Governor's Energy Advisory Council: Public Engagement Summary

December 2023

Contents

Background

The Governor's Energy Advisory Council (GEAC) is responsible for providing recommendations to DNREC's State Energy Office while undergoing the process of updating Delaware's comprehensive State Energy Plan. As laid out in the 2023 update to the Delaware Energy Act, the Delaware Energy Office must update the State Energy Plan every five years to safeguard the citizens of the State, support statutory greenhouse gas reduction targets, promote the transition to clean and renewable energy, reduce wasteful or inefficient uses of energy, and support implementation of the State's Climate Action Plan. As part of this process, the GEAC is also responsible for obtaining and integrating public input to ensure that the resulting State Energy Plan is equitable, aligned with the public good, and that Delawareans have a voice in their State's energy policy.

During November 2023, the GEAC held a series of three public engagement sessions: the first on November 1, at Dover Public Library in Kent County, the second on November 6, at the Route 9 Library & Innovation Center in New Castle County, and the third on November 15, at the Cheer Community Center in Sussex County. DNREC staff and GEAC members were on hand at all three events, holding informal one-on-one conversations to address individual questions and concerns. At each event, paper surveys were handed out with a series of open-ended questions to solicit public feedback on the State Energy Plan. Additionally, an online version of the survey was offered for those who could not make it to an in-person session, or for those who preferred to fill out a digital survey over a paper copy.

A total of 20 participants attended the Kent County session, 70 at New Castle County, and 77 at Sussex County. Not all attendees filled out surveys, and not all survey respondents attended an in-person event. Figure 1 shows the distribution of respondents based on which event, if any, they attended. 55% of survey respondents attended an in-person event, while 45% did not. Sussex County had by far the highest number of survey respondents who attended the in-person event, over double the rate of New Castle County and nearly quadruple over Kent County.
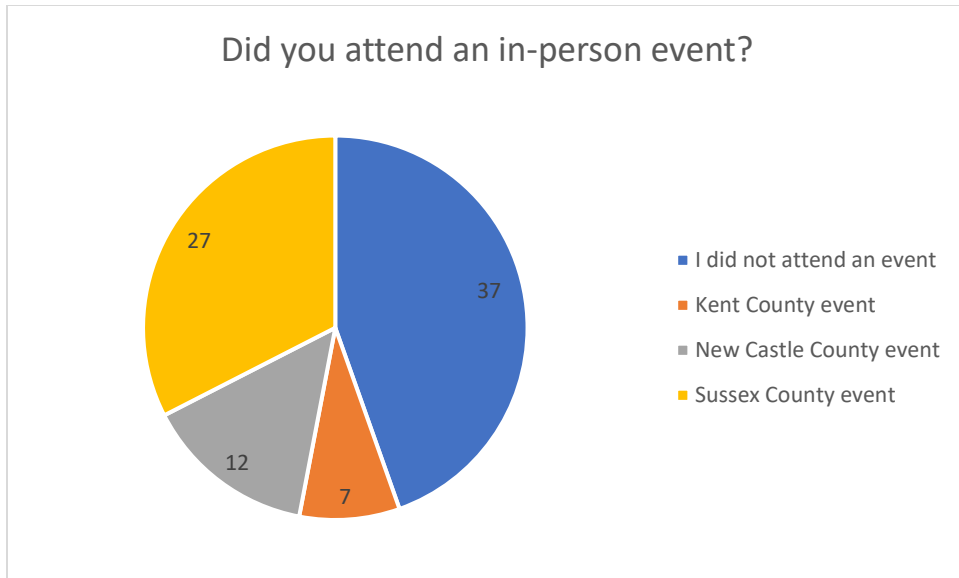
Figure 1: Survey respondents' answers to the question "Did you attend an in-person event?" Paper surveys were recorded as attendees of the event where their survey was collected.

Survey Geography and Participation

One of the primary intentions behind holding three separate in-person public engagement events, one in each county, was to ensure equitable access to opportunities to participate. Older residents, or those with limited Internet access or technical knowledge, may struggle with filling out an online survey; residents with limited free time or access to transportation may struggle with attending an in-person event. While it is not always feasible to meet every person's needs perfectly, the hybrid approach demonstrates the State's commitment to accessibility in public engagement.

Additionally, rural Delawareans, especially in Sussex County, often express a perceived disconnect between their needs and the needs of residents in urban population centers such as Wilmington. Part of DNREC's mission is to address these differing needs between communities, and to ensure that all voices are represented in matters of public policy. This may be reflected in the difference in attendance between the three events, as seen previously in Figure 1. Some event attendees even drove in from Maryland to express their opinions on energy issues that could affect the Delmarva peninsula as a whole.
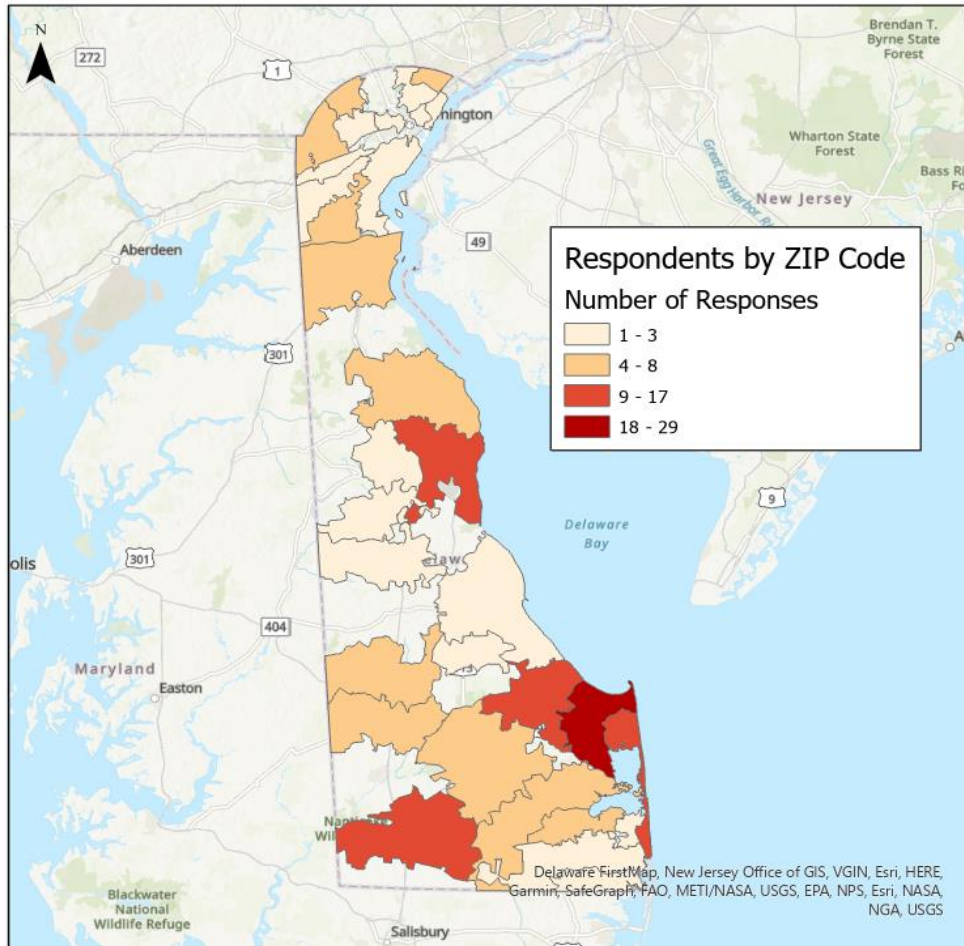
Figure 2: Survey respondents by self-reported ZIP code.

Figure 2 shows the geographic distribution of survey respondents' residences by self-reported ZIP code. As in Figure 1, the largest concentration of respondents are located in Sussex County. Surprisingly, there were relatively few respondents from the Wilmington area, despite being one of the largest population centers in Delaware. For future events, coordination with Wilmington community partners may be effective to boost awareness and engagement prior to public events.

One potential limitation to the interpretation of survey results is self-selection bias. Self-selection bias can occur when participants in a study or survey are comprised of volunteers, rather than a random sample. In this case, it is safe to assume that individuals who seek out public input events to provide feedback tend to have strong opinions and a personal stake in the subject matter, whether vocally positive or vocally negative. Those strong opinions will be over-represented in the responses compared to Delaware's general population as a whole, who may be unaware of or uninterested in state energy policy.

Methods

For this summary report, a mixed-methods quantitative and qualitative content analysis was employed to categorize and draw common themes from survey responses. Qualitative content analysis is "a research method for the subjective interpretation of the content of text data through the systematic

classification process of coding and identifying themes or patterns"[i]. Unlike quantitative content analysis, which generally focuses on analyzing the frequency of certain keywords or phrases within a body of text, qualitative content analysis focuses on recurring ideas and themes, and can include semantic information and implicit meanings embedded within the literal words[ii].

The qualitative content analysis used in this document utilizes a process called inductive coding, in which responses are systematically categorized by type. The analyst first reads through the data, identifies common themes and patterns, then groups those patterns into categories called "codes". These codes are classified in a document called a codebook, to ensure rigor and ease of validation. The analyst then conducts multiple rounds of coding: reading through the data, applying codes to responses, refining any codes that may be unclear or redundant, and repeating until a final product is reached.

Code	Description	Sample response
Pro-offshore wind	Favorable attitude towards pursuing offshore wind energy in Delaware	"We need to transition to renewable energy (especially off shore wind) and away from fossil fuels as fast as possible"
Anti-offshore wind	Unfavorable attitude towards pursuing offshore wind energy in Delaware	"Offshore wind is dying around the world and along our coast because it will devastate communities, livelihoods, tourism, sea life, birds and other animals."
Affordability	Expressing concern about costs, e.g. energy prices, affordability of solar panels, EVs	"The cost of energy is a big concern for consumers that are on fixed income or low income."
Climate crisis	Explicitly referencing climate change, urgency of climate action, and/or GHG emission reduction as core considerations	"Please prioritize the climate crisis above all else! Nothing else is more important right now; we have such limited time to help avoid the worst effects of the climate crisis."
Non-interference	Opposition to state action (e.g. mandates, subsidies), expressing preference for businesses and utilities to make energy-related decisions	"Delaware should leave electric business to utilities and save tax payer money"

Table 1: Excerpt from the analyst's codebook for General Questions, presented for illustrative purposes.

While time-consuming, the qualitative coding process produces a robust and nuanced analysis. For example, consider the following two citizen responses:

- "Do not build wind turbines and infrastructure that will destroy coast Sussex DE citizens' way of life."
- "Not a fan of ocean windmills. Too expensive, blight on ocean."

To a human reader, it is clear that these statements are both qualitatively in opposition to offshore wind. However they do not share any significant keywords, and a strictly quantitative keyword search for "wind turbines" or "offshore wind" would miss the second response due to its nonstandard phrasing

("ocean windmills"). When dealing with a diverse audience approaching a topic with varying levels of expertise, it is important to remember that the language used may not be consistent or academically "correct" in all circumstances. Additionally, qualitative coding allows for the analyst to further break down sub-codes and underlying themes: whether the primary opposition to offshore wind is based in concerns about cost relative to other forms of renewable energy, effects on the viewshed, concerns for the marine ecosystem and potential impacts on wildlife, and so on. This demonstrates the value of a qualitative approach, which allows a reader to pick up on context and connotative cues to code responses appropriately.

For purposes of this summary report, a quantitative approach was applied to questions with clear categorical responses (e.g. "yes/no/I don't know"), while a qualitative approach was applied to open-ended questions with subjective responses (e.g. "what do you think the state should prioritize?"). Key findings from both methods will be presented in each section.

Findings

The survey was divided into five sections based on the GEAC workgroups: *General Questions*, *Energy Equity*, *Energy Efficiency and Electrification*, *Renewable Energy and Clean Technologies*, and *Grid Modernization*. For each section, the survey presented definitions of key terms, then a short list of questions pertinent to the subject matter. A full list of questions from all five sections can be found in Appendix A at the end of this report.

The online version of the survey incorporated all five survey sections and recorded them together, along with the respondent's name, email address, and ZIP code. For in-person paper surveys, ZIP code was collected but not name and email. The paper surveys were separated by workgroup table, so an individual could choose to fill out one, some, or all sections as they preferred; as a result, the total number of respondents varies slightly between survey sections. All questions were optional and could be left blank.

General Questions

The General Questions section of the survey had a total of 87 respondents: 62 online, and 25 paper surveys.
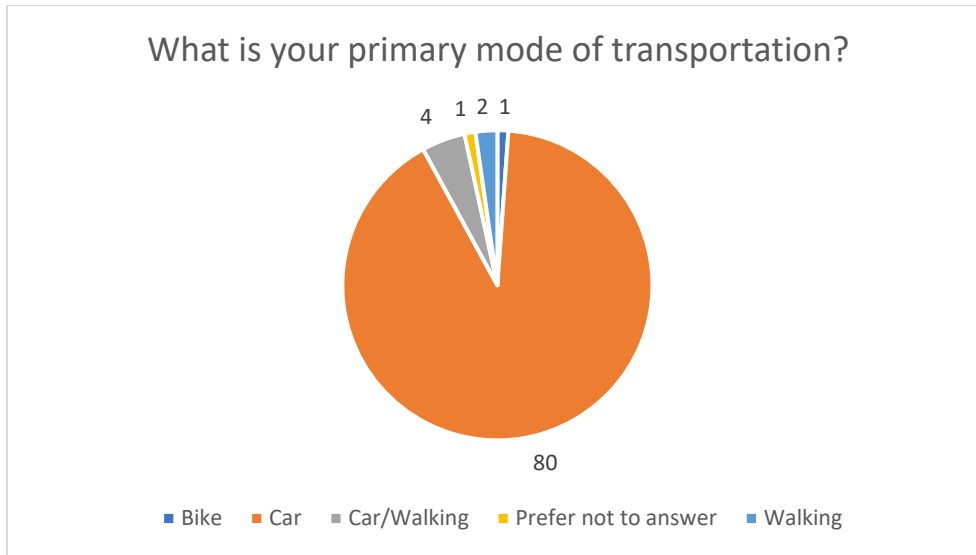
Figure 3: Respondent answers to Q1: "What is your primary mode of transportation?"

Q1 in the General Questions section of the survey pertained to primary modes of transportation; the options presented for respondents to choose from were car, bus, train, walking, or other. As seen in Figure 3, 91% of respondents indicated that they are reliant on a car as their primary mode of transportation, with the remaining respondents reliant on bike, walking, or a combination of car and walking. Notably, not a single respondent indicated that they use public transit as their primary mode of transportation. One paper respondent even wrote in the margin: "bus service not available." The desire for expansion of public transit in Delaware is an ongoing message in survey responses. While none of the survey sections directly address clean transportation, and thus it is not prevalent enough in any individual section to be a driving theme, requests for public transit appear repeatedly in every section as a suggested action: often paired in synergy with other actions, like more EV buses in low-income communities to improve transportation equity, or bus routes sited near affordable housing developments retrofitted to be energy-efficient.
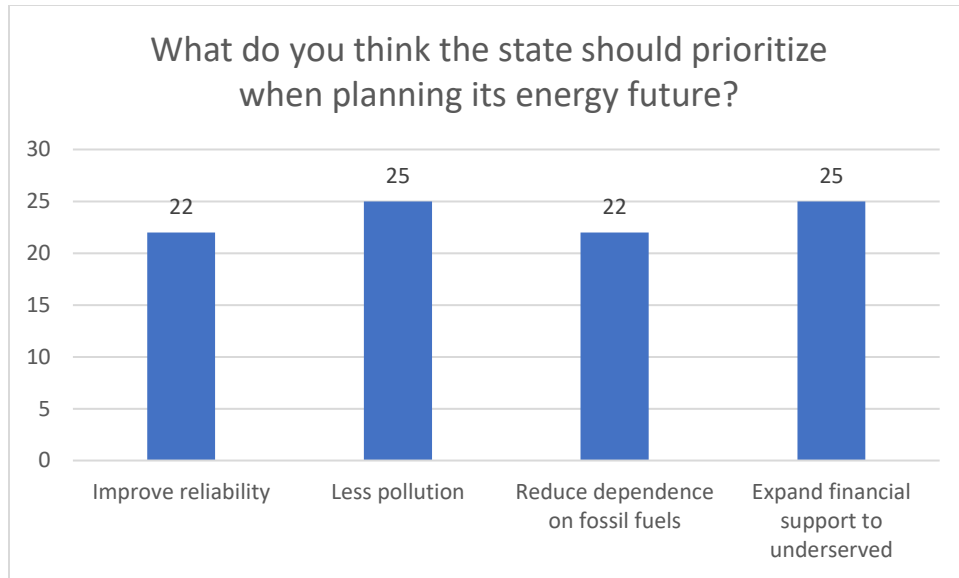
What do you think the state should prioritize when planning its energy future?

Improve reliability	Less pollution	Reduce dependence on fossil fuels	Expand financial support to underserved
22	25	22	25

Figure 4: Respondent answers to Q2: "What do you think the state should prioritize when planning its energy future?"

Q2 asked respondents to choose from a selection of potential priorities for the Energy Plan: improving the reliability of energy and electricity to your home, switching to energy generation sources that produce less pollution for Delawareans, reducing the state's dependence on fossil fuels, improving or expanding financial support or resources to underserved and overburdened communities, or a fill-in-the-blank option. (Note that due to the open-ended option and variety of responses received, the "other" responses for Q2 were coded qualitatively along with Q3).

Of the prewritten options provided, support was uniform across the board, with none specifically as a standout option. Rather than a marked split in priorities, this is primarily reflective of "all of the above/none of the above" responses. Respondents who strongly support a rapid transition to green energy were likely to cite all four categories as benefits, while those who oppose the transition to renewables tended to reject all four and write in their own concerns.
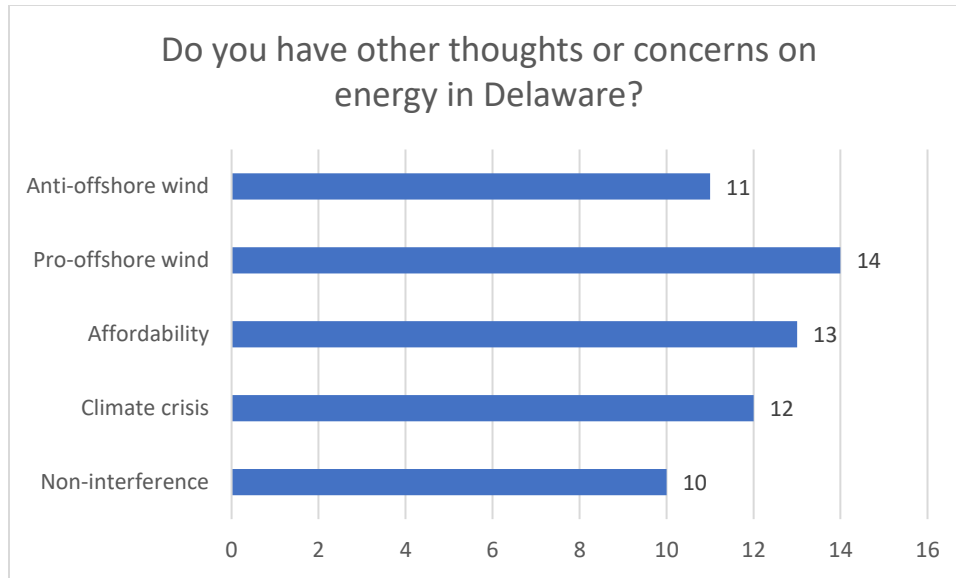
Figure 5: Overall themes identified in Q2's "other" category and Q3: "Do you have any other thoughts or concerns on energy in Delaware that you would like to share?"

The primary themes identified in Q2's "other" category, as well as in Q3, were as diverse and wide-ranging as one would expect from such a broad question. However, the overall trend of answers fell into five main categories: affordability, the climate crisis, non-interference, and pro- and anti-offshore wind.

Thirteen respondents (15%) specifically cited concerns about costs: primarily the cost of energy, and especially the burden that it represents on lower-income households. Some were concerned about whether renewable energy would cost more, while others saw increased state investment in the grid and energy efficiency as a solution to reduce current costs. Twelve respondents (14%) explicitly mentioned climate change, and the State of Delaware's commitment to reaching net zero greenhouse gas emissions by 2050, as laid out in the 2023 Climate Solutions Act. These responses emphasized the need to switch to renewable energy "as quickly as possible" and to "immediately" adopt assertive policies on reducing greenhouse gas emissions.

The "non-interference" category encompasses a range of criticism from those strongly opposed to the State of Delaware's actions to promote a clean energy transition: in particular rebate programs, subsidies, mandates, and/or other actions they perceive as state overreach. Responses in this category advocate for a hands-off approach in the energy sector, for the state to "get out of the industry" and let the private sector make energy-related decisions. This was a small but vocal contingent, comprising 10 of 83 respondents (11%). Responses in this category had the largest overlap with reliability and expanded financial support as priorities, and affordability as an additional concern. This suggests that opposition to statewide action is primarily rooted in fears that a modernized, renewable grid will be unaffordable, inaccessible to certain communities, or insufficiently tested for reliability. Some respondents openly asked for more data "proving" that the plan will work, or that wind and solar will be sufficiently reliable as energy sources when scaled up. This offers some clear pathways for future outreach, as well as demonstrating the necessity of trusted sources and transparency in communication.

As expected, offshore wind energy is a particularly divisive issue, especially in Sussex County. Survey respondents showed no strong consensus, albeit with slightly more pro- than anti-wind responses (14

vs. 11). Proponents of offshore wind cited it as a necessary component of a rapid transition to renewable energy, an underutilized resource in the state, and potential source of green jobs for Delawareans. Opponents primarily cited concerns about the costs of offshore wind compared to other renewable options, as well as concerns for the effects of turbines on marine life, especially birds and whales. As above, knowing respondents' specific reasoning makes it easier to address those concerns directly when engaging in future outreach.

Energy Equity

The Energy Equity section of the survey had a total of 85 respondents: 62 online, and 23 paper surveys.

This section of the survey encompassed four questions, three of which were open-ended. Q1 asked what respondents would like the state to do to promote energy equity, Q3 asked how the state can make education, training, and job opportunities for clean energy jobs accessible to all Delawareans, and Q4 asked what tools and resources are needed to increase access to energy education. Because answers to these three questions strongly overlapped, all three were qualitatively coded as a single text.
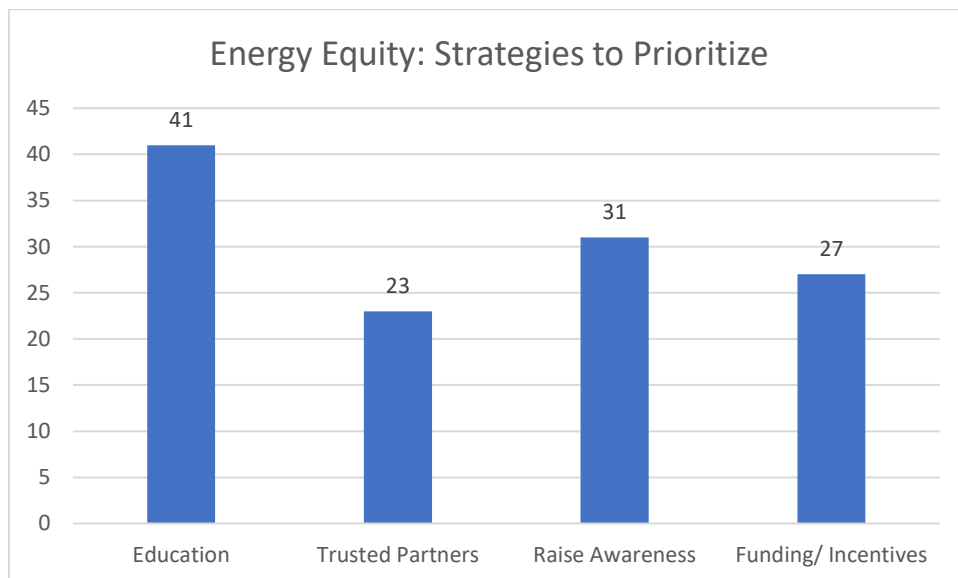

Figure 6: Equity strategies to prioritize, identified from Q1, Q3, and Q4 in the Energy Equity section.

Four main strategies were identified as common themes: education, engaging trusted partners, raising awareness, and expanding funding/incentives for participation in energy programs. "Education" as a strategy includes partnerships with K-12 education, vocational and technical schools, and higher education programs at colleges and universities. "Trusted partners" encompasses partnerships with non-school organizations that could play an outreach role in their communities: libraries, NGOs, houses of faith, community leaders, etc. "Raising awareness" covers mass media campaigns such as TV and newspaper advertisements, as well as social media. "Funding/incentives" covers expanding existing rebates and state incentive programs, as well as establishing new ones.

Education was by far the most popular strategy among respondents; nearly half (48%) of responses in some way touched on the importance of educational opportunities and job training for Delaware's

youth. This strategy also overlapped heavily with the funding/incentives strategy, as many respondents suggested the creation of workforce-development-related incentives: paid internships, subsidized tuition, wraparound supports like transportation and childcare to make job training more accessible to nontraditional students, and other incentives to expand access to education.

The second most popular strategy, raising awareness, suggests that Delawareans may not be fully taking advantage of the programs already available to them: whether because those programs are inadequately advertised, because eligibility guidelines are unclear, or because the provided information is confusing and time-consuming to navigate. Developing simple, broadly accessible messaging that can be easily circulated on social media can help expand awareness of existing programs. Additionally, respondents encouraged messaging crafted directly for high school students, to ensure that students choosing a career path are aware of the growing demand for clean energy jobs and the opportunities available for them.
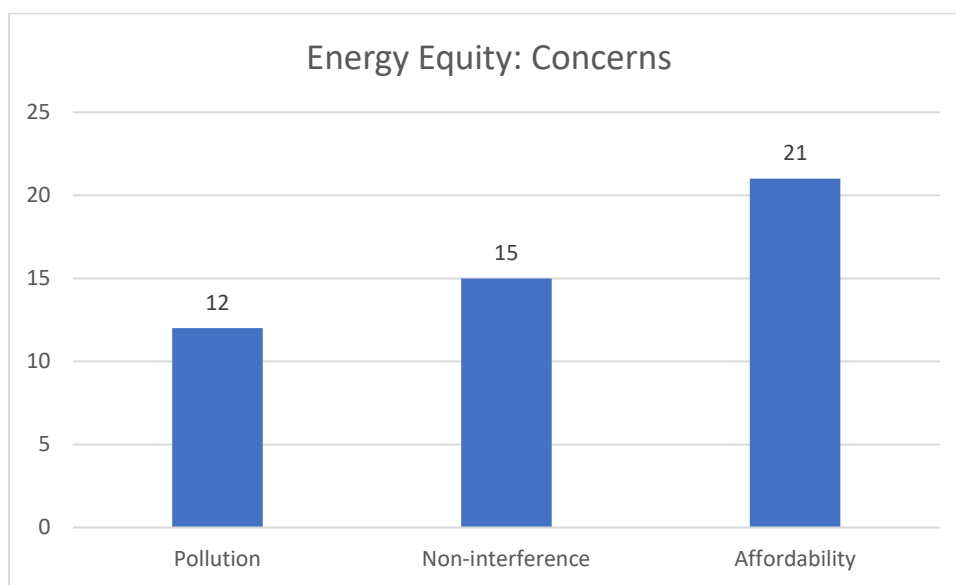

Figure 7: Equity concerns identified in the Energy Equity section.

Figure 7 shows the top three concerns generated from the open-ended questions. The most commonly-cited concern was affordability: primarily related to the cost of energy, especially in low-income communities. Low-income households tend to struggle with a higher energy burden, may live in older buildings with limited weatherization, and lack the savings to cover the upfront costs of investments like major home repairs, upgrading to energy-efficient appliances, or installing solar panels. The second common concern was pollution: respondents seem highly aware that proximity to highways and heavy traffic through overburdened communities can impact local air quality and respiratory health of nearby communities. Transitioning diesel-burning trucks and buses to their zero-emission electric counterparts is a priority for respondents in this category.

As with the previous section, there is also a vocal section of those who oppose "interference" by the state, blaming state energy programs for a perceived increase in energy costs. Respondents in this category frequently cited "equality not equity": a common rallying cry for those who perceive equity as inherently unfair, or perceive themselves as disadvantaged, but not in the ways that qualify them for equity programs. Surprisingly, respondents in this category opposed all the equity strategies listed in

Figure 6, *except* for education: roughly a third of respondents in this category still support access to technical schooling and vocational training.
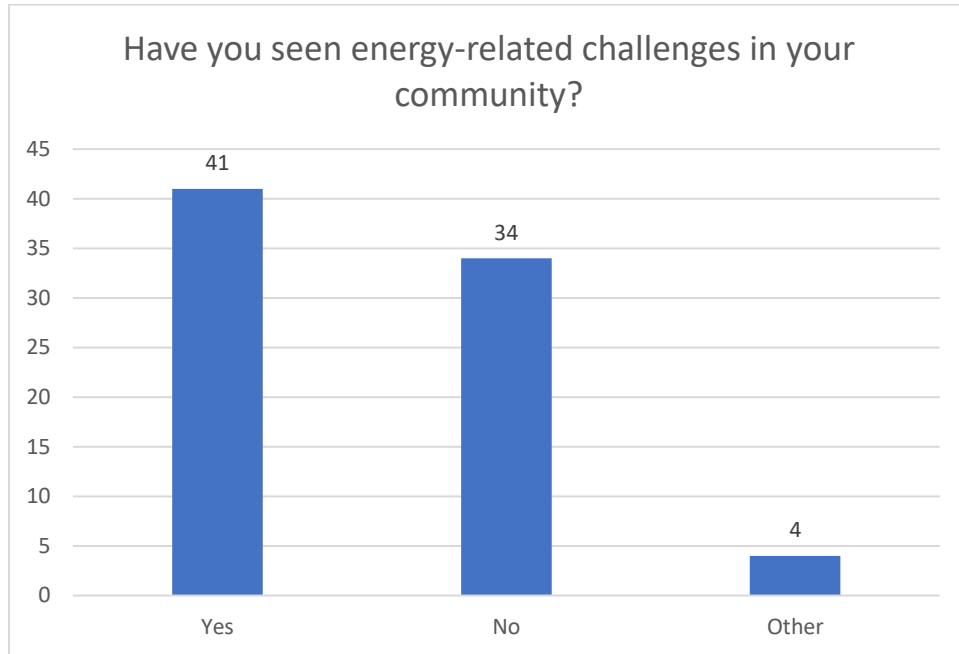

Figure 8: Respondent answers to Q2: "Have you seen energy-related challenges in your community?"

For Q2, respondents were split on whether they had personally witnessed energy-related challenges in their community. They were likewise split on what constitutes an energy-related challenge: sample responses ranged from brownouts in Pennsylvania, to neighbors leaving their garage doors open and letting heat escape in the wintertime. The most common responses included cost of energy, loss of power during storms, not enough EV chargers, and lack of community interest in programs like residential solar.

Energy Efficiency & Electrification

The Energy Efficiency and Electrification section of the survey had a total of 89 respondents: 62 online, and 27 paper surveys.
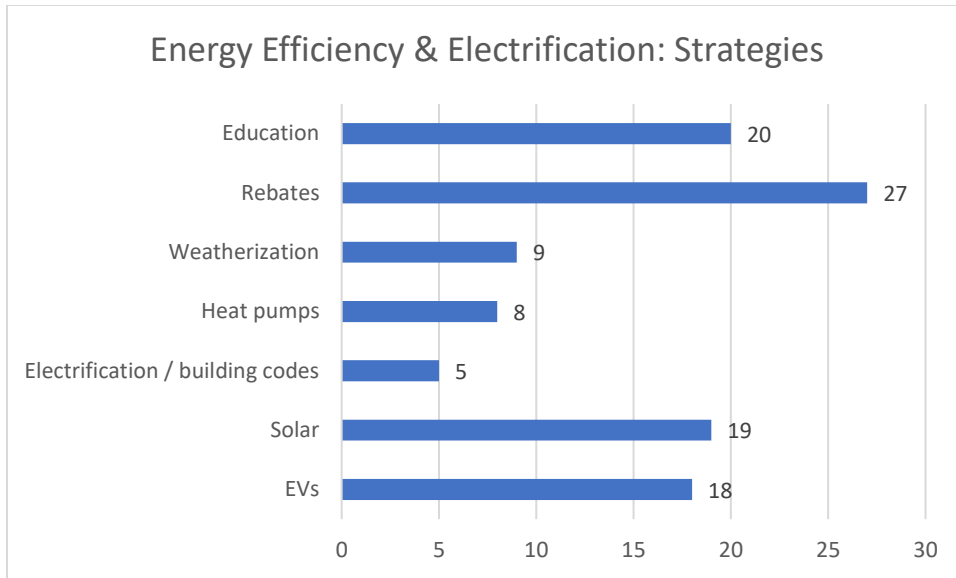
Figure 9: Respondent answers to Q1: "What more could the state do to promote energy efficiency or electrification for your household or business?" and Q3: "What energy-efficient or electrification products or initiatives would you like to see incentivized?"

Of all five sections, Energy Efficiency was the one where respondents struggled the most to identify sector-specific strategies. While a handful of responses mentioned weatherization, heat pumps, and updating building codes to improve efficiency standards, a larger proportion of responses focused on solar energy and electric vehicles. This suggests that while Delaware's programs for incentivizing residential solar and electric vehicle rebates are well-known to the public, respondents may be less familiar with the options available for weatherization and energy efficiency. As in the previous section, support for education and raising awareness remains high. Respondents recommended advertising and expanding existing programs, as well as adding new incentives such as rebates for replacing old gas appliances and HVAC systems.
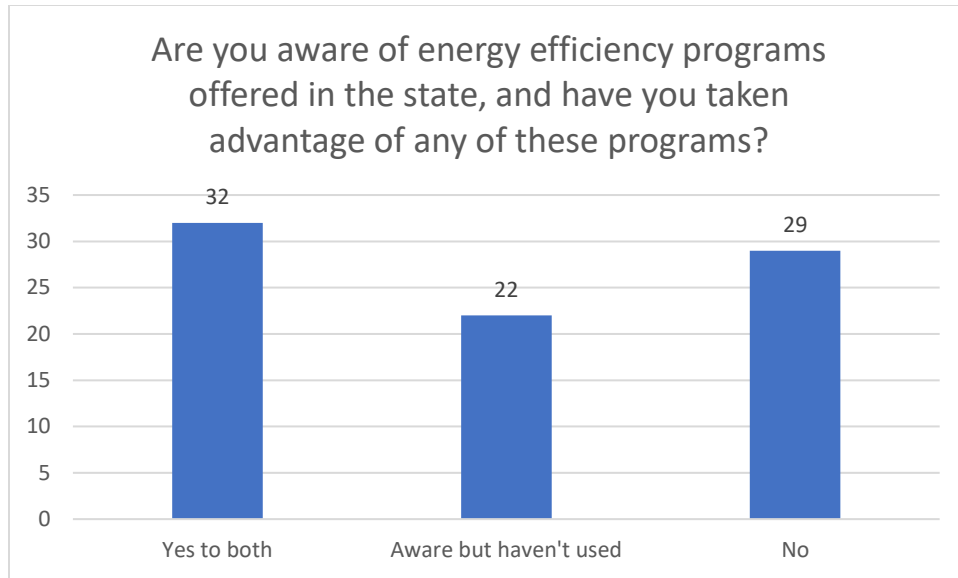
Figure 10: Respondent answers to Q2: "Are you aware of energy efficiency programs offered in the state, and have you taken advantage of any of these programs?"

Figure 10 shows respondent answers to Q2, asking whether respondents are aware of current energy efficiency programs and whether they have utilized any state programs. Respondents are broadly split across all three categories. Of those who responded "yes" to both questions, the highest number (15 respondents) said they had taken advantage of Energize Delaware's home energy audits. The next two highest were residential solar panels, at 11 respondents, and electric vehicle rebates, at 7 respondents. Among those who said they were aware of state programs but had not used them, respondents mentioned that they did not qualify, could not take advantage due to renting their home, or were waiting on delayed rebates from the state. These concerns are addressed in greater detail in the Renewable Energy section, which asks specifically about barriers.

Renewable Energy & Clean Technologies

The Renewable Energy and Clean Technologies section of the survey had a total of 94 respondents: 62 online, and 32 paper surveys.
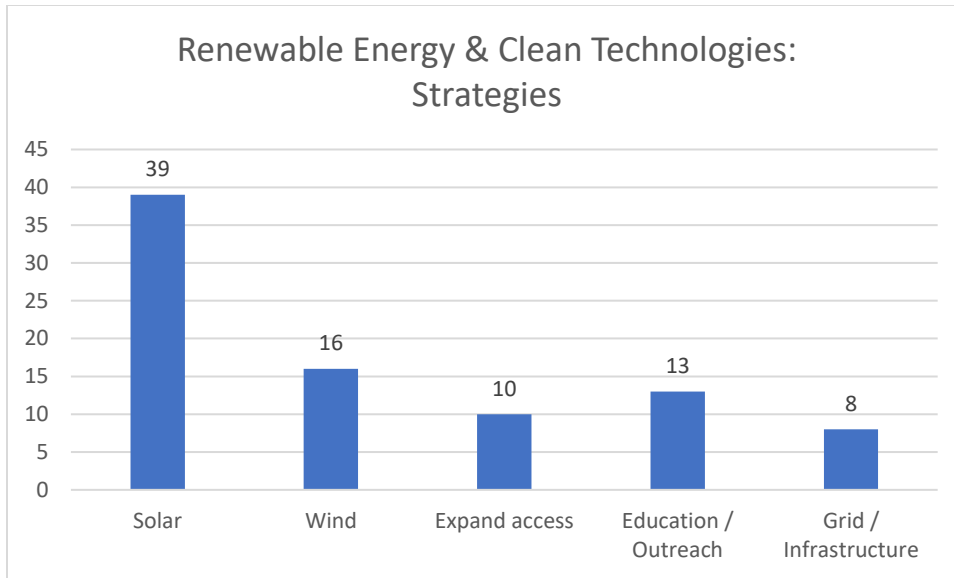
Figure 11: Respondent answers to Q1: "What more could the state do to promote renewable energy for your household or business?" and Q4: "What renewable or clean energy products or initiatives would you like to see incentivized?"

Solar was by far the most popular strategy mentioned in this section. As seen earlier in General Questions, support for wind energy tends to be muddled in debates about the perceived merits and drawbacks of offshore wind. Respondents favored expanding initiatives like low-income solar rebates community solar, and the development of initiatives targeted towards renters. They also supported education and outreach activities, such as amplifying success stories from happy customers, and developing easy-to-read guides to state and federal incentive programs. The final suggested strategy synergizes with grid modernization: respondents suggested expanding grid capacity for residential solar, and investing in microgrids with battery storage.
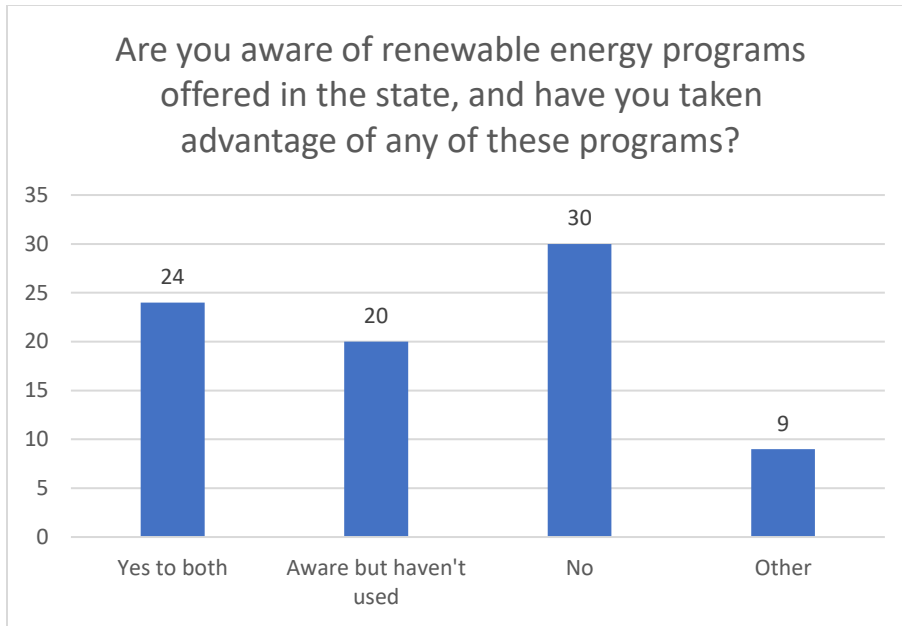
Figure 12: Respondent answers to Q3: "Are you aware of renewable energy programs offered in the state, and have you taken advantage of any of these programs?"

As with the similar question for Energy Efficiency & Electrification, respondents were broadly split on whether they had utilized renewable energy programs offered in the state. Again, the most widely-cited programs were for residential solar, EV rebates, and Energize Delaware's home energy audits. Among those aware of the programs who have not used them, several respondents stated that they had applied but found they did not qualify. Further analysis in this area may be useful, such as looking into rejected solar applicants to determine who is not qualifying and whether there are gaps in program coverage.

Answers to the first half of Q2, asking about whether respondents have installed or are considering installing solar panels, were very similar to responses to Q3. However, answers to the second half of Q2 – asking specifically about barriers deterring respondents from installing solar panels – were much more illuminating.
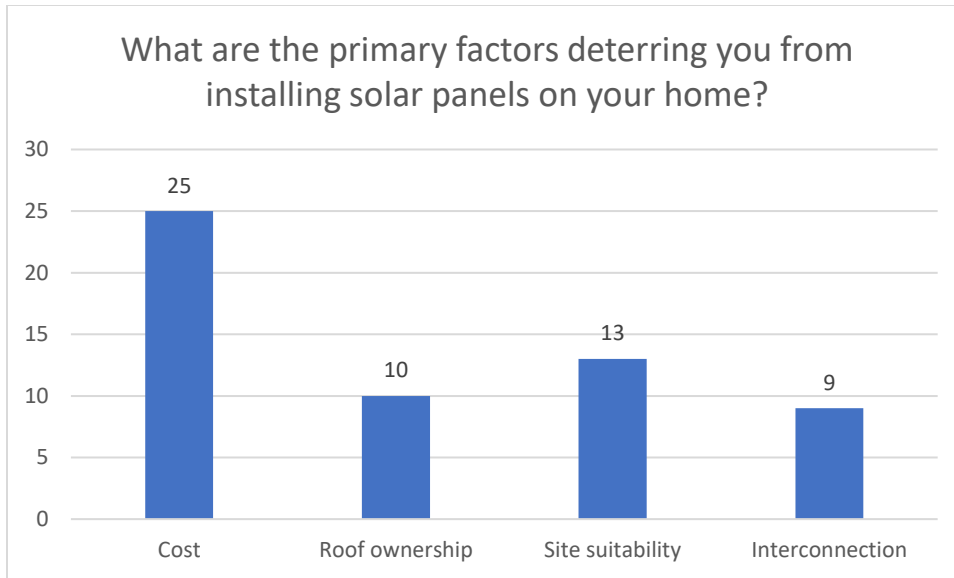
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Figure 13: Breakdown of the second half of Q2: "If you do not have solar panels on your home, what are the primary factors deterring you from installing solar panels on your home?"

For purposes of this analysis, "roof ownership" covers anyone who lacks ownership of an individual rooftop for solar installation, such as renters, people in multi-family dwellings, or condominium communities. "Site suitability" covers issues such as roof angle, too many trees or too much shade. Finally, "interconnection" covers individuals for whom the primary barriers were with utilities, net metering, or finding the process unclear and difficult to navigate. Cost remains by far the highest barrier for residential solar. Even knowing that solar panels typically pay for themselves within ten years, the upfront cost may still be difficult to justify for households with limited savings, retirees, or residents who don't plan to stay in their current home long enough to reap the benefits. Multiple respondents indicated that they had done the cost-benefit calculations and found them unfavorable.

Grid Modernization

The Renewable Energy and Clean Technologies section of the survey had a total of 93 respondents: 62 online, and 31 paper surveys.
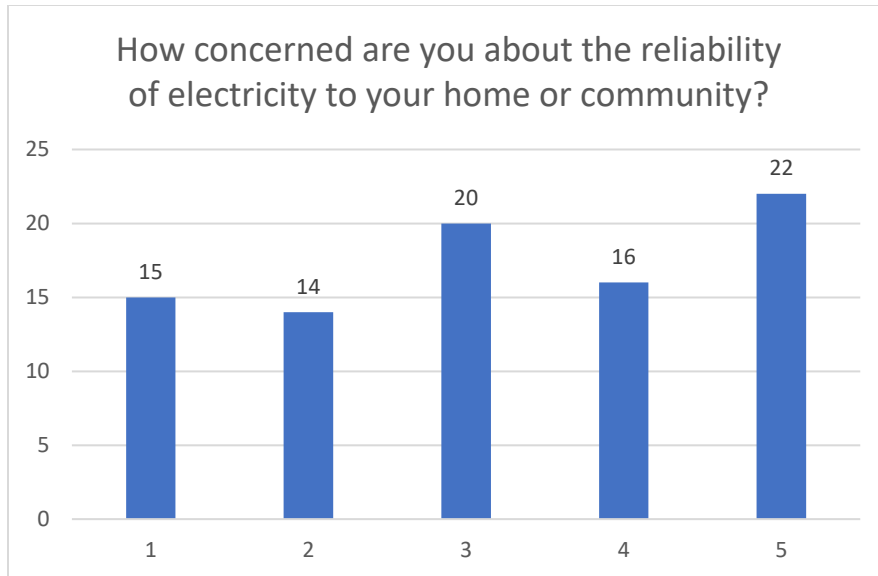
Figure 14: Respondent answers to Q1: "How concerned are you about the reliability of electricity to your home or community?" 1 represents no concern, while 5 represents very concerned.

Q1 of this section is a five-point Likert scale, addressing concerns about the reliability of electricity to a respondent's home or community. Responses to this question show an interesting pattern: rather than a quasi-normal bell curve distribution, the distribution of responses is strongly shifted towards the tails, with 5 – very concerned – as the most common answer. In general, Likert scales bias toward central values, with fewer individuals having opinions at the extreme ends of the scale. Distinct clustering at the tails suggests that the respondent sample is self-selected for strong opinions. As discussed in the survey background, the sample is self-selected from individuals willing to attend an in-person event on a weekday evening to give their opinions on energy policy, so strong opinions are not surprising. But it does indicate that energy reliability is a major concern for respondents.
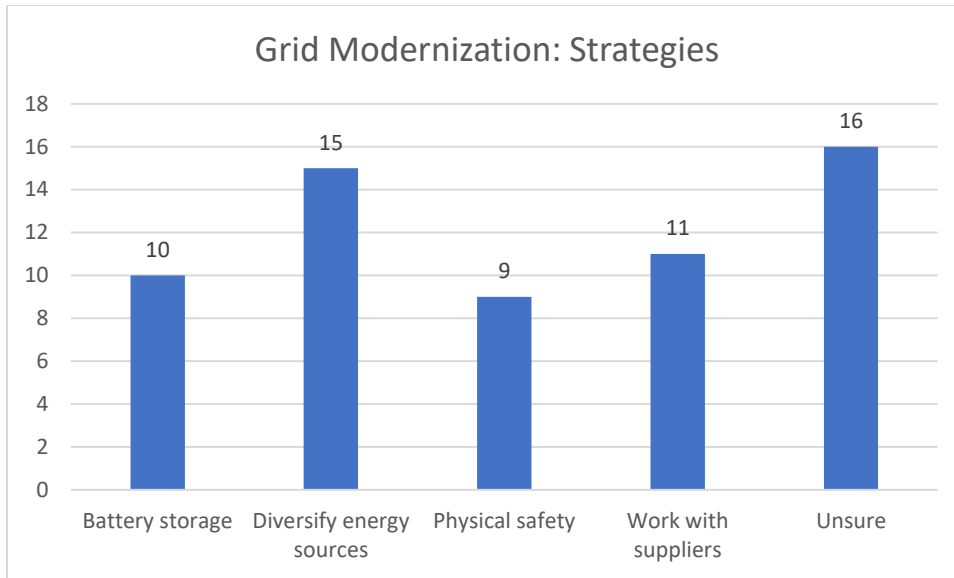
Figure 15: Respondent answers to Q2: "How do you think the state could better address energy security, grid resilience, and/or grid modernization?" and Q4: "What programs or policies could the state consider to better accommodate distributed resources?"

Likely due to the highly technical nature of the subject matter, grid modernization was the section in which the largest number of respondents explicitly stated that they were unsure of what to recommend, or did not have the expertise to answer. Some respondents favored battery storage, diversifying energy generation sources using strategies like community solar, or working directly with suppliers like PJM. Others focused on responding to physical threats to the grid, like fires or downed power lines. Many respondents were unclear on exactly what role the state plays in grid modernization, or whether it should be the responsibility of the federal government and/or utilities. Regardless, there was broad consensus that grid modernization and resilience should be the state's top priority – whether to ensure uninterrupted access to electricity for all Delawareans, or to prepare the grid for a transition to greater renewable energy generation.
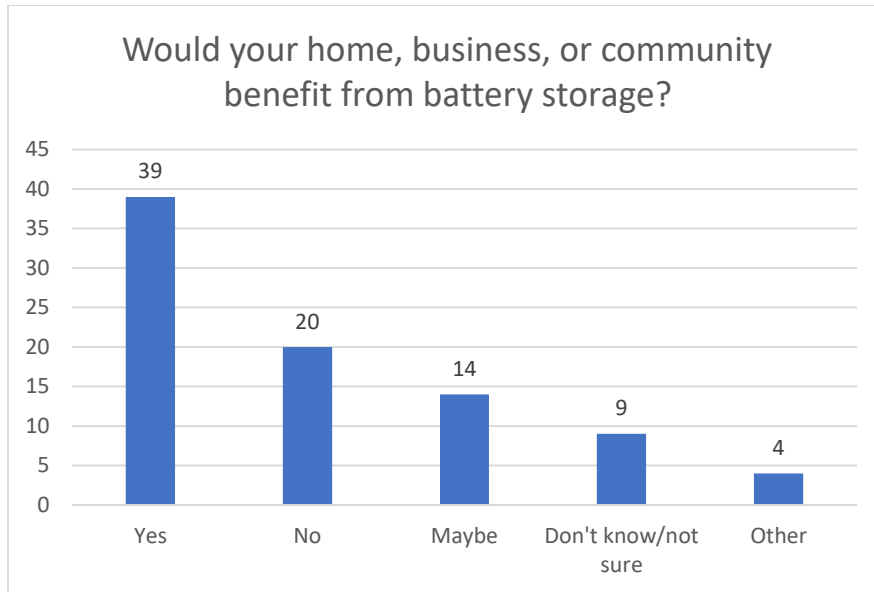
Figure 16: Respondent answers to Q3: "Would your home, business, or community benefit from battery storage?"

Q3 addressed whether respondents thought that their home, business, or community would benefit from battery storage. As with the previous question, there was some uncertainty in respondents about the benefits and risks of battery storage: some responses expressed concern about the current state of battery technology, lifespan, and safety. Overall, 42% of responses expressed favorable opinions on battery storage. Still, this is an area in which providing the public with more information could be beneficial, especially for those who are unclear or undecided.

Discussion

The Delaware Climate Change Solutions Act of 2023 establishes a statutory target to reduce Delaware's greenhouse gas emissions by at least 50% by 2030, and to reach net zero by 2050. The Act also directs the State Energy Office to develop and update every 5 years a comprehensive State Energy Plan, consistent with these greenhouse gas emissions reduction targets, promoting the use of renewable energy, and encouraging the conservation of energy through energy efficiency practices. An overwhelming majority of Delawareans support the state's actions to transition towards cleaner, more resilient, renewable-powered energy infrastructure. A survey conducted by the University of Delaware in 2019 showed that fully 70% of Delawareans support taking immediate action to fight climate change, 74% support requiring that an increasing percentage of electricity used in Delaware come from renewable sources, and 73% support stronger energy efficiency standards[iii]. These findings are consistent with responses to this survey: while opinions on specific strategies such as offshore wind may differ, most respondents expressed strong support for some or all of the strategies presented.

Still, no policy has 100% universal support. Roughly 11 to 15% of respondents expressed opinions that climate change is a hoax, renewables are the wrong direction, and the state should immediately stop incentivizing programs like solar and EVs. (Note that this theme appeared in roughly equal counts in all

sections; however, as it was the same group of respondents and responses had already been discussed in depth, the code was excluded from sections after Energy Equity to avoid excessive repetition.) These numbers are broadly consistent with findings by the Yale Program for Climate Change Communication's widely-utilized "Six Americas" framework, which divides audiences by level of belief and motivation to act on climate change[iv].
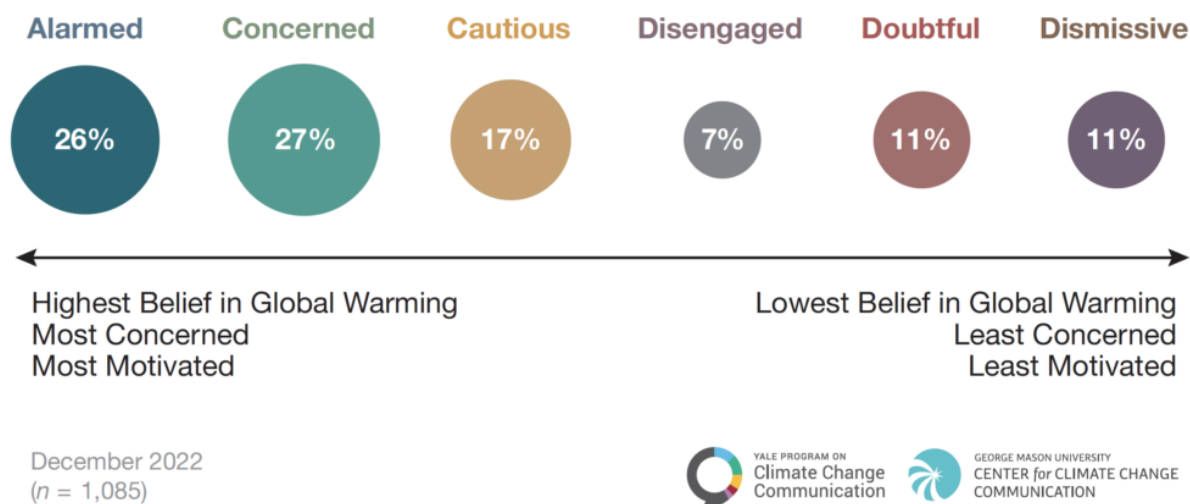

Figure 17: "Global Warming's Six Americas," as reported by the Yale Program for Climate Change Communication[v].

Since the YPCCC began tracking these numbers, the "Alarmed" group has more than doubled in size, going from 12% in 2012 to 26% in 2022. However, the "Doubtful" and "Dismissive" groups have remained stable over time, indicating that these are deeply-held beliefs that are unlikely to change in response to simple outreach efforts. Instead, it is more effective to focus the conversation on areas of agreement. Even among respondents who professed the belief that climate change is a hoax, there was limited support for strategies like strengthening grid resilience, reducing the energy burden for Delawareans, and expanding education and job training in the energy sector.

Across all sections of this survey, some key themes emerged. Education and awareness are a recurring theme: not all Delawareans who could take advantage of current state programs are aware of the opportunities available to them, or may be confused on the requirements for qualification. While most respondents were aware of existing rebates for residential solar and electric vehicles, as well as Energize Delaware's home energy audits, other programs were less well-known. Navigating the application process for rebates and other incentives can be confusing and time-consuming, especially for underserved communities. Investing resources into public awareness and accessible messaging for a general audience could be useful. Additionally, it could be beneficial to look at cross-program synergy and overlaps, so that applicants expressing interest in one program could be directed towards other resources that would benefit them.

Cost and affordability were another key theme across multiple sections. For those aware of and interested in residential solar, upfront costs remain a major barrier even with current incentives. The

recently-started Low- to Moderate-Income Solar Pilot Program, which brings affordable solar to underserved communities, will be a vital strategy going forward. Respondents are also concerned with the overall energy burden and cost of energy, especially for lower-income households. Showing data on cost comparisons between renewable energy and traditional fossil fuels could be useful to alleviate concerns about rising energy costs. Likewise, weatherization and energy efficiency programs can help reduce residents' monthly power bills by reducing the amount of energy consumed.

Greater collaboration across sectors and between initiatives is another key theme – for instance, expanding public transit options in low-income rural areas with limited access to electric vehicle charging, or incentivizing development of affordable housing that's energy-efficient and solar-ready, or incorporating distributed solar and microgrids into grid modernization planning. The energy plan that Delawareans want is a holistic one, with consideration for how each component affects the others.

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[i] Hsieh, Hsiu-Fang and Shannon, Sarah E. "Three Approaches to Qualitative Content Analysis." *Qualitative Health Research* 15, no. 9 (2005): 1277-1288. https://doi.org/10.1177/1049732305276687

[ii] Yan Zhang and Barbara M. Wildemuth, "Qualitative Analysis of Content" in *Applications of Social Research Methods to Questions in Information and Library Science*, 2nd ed. (Santa Barbara: Libraries Unlimited, 2017), 318-329.

[iii] Delaware Department of Natural Resources and Environmental Control, *Delaware Residents' Opinions on Climate Change and Sea Level Rise* (Dover, DE, March 2020), https://documents.dnrec.delaware.gov/energy/Documents/Climate/DNREC-Climate-Survey-Full-Report-20200323.pdf.

[iv] "Global Warming's Six Americas," *Yale Program for Climate Change Communication*, accessed December 10, 2023. https://climatecommunication.yale.edu/about/projects/global-warmings-six-americas/

[v] "Global Warming's Six Americas," *YPCCC.*

Appendix A: Survey Questions

General Questions

Q1: What is your primary mode of transportation? (select one answer)

- Car
- Bus
- Train
- Walking
- Other (fill in blank)

Q2: What do you think the state should prioritize when planning its energy future? (select all that apply)

- Switching to energy generation sources that produce less pollution for Delawareans and reduce the state's dependence on fossil fuels
- Improving the reliability of energy and electricity to your home
- Improving or expanding financial support or resources to underserved and overburdened communities
- Other (fill in blank)

Q3: Do you have any other thoughts or concerns on energy in Delaware that you would like to share?

Energy Equity

Definitions:

- **Energy equity:** energy equity recognizes that disadvantaged communities have been historically marginalized and overburdened by pollution, underinvestment in clean energy infrastructure, and lack of access to energy-efficient housing and transportation

Q1: What more would you like the state to do to promote energy equity?

Q2: Have you seen energy-related challenges in your community? If so, please describe below.

Q3: How do you think the state can best make educational, training, and job opportunities for clean energy jobs accessible to all Delawareans?

Q4: What tools or resources does your community need to increase access to energy education programs?

Energy Efficiency & Electrification

Definitions:

- **Energy efficiency:** the process of replacing older/less energy-efficient appliances, building materials, and technologies with newer, more efficient designs that require less energy.

Efficiency improvements both lower energy costs (utility bills) and reduce greenhouse gas emissions.

- **Electrification:** the process of replacing a machine, system, or technology that uses fossil fuels (coal, oil, and natural gas) with options that use electricity as a source of energy.

Q1: What more could the state do to promote energy efficiency or electrification for your household or business?

Q2: Are you aware of energy efficiency programs offered in the state and have you taken advantage of any of these programs? If yes, which programs have you taken advantage of?

Q3: What energy-efficient or electrification products or initiatives would you like to see incentivized?

Q4: Have you taken actions to help change your use of energy and reduce your utility bills (such as switching to LED lightbulbs, installing energy-efficient appliances, turning off lights, washing laundry in cold water, etc.)? If yes, please below.

Renewable Energy & Clean Technologies
Definitions:

- **Renewable energy:** energy from sources that are naturally replenishing
  Examples: solar, wind, hydrologic (water).
- **Clean energy:** low-carbon or zero-carbon energy derived from sources other than wind and solar
  Examples: electricity produced from nuclear or hydroelectric plans and energy sources, such as renewable natural gas.

Q1: What more could the state do to promote renewable energy and clean technology for your household, community, or business?

Q2: Have you installed or are you considering installing solar panels on your home? If you do not have solar panels on your home, what are the primary factors deterring you from installing solar panels on your home?

Q3: Are you aware of renewable energy programs offered in the state and have you taken advantage of any of these programs? If yes, which programs have you taken advantage of?

Q4: What renewable or clean energy products or initiatives would you like to see incentivized?

Grid Modernization
Definitions:

- **Grid modernization:** updating the power grid through innovative technologies and practices to meet modern-day energy demands and grid challenges.

- **Energy security:** the uninterrupted availability of energy sources at an affordable price. Energy security focuses on the ability of energy systems to react to sudden changes in the supply-demand balance, environmental factors, and cyber security concerns.
- **Battery storage:** the capturing of energy and storage in batteries for future use.
- **Distributed Energy Resources (DERs):** small-scale energy resources usually located near where electricity is used, such as rooftop solar panels, and battery storage.

Q1: How concerned are you about the reliability of electricity to your home or community (ie. Power disruptions or outages)? Circle a number from 1 to 5, with 1 being not concerned and 5 being very concerned.

Q2: How do you think the state could better address energy security, grid resilience, and/or grid modernization?

Q3: Would your home, business, or community benefit from battery storage?

Q4: What programs or policies could the state consider to better accommodate distributed resources such as solar, electric vehicles (EVs), and battery storage?