

Embedded Environmentalism: Understanding Rural Resistance to Renewable Energy in Maine

by Nicholas F. Jacobs and Joseph Grassi

ABSTRACT

This article offers a new perspective on rural opposition to solar and wind development in Maine. Rather than dismissing resistance as ideological or anti-environmental, we introduce the framework of *embedded environmentalism*—a place-based environmentalism rooted in identity, a sense of geographic fairness, and local control. Drawing on original survey data from nearly 800 New Englanders, we find that attitudes toward renewable energy are better explained by concerns over land use, fairness, and governance than by partisanship or Left-Right ideology. This research suggests that to build sustainable solutions in rural places, environmental policy must engage local knowledge, respect rural identity, and be clear in the geographically equitable sharing of benefits. Policies that fail to account for rural experiences and priorities risk deepening resentment and missing opportunities for durable collaboration. Embedded environmentalism offers a way forward: one that recognizes rural people as stewards rather than obstacles, and grounds policy in the places it aims to serve.

INTRODUCTION

Renewable energy is expanding rapidly and much of that expansion is happening in rural places. In Maine alone, solar generation has grown nearly tenfold since 2020, now accounting for 13 percent of renewable energy produced in-state, while wind produces over a quarter of the state's renewable electricity and constitutes nearly 70 percent of all wind generation in New England (authors' calculations; Maine GEO 2025). Together with hydropower, renewables make up 67 percent of Maine's in-state electricity generation, ranking the state among the most renewable-reliant in the country.¹ Yet as new solar and wind projects move into farm fields, forests, and ridgelines, a wave of rural opposition is growing. Dozens of towns have passed moratoria, paused permitting, or rewritten ordinances to slow or stop commercial development (Valigra 2023). On the surface, this resistance looks familiar: another case of partisan backlash or NIMBYism (Not in My Backyard).

But a deeper puzzle lurks beneath the headlines. Why would rural residents—many of whom are on the front

lines of environmental change—oppose clean energy? Rural communities disproportionately face rising costs from extreme weather, depend on seasonal cycles and fragile ecosystems, and have long histories of self-reliant environmental stewardship. If anyone has a stake in the transition to a more sustainable future, it's the people who live closest to the land. And yet, in Maine and beyond, rural skepticism about renewable energy is real—and growing.

This paper explores that tension. Based on original survey research with 777 rural New Englanders, we argue that many conventional explanations of rural resistance miss the mark. The problem isn't opposition to environmental goals—it's opposition to how

environmental policy is designed and delivered. Rural communities often feel excluded from decisions, frustrated by opaque processes, and wary of policies that promise benefits elsewhere but leave local communities to bear the risks and costs associated with development. These concerns are not captured by standard narratives of conservative backlash, partisan bickering, or just straight-forward NIMBYism.

To better understand this dynamic, we introduce the concept of *embedded environmentalism*. While frameworks like rural resentment have helped explain political alienation (Cramer 2016; Jacobs and Shea 2023), they often reduce rural opposition to reflexive anti-government or anti-environmental sentiment. This flattens the lived experiences and place-based attachments that shape rural political behavior, especially around land use and environmental policy. In contrast, embedded environmentalism highlights how rural residents interpret environmental initiatives through the lens of place, history, identity, and autonomy. It offers a way of seeing rural resistance not as a rejection of environmental protectionism, but as a demand for inclusion, fairness, and local self-determination.

We test whether embedded environmentalism—measured through novel indices of environmental identity, a preference for local decision-making, and perceived exploitation—better predicts attitudes toward solar development than standard explanations rooted in partisanship or NIMBYism. Using multiple outcome measures assessing support for renewable energy projects in respondents’ *specific local communities*, we model changes in support for renewable energy based on our new indicators of embedded environmentalism, as well as the standard partisan and aesthetics-based explanations for opposition. Our findings suggest that support for renewable energy is not absent in rural communities; rather, it is conditional—shaped by concerns about voice, fairness, and the preservation of place. Rural residents are not saying “not in my backyard”—they are saying “not without us.”

To be sure, local engagement is not a cure-all for rural opposition, but rather it is a necessary condition for policy legitimacy. Our argument does not claim that speaking to rural residents’ embedded environmentalism alone will ensure consent; rather, it reframes opposition as a governance problem—one that stems from how policies are made and communicated, not simply from who wins or loses in their implementation. To elaborate on this reframing, the paper proceeds in four parts. First, we situate our argument within existing scholarship on rural resentment and environmental politics. Second, we elaborate the framework of embedded environmentalism and describe how its three core dimensions are operationalized. Third, we present results from a set of statistical models testing competing explanations for rural resistance to solar energy projects. Finally, we reflect on the broader implications of our findings for environmental policy design, rural governance, and the prospects for building durable rural-urban coalitions around climate action.

EMPIRICAL MOTIVATIONS

As with many aspects of rural politics, conventional explanations for rural resistance are rooted in partisanship and ideological resistance—notably, conservative backlash. Partisan frameworks emphasize the growing role of partisan polarization in American politics, suggesting that support for renewable energy is conditioned by broader political worldviews, especially among conservatives who tend to distrust environmental regulations and associate climate policy with

liberal elites (Bidwell 2016). For example, Sokoloski et al. (2018) find that Republicans in the Northeast are significantly more likely to oppose offshore wind when they perceive it as aligned with Democratic priorities, regardless of the project’s potential local benefits. Similarly, Bidwell (2016) shows that political orientation strongly predicts willingness to accept wind development, even when controlling for perceived economic gains. An increasing number of media stories highlight the role of conservative organizations that spend thousands of dollars to create or *astroturf* local opposition to solar projects, often framing their efforts in terms of property rights and local control (Weaver 2023).

While many scholars frame rural resistance to renewable energy in ideological or partisan terms, a growing body of research also emphasizes the role of functional or aesthetic concerns—what might simply be called NIMBYism. In this view, opposition arises not from partisan distrust or ideological skepticism towards climate change, but from localized objections to the physical characteristics of renewable infrastructure. Aesthetic concerns—such as visual disruption, noise, or perceived harm to landscapes—consistently rank among the most powerful predictors of opposition to renewable energy projects. Smith and Klick (2007) show that although Americans express general support for wind power in national surveys, support declines significantly when individuals consider its downsides—especially noise, visual intrusion, and effects on property values and wildlife. Likewise, Wüstenhagen et al. (2007) find that local resistance is often motivated by concerns about visual blight rather than political ideology. More recent studies from outside the United States affirm this pattern: Frantál et al. (2023) find that the aesthetic quality of projects significantly shapes public acceptance, especially for certain demographic groups, while West et al. (2010) argue that landscape and aesthetics remain central factors in creating greater public support for renewable energy more broadly. Taken together, these findings reveal that rural opposition often stems not from ideological hostility, but from direct, experiential concerns about what renewable energy looks and feels like—particularly in familiar or valued landscapes.

Beyond Ideology and Aesthetics: Embedded Environmentalism

Yet even as these aesthetic objections help explain localized pushback, they often fall short of capturing what’s truly at stake for rural communities. Why does a

TABLE 1: **Dimensions of Rural Resentment and Their Environmental Expression**

Rural resentment dimension	Definition: rural resentment	Corresponding construct: embedded environmentalism	Political implication
Material/distributive	Belief that rural areas are not receiving their fair share of government resources or economic investment.	Rural communities bear burdens of renewable energy without fair compensation or benefit.	Support for equity in policy (e.g., farmland protection), not blanket opposition.
Influence	Belief that rural voices are excluded from decision-making; government is unresponsive to rural concerns.	Frustration with technocratic or externally imposed governance.	Opposition to centralized governance, demand for procedural justice.
Respect	Perception that rural people and values are looked down upon or culturally dismissed.	Rural residents as environmental stewards, rooted in daily lived experience.	Cultural recognition and legitimacy; pushes back on anti-rural stereotypes.

concern about ugliness resonate so deeply? Recent research on the concept of rural resentment offers clues: rural communities often feel they are systematically overlooked, disrespected, or burdened by distant decision-makers (Cramer 2016; Jacobs and Shea 2023). When the landscape you care for becomes the canvas for unseen outsiders, aesthetic concerns may be tangled with deeper anxieties about power, fairness, and cultural respect. Diamond (2023), for example, finds that rural environmental attitudes are shaped by a composite of one’s connection to nature, rootedness, self-reliance, and general resentment towards urban areas—a blend that colors how people interpret the use of land in specific rural communities. In this context, objecting to a project’s appearance isn’t just about visual preference—it’s about defending local values in the face of broader marginalization.

In *The Politics of Resentment*, Katherine Cramer (2016) introduced rural resentment as a three-part perception: (1) that rural areas are ignored by decision-makers, (2) that they do not receive their fair share of resources, and (3) that their values and way of life are misunderstood or disrespected by urban elites. These perceptions are not merely material; they are symbolic and relational. They define how rural residents interpret their place in the national political landscape—whose voices count, and where those voices are located.

In a similar vein, we conceptualize embedded environmentalism as the environmental expression of rural resentment—rooted not only in attachment to land, but also in demands for fairness, voice, and respect in decisions that affect rural landscapes. Likewise, we adopt a three-dimension framework (Table 1).

This framework helps clarify how rural opposition to renewable energy can be reframed not as simple

obstruction, but as a set of principled concerns tied to distributive justice, democratic legitimacy, and cultural recognition. It builds off of scholarship within environmental policy and larger studies of rural politics.

Environmental identity refers to a personal and affective connection to nature, grounded in daily interactions with land and landscape (Hinds and Sparks 2008). It encompasses a deep sense of environmental concern and personal stewardship, reflecting a self-conception as stewards of nature (Diamond 2025). Rural Americans have a deep history as a distinctively rural people (Jacobs and Shea 2023), and their communities play a vital role in successful resource management and environmental policy implementation (Diamond 2023). Despite this, there is a perception that rural Americans do not care about environmental protection, or may even be anti-environmentalists (Carlson 2024). But an environmental identity builds on prior research to rethink rural environmental attitudes as a product of resident’s unique relationship to land (Bonnie et al. 2020). For example, rural participants have expressed sentiments that tie the preservation of the land to their familial legacy; they are motivated to care for their natural environment because they recognize its importance to pass down to future generations (Diamond 2023).

Previous studies have found that while there is a divide in environmental attitudes between urban and rural Americans, it is not due to differences in importance, prioritization, or knowledge about environmental issues (Hamilton et al. 2014, 2019). Instead, a distinctively rural environmental identity—including connectedness to nature—is a key component (Diamond 2023). Research also indicates that connectedness to nature is positively and significantly associated with environmental

protection policy prioritization, underpinning a form of positive civic environmentalism (Diamond 2025).

Environmental exploitation or, at least, the perception of exploitation, is our second dimension in embedded environmentalism, and it reflects the idea that many hold the belief rural communities are being asked to bear the burdens of the renewable energy transition—such as land loss, aesthetic disruption, and industrialization—without receiving equitable recognition or benefits. Such perceptions are, indeed, rooted in a deep history of exploitative and extractive industries (Ashwood 2018; Berry 1977). As an attitudinal construct, we are interested in how these histories translate to perceptions that rural communities are marginalized at the expense of urban populations.

Rural areas are often the sites of the nation's largest renewable energy projects, which can be met with both excitement and ire, and which frequently raise concerns about the unequal share of burdens and costs (de Souza Briggs et al. 2024; Reed 2023). Just as rural residents frequently believe that they would not have so many problems if they received their fair share of government resources or if government focused less on the problems afflicting big cities (Jacobs and Munis 2022), renewable energy development frequently triggers distributive concerns in rural communities, where large-scale wind and solar projects are viewed possible sources of unfair burden (Laeser 2024). This is not unlike environmental conservation efforts that have often taken on a frame that protecting endangered species is an urban benefit that restricts traditional practices in rural communities (Lyons 2017). For instance, some rural residents report that messaging and incentives for clean energy often focus on urban energy demand and urban goals—reducing urban emissions or powering distant cities—while glossing over local disruptions like land conversion, ecological impacts, and diminished local agency.

Environmental localism, in contrast, captures the desire for local control over land-use decisions and a deep skepticism of distant or technocratic governance, regardless of potential burden or environmental degradation. Process is important in its own right. Rural residents often feel they, along with others in their local community, know the environment best and are best equipped to make decisions about its management (Diamond 2023). Historically, conflicts between rural communities and government over public land management have stoked the feeling that rural communities lack

autonomy in environmental decision-making (Munis and Nemerever 2025). The influence of environmental localism on broader policy outcomes can be mixed; it supports policy when rooted in the community and resists it when externally imposed; this aligns with the concept of *home rule*, a central tenet for many rural conservation movements (Munis and Nemerever 2025).

Moreover, research on community acceptance consistently finds that local opposition arises from perceived exclusion from decision-making, worries about distributive justice, and a lack of trust in external actors (Sovacool and Ratan 2012; Wüstenhagen 2007). In Ontario, for instance, Fast et al. (2016) document how wind energy disputes intensified when local governments lost siting authority, triggering widespread protests not against wind itself but against perceived imposition by the provincial government. In Switzerland, Stadelmann-Steffen and Dermont (2021) find that acceptance of local renewables increases substantially when residents are given meaningful opportunities to participate in siting decisions. In these cases, rural resistance reflects procedural grievances and localized risk assessments more than outright ideological hostility.

These dimensions form a coherent alternative to dominant ideological explanations. Rather than opposing renewable energy in principle, many rural residents articulate a conditional environmentalism—one that supports solar or wind development when it aligns with local values, is governed fairly, and maintains continuity with long-standing relationships to the land. In this view, land is not simply an economic asset or a regulatory site, it is a foundation for identity, community, and intergenerational continuity.

Think of it like a fourth-generation Maine potato farmer being asked to adopt a new crop. It's not just about whether they believe in farming—they've built a life, a livelihood, and a legacy from working the land (environmental identity). But the land isn't just productive, it's also personal, tied to family, memory, and meaning. Now they're being asked to grow something new, from unfamiliar seed, under rules they didn't help write (environmental localism), and with the profits flowing elsewhere while they shoulder the risks (environmental exploitation). Even if they support the idea in theory—even if it is in their *best interest* to change—some decisions in life are more than a simple cost/benefit calculation.

METHODS AND SURVEY INSTRUMENT

To understand the sources of rural opposition to solar energy development, we tested four competing explanatory frameworks using an original survey of 1,456 respondents across New England, with an intentional oversample of rural residents in Maine (N=655). The survey was administered through CINT and designed in Qualtrics, focusing on perceptions of solar and wind infrastructure, environmental values, and attitudes toward land use regulation. Our models focus exclusively on rural respondents (n=777), of whom 445 are from rural Maine, allowing for a more precise analysis of rural political attitudes in environmental policy contexts. We find no geographic variation across New England in any of our models; when we restrict our sample to rural Mainers, coefficients are similar in magnitude and direction, although standard errors are larger.

As shown in Table 2, the Maine subsample closely reflects the demographic and political profile of the state’s rural population. Respondents from rural Maine are, on average, older and less affluent than the statewide population. They also report lower levels of college completion and a smaller share identifying as Democrats. These differences are consistent with well-established rural-urban divides in the state and help ensure that the survey captures the socioeconomic and partisan contours most relevant to Maine’s renewable-energy debates. Moreover, the same basic demographic and attitudinal patterns—older, less formally educated, less Democratic, and more place-attached respondents—are evident across the broader rural New England sample.

Survey respondents were drawn from across the entire state of Maine, representing all 16 counties. Importantly, 77 percent of rural self-identified respondents reside outside Maine’s three most densely populated counties (York, Cumberland, and Androscoggin). This breadth of representation increases confidence that the findings speak to the broad challenges facing rural communities, which are not confined to any single development corridor.

Our models estimate predictive attitudes and demographic profiles of those who favor solar development and broader renewable resource policies. Each dependent variable was recoded into a binary outcome, with higher values indicating support for the statement. We test our framework against other

common explanations of rural resistance to renewable energy using two sets of dependent variables. The first set includes direct questions about solar energy: whether respondents support solar development, are willing to accept visible infrastructure, and object to solar projects based on aesthetics or perceived misalignment with local needs. The second set focuses on broader policy orientations: whether respondents believe solar projects benefit urban areas at rural expense, disregard farmland preservation, or reflect values aligned with rural life.

This design allows us to adjudicate between competing narratives: Is rural opposition driven primarily by ideology and resentment, or by procedural concerns and local values? To answer this question, we constructed three indices to capture distinct yet overlapping dimensions of embedded environmentalism in rural New England—identity, exploitation, and localism—and an additional index to test the relationship to NIMBY-concerns. Each index draws on multiple survey items grounded in prior literature and developed to reflect cognitive, affective, and behavioral orientations toward environmental and land-use policy.

Our measure of environmental identity was built from three items that measure affective and cognitive connection to nature. Respondents were asked to indicate their agreement with the following statements on a five-point Likert scale: “I feel connected to the place I live,” “I think of myself as a part of nature, not separate from it,” and “My personal actions have a direct impact on the health of the natural environment.”

TABLE 2: Sample Demographics and Point-Estimates for Key Variables of Interest

	Rural Maine	Rural New England	Maine (Total)*
Mean age	51.6	42.2	44.8
College degree (%)	31.4	26.4	35.3
White (%)	96.9	95.9	91.3
Above 100k year (%)	10.8	22.7	34.9
Democrat (%)	25.0	24.1	36.2
Environmental identity (0-1)	0.75	0.71	
Environmental resentment (0-1)	0.71	0.70	
Environmental localism (0-1)	0.56	0.54	

Note: Maine totals are drawn from the 2024 American Community Survey (ACS) state-level estimates. Partisan identity estimates are derived from the Maine Secretary of State’s most recent voter registration data.¹²

Our measure of environmental exploitation reflects perceptions of systemic disadvantage and distributive injustice in environmental governance. It includes agreement with statements such as: “Increased emphasis on powerful urban politicians means that my community doesn’t get what we deserve,” “People in urban areas have more influence over national policies than people in areas like mine,” and “The rural way of life is worth protecting.”

Finally, environmental localism captures procedural preferences for local autonomy in environmental decision-making. It combines responses to: “When it comes to addressing environmental problems, communities should be left to solve problems on their own,” “I generally trust the decision makers who determine environmental policies” (reverse-coded), and “It is more important to take care of our local environment before we address global environmental problems.” To draw comparisons across the three components of embedded environmentalism, the sums of the questions were averaged and normalized using min-max scaling.

While the strength of partisan identity (seven-point scale) and ideological conservatism (seven-point scale) have traditional measures, we developed a new measure to capture people’s sense of aesthetic opposition to renewable energy projects using two survey items—what we call classic NIMBYism opposition. This index reflects aesthetic resistance, not the kind of distributive or cultural grievance associated with rural or environmental resentment. Whereas rural resentment captures a sense of exclusion from political decision-making or an imbalance in how respect and resources are allocated between urban and rural places, the NIMBYism index isolates attitudes rooted in visual and spatial discomfort with renewable infrastructure itself. It taps respondents’ sensitivity to perceived intrusions on familiar landscapes rather than their broader judgments about fairness or governance. In this way, aesthetic opposition functions as a surface-level expression of preference, distinct from the deeper, relational grievances that embedded environmentalism seeks to explain.

To assess those perceptions, respondents were asked to rate their agreement with: “Even if they reduce fossil fuel usage, solar installations look too ugly for my community” and “As a whole, I think rural people value new solar projects” (reverse-coded). These items capture aesthetic and social consensus-based resistance to visible energy infrastructure. The resulting index was min-max normalized.

To evaluate the relative importance of different attitudinal constructs in shaping rural support for renewable energy, we use ordinary least squares (OLS) regression analysis. OLS regression allows us to isolate the unique contribution of each construct while holding constant key demographic controls (age, gender, race/ethnicity, income, education, and political party identification). This approach is especially useful for adjudicating between competing explanations that are often correlated in the real world. For instance, aesthetic concerns may co-occur with localist sentiments, or distrust of experts may correlate with partisan identity. By estimating their independent covariance, regression models enable us to determine which explanatory variables matter most in predicting rural attitudes toward solar energy.

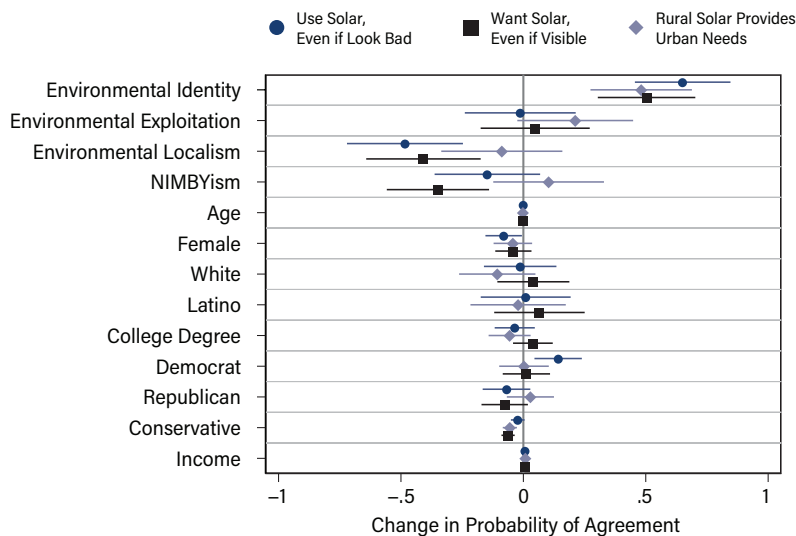
RESULTS

Rather than assuming opposition is ideological or aesthetic in nature, we assess whether deeply held place-based concerns—grounded in identity, fairness, and governance—more powerfully predict support for, or resistance to, renewable energy projects. If embedded environmentalism outperforms standard variables in predicting attitudes toward local solar development and related land-use policies, it strengthens our claim that rural resistance is not simply obstructionist or misinformed, but is instead rooted in principled, place-conscious reasoning.

Figure 1 presents results from three logistic regression models predicting rural attitudes toward solar energy development. Each model includes our three embedded environmentalism constructs—identity, exploitation, and localism—alongside conventional explanations: NIMBYism, partisanship, ideology, and key demographics. The dependent variables measure: (1) general support for solar development in one’s community (even if it looks bad); (2) support for solar production that benefits urban areas; (3) willingness to accept visible solar infrastructure.

Across models, environmental identity emerges as a strong and consistent predictor of support for solar development. A one-unit increase in environmental identity (the full span of possible attitudes) is associated with a 64 percentage point increase in the probability of supporting local solar projects that look bad, a 48-point increase for support of rural solar that benefits urban areas, and a 50-point increase in support for solar even when visible.² These are large relationships, even if they

FIGURE 1: Attitudes Toward Solar Development



capture the full extent of one’s potential environmental identity, and provide strong evidence that rural attachment to nature is not an obstacle to renewable energy but a foundation for civic environmentalism.

At the same time, one’s environmental localism also shows robust and significant patterns, but in the opposite direction. It is negatively associated with all three pro-solar outcomes, with marginal effects ranging from -0.41 to -0.49 ,³ indicating that respondents who value local control and distrust external decision-makers are substantially less supportive of visible or externally driven solar development.

By contrast, environmental exploitation shows no statistically significant relationship with any outcome in Figure 1 although it is marginally insignificant for our second outcome measure of the potential beneficiaries of solar development. While the direction of the coefficients is generally negative, the variance is too high given our sample size, suggesting that perceptions of unfair treatment alone may not drive solar attitudes absent other localist or identity-based cues.

Notably, NIMBYism performs inconsistently. It is not a significant predictor of opposition to visible solar or solar that benefits urban areas, and while it reaches significance in predicting general support for solar,⁴ its effect size is considerably smaller than that of the embedded environmentalism constructs; note, these are scaled to similar levels of magnitude change. These results challenge the dominant narrative that aesthetic or

values-based opposition (*ugliness* or symbolic disapproval) explains rural resistance. Once deeper attachments to place and process are accounted for, NIMBYism plays a minimal role.

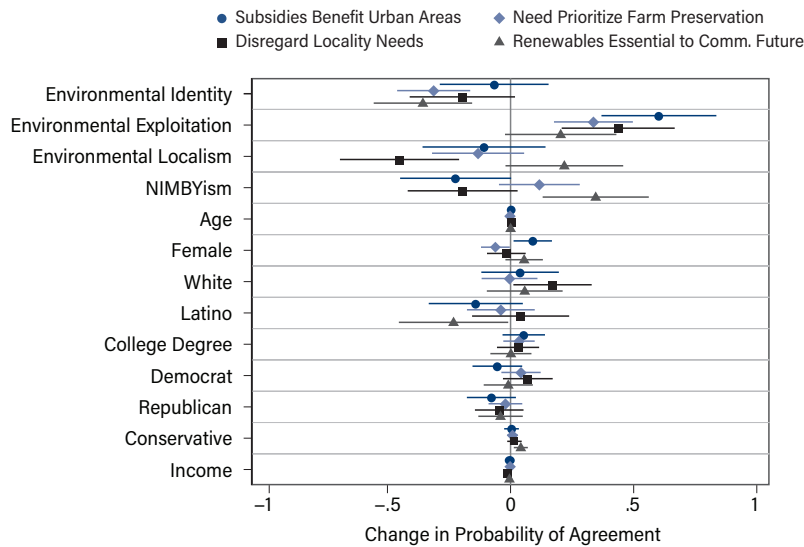
Finally, the models reveal mixed results for partisanship and ideology. While self-identified Democrats are modestly more supportive of local solar development, neither Republican identity nor ideological conservatism consistently predicts attitudes across the models.⁵ For example, conservatism is unrelated to general support for solar and only significantly negative when the solar is framed as serving urban needs.⁶ Overall, the effects of partisanship are dwarfed by the influence of environmental identity and localism. This finding suggests that rural energy politics may be shaped less by partisan alignment than by deeply held place-based values.

A second set of models examines general policy views related to incentives, farmland protection, cultural values, local needs, and energy investment. Figure 2 presents results from four logistic regression models where the dependent variables capture agreement with statements asserting that (1) solar incentives disproportionately benefit urban areas, (2) farmland preservation should be prioritized over solar development, (3) rural needs are overlooked in energy planning, and (4) solar energy is essential to the community’s future.

Across all four models, environmental exploitation is the most consistent positive predictor of critical attitudes toward solar policy. It is associated with a 49-point increase in the probability of agreeing that solar incentives favor urban areas, a 27-point increase in support for prioritizing farmland, and a 40-point increase in believing rural needs are neglected.⁷ These are substantial relationships that underscore the importance of perceived environmental injustice—rural residents who feel exploited or ignored are significantly more likely to reject current policy approaches.

By contrast, environmental identity, which predicted strong pro-solar sentiment in Figure 1, is now associated with opposition to those critiques. It reduces agreement with the idea that subsidies benefit urban areas, farmland conservation should be prioritized, that rural needs remain unmet, and the belief that solar is not

FIGURE 2: Broader Policy Dispositions



essential to the community's future.⁸ While the relationship between identity and incentives is not statistically significant, the remaining models suggest that those with strong environmental identities are far more likely to affirm solar's importance and reject rural victimhood narratives.

Environmental localism, on the other hand, plays a more targeted role. It significantly increases the probability of believing that rural needs are overlooked by 39 points, but does not significantly predict attitudes toward incentives or farmland prioritization.⁹ This pattern suggests that localist concerns are more procedural than distributive—they emerge when respondents feel excluded from decision-making rather than when the issue is framed in economic or land-use terms.

NIMBYism, often presumed to drive rural opposition, plays a more marginal role in these models. It is only significant in one model, predicting a 34-point increase in the likelihood of rejecting the idea that solar is essential to the community. Its relationship to policy critiques around incentives, farmland, and needs are weak and statistically insignificant.¹⁰ This suggests that NIMBYism does not reflect a broad policy worldview but instead amplifies symbolic or aesthetic resistance in particular contexts.

Partisanship and ideology remain notably weak predictors of these policy views. Neither Democratic nor Republican identity significantly predicts attitudes across any of the four outcomes, once measures of embedded

environmentalism are incorporated into the model. Ideological conservatism is associated with a small increase in agreement that solar is essential to the community,¹¹ but is otherwise unrelated to views on incentives, farmland, or rural neglect.

Together, these models reinforce the central theme: rural critiques of solar policy are best understood through the lens of embedded environmentalism, not NIMBYism, partisanship, or conservative backlash. Environmental identity is associated with support for solar's communal role, while resentment—especially when rooted in fairness and representation—drives opposition. For policymakers, these findings highlight that distributive and procedural justice, rather than symbolic or aesthetic appeals, are likely to be the key to rural support for renewable energy transitions.

DISCUSSION AND POLICY IMPLICATIONS FOR MAINE

Our analysis shows that embedded environmentalism, more than partisanship or aesthetics, shapes rural views on solar and land-use policy in rural New England. For Maine policymakers, these findings point to a central lesson: sustainable energy policy cannot be designed from Augusta alone. As the state pursues its statutory goal of achieving 80 percent renewable electricity by 2030, the success of that transition depends on aligning statewide planning with local governance traditions and economic realities. The logic of embedded environmentalism implies that public trust in programs such as the Net Energy Billing scheme, the Governor's Energy Office's siting guidance, and dual-use solar initiatives will hinge on whether rural communities perceive these efforts as transparent, equitable, and responsive to local concerns.

Recent developments in Maine underscore how deeply these place-based concerns play out in practice.

Distrust and Economic Insecurity

Passed in 2024 by a broad bipartisan coalition, LD 1777—An Act to Reduce State Costs and Increase Customer Protections for the State's Net Energy Billing

Program—substantially scaled back Maine’s community solar incentives after years of rapid program expansion. The final bill reflected months of negotiation among legislators, utilities, and clean-energy developers, ultimately resulting in a phased rollback of net-energy billing for large projects. The debate over LD 1777 also illustrates how our findings can reframe conventional interpretations of energy policy reform. As William Harwood (2025) argues in *Maine Policy Review*, the rollback of Maine’s net-energy billing program was justified as a necessary correction to market distortions that increased costs for ratepayers. From an economic standpoint, that logic is sound. Yet our results suggest that the politics surrounding LD 1777 cannot be understood solely in fiscal or technical terms. To the extent that the move was criticized as a “rug pull” that fractures investment trust, with fears that Maine will lose its reputation as a reliable market (Metea 2025), the reaction also reveals how reform processes intersect with deeper place-based concerns. Clear among elected officials supporting these changes was an awareness that such reversals respond to the strong and consistent presence of environmental exploitation and localism in their districts—where rural residents feel they are being asked to shoulder the burdens of the clean-energy transition while remaining second-class participants in state decision-making. In this sense, the LD 1777 controversy does not contradict our argument; it reinforces it. What appeared as a debate over market efficiency was, for many rural Mainers, a dispute over voice, fairness, and the geography of trust that our model captures.

Desire for More Control

State-level actions such as the proposal for mandatory visual buffering around solar farms—aimed at preserving scenic views through hedges, fences, or murals—illustrate how aesthetic concerns are often invoked, but community control lies beneath the surface (Turkel 2021). More directly, rural communities have expressed a collective sense of environmental localism by passing dozens of 180-day moratoriums on solar development—from Stockton Springs, to Machias, Andover, Trenton, Penobscot, and others. Stockton Springs residents pushed for a vote almost as soon as a commercial solar project was proposed; as one resident—who did not live on the road where the development was proposed said, “We should be able to have our voice heard in this process of you guys deciding to have this; it kind of bothers me that this is going forward” (Ray 2025). Such

a sentiment reflects the heart of environmental localism: a demand not merely for regressive aesthetic fixes, but for procedural control, community voice, and locally determined standards for development.

Stewardship and Shared Use

And yet, our models also show that rural New Englanders with strong environmental identity are among the most supportive of renewable energy development—especially when that development is rooted in rural ways of life. This is not a contradiction; it’s confirmation of what many rural residents already know: land is not just scenery, it is a livelihood, a legacy, and a source of meaning.

That may help to explain the growing embrace of dual-use solar projects across Maine, where solar panels are co-located with farming and grazing. In Jefferson, a 225-acre site now hosts nearly 500 grazing sheep alongside solar infrastructure, a partnership between local farmers and developers that keeps land productive and integrated into seasonal agricultural rhythms (Walztoni 2024). These projects resonate with embedded environmental identity not because they hide the panels, but because they preserve the function and meaning of the land beneath them.

Our models affirm this alignment. Environmental identity is the strongest predictor of support for visible and urban-serving solar, suggesting that rural residents don’t oppose solar because they are anti-environment. They oppose it when it severs their connection to land. When projects are designed to sustain that connection—through pollinator habitats, rotational grazing, or community-shared ownership—resistance gives way to stewardship.

And that is perhaps the most important implication of our findings: that embedded environmentalism is not monolithic. Individuals with strong environmental identities can also feel exploited or excluded from decision-making. In fact, these tensions often coexist in the same person—someone who sees themselves as a steward of the land and wants to see it preserved, yet is wary of who decides how that land will be used. Far from signaling inconsistency, this reflects a deeper political reality: rural environmentalism is forged in negotiation. And embedded environmentalism provides a framework for negotiating tradeoffs between tradition and innovation, autonomy and coordination, local knowledge and external expertise. Policymakers who treat rural communities as conflicted but capable partners, rather than as

obstacles or monoliths, are more likely to build lasting coalitions.

Still, we also acknowledge that greater local participation may not always reduce conflict. In some cases, expanded consultation can harden opposition when procedural inclusion raises expectations that cannot be met or when local interests remain divided. Evidence from European wind-energy planning, for example, shows that participatory mechanisms can, under certain conditions, reproduce existing patterns of conflict and mistrust rather than resolve them (Ellis and Ferraro 2016). Policymakers should therefore view local engagement as part of a broader design challenge—balancing inclusion with clarity, and procedural justice with the state’s responsibility to coordinate large-scale decarbonization. And, of course, as with any stated-preference survey, the responses reflect reported attitudes rather than observed behavior. While these measures provide valuable insight into how rural residents think about renewable energy, they should not be interpreted as direct predictors of on-the-ground actions when specific projects arise.

These emerging practices offer a template for policy. If rural residents see solar as part of their working landscape—not just an outside imposition—they are far more likely to embrace it. In this way, dual-use development is not just an agronomic fix; it is a political one, speaking directly to the values our models show matter most. More broadly, for Maine’s clean-energy future, the lesson is clear: durable progress will depend less on persuading rural Mainers to accept change from above and more on building institutions that allow them to shape it from within.

NOTES

- 1 US Energy Information Administration, Maine: State Profile and Energy Estimates, Profile Analysis, <https://www.eia.gov/state/analysis.php?sid=ME>
- 2 All increases were $p < .001$.
- 3 ($p < .001$)
- 4 visible solar ($\beta = -.13$, $p = .23$); solar that benefits urban areas ($\beta = .10$, $p = .38$); general support for solar ($\beta = -.34$, $p = .001$)
- 5 local solar development ($\beta = .14$, $p = .004$)
- 6 general support for solar ($p = .13$); serving urban needs ($\beta = -.06$, $p < .001$)
- 7 solar incentives favor urban areas ($p < .001$); prioritizing farmland ($p = .004$), believing rural needs are neglected ($p = .005$)
- 8 subsidies benefit urban areas ($\beta = -.13$, $p = .26$); farmland conservation should be prioritized ($\beta = -.35$, $p < .001$); rural needs remain unmet ($\beta = -.24$, $p = .03$); solar is not essential to the community’s future ($\beta = -.37$, $p < .001$)
- 9 rural needs are overlooked ($p = .001$)

- 10 solar is essential to the community ($p = .002$); incentives, farmland, and needs ($p > .07$ in all three cases).
- 11 ($\beta = .04$, $p = .008$)
- 12 “Latest Enrolled and Registered Data Files,” <https://www.maine.gov/sos/news/latest-enrolled-and-registered-data-files-posted-online>

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Nicholas F. Jacobs is the Goldfarb Family Distinguished Chair in American Government at Colby College, where he also serves as the Inaugural Director of the Bram Public Policy Lab.

Joseph Grassi graduated from Colby College in 2025 with a degree in government. He lives in Freedom, Maine.