau/Office as applicable); Eligible Recipients; Eligible Use; Funding Mechanism; Total Funding Amount in 2022 U.S. dollars (USD$); Formula Funding Equation (as applicable); Closing Date (and, if applicable, Starting Date); indication if New, Extended, and/or Modified; and information on any bonus credit, such as from meeting wage requirements. Textual descriptions of Eligible Recipients and Eligible Use were saved in two forms: directly quoted from the guidebook; and shortened into keywords. In Microsoft Excel, the 134 identified provisions can be reordered using the "Sort & Filter" functionality according to

these categories for ease of comparison. The data for funding by eligible recipient(s) and use were visualized using the PivotTable and PivotChart features, subdivided in each case by five thematic umbrella categories for ease of interpretation (these are shown in Figure 1.1 under Results).

The second portion of the spreadsheet analysis narrows the breadth of subject areas under review to declared grant-based provisions only, as other disbursement mechanisms – especially those using tax credits – are practically impossible to geolocate or individualize by project. Grant programs from the first funding cycle are reported via a federal government portal website entitled "Investing in America" (accessible at: https://www.whitehouse.gov/invest/), which contains geolocated data from all federal agencies. As of February 2024, the portal was updated to include data from non-geolocated grant-funded projects as well. Although each agency also has an awards announcement page for public projects, these do not cover as many grant-based provisions as the central forum, nor subdivide these by topic area as the central depository does. The downloadable Excel spreadsheet available via the main federal repository includes project name and location (state, county, city), program funding type (discretionary or formula), and total approved funding amount, compiling data from across all 50 states and U.S. territories.

Taking this dataset, project information listed for each of the six New England states was removed to a separate spreadsheet and analyzed using the PivotTable feature as before, organized by category (taken directly from the original spreadsheet), program name, federal agency, and recipient type. The latter was added to the spreadsheet by manually reading through the project names and assigning a defined recipient keyword (city, housing project, non-profit, regional planning agency, rural farmers, rural town/energy producer, state, tribes, and other/non-specified). A few entries entered as "multiple" in the state column were not included as none of these are geolocated nor specific about which states are impacted, leaving 287 individual projects (of which 72 are not included in the current version of the federal website map, according to the spreadsheet).

Lastly, a representative project for each recipient type from the second part of the analysis was sampled from the spreadsheet described above and explored further using Internet-accessible press releases and planning information. The intention of this third section is to elaborate on how funding translates to observable changes in specific communities. Insights and observations from these various database and textual analyses are discussed in the subsequent sections, followed by recommendations developed by the author in conjunction with existing literature.

Results and Analysis

Part 1: Overview of the Inflation Reduction Act

The spreadsheet summary and PivotTables produced for this research provide a wealth of helpful visualizations and comparisons that it is hoped can complement existing policy assessments in a relatively user-friendly interface. First and foremost, the purpose of this dataset is to break down the quantifiable portions of the Act into manageable and comprehensible subsects in order to ascertain the demonstrated focus of the legislation beyond its often-opaque political messaging. Figures/Tables 1-1 and 1-2 illustrate the spread of all quantified IRA funding across five umbrella terms and fifteen keywords developed over the course of creating the spreadsheet:

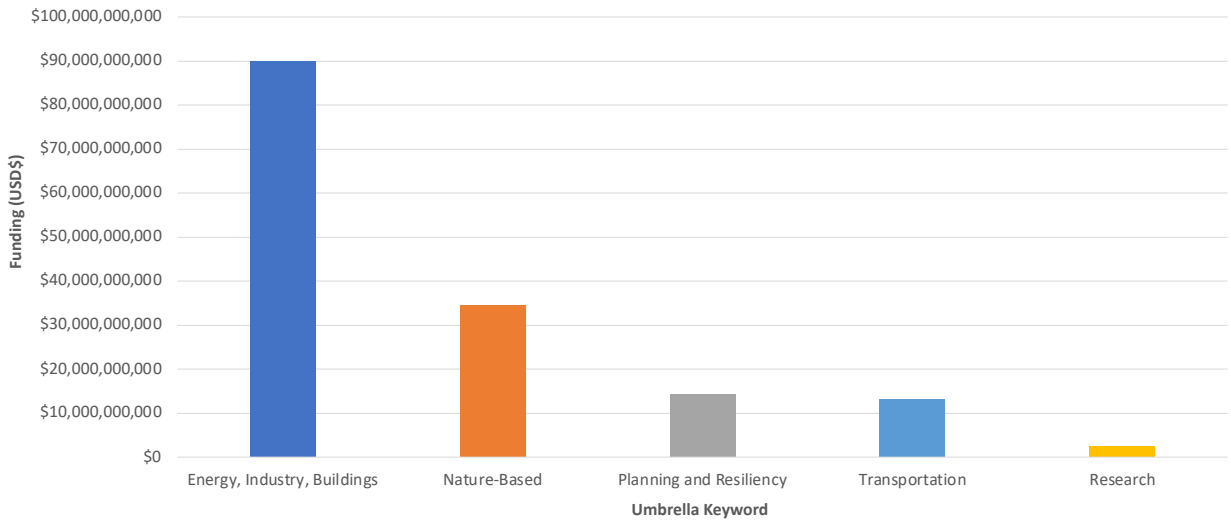

Figure 1-1: Overview of listed IRA funding by assigned umbrella term. Note that this does not include most tax-credit based programs, which are not easily reported, nor non-climate related portions of the IRA.

Table 1-1: Overview of defined IRA funding by umbrella term, designated manually by the author.

Umbrella Keyword Theme	Number of Provisions	Total Funding Amount
Energy, Industry, Buildings	46	$90,012,950,000
Nature-Based	30	$34,335,000,000
Planning and Resiliency	30	$14,216,400,000
Transportation	20	$13,071,060,000
Research	8	$2,513,500,000
Grand Total	**134**	**$154,148,910,000**

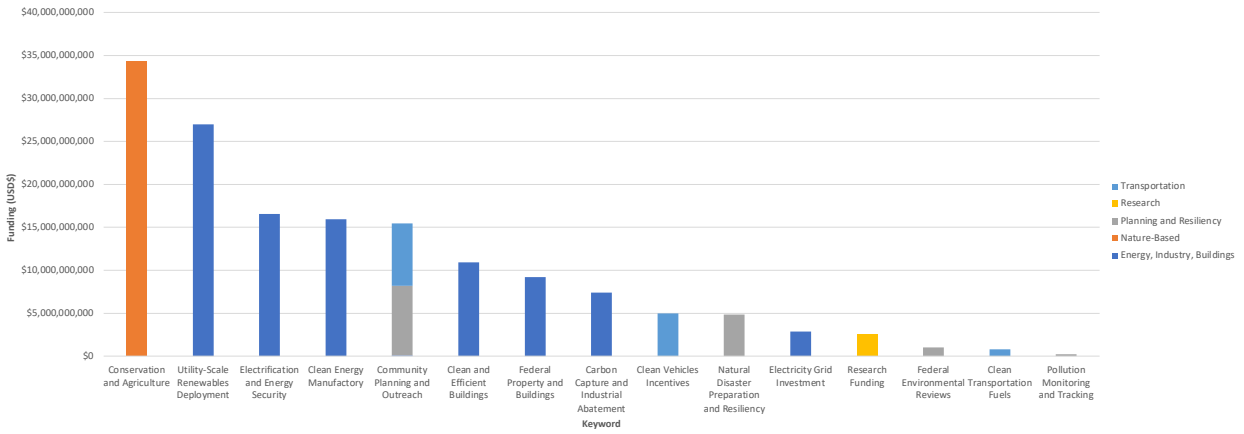

Figure 1-2: Overview of listed IRA funding by thematic keyword. Note these labels are informed by, but independently produced from, the existing subsection titling used in the IRA and accompanying guidebook.

Table 1-2: Overview of listed IRA funding by thematic keyword describing the end-use purpose of funding.

Keyword Theme	Number of Provisions	Total Funding Amount
Nature-Based Solutions: Conservation/Agriculture	30	$34,335,000,000
Utility-Scale Renewables Deployment	7	$27,000,000,000
Electrification and Energy Security	7	$16,550,450,000
Clean Energy Manufactory	5	$15,950,000,000
Community Planning and Outreach	11	$15,447,000,000
Clean and Efficient Buildings	11	$10,940,000,000
Federal Property and Buildings	8	$9,225,000,000
Carbon Capture and Industrial Abatement	4	$7,400,500,000
Clean Vehicles Incentives	6	$5,000,000,000
Natural Disaster Preparation and Resiliency	8	$4,863,400,000
Electricity Grid Investment	3	$2,860,000,000
Research Funding	8	$2,513,500,000
Federal Environmental Reviews	9	$1,005,000,000
Clean Transportation Fuels	10	$806,060,000
Pollution Monitoring and Tracking	7	$253,000,000
Grand Total	**134**	**$154,148,910,000**

As is shown above, the entire quantified portion of the IRA amounts to $154,148,910,000. That is, about $154 billion, compared to established federal approximations of around $369 billion, which includes all tax credit expenditures not given specific funding caps in the legislation (Senate

Democrats, n.d.). Notably, the $215 billion remaining that would come from tax credit provisions accounts for only 22 of the 134 provisions, directed to households and manufactory industries, as opposed to agency-directed project awards. However, as tax credits fall outside the purview of this analysis for reasons noted previously, these results will instead emphasize the distribution of the nonetheless substantial $154 billion devoted to grants, loans, and direct federal expenditures.

As made evident by Figure 1, provisions targeting cleaner energy, industry, and buildings claim the largest share of funding with around $90 billion (or 58% of the $154 billion total), more than double the next largest category – nature-based solutions – at $34 billion (or 22% of the total). Figure 2 expands on the specific components of these umbrella terms, though it is worth noting that a few provisions that have the same keyword are distributed across different umbrella groups (this largely applies to community outreach programs with varying focuses – but no individual provisions are repeated in multiple umbrella groups). The $90 billion to energy, industry, and buildings, for instance, is subdivided between: utility-scale renewables deployment ($27 billion), rural electrification and energy security programs ($16.5 billion), clean energy manufactory ($16 billion), building efficiency improvements ($11 billion), federally-owned building retrofits ($9.2 billion), carbon capture ($7.4 billion), and electricity grid investments ($2.9 billion). The next largest umbrella categories in order of magnitude are nature-based solutions (represented in entirety in Figure 2 under 'conservation and agriculture'), community planning, and transport, followed by $2.5 billion in new research funding, the smallest, but no less substantial, amount.

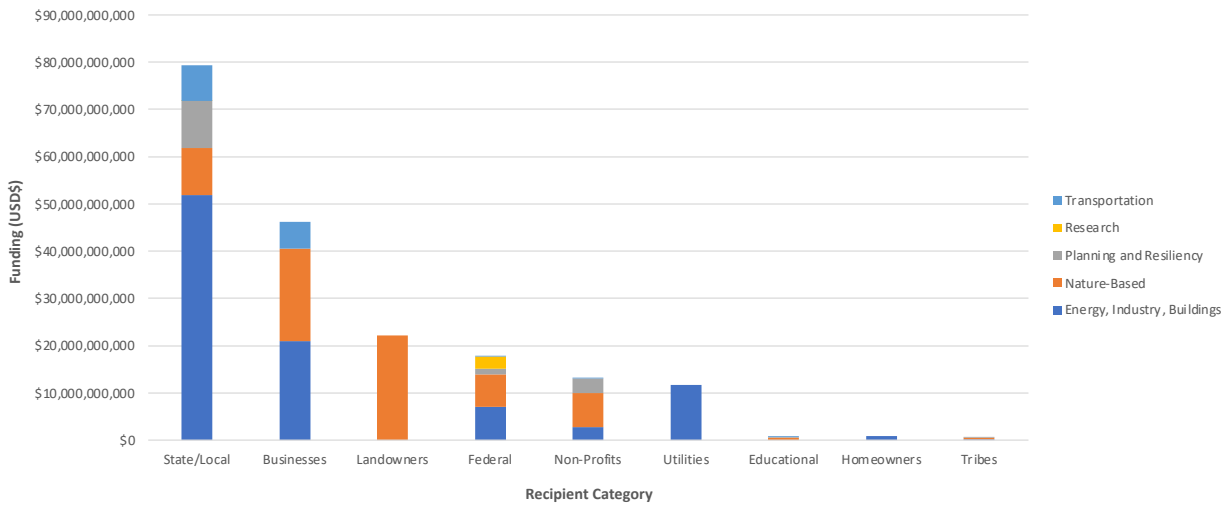

Figure 1-3: Overview of listed IRA funding by eligible recipient category. Some provisions permit multiple recipients to claim the same funding (e.g., both businesses and non-profits), and so are repeated under both.

Table 1-3: Overview of defined IRA funding by eligible recipient category. No overall total is given here because there are provisions that are listed multiple times under different recipients.

Eligible Recipient	Number of Provisions	Total Funding Amount
State/Local	39	$79,363,560,000
Businesses	36	$46,282,010,000
Landowners	12	$22,125,000,000
Federal	42	$17,695,400,000
Non-Profits	16	$13,219,000,000
Utilities	8	$11,700,000,000
Educational	6	$941,060,000
Homeowners	10	$940,000,000
Tribes	6	$722,500,000

Figure and Table 1-3, above, display the same provisions in terms of their eligible recipients, allowing for individual provisions to exist in multiple categories so as to represent the maximum funds available to each category individually of the others. Here, we find that state/local government (including agencies) comes far out in front, followed by businesses and landowners. The majority of funding, including to the top three, is grant- or loan-based, but there is still a fair amount of federal direct spending (represented in entirety under the 'Federal' recipient category), at around $17.7 billion. It is also worth mentioning that state and federal funding may include projects that go on to fund the other groups indirectly (say, through regional or state agencies), meaning some of these provisions could potentially have impacts beyond their listed category.

Figure and Table 1-4 below show that a little over half of IRA provisions are entirely new, the remainder being an extension of some variety of prior legislation (e.g., the Defense Production Act of 1950 or the Clean Air Act of 1970) as well as longstanding initiatives like the Rural Energy for America Program (REAP) and Conservation Stewardship Program. Of particular note is the dominance of agricultural and conservation programs among the existing and renewed provisions, and their absence from new measures, suggesting once more that the main focus of the IRA as a novel climate law is firmly on energy, industry, and buildings. This is consistent across both funding and number of provisions, as the latter is also around half for this category. For all of these results, it is worth noting the difference between funding amount and number of provisions, as a few large provisions or many small provisions can greatly skew the interpretation of emphasis – for the most part, this analysis will focus on funding as a better reflection of legislative priority.

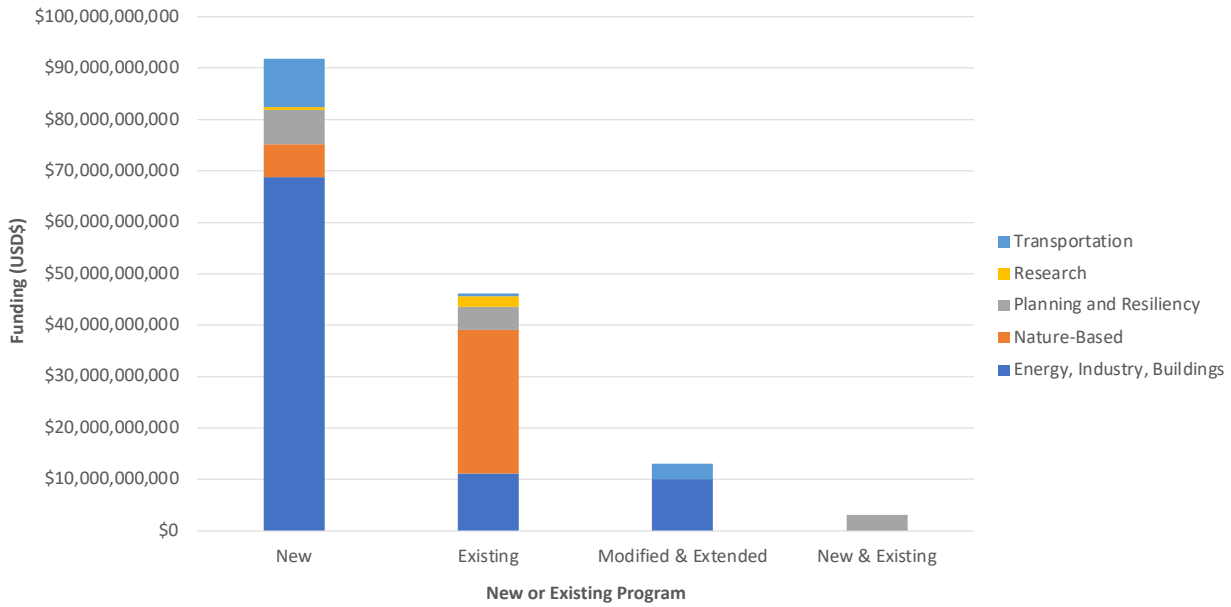

Figure 1-4: Overview of listed IRA funding by new or existing program. Modified and extended programs are existing provisions from earlier legislation that have altered funding or eligible recipients. New and existing refers to programs that have both new and existing components.

Table 1-4: Overview of defined IRA funding by whether it is new or existing.

Row Labels	Number of Provisions (%)	Total Funding Amount (%)
New	70 (52%)	$91,901,460,000 (60%)
Existing	51 (38%)	$46,183,950,000 (30%)
Modified & Extended	10 (8%)	$13,000,000,000 (8%)
New & Existing	3 (2%)	$3,063,500,000 (2%)
Grand Total	**134**	**$154,148,910,000**

Figure and Table 1-5 on the next page show the spread of IRA provisions by managing federal agency. As perhaps expected by a law whose principal categories are energy, industry, buildings, agriculture, and conservation, the federal agencies who have received the most from the IRA are the Department of Agriculture, Environmental Protection Agency (EPA), and Department of Energy. While these three clearly dominate non-tax-credit measures, it is worth noting that the Department of the Treasury handles the vast majority of tax credits and is thus the true largest managing agency responsible for implementation, although tax credits are not explored here.

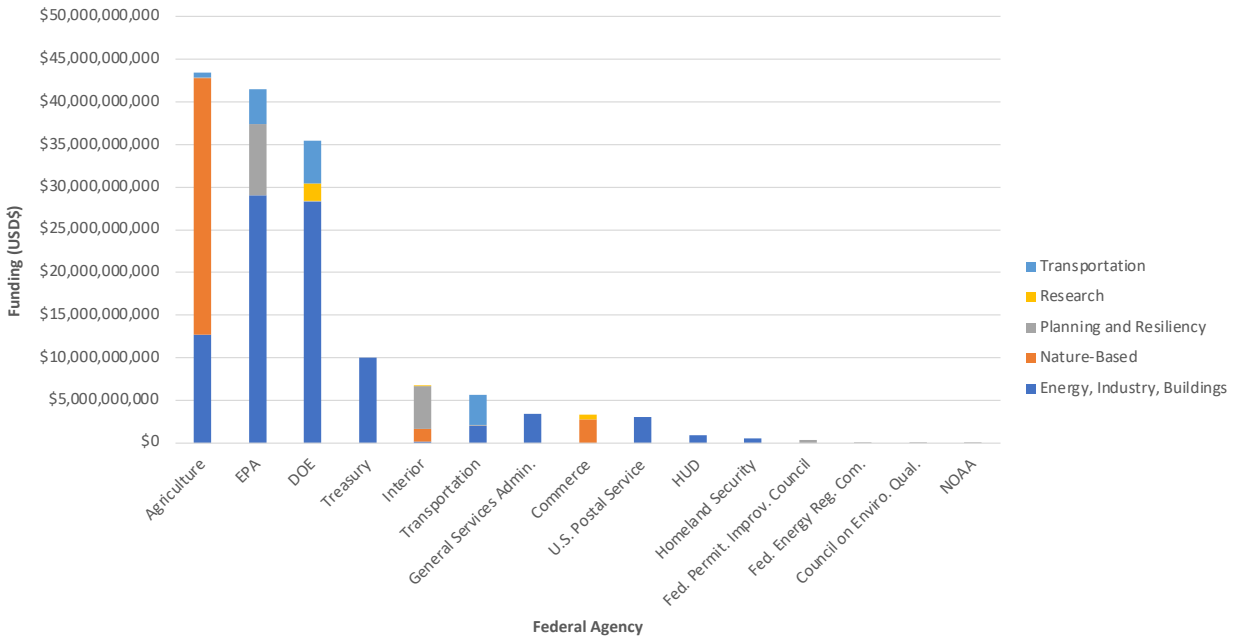

Figure 1-5: Overview of defined IRA funding by managing federal agency (some shorthand names used).

Table 1-5: Overview of defined IRA funding by managing federal agency (shorthand given in parenthesis).

Federal Agency	Number of Provisions	Total Funding Amount
Department of Agriculture	28	$43,410,450,000
Environmental Protection Agency (EPA)	23	$41,456,000,000
Department of Energy (DOE)	20	$35,412,000,000
Department of the Treasury	23	$10,000,000,000
Department of the Interior	17	$6,636,900,000
Department of Transportation	5	$5,596,060,000
General Services Administration	3	$3,375,000,000
Department of Commerce	5	$3,290,000,000
U.S. Postal Service	1	$3,000,000,000
Department of Housing and Urban Development (HUD)	3	$940,000,000
Department of Homeland Security	1	$500,000,000
Federal Permitting Improvement Steering Council	1	$350,000,000
Federal Energy Regulation Commission	1	$100,000,000
Council on Environmental Quality	2	$62,500,000
National Oceanic and Atmospheric Administration (NOAA)	1	$20,000,000
Grand Total	**134**	**$154,148,910,000**

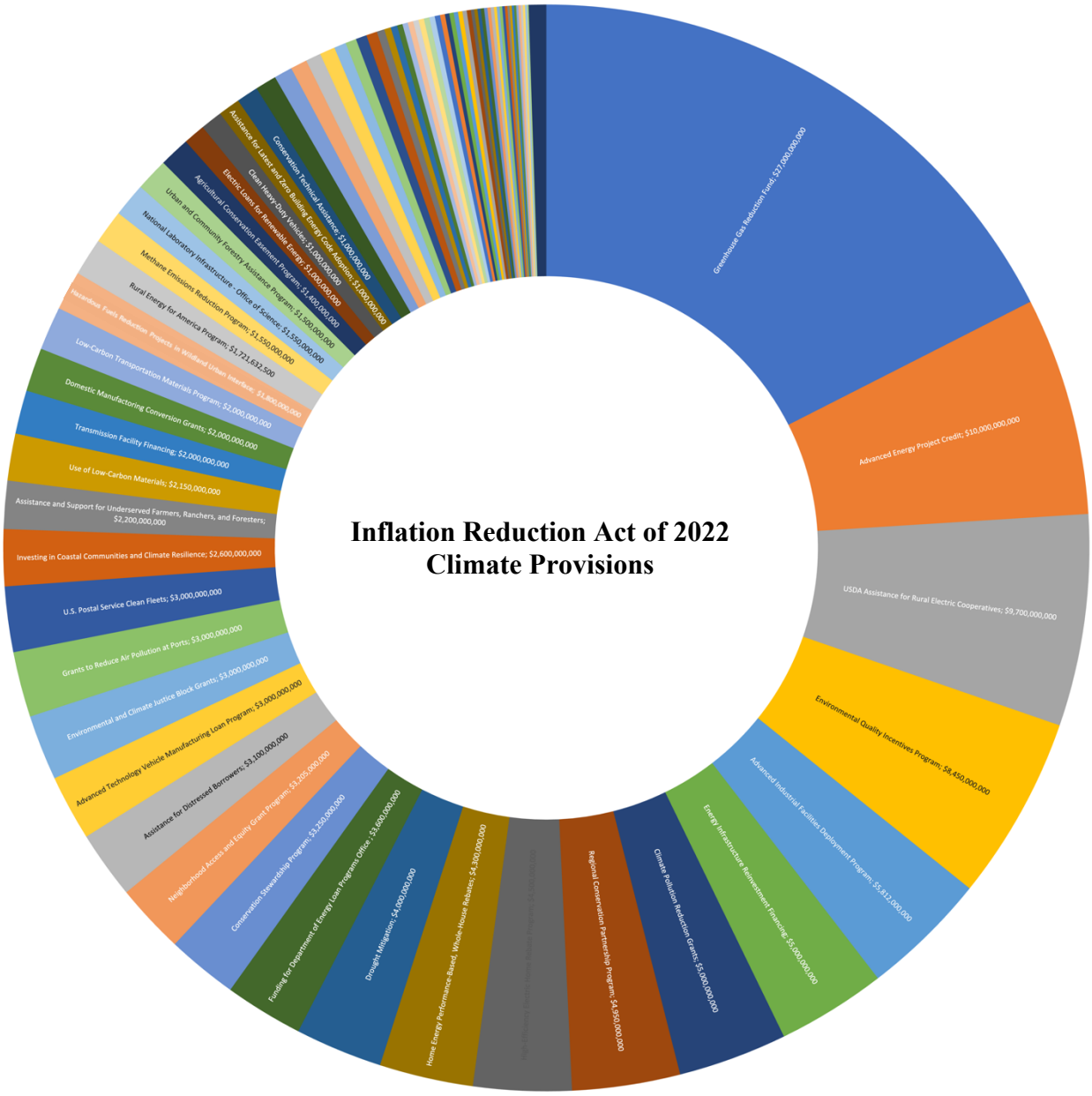

Figure 1-6: All individual provisions, by order of funding amounts (listed parenthetically if over $1 billion).

As Figure 1-6 shows, in terms of individual provisions, only 35 of the IRA programs are valued at $1 billion or more by themselves (labeled by name above). Collectively, these 35 account for $140 billion of the $154 billion totaled in the earlier listed tables. The four largest of these, the Greenhouse Gas Reduction Fund ($27 billion), Advanced Energy Project Credit ($10 billion), USDA Assistance for Rural Energy Cooperatives ($9.7 billion), and Environmental Quality Incentives Program ($8.45 billion) receive as much as 36% of all IRA grant funding alone.

Part 2: Declared IRA Projects in New England

The New England dataset analysis contains only 27 provisions of the 112 non-tax-credit programs seen in Part 1. All 27 are either grant-based or directly federally funded. These are summarized below by category keyword as appears unaltered in the spreadsheet downloadable from the federal government portal (in this case, the February 2024 version), in Figure/Table 2-1:

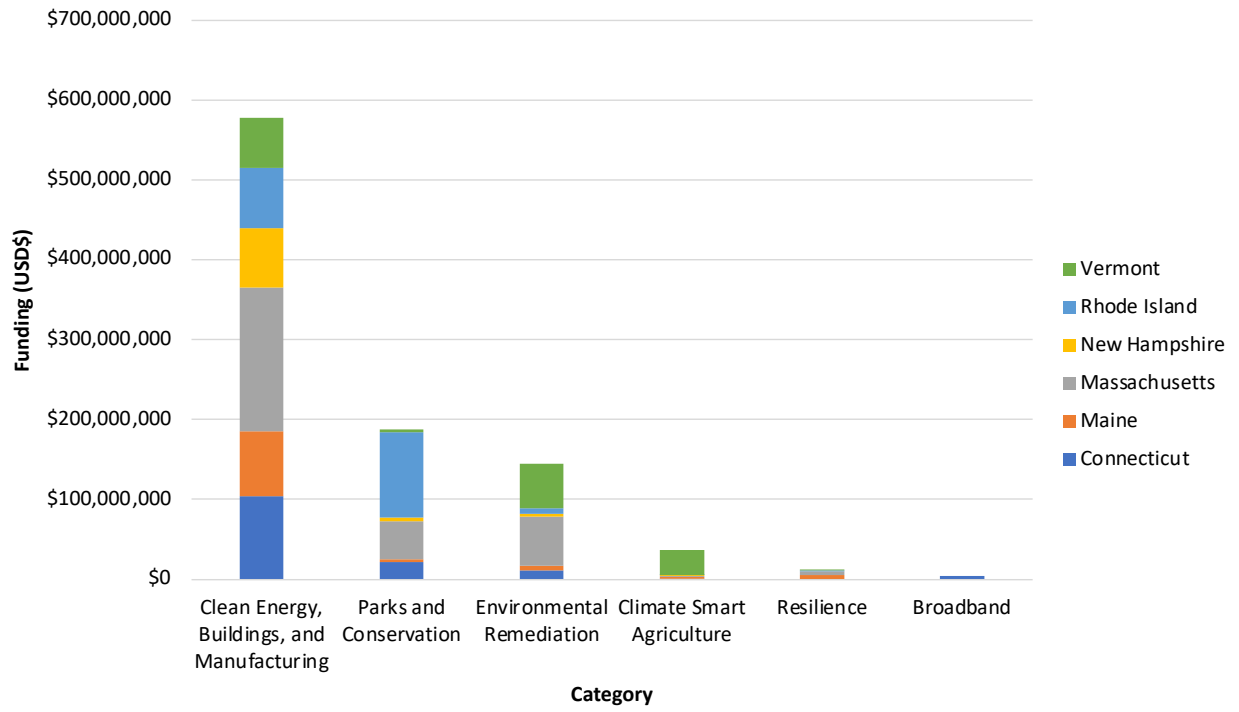

Figure 2-1: New England IRA-funded grant projects through February 2024, by spreadsheet category.

Table 2-1: New England grant projects by category.

Category	Number of Projects	Funding Amount
Clean Energy, Buildings, and Manufacturing	161	$577,372,721
Parks and Conservation	37	$187,785,700
Environmental Remediation	51	$144,297,178
Climate Smart Agriculture	15	$36,285,871
Resilience	19	$11,798,126
Broadband	4	$4,500,000
Grand Total	**287**	**$962,039,596**

As may be seen in Figure 2-1 with some projects being listed under “Broadband” despite having no relation to internet access, the categories in the spreadsheet contain errors. As such, it was necessary to manually reassign the entire category column by chapter title from the guidebook, similar to Figure 1-2. The reassigned categories are shown below in Figure/Table 2-2:

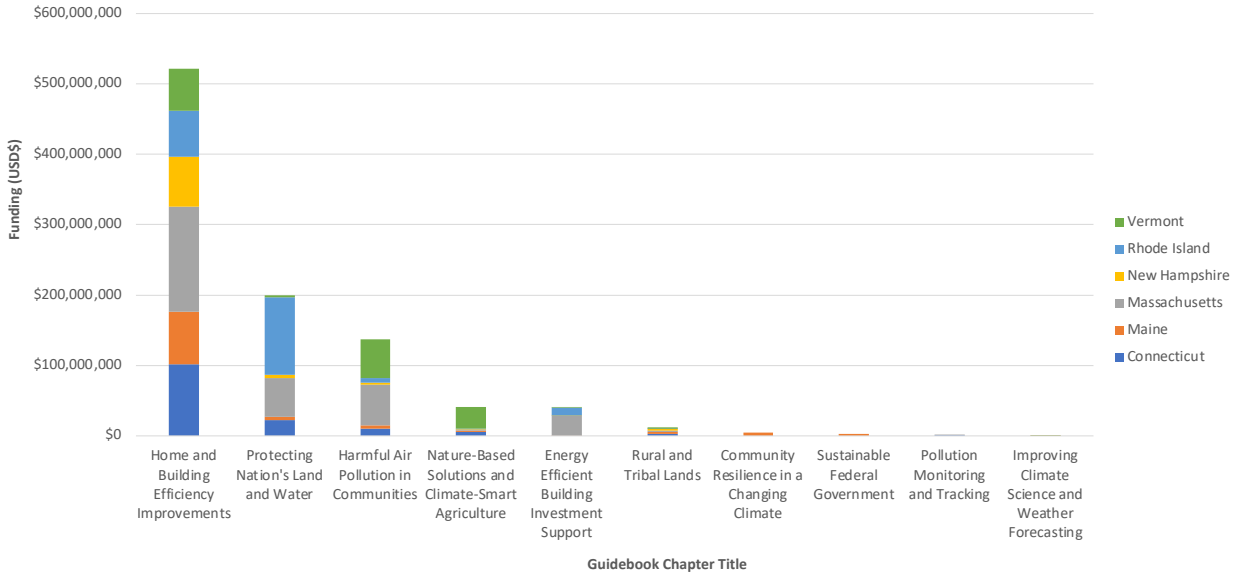

Figure 2-2: New England IRA-funded grant projects through February 2024, by guidebook chapter.

Table 2-2: New England grant projects by guidebook chapter.

Guidebook Chapters	Number of Projects	Total Funding Amount
Home and Building Efficiency Improvements	28	$521,278,431
Protecting Nation's Land and Water	66	$199,967,943
Harmful Air Pollution in Communities	34	$136,839,636
Nature-Based Solutions and Climate-Smart Agriculture	19	$40,785,871
Energy Efficient Building Investment Support	8	$40,414,906
Rural and Tribal Lands	124	$12,479,384
Community Resilience in a Changing Climate	1	$5,000,000
Sustainable Federal Government	1	$3,200,000
Pollution Monitoring and Tracking	4	$1,657,542
Improving Climate Science and Weather Forecasting	2	$415,883
Grand Total	**287**	**$962,039,596**

We can see from the prior two figures that there are, in all, some $962,039,596 in declared projects for the New England region, across 287 individual projects, with home and building efficiency coming out on top, followed, interestingly, by mainly pollution and planning concerns. Figure/Table 2-3 below examines which recipient groups are applying for/receiving these funds:

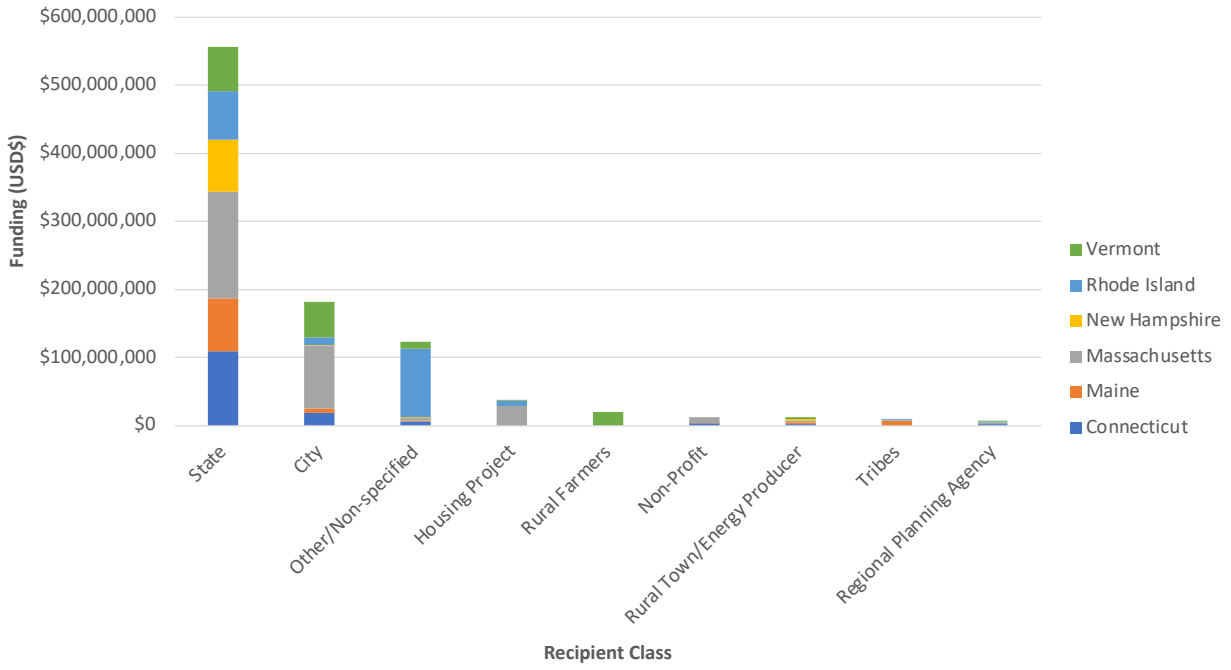

Figure 2-3: New England IRA-funded grant projects through February 2024, by ascertained recipient class.

Table 2-3: New England grant projects by recipient class.

Recipient Class	Number of Projects	Total Funding Amount
State	44	$556,114,361
City	50	$182,062,522
Other/non-specified	28	$123,818,511
Housing Project	7	$37,894,906
Rural Farmers	4	$20,731,707
Non-Profit	7	$12,835,131
Rural Town/Energy Producer	124	$12,479,384
Tribes	15	$8,760,720
Regional Planning Agency	8	$7,342,354
Grand Total	**287**	**$962,039,596**

First and foremost, it is clear that state-directed programs are absolutely dominant, receiving well over half of the declared funding across a moderate number of projects, roughly evenly spread across the six states except for Massachusetts, which has twice as much as the next largest state. Combined with the non-specified class, about 75% of state funds have no defined single municipal recipient (and are similarly absent from the online map in the federal portal), and so little more can be said for these in terms of geographic distribution. For the remaining 25%, however, the largest category is cities – that is, municipal governments applying for IRA grants. The eight largest of these local projects are, perhaps unsurprisingly, in more populated and wealthy areas: Montpelier, VT; Boston, MA; Revere, MA; Provincetown, MA; Providence, RI; Salem, MA; Springfield, MA; Harvard, MA. However, some large regional cities, such as Worcester, MA, have not applied for or received any funding to date, so size alone may not be the only factor.

Variations between states are somewhat apparent in the stacked bar charts shown thus far, but it is valuable to look at this variable independently, particularly with regards to population (using 2020 Census data) and per capita funding allocation. It is worth reiterating that the funding going to states may also be reallocated by states toward local projects, although this is not known from this data alone. The total funding amount by state is displayed in Figure 2-4, below, followed by Table 2-4, which includes population, number of projects, and per capita funding:

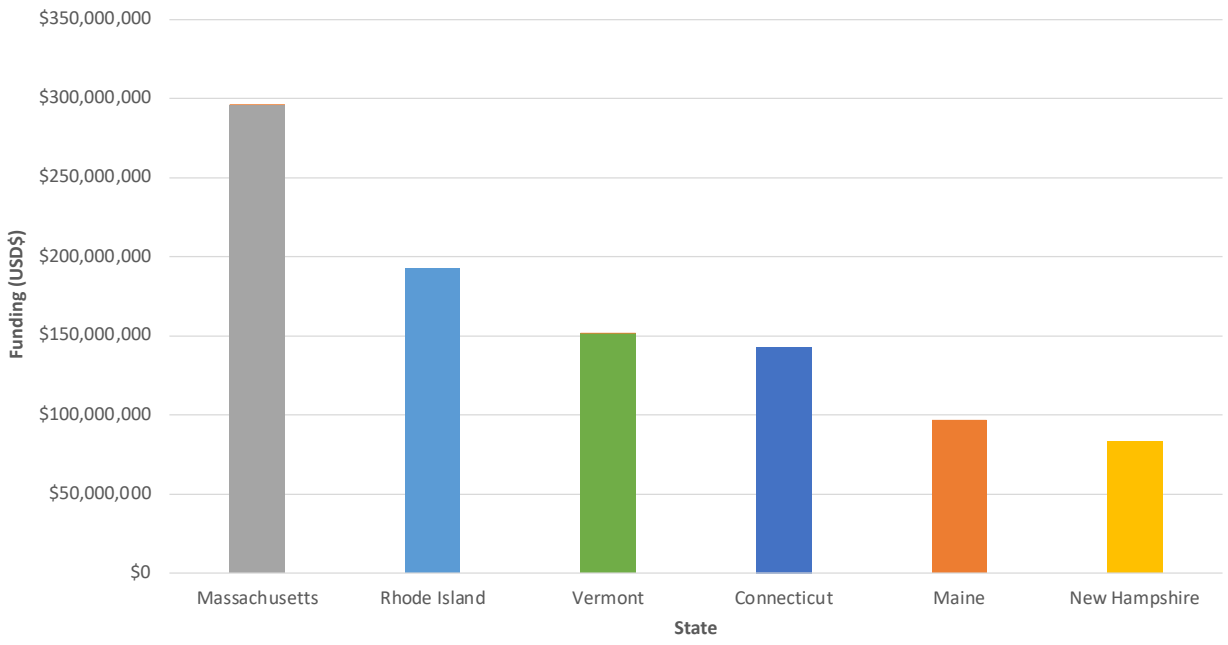

Figure 2-4: New England IRA-funded grant projects through February 2024, by state.

Table 2-4: New England grant projects by state, with population information (U.S. Census Bureau, 2020).

State	Population (2020)	Number of Projects	Total Funding Amount	Funding per Capita
Massachusetts	7,029,917	66	$295,863,537	$42.09/person
Rhode Island	1,097,379	29	$192,708,627	$175.61/person
Vermont	643,077	40	$151,207,591	$235.13/person
Connecticut	3,605,944	51	$142,744,842	$39.59/person
Maine	1,362,359	75	$96,599,482	$70.91/person
New Hampshire	1,377,529	26	$82,915,517	$60.19/person
Grand Total	**15,116,205**	**287**	**$962,039,596**	

As anticipated for the largest state by population, Massachusetts in the largest recipient of project funds and the second largest for number of projects after Maine, the largest state by land area (although by total dollar amount, Maine only comes to fifth place out of the six states). Less consistent with population and land area, however, are Rhode Island and Vermont, which appear to have less but more valuable projects, especially in relation to their smaller population size.

Finally, Figure/Table 2-5 subdivides the declared projects by federal agency responsible for managing the related IRA provision. This is subsequently followed by Figure/Table 2-6, which provides a total overview of all the projects funded in New England:

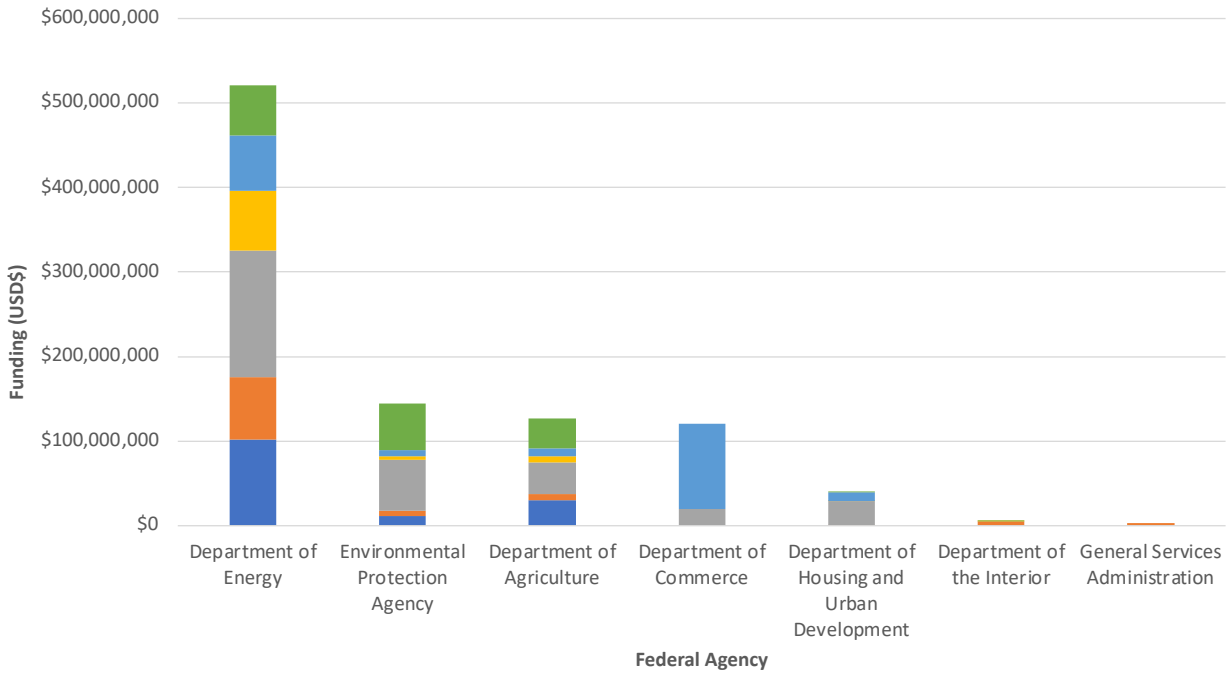

Figure 2-5: New England IRA-funded grant projects through February 2024, by federal agency.

Table 2-5: New England grant projects by federal agency.

Row Labels	Number of Projects	Total Funding Amount
Department of Energy	28	$521,278,431
Environmental Protection Agency	51	$144,297,178
Department of Agriculture	177	$126,900,955
Department of Commerce	18	$120,382,243
Department of Housing and Urban Development	8	$40,414,906
Department of the Interior	4	$5,565,883
General Services Administration	1	$3,200,000
Grand Total	**287**	**$962,039,596**

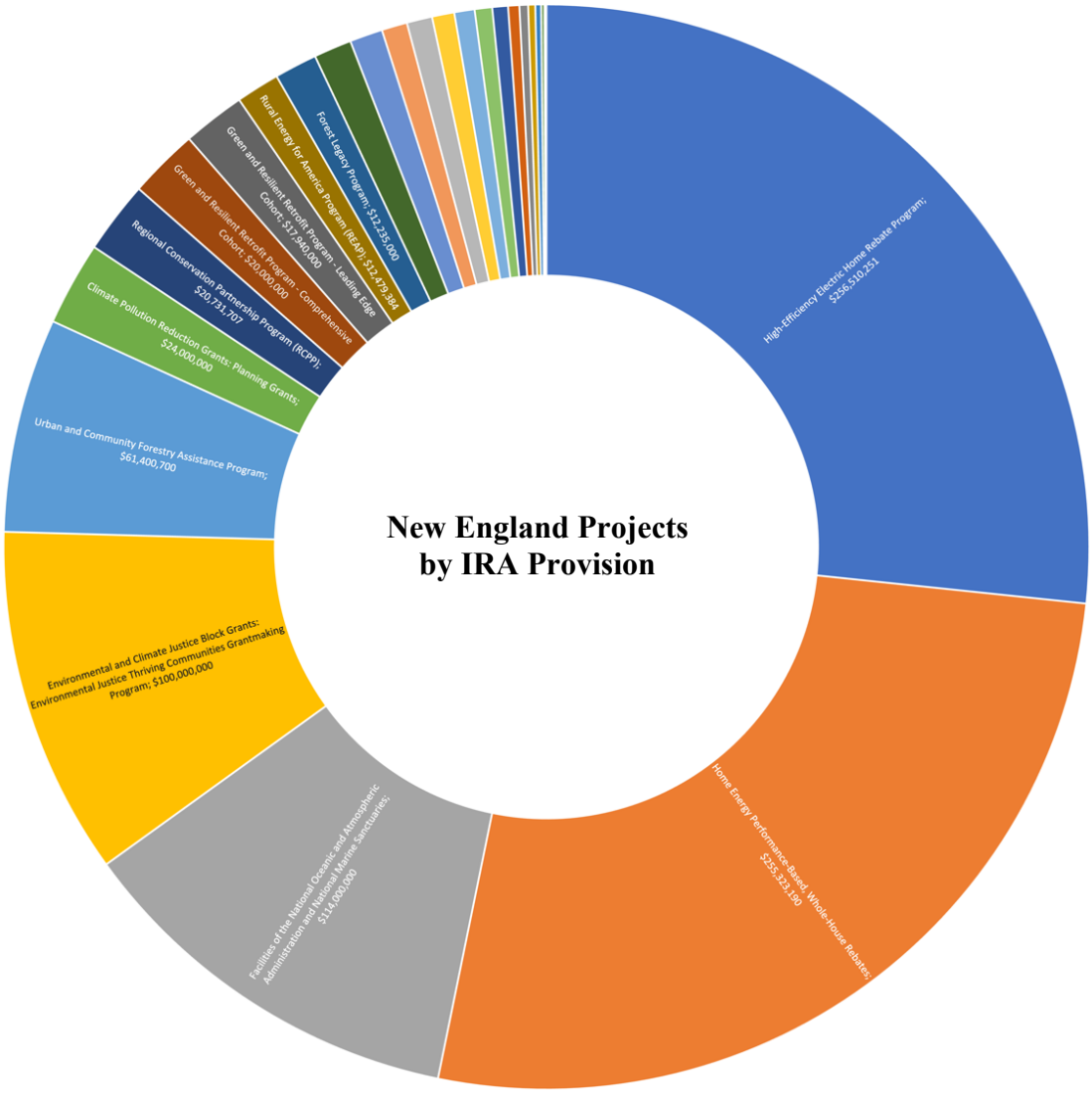

Figure 2-6: All provisions currently funded in New England, by order of amount (listed if more than $12m).

Table 2-6: All provisions currently funded in New England, including funding mechanism and chapter.

IRA Provision	Number of Projects	Total Funding Amount	Funding Mechanism	Guidebook Chapter
High-Efficiency Electric Home Rebate Program	16	$256,510,251	Grant	Home and Building Efficiency Improvements
Home Energy Performance-Based, Whole-House Rebates	6	$255,323,190	Grant	Home and Building Efficiency Improvements
Facilities of the National Oceanic and Atmospheric Administration and National Marine Sanctuaries	2	$114,000,000	Direct Federal Funding	Protecting Nation's Land and Water
Environmental and Climate Justice Block Grants: Environmental Justice Thriving Communities Grantmaking Program	2	$100,000,000	Grant	Harmful Air Pollution in Communities
Urban and Community Forestry Assistance Program	32	$61,400,700	Grant	Protecting Nation's Land and Water
Climate Pollution Reduction Grants: Planning Grants	12	$24,000,000	Grant	Harmful Air Pollution in Communities
Regional Conservation Partnership Program (RCPP)	2	$20,731,707	Grant	Nature-Based Solutions and Climate-Smart Agriculture
Green and Resilient Retrofit Program - Comprehensive Cohort	1	$20,000,000	Grant	Energy Efficient Building Investment Support
Green and Resilient Retrofit Program - Leading Edge Cohort	3	$17,940,000	Grant	Energy Efficient Building Investment Support
Rural Energy for America Program (REAP)	124	$12,479,384	Grant	Rural and Tribal Lands
Forest Legacy Program	2	$12,235,000	Grant	Protecting Nation's Land and Water
Environmental and Climate Justice Block Grants: The Environmental Justice Government-to-Government (EJG2G) Program	11	$10,821,383	Grant	Harmful Air Pollution in Communities
State-Based Home Efficiency Contractor Training Grants	6	$9,444,990	Grant	Home and Building Efficiency Improvements
Environmental Quality Incentives Program (EQIP)	6	$7,331,147	Grant	Nature-Based Solutions and Climate-Smart Agriculture
Conservation Stewardship Program (CSP)	6	$7,285,542	Grant	Nature-Based Solutions and Climate-Smart Agriculture
Investing in Coastal Communities and Climate Resilience	16	$6,382,243	Grant	Protecting Nation's Land and Water
Environmental and Climate Justice Block Grants: Environmental Justice Collaborative Problem-Solving (EJCPS) Cooperative Agreement Program	13	$5,800,000	Grant	Protecting Nation's Land and Water
Tribal Climate Resilience	1	$5,000,000	Grant	Community Resilience in a Changing Climate
From Learning to Leading: Cultivating the Next Generation of Diverse Food and Agriculture Professionals (NEXTGEN)	1	$4,500,000	Grant	Nature-Based Solutions and Climate-Smart Agriculture
Use of Low-Carbon Materials	1	$3,200,000	Direct Federal Funding	Sustainable Federal Government

Green and Resilient Retrofit Program - Elements Cohort	4	$2,474,906	Grant	Energy Efficient Building Investment Support
Funding to Address Air Pollution: Clean Air Act Grants	9	$2,018,253	Grant	Harmful Air Pollution in Communities
Funding to Address Air Pollution: Fenceline Air Monitoring	4	$1,657,542	Grant	Pollution Monitoring and Tracking
Agricultural Conservation Easement Program (ACEP)	1	$937,475	Grant	Nature-Based Solutions and Climate-Smart Agriculture
USGS 3D Elevation Program (3DEP)	2	$415,883	Direct Federal Funding	Improv. Climate Science and Weather Forecasting
Endangered Species Act Recovery Plans	1	$150,000	Grant	Protecting Nation's Land and Water
Increasing Land, Capital, and Market Access (Increasing Land Access) Program	3	-	Grant	Nature-Based Solutions and Climate-Smart Agriculture
Grand Total	**287**	**$962,039,596**		

In all, the 287 New England projects, totaling around $962 million, account for only 4.85% of the $19,819,945,681 in declared projects nationally, of which there are 4,958 (New England is home to only 5.79% of these individual projects). As has been observed in prior figures, funding amount and number of projects are not the same, as there are a few large projects, and a lot of very small ones. For instance, in Table 2-6, it becomes evident that the greatest number of projects belong the REAP program, with 124, but each individual project is so small that it ranks only tenth out of 27. The full ranges of funding for individual projects varies from as little as $7,800 up to $50,000,000, although a few projects, including all three under the Increasing Land Access Program, have no declared funding at all, a possible data collection error. Lastly, it is worth noting that it remains unknown whether there are more than these 27 provisions actually being implemented. As such it is difficult to tell whether the absence of so many of the 134 provisions outlined in Part 1 is either the result of insufficient reporting or a lack of applicability or interest, or some combination.

Part 3: Case Studies

In this section, the eight representative examples of projects from each of the discrete recipient categories – city, housing project, non-profit, regional planning agency, rural farmers, rural town/rural energy producer, state, tribes – are briefly reviewed, drawing on data from Part 2.

1) City: Healthy Places Boston – Massachusetts *($11,406,762)*

In the state of Massachusetts, home to the largest urban areas in New England, over $22 million has been allocated to individual cities' programs to expand tree cover, with a particular emphasis in most cases on disadvantaged areas identified as historically deficient in tree cover (Executive Office of Environmental and Energy Affairs [EOEEA], 2023). The most extensive of these programs is located in the capital city, Boston, MA, under the name "Healthy Places Boston." Accounting for half of the declared city funds to Massachusetts from the Urban and Community Forestry Assistance Program (under the U.S. Forest Service), the Boston program is intended to "advance social inclusion and workforce development" in the neighborhoods of Chinatown, East Boston, Dorchester, Mattapan, and Roxbury (EOEEA, 2023). This array of ethnically-diverse, working class, and ex-industrial communities reflects the program's emphasis on environmental justice concerns and prioritizing reinvesting in areas left more vulnerable to urban heat islands. As part of this effort, there is substantial interest in fostering community involvement through both non-profits such as the Boston Tree Alliance (which is receiving $2.6 million directly from the IRA grant) and private homeowners (Bleichfeld, 2023). This is important for both equity and effective reach, since as much as 60% of urban trees are not on public land (Bleichfeld, 2023). The primary use of the money, interestingly, is towards the maintenance of existing tree cover and the creation of jobs and non-profit support to do so, rather than simply for only planting new trees (Boston Department of Parks and Recreation, 2023). Notably, a number of these jobs are intended for young adults from the communities themselves via PowerCorps Boston, an educational paid work program expanded by IRA funding to 100 participants a year (Boston Department of Parks and Recreation, 2023). In addition, Boston is also seeking to trailblaze with sidewalk experiments on the feasibility of planting more trees on roadsides without compromising accessibility of spaces, again reflecting a concern with related urban design challenges (Boston Department of Parks and Recreation, 2023). To conclude, Boston now stands as a well-resourced leader in the urban forestry scene, with ambition to match, representing a prime example of funding meeting existing demand.

2) Housing project: Hillcrest Village Apartments – Rhode Island *($7,800,000)*

The Hillcrest Village Apartments complex in Providence, RI is a single public housing block containing 130 apartments for seniors, built in 1979 and run by Preservation of Affordable Housing, a non-profit developer of affordable housing, since 2005 (Preservation of Affordable

Housing [POAH], 2023; POAH, n.d.). Supported by the federal Department of Housing and Urban Development's Green and Resilient Retrofit Program under the IRA, the facility was retrofitted to achieve 'Leading Edge' status, which requires owners to commit to obtaining recognized green certifications such as LEED Gold or Platinum (POAH, 2023). As part of the upgrades, the building installed "new windows, low-energy lighting, low-flow shower-heads and faucets, low-flow toilets, and Energy Star-rated appliances to replace older models," as well as an on-site cogeneration plant that captures excess heat from an existing boiler system to generate electricity (POAH, n.d.). Notably, this is only one of 16 such projects funded by HUD as part of the 'Leading Edge' cohort, alongside another similar apartment complex in Salem, MA, receiving $7.6 million and a second, separate building in Providence, RI, Hillside Village, with $2.5 million (HUD, n.d.). Although no New England projects were included among the 10 projects added in February 2024 to the first wave of 16, the fact that three sizable and ambitious rebuilds occurred in the region is promising for future investment, including for properties of more moderate means (HUD, 2024).

3) Non-profit: Last Green Valley Forest Legacy Project – Connecticut *($3,620,000)*

Funded under the Forest Service's Forest Legacy Program provision, the Last Green Valley project is managed by a regional conservation non-profit of the same name, based in northeastern Connecticut (Last Green Valley, n.d.). As the name of the project area suggests, it consists of the last remaining contiguous forest space in the Boston, MA to Washington, D.C. corridor left largely undeveloped, covering 1.49 million acres bounded by Worcester, MA, Springfield, MA, Hartford, CT, New London, CT, and Providence, RI (Last Green Valley, n.d.). As much as 76% of the region is forest covered, with the vast majority in the hands of small private landowners, but only 26% of this land is permanently protected (Last Green Valley, n.d.). The Forest Legacy Program provides incentives to these landowners to encourage better forest management practices, as well as funds to directly buy property rights or development rights to be held by a state agency in perpetuity (Forest Service, n.d.). This is thus one of the largest voluntary forest conservation programs in the Northeast, and an excellent illustration of delegated management between federal, state, and non-governmental entities, with the potential to affect a very large area across multiple states. Whether this effort will be successful is dependent how much buy-in from additional private landholders there is, but if the approach of using a non-profit as an intermediary proves effective at improving enrollment in the program, we may expect more funding of the sort in New England in the future.

4) Regional planning agency: Central Massachusetts Regional Planning Commission *($1,000,000)*

Leading a coalition of planning agencies in Massachusetts and Connecticut covering a total of 81 individual towns, mostly rural except for Worcester, MA, the Central Massachusetts Regional Planning Commission (CMRPC) was successfully awarded a Climate Pollution Reduction Grant (CPRG) for four years of monitoring and planning work. Within its own jurisdiction (roughly analogous to southern Worcester County), CMPRC serves as a non-profit, non-governmental planning consultancy group for 40 towns, many of whom are very small (less than 5,000 people) and have very limited planning capacity or staff. As such, in this familiar New England context of strong home rule among many small towns, CMPRC plays a very large role in ensuring that state and federal planning requirements and periodic town-level plan updates across a wide range of issues are actually achieved. A similar situation exists for the other regions brought onto the project, which includes large parts of the Montachusett Regional Planning Commission (MRPC) and Northeast Connecticut Council of Governments (NECCOG). Overseen by the EPA, CPRG projects fall under the category of planning funding, intended to provide planning agencies and the like with the resources to have employees working on writing plans, organizing public meetings, and contracting with consultancy groups. The CMRPC-led project in particular has three deliverables: a Priority Climate Action Plan to identify short-term implementable actions, a later Comprehensive Climate Action Plan with long-term GHG reduction goals, and a final status report at the end of the four years detailing progress and next steps (CMRPC, 2023). An important part of all three is the development of a common GHG inventory accessible to participating towns and the public, so as to consistently measure the scope of the current challenge across the region and track its progress. Interestingly, this was performed by Weston & Sampson, an outside consultancy group, rather than CMPRC alone – a good example of how regional planning agencies often utilize services to complement their own planning expertise. As this illustrates, even purely planning projects have a lot of components and require funding to prepare sustained actions at scale.

In March 2024, the Priority Climate Action Plan (or PCAP) for the Greater Worcester area was published, demonstrating the results of the public meetings held across the region in the past months in the form of a ranked list of 20 priority actions. These actions were ranked from “high” to “low” priority by CMPRC in consultation with the public survey results and Weston & Sampson estimates of each action’s GHG reduction potential (CMRPC, 2024, p. 68). The five strategies that

were ranked as "high" priority are: composting and regional waste management (47,411 MT CO_2e reduction by 2035); free online consultation to improve home energy efficiency in at least 50% of the area's housing stock (143,449 MT CO_2e); expansion of free-fare public transit (1,178 MT CO_2e); incentives for solar on 15 specific brownfield sites (20,601 MT CO_2e); and rooftop solar on 25 large public buildings (9,082 MT CO_2e) (CMRPC, 2024, p. 68). If the estimates are reasonably accurate, all 20 actions on the list (including these) would account for a reduction of 319,810 MT CO_2e, with the top five providing 69% of this reduction (CMRPC, 2024, p. 68-69).

The GHG inventory by sector is also included as an appendix of the PCAP, showing a total emissions contribution of 11,047,832 MT CO_2e, primarily from residential and industrial buildings (2.2 and 2.5 million MT CO_2e, respectively) and passenger vehicles (2.8 million MT CO_2e in the Massachusetts portion alone) (CMPRC, 2024b, Appendix A). Thus, if the plan is successful, the region should experience a 2-3% reduction in GHGs by 2035, not counting any other effects from private efforts or other state or local-level incentives, which could be just as significant. The next iteration of the project, the Comprehensive Climate Action Plan (CCAP), is expected in mid-2025, and will set specific targets by sector based on the GHG inventory and will provide more specific actions on how to achieve these, as well as a more complete look at who has the authority to do so and what the possible impacts on vulnerable populations could be (CMRPC, 2023). It is worth noting that the plan is not binding in any legal sense, as CMPRC is not a governmental agency and cannot directly set incentives or zoning laws at any level – however, it is intended as a resource to help towns with that authority to adopt it in part or entirety. The degree to which this will occur will depend on participating towns getting on board and having the political and administrative capacity to see it through – which entities like CMPRC will likely play a critical role in shaping.

5) Rural farmers: Regional Conservation Partnership Program (RCPP) – Vermont *($10,000,000)*

RCPP is a long-standing program, originating way back in 1985 and most recently updated in 2018 to emphasize innovative, "pay-for-performance," and large-scale infrastructure projects in agricultural and forested land within identified "Critical Conservation Areas" (USDA, 2022, p. 3-4). One example of an RCPP project from before 2018 has already been seen above: The Last Green Valley in Connecticut received a $400,000 grant through it in 2014 to conduct the easement purchases which has now been expanded by almost 10 times by the IRA (Last Green Valley, n.d.). Although The Last Green Valley was not concerned with farmers, as there is little farm agriculture

in the region, there are other examples elsewhere in the region – including two entirely new RCPP projects in Vermont, amounting to $20 million together. One of these is related to water quality and management of agriculture runoff, and the other specific to dairy farmers on practices to reduce direct emissions and water impacts (USDA, 2023a). These two demonstrate the breadth of RCPP fairly well. The first is directly handled by the Department of Environmental Conservation and the second is a collaboration with the National Fish and Wildlife Foundation, a federal entity, and a for-profit dairy group, Stonyfield Yogurt (USDA, 2023a). The latter is perhaps more intriguing for its public-private set-up, but notable also for its focus on farmer education via existing distribution networks and demonstration farms, intending to enact industry-wide changes in practices (USDA, 2023a). Thus, Vermont demonstrates an interesting addition to the long legacy of RCPP in New England and around the country, additionally bolstered by the large contribution of IRA funds.

6) Rural town/rural energy producer: 1.58MW Thorndike Solar Farm – Maine *($1,000,000)*

The largest of the 124 Rural Energy for America Project (REAP) proposals approved in the past year is the Thorndike Solar Farm located in the rural town of Thorndike, ME, in Waldo County, just outside of Bangor, ME. Promising a 1.58MW photovoltaic solar farm, the project is estimated to offset around 859 metric tons of CO_2e annually, in addition to generating $358,000 in revenue for local businesses every year (USDA, 2023b). Before the IRA, the proposed project was somewhat smaller, just under 1MW, when it was originally filed in 2019 and faced a number of disagreements with the state Public Utilities Commission over the subsequent years regarding interconnection (Energy Central, 2023). These local regulatory challenges notwithstanding, the development of the project under the REAP grant has some promise to benefit the region if it comes to fruition, assuming the estimates are correct. Other information on this and other solar projects is unfortunately hard to find. It is nonetheless worth highlighting that this is only one of the many REAP projects underway and one of the best funded of them – on the other end of the spectrum, the smallest listed project, in Spruce Head, ME, received only $7,800. Based on the data from Part 2, the average amount of funding for REAP projects in 2023 was $100,000, mostly for smaller solar projects with capacities in tens of kilowatts. Also, reporting on other REAP projects is often limited, with many of the smaller projects reporting very little information except a location and dollar amount, once again demonstrating a shortcoming in existing data reporting.

7) State: Rebates for whole-house retrofits – All States *($29,362,920 to $73,233,910)*

Present across all six states, state programs receiving money from the Home Energy Performance-Based, Whole-House Rebates provision of the IRA are easily among the largest currently mobilized in New England, totaling $256 million. This is closely matched by an almost exactly equal amount of funding – $255 million to be precise – from the High-Efficiency Electric Home Rebate Program provision. This half-billion dollar investment in New England states is for the most part intended not for use on state property but to fund state programs to benefit homeowners and to some degree renters with funding to help evaluate homes and enact electricity and heating efficiency improvements (Mass Save, 2023). The Home Efficiency Rebates program, for instance, provides homeowners and landlords, regardless of income, with incentives that pay off relative to the performance of the upgrades (Mass Save, 2023). The Home Electrification and Appliance Rebates Program, by comparison, provides rebates for all low- and mid-income households that install new efficient home electric appliances (Mass Save, 2023). This is oftentimes performed by collaborating or state-owned non-profit entities. In Massachusetts, for instance, this is carried out by Mass Save, under the Massachusetts Department of Energy Resources (Mass Save, 2023). Additionally, the Massachusetts Clean Energy Center – a quasi-public agency funded by the state but operated independently to provide education and bolster economic development in clean energy – also provides detailed information for the public, helping residents to digest the many federal and state incentives in place under the IRA (Massachusetts Clean Energy Center, n.d.). However, despite the sizable funding put into these state-level pools, there are presently no specific community-level projects that are publicly posted, so the local impact of these state programs is currently unknown.

8) Tribes: Passamaquoddy Indian Tribe – Maine *($5,000,000)*

Located in Princeton, ME, and Pleasant Point, ME, on the border with Canada, the Passamaquoddy Indian Tribe is one of 16 federally-recognized tribes that have received IRA funds in New England, and the only one in the region to receive a Tribal Climate Resilience grant. One of the few provisions reserved for tribal nations, the Tribal Climate Resilience program is intended to aid in the planning and actualization of efforts to either relocate tribal communities or improve resiliency measures in existing communities where possible (Department of the Interior, 2022). In all, only three tribes in the country are utilizing the relocation aspect of the funding, and only eight

receiving the $5 million planning grant component – one of which is the Passamaquoddy (Department of the Interior, 2022). The main climate threat facing the Passamaquoddy is seasonal and tidal flooding, where highs can reach 70ft, in addition to chronic inundation from sea level rise (Bureau of Indian Affairs, 2023). The stated purpose of the project at present is to "explore possible options for long-term climate resilience" with regards to the expected impacts on coastal erosion, water quality, and power supply stability (Bureau of Indian Affairs, 2023). Although it is still in the early stages, this will likely either result in "Protect in Place" or "Managed Retreat" measures, especially for the 0.5 square mile peninsula of Pleasant Point (Bureau of Indian Affairs, 2023). The project has been met with support from Maine's congressional delegation and hailed as a "first of its kind," given the funding is expected to last over 50 years (Office of Chellie Pingree, 2022). The other 15 tribal grants in the region are going towards either rural (and ideally clean) electrification rebates and Environmental Justice Block Grants, which provide technical and financial support for tribes in the region through either or both state and federal tribal agencies.

This analysis does not capture the sizable amount of private innovation resulting from IRA tax credits. On the federal portal website, this information is not provided in a downloadable Excel spreadsheet but is graphically displayed on their interactive map – although the private investment tab does not provide any means to separate by funding source (IRA vs. BIL) or specific program, and therefore could not be used as part of this research. As will be reiterated in the conclusion, this lack of data transparency is a major limitation for the study of the IRA and its impacts and is a substantial gap that future research and federal reporters should address moving forwards.

Nonetheless, even from the few large grant-funded projects presented in this section, we can draw some relevant conclusions. Beyond the sheer magnitude and breadth of funded projects, it is important to note that the majority of funding goes to the states, who may then pass on support to local entities, although the exact local beneficiaries of this are not discernable from the available data. Of the local projects we do know the location of, there are only a relatively few notable leaders, and many of them, like Boston or the Last Green Valley, already had plans in place and had pursued alternative funding prior to the IRA. Thus, although New England has received almost a billion dollars so far, there is still more to be done to replicate this progress in less well-positioned and enthusiastic localities, from small towns lacking support to larger towns with less interest.

Conclusions, Limitations, and Recommendations

To answer the research questions set out at the start of this paper, it is clear that the Inflation Reduction Act is unlike anything that has come before it in the U.S. policy space, although it is not without fault. First and foremost, it must be recognized in the context of past climate action that there is no prior law of this breadth or magnitude dedicated to tackling climate change in the U.S. That it is estimated at $370 billion across 134 grant and tax credit provisions is praiseworthy in and of itself, but closer analysis of the exact use of the $154 billion in grant-based funding is necessary to assess how much of this is going to effective mitigation and adaptation measures.

From Part 1 of the analysis, we saw that the main emphasis of the Act is firmly placed on the clean energy transition to renewable sources across the main sectors of electricity, industry, and buildings – accounting for as much as $90 billion of all grant-based measures. This is perhaps to be expected given the large share of these sectors toward U.S. greenhouse gas emissions. The remaining $64 billion is split between nature-based solutions ($34 billion), planning and resiliency ($14 billion), transportation ($13 billion), and research ($2.5 billion). Most surprising is the large funding for nature-based solutions, including agricultural support and conservation efforts, which are a little less precisely defined within the climate arena, capturing adjacent issues such as water quality and species protection, though less towards emissions. This is especially glaring compared to the lack of funding for transportation, although this is also found in the domain of the Bipartisan Infrastructure Law. Even within the IRA itself, half the funding is for continuing past programs, disproportionately involving nature-based solutions – and conversely, the vast majority of the new programs is to be found in the realm of electricity, industry, and buildings. In short, although most of the Act is leveraged by tax credits, the substantial portion of grant-based provisions, which are ultimately intended for non-individual entities (states, businesses, non-profits), exhibit a rather sizable interest in energy concerns, leveraged in the form of capital projects and technical support.

This observation is consistent in Part 2 at the regional New England level, where some $962 million has been mobilized as of February 2024 via the IRA, which accounts for only about 5% of the national $20 billion total (for reference, New England contains about 5% of the national population, so this is proportional). The vast majority of this funding is provided to state agencies, making finer geographic analysis somewhat difficult, although there are a substantial number of individual cities receiving funds (albeit in smaller grants) as well. As may be expected, the largest population areas appear to benefit most from grants, as evidenced by the large number of major

cities in Massachusetts in particular – among them Boston, Salem, Revere, Provincetown, Harvard, and Springfield – ranking in the top eight. The main conclusion with regards to equity between localities is that more sizable grants seem to be going towards bigger and assumingly more well-funded governments, although there are some towns not represented. For instance, Worcester, MA, the second largest city in New England, has no IRA project declared except the regional CPRG planning grant explored in Part 3, which is independent of the city itself, making it one of several urban areas to miss out on city-level funding. In rural areas, the role of planning agencies and non-profits is even more pronounced in the funding breakdown, which is likely a function of smaller towns having less administrative capacity relative to larger regional organizations and cities.

This was further demonstrated with specific examples in Part 3. Featuring eight case studies of projects receiving $1 million or more from each of the eight recipient classes identified in Part 2, the first conclusion from this section to note is the sheer breadth of the projects funded. Here, we have everything from urban forestry programs to home energy efficiency rebates to dairy management initiatives, solar farms, and planning support. While these are just a few specific projects underway and are more expansive in scope than the majority of recipients in New England, this does give us a sense of the individual leaders most engaged with available IRA opportunities.

Conversely, the lack of funding elsewhere may be the result of several factors, such as whether an eligible recipient even knew about the opportunity and was able and willing to apply (a factor of their awareness, administrative capacity, and available expertise), and whether their application is then accepted and funded (determined by the requirements of the provision and the managing agency). Given the lack of data on rejected applications and internal processes, the latter is difficult to parse, though the number of larger and wealthier municipalities and well-staffed non-profits among the accepted projects suggests administrative obstacles could be holding back other localities. There are other possible reasons for this pattern, including those found in prior literature on policy implementation in the region. A lack of political interest and especially citizen-led coalitions and support groups, for instance, was found to be a major distinguishing factor between leading and lagging towns in Connecticut (Bayulgen, 2020). A related explanation is that other, smaller towns are waiting to observe the results of implementation by the leaders before taking action themselves. This is difficult to determine, however, without additional data on local decision-making processes and rationales, although this may be implicitly observed in IRA project data if these other localities apply and receive funding in the coming years.

As noted previously, this study does have several limitations that should be mentioned. The single greatest limitation of this research is the lack of available data on the progress of tax credit mobilization, which contains the largest benefits to individuals. Not unrelatedly, there is also an absence of clearly summarized federal data on implementation progress across the board, even for the relatively more measurable domain of grant-based projects. While this thesis has sought to present the federal data more helpfully, this was necessary only because of the lack of informative presentation on the federal website. Beyond presentation, a lot of useful data is simply not reported. Significantly, there is no information on the number of applicants to each program or the number that were not accepted nor the rationale for possible exclusion, which is especially relevant for discretionary programs for which the exact funding amount is determined by the managing agency. In brief, a key issue to address looking towards future research and policy recommendations is the relative lack of transparent and comprehensible data on funding availability and project approval.

It is also worth mentioning that the dataset used here is only a time-slice view of approved projects to date and that the funding described therein is preliminarily declared and non-binding at this stage in the approval process. While unlikely, some of the projects analyzed in this paper from February 2024 may not be completed or receive the full dollar amount reported in the spreadsheet, for instance if the project fails to meet contingent requirements given by a specific provision. Also, the data itself is regularly updated, with only the most recent version available for download via the portal. These changes seem to be relatively minor, as less than 10 new projects in New England have been added every month since February 2024. The versions of the spreadsheet available in the supplementary spreadsheet are from December 2023, February 2024 (used in this analysis), March 2024, and April 2024. Only the 2023 version is substantially different, as it does not include any projects not illustrated on the portal map – the inclusion of this additional unmapped data in February 2024 was the primary reason for using this dataset for Parts 2 and 3 for the analysis.

These limitations notwithstanding, there is much, however, that we can conclude from the grant-based provisions explored in this paper and can suggest moving forward. The most important of these insights to remember looking to the future is that we already know that the emissions targets of the U.S. for 2030 and 2050 are not on track even with the IRA, which is expected to provide a meaningful but insufficient emissions reduction of 33-40% by 2030 (Bistline, et al., 2023). As such, new legislation will be necessary in the coming years even before the expiry of funding for the IRA in and around 2032. Given the IRA is the first of its kind at the federal level,

this is a pivotal moment in U.S. climate policy, as the content of the necessary successor to the IRA is still up for debate and requires proper consideration of the limitations of the present IRA.

While the formulation of future legislation is somewhat outside the purview of this thesis, Part 1 of the analysis can speak to the content limitations of the IRA that could be better addressed. First, it may be reasonably questioned whether the entirety of the $370 billion in funding is actually going towards climate change issues, given the relative dominance of some tangential nature-based solutions, second only to energy, industry, and buildings. The broad applicability of the IRA funding may well have been one of its political advantages, or even necessities, to be passed, but the role of less emissions-related concerns as agricultural runoff or deferred maintenance of the National Park System in climate change solutions is doubtful. Though it is necessary and desirable to have these issues addressed for other reasons, it cannot really be argued that these actions are solely devoted to alleviating the drivers and impacts of climate change. Second, there are transition opportunities not included in the current IRA – some of which are covered by parallel actions in the Bipartisan Infrastructure Bill and some state laws, not covered in depth here, and others which are not. Among the greatest concerns are transportation, nuclear power, and electricity storage. No mention is made in the IRA concerning public transportation, for instance, nor the provisioning of additional infrastructural improvements to meet the added demand subsidized by the IRA tax credits. In terms of nuclear energy, there are efforts to keep existing plants open and to maintain funding for uranium production but no comparative financing for new nuclear projects under the IRA, despite the fact that nuclear carries no carbon emissions during generation and provides high baseline capacity to the grid. In absence of nuclear, storage is even more necessary for a clean grid, and although there are a number of provisions that list storage as eligible for tax credits and grant money, even more would be needed independent of new renewable construction to secure the grid from intermittency. Third, the implementation effects of the protectionist requirements of some provisions (largely for manufactory) are yet to be studied, but it is likewise worth assessing if these limitations, desirable for defensible reasons distinct from resolving climate change, help or hinder reaching global targets. Thus, there is plenty that future legislation could strive to expand upon.

The criteria used for assessing a policy is important. The most common deployed for U.S. government policy is economic cost-benefit analysis, for which the main elements are efficiency (maximizing social benefits), cost-effectiveness (maximizing yield for resources spent), fairness (equity between groups), enforceability (monitoring and sanctioning breaches of limits), flexibility

(ability to be modified), incentives for technological innovations, and moral considerations (Field & Field, 2021). In this framework, the IRA is at least partially successful, acting as a subsidy measure to reduce emissions indirectly by encouraging the swifter adoption of cleaner substitute technology, abatement measures such as carbon capture, and resiliency measures to reduce environmental and human damages. While the moral dimension is somewhat open to interpretation and political messaging, the emphasis of the IRA on extending dedicated funds to marginalized groups is keenly engaged with environmental justice concerns. If economic efficiency were the only criteria, however, mechanisms such as a national carbon tax could be suggested in concert with the entirely subsidy-focused approach of the IRA to reach even greater reductions (Jordan, et al., 2022). Therefore, here too, then, is opportunity for further research and legislative action.

Relevant to both future legislation and maximizing the implementation of the current IRA, Parts 2 and 3 demonstrate who the early adopters of IRA funding in New England are, and some of the qualities inherent in successful projects so far. Principally, these are large state-led initiatives (such as home efficiency rebate programs) and regional non-profits (planning agencies and land conservation groups) with larger existing resources and staffing at their disposal, although there a few standalone leaders, including private businesses and some specific developers (e.g., rural solar farm projects and public building retrofits). However, much of the region is relatively untouched, such as in the central and western regions of Massachusetts and much of Connecticut and New Hampshire. Exactly why this geographic pattern exists is not entirely clear but could likely be a result of spatial differences in political interest, governing capacity, and existing investment. This represents a significant barrier to implementation in New England in particular, given the stark urban-rural divide in population size, wealth, and governance, impacting IRA grant allocation.

In short, improving local capacities to apply for offerings is absolutely necessary to rectify the lack of funding going towards non-leading communities in the coming years. In particular, there is a need to improve awareness and provide greater technical support and expertise. Fortunately, there has already been progress on this to a degree, in the form of state-level initiatives. Massachusetts, for instance, opened an office dedicated to climate policy and resiliency, in charge of coordinating state agencies and communities and harnessing all resources to those ends, including IRA grants (Massachusetts Office of Climate Innovation and Resiliency, 2024). Whether advances such as this will be sufficient remains to be seen, but it demonstrates some existing understanding of these barriers and is a workable regional solution that can be built upon.

In the final analysis, the Inflation Reduction Act as it currently exists is a substantial step forward but is dependent on continued and expanded adoption among a wider range of municipal, state, business, and non-profit recipients to reach its maximum potential. It is the role of policy research such as this to identify what limitations have prevented implementation so far and point to potential solutions. These solutions include, but are not limited to: improved communication of opportunities to potential recipients; the creation of streamlined state and regional agencies tasked solely with managing climate funding opportunities; increased support for regional planning agencies to further expand administrative capacity of small rural towns; and the development of local initiatives through educational institutions and citizen-led coalitions to build political support from the ground up.

Both the successes and shortcomings of the IRA will shape U.S. climate policy – and thereby progress on climate change at large – for years to come, and as such it is imperative that we measure its progress early and apply what we learn towards better implementation and future legislation. With the polarized political environment in the U.S., and the established history of U-turns in federal policy on climate change, the ongoing success of the IRA will also likely help to secure its future and avoid its reduction or repeal by a subsequent administration. Lest we forget, the U.S. once again stands at a crossroads, and while the IRA is a step forward, we are just as capable of taking a step back. Ultimately, the direction we choose to take is up to us, but it *is* a choice – and the information available to us to make informed decisions and find opportunities to improve our local situation is truly paramount in shaping our future.

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