

# Overview of NECAP Public Surveys on Climate Change Adaptation in Dover

## Background

Prior to running New England Climate Adaptation Project (NECAP) role-play simulation workshops, project staff commissioned an independent firm to randomly poll 100 Dover residents via landline. This poll (Poll 1), conducted in May 2013, provided a snapshot of baseline opinions about climate change risks and adaptation in the city. Following the NECAP workshops, a second public poll (Poll 2) was conducted in May 2014 to see any shifts in residents' opinions during that time.<sup>1</sup> This report summarizes key findings from the two polls. These key findings are discussed individually in the sections that follow and a brief summary of all findings is provided in the conclusion.

## Demographics

Demographically, Poll 1 respondents were largely similar to Poll 2 respondents. The vast majority of respondents lived in Dover year-round (97percent in Poll 1 and 95 percent in Poll 2). Many were also long-term residents of Dover; 46 percent in Poll 1 and 39 percent in Poll 2 had lived in the community for more than 20 years.

The gender and age breakdown for both of the polls was also similar. Since the age and gender distribution of both poll samples were slightly different than the population of Dover at large, the public opinion data were weighted for age and gender to reflect a demographically representative sample.

Notably, there was a significant difference in environmental group membership between the Poll 1 and Poll 2 populations. Both polls suggest that a large portion of Dover residents do not belong to nonprofits involved in environmental advocacy efforts. However, Poll 1 respondents were much more likely to belong to environmental groups, particularly local environmental groups, than Poll 2 respondents (Table 1). This difference is worth noting, as individuals associated with local environmental groups are more likely to be concerned about local climate change risks—particularly environmental risks—than those who are not.

		Poll 1	Poll 2
Do you belong to any non-profit groups that regularly advocate on behalf of environmental conservation and/or protection?	No	73%	82%
	Yes, a national group (like The Nature Conservancy or National Audubon Society, etc.)	3%	9%
	Yes, a local group (like a watershed alliance or local conservation committee, etc.)	16%	1%
	Yes, other	8%	8%

<sup>1</sup> It will be indicated in this write-up where findings from the polls were statistically significant. If no indication is given, the finding from the poll was not statistically significant.

**Table 1:** Environmental group membership

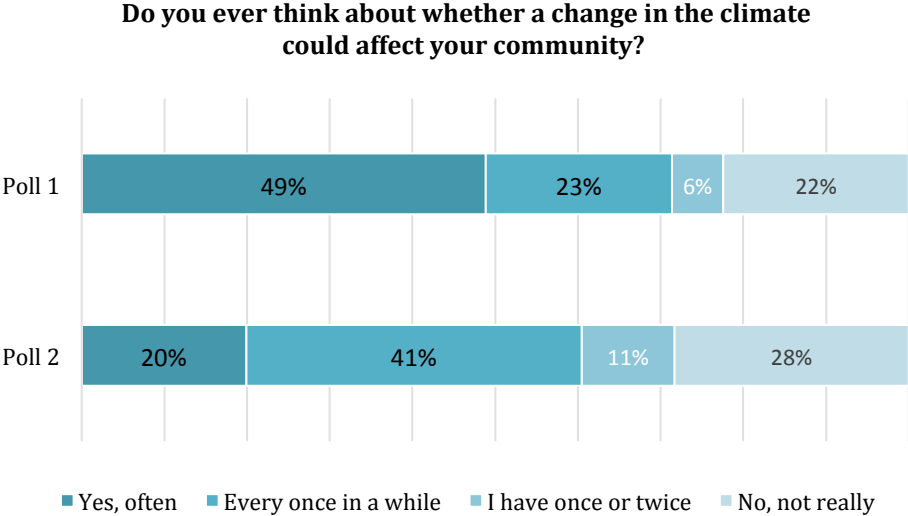
Poll 2 respondents were asked whether they had attended one of the NECAP workshops during the preceding year. Only 1 percent said they had, indicating very minor overlap between the Poll 2 population and the workshop population. This small overlap was anticipated and wanted, since the intent of the poll was to gauge the public opinion of Dover residents at large.

### Thinking about climate change

A majority of respondents in each poll (72 percent in Poll 1 and 61 percent in Poll 2) said that they think about whether a change in the climate could affect Dover at least “every once in a while” (Figure1).

While many people said they consider how climate change could affect Dover “often,” the number of people who fell into this category declined from 49 percent in Poll 1 to 20 percent in Poll 2. This shift from Poll 1 to Poll 2 was statistically significant. This change, as well as the lower total number of people who think about climate change impacts at least once in a while, may be at least partially attributable to the fact that Dover did not experience severe weather in the year between the two polls. In contrast, Hurricane Sandy occurred less than a year before Poll 1, and Hurricane Irene hit the region in 2011. The higher percentage of people who often think about local climate change risks in Poll 1 may also be related to the higher number of people affiliated with local environmental groups in that poll sample.

Regardless, both polls indicate that many people in Dover are thinking about the potential impacts of climate change on their community.



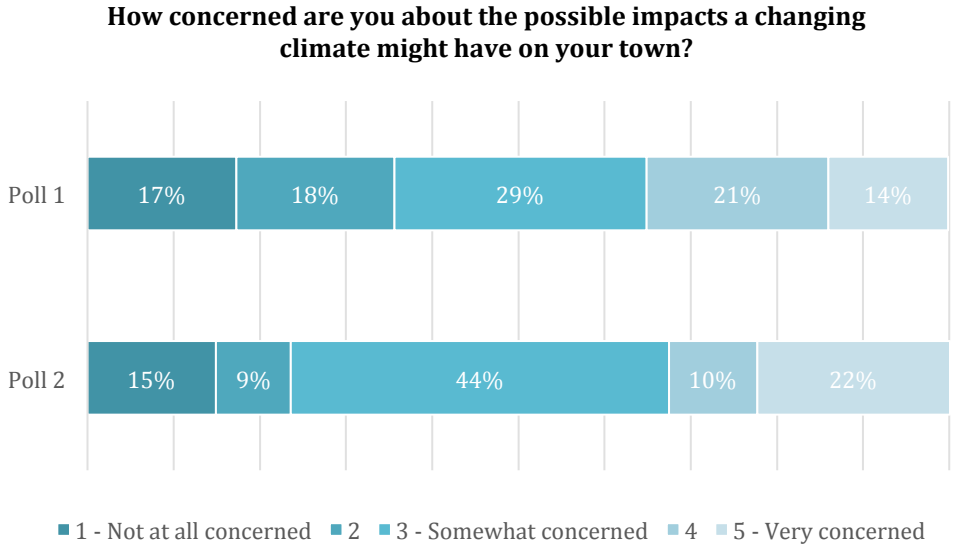
**Figure 1:** Frequency of climate change consideration

**Takeaway:** While Poll 2 respondents are thinking about climate change less often than Poll 1 respondents, a clear majority of respondents in both polls think about climate change at least every once in a while.

**Concern about climate change**

In line with the fact that many people are thinking about how climate change could affect their community, there is a surprisingly high level of concern about climate change risks in Dover. In response to the question, “How concerned are you about the possible impacts a changing climate might have on your town?” approximately two-thirds of Poll 1 respondents and three-fourths percent of Poll 2 respondents expressed some level of concern about the possible impacts of climate change, with many saying they are very concerned.

As indicated in Figure 2, more respondents in Poll 2 reported some level of concern about climate change than in Poll 1. This shift was statistically significant, with 77 percent of Poll 2 respondents saying they were “somewhat concerned” to “very concerned,” compared to only 64 percent of Poll 1 respondents. The number of people who said they are “very concerned” increased from 14 percent in Poll 1 to 22 percent in Poll 2.



**Figure 2:** Concern about climate change

When asked if their concern about local climate change impacts had shifted during the past year, 43 percent of Poll 2 respondents indicated that their concern had increased, 55 percent indicated no change, and only 3 percent indicated that their concern had decreased.<sup>2</sup> Respondents’ reasons for their shifts in level of concern are shown in Table 2:

<sup>2</sup> This question was only asked in Poll 2, not in Poll 1.

Natural weather event	64%
News story	25%
Other	7%
The National Climate Assessment or another scientific report	4%
Local government action	0%
State or national government action	0%
A personal or professional interaction	0%
Educational workshop or presentation	0%
School	0%

**Table 2:** Poll 2 respondents' answers for the question - "What was the primary cause of this shift in your concern about the possible impacts climate change could have on your town?" Respondents were given the above choices and were asked to select one.

**Takeaway:** Concern about climate change is surprisingly high in Dover, and appears to have increased from Poll 1 (2013) to Poll 2 (2014). This is particularly notable in light of the fact that environmental group affiliation was lower among Poll 2 respondents. A natural weather event was the most commonly given reason for individuals' increase in concern over the past year, followed by a news story.

## Respondents' views on most significant climate change impacts

In Poll 2, respondents were asked: "What do you think the most significant impacts of a change in climate might be in your community?" They were given the option to select up to 3 options, in rank order.<sup>3</sup>

Polled Dover residents' first responses (i.e. the impact they think will be most significant) are shown in Table 3 below. Respondents' top concerns are sea level rise, increased flooding, and more severe storms, respectively. Twelve percent of respondents felt there would be no significant impact.

What do you think the most significant impacts of a change in the climate might be for your community? [First ranked response]	Sea level rise	25%
	Increased flooding	19%
	More severe storms	18%
	There will be no significant impact	12%
	More heat waves	10%
	Drought	9%
	Ecosystem impacts	7%
	Infrastructure impacts	1%

**Table 3:** Poll 2 respondents' of the key climate change risks facing Dover

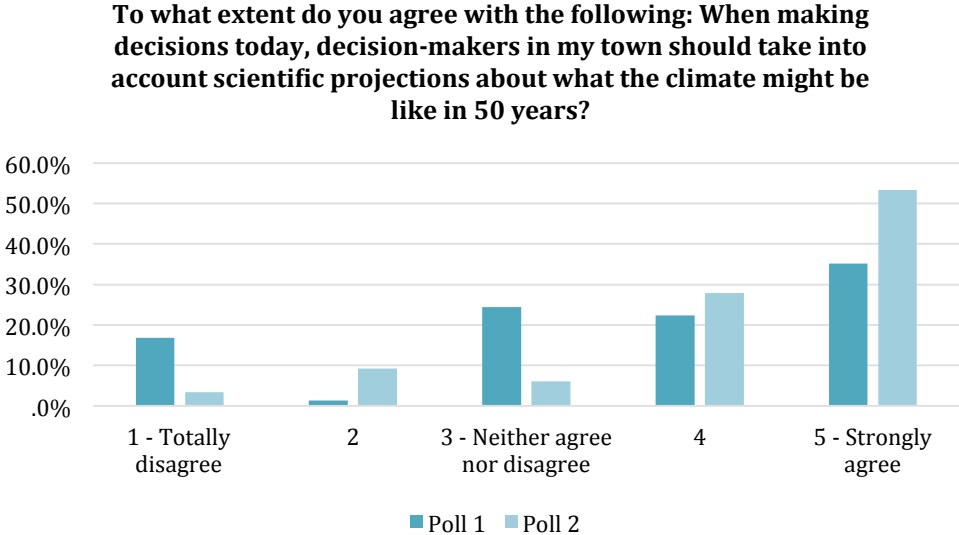
Of those who provided a second response, 32 percent said heat waves and 27 percent said more severe storms.

<sup>3</sup> This question was only asked in Poll 2, not in Poll 1. While there was a question about climate change impacts in Poll 1, it was a slightly different question with slightly different answer choices.

**Takeaway:** Most people think of sea level rise, increased flooding, more severe storms, and heat waves as the most significant climate risks for Dover.

### Support for climate adaptation action

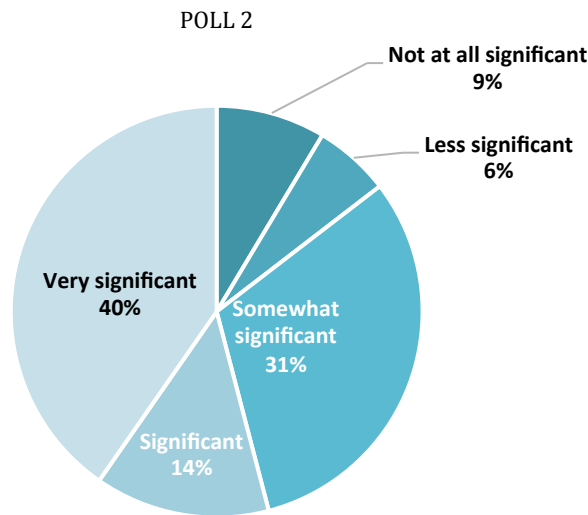
From Poll 1 to Poll 2, there was a statistically significant shift towards the belief that decision-makers should take into account climate change projections when making current decisions (Figure 3). In response to the question, “To what extent do you agree with the following: When making decisions today, decision-makers in my town should take into account scientific projections about what the climate might be like in 50 years,” more than half of Poll 2 respondents answered “strongly agree”, compared to only 35 percent of Poll 1 respondents. Another 28 percent of Poll 2 respondents said that they “somewhat agree,” an almost 6 percent increase over Poll 1. Only 13 percent of Poll 2 respondents expressed disagreement with this statement.



**Figure 3:** Comparison of Poll 1 and Poll 2 results for perspectives on whether local decision-makers should take climate science into account in everyday decision-making.

Both polls also asked respondents: “How significant do you think addressing climate change risk should be in your town’s planning and decision making over the next ten years?” While there was not a clear shift from Poll 1 to Poll 2, respondents in both polls thought addressing climate change should be significant in Dover’s planning (Figure 4). In Poll 1, 56 percent of polled residents said it should be “significant” to “very significant,” and another 25 percent said that it should be “somewhat significant.” Similarly, in Poll 2, 54 percent of polled residents said it should be “significant” to “very significant,” and another 31 percent said that it should be “somewhat significant.” Overall, the shift in responses to this question from Poll 1 to Poll 2 was not statistically significant.

**How significant do you think addressing climate change risk should be in your town's planning and decision making over the next ten years?**



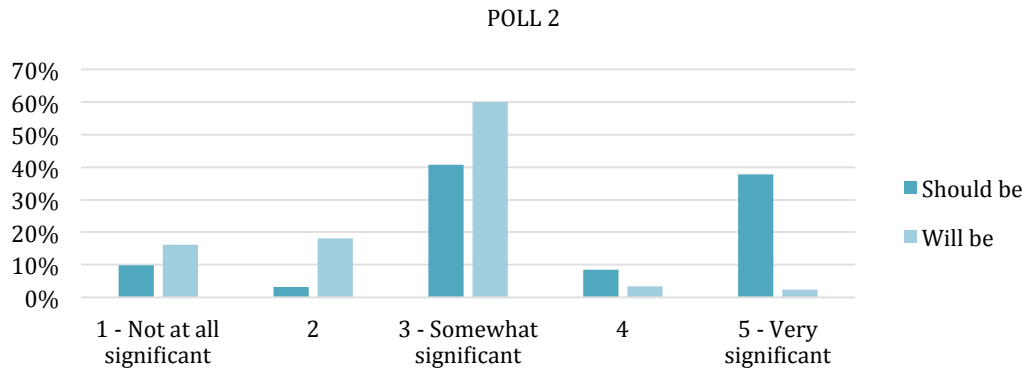
**Figure 4:** Poll 2 respondent's beliefs regarding the importance of local efforts to address climate change risks

**Takeaway:** Many polled respondents believe that local decision-makers should take climate projections into account. The poll results also suggest that many people believe that climate adaptation should be a priority for local government.

### **Slight increase in confidence in Dover, but still a significant confidence gap**

One of the more striking findings is that both public polls revealed that the large majority (upwards of 80 percent in both Poll 1 and Poll 2) think that climate change should be “somewhat significant” to “very significant” in Dover’s planning during the next ten years. However, far fewer said that they think it *will actually be* “somewhat significant” to “very significant” (47 percent in Poll 1 and 66 percent in Poll 2) (Figure 5). Similarly, when asked “How confident are you that your town will be able to effectively respond to climate-related risks despite uncertainty about what the future climate will be like?” only 17 percent of Poll 1 and 14 percent in Poll 2 respondents said that they were either “confident” or “very confident.” This “confidence gap” was found in all four NECAP communities, both in Poll 1 and Poll 2.

**How significant do you think climate change *should be/will actually be* in your town’s planning and decision making over the next ten years?**



**Figure 5:** Confidence gap among Poll 2 respondents

Given this confidence gap, it is notable that there was a small increase in confidence in the City’s willingness and ability to plan for climate change from Poll 1 to Poll 2. In response to the question “How significant do you think climate change risk will actually be in your town’s planning and decision making over the next ten years?” 66 percent in Poll 2 said that it would be “somewhat significant” to “very significant,” compared to only 34 percent of Poll 1 respondents (Table 4). This increase is statistically significant. However, it is important to note that almost this entire shift was towards the moderate answer – “somewhat significant,” rather than towards “very significant.” Furthermore, despite this slight upwards shift in confidence, the gap is still quite large.

		<b>Poll 1</b>	<b>Poll 2</b>
How significant do you think climate change risk will actually be in your town’s planning and decision making over the next ten years?	1 - Not at all significant	33%	16%
	2 - Not significant	34%	18%
	3 - Somewhat significant	23%	60%
	4 - Significant	7%	3%
	5 - Very significant	4%	2%

**Table 4:** Poll 1 and Poll 2 respondents' confidence in Dover

**Takeaway:** While many people think that climate change should be important in Dover’s planning over the next ten years, they generally lack confidence that the town will take action to prepare. There was a small increase in confidence in Dover’s ability and willingness to address climate change between Poll 1 and Poll 2, but the confidence gap remains notably large.

## Perceived barriers to action

In Poll 2, respondents were asked “If the climate is changing, what is most likely to prevent your community from taking appropriate action?” and were allowed to choose up to three options in rank order, starting with most important.<sup>4</sup> The most popular first ranked response was “lack of funding or financial resources,” with about 38 percent of respondents choosing this as the primary barrier (Table 6). This is consistent with findings from the Dover Stakeholder Assessment and survey data from NECAP workshops, both of which found that people generally identify funding as one of the key barriers to addressing climate change.

“Uncertainty about what the future climate will be like” was the second most common primary barrier, selected by 26 percent of respondents, followed by “lack of agreement about what to do about it” (12 percent). Notably, only 2 percent of respondents said “nothing; my community is prepared.”

Lack of funding or financial resources	38%
Uncertainty about what the future climate will be like	26%
Lack of agreement about what to do about it	12%
Lack of political will	10%
Lack of scientific information	7%
Lack of public support	3%
Nothing; my community is prepared	2%
Lack of technical know-how/capacity	2%

**Table 5:** Poll 2 respondents’ first ranked response to the question: “If the climate is changing, what is most likely to prevent your community from taking appropriate action?”

**Takeaway:** Among Poll 2 respondents, lack of funding or financial resources and uncertainty about the future climate were the most commonly perceived primary barriers to adaptation.

## Some willingness to pay for adaptation

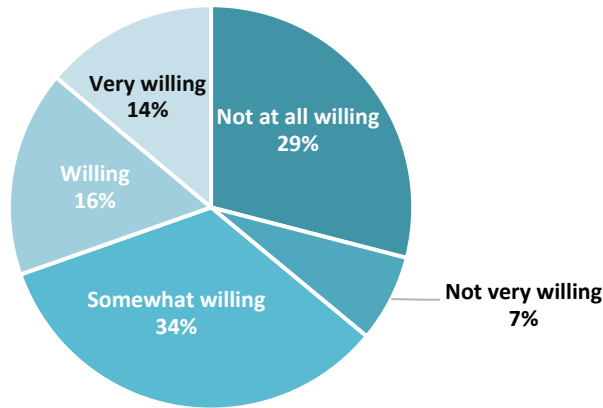
In Poll 2, respondents were asked about their willingness to pay slightly higher taxes so that their community could adapt to climate adaptation. Almost two-thirds of respondents indicated that they were “somewhat willing” to “very willing” to pay slightly higher taxes for this purpose (Figure 6).

<sup>4</sup> This question was only asked in Poll 2, not in Poll 1.



**How willing would you be to pay slightly higher taxes so that your town can prepare for climate change risks?**

POLL 2



**Figure 6:** Poll 2 respondent's willingness to pay for climate change adaptation

Unsurprisingly, there was a statistically significant positive correlation between concern about climate change and willingness to pay. Poll 2 respondents who indicated a higher level of concern in response to the question “How concerned are you about the possible impacts a changing climate might have on your town?” also tended to exhibit a higher willingness to pay. Similarly, a lower level of concern generally corresponded to a lower willingness to pay. There was also a statistically significant positive correlation between the belief that preparing for climate change risks should be a priority for Dover over the next decade and willingness to pay.

Poll 2 also asked respondents the related question “What would make you more willing to pay slightly more in taxes so that your town can prepare for climate change risks?” Respondents were given the options listed in Table 6 below. Even though 30 percent of people said they are willing or very willing to pay more taxes so their town can prepare for climate change, only 1 percent of respondents chose the answer “I am already very willing to pay slightly more in taxes for this purpose.” In contrast, about a quarter (24.1%) of respondents answered “I do not want to pay more taxes for this purpose.”

Of the three-quarters of Poll 2 respondents who might be willing to pay more in taxes, the three most common responses were: “If I started seeing the impacts of climate change” (20%), “If I had more confidence in my town’s ability to effectively manage climate change risks” (16%), and “Other” (15%). The results of this question suggest that, while many people say they would be willing to pay more in taxes to support Dover in planning for climate change, most are not entirely ready to do this, and the reasons for this lack of readiness are very mixed.

What would make you more willing to pay slightly more in taxes so that your town can prepare for climate change risk?"	I do not want to pay more taxes for this purpose	24%
	If I started seeing the impacts of climate change	20%
	If I had more confidence in my town's ability to effectively manage climate change risks	16%
	Other	15%
	If my town decision-makers included climate change preparations in everyday planning decisions	11%
	If my voice was represented in my town's decision-making about how to prepare	8%
	If my town got hit by a major storm or other climate disaster	4%
	I am already very willing to pay slightly more in taxes for this purpose	1%

**Table 6:** Poll 2 respondents' answers to the question: "What would make you more willing to pay slightly more in taxes so that your town can prepare for climate change risks?"

**Takeaway:** The majority of Dover residents say they are willing to pay more in taxes to support climate adaptation efforts, but they are not entirely ready to do so, and the reasons for this apparent lack of readiness are mixed.

### Dover respondents believe that stakeholder involvement is important

In both polls, it is clear that Dover respondents believe it is important for stakeholder groups to be involved in deciding how to respond to climate change risks. When asked "How important is it that residents, local groups, and businesses be involved in deciding how to respond to climate change risks?" 63 percent of Poll 1 respondents and 62 percent of Poll 2 respondents answered "important" or "very important" (Table 7). Another 22 percent of Poll 1 respondents and 34 percent of Poll 2 respondents answered "somewhat important."

		Poll 1	Poll 2
How important is it that residents, local groups, and businesses be involved in deciding how to respond to climate change risks?	1 - Not at all important	8%	5%
	2 - Not important	7%	1%
	3 - Somewhat important	22%	34%
	4 - Important	19%	13%
	5 - Very important	44%	48%

**Table 7:** Importance of stakeholder involvement

While no significant shift in public opinion occurred between Poll 1 and Poll 2 on this matter, the consistency of these findings indicate that residents in Dover consider stakeholder involvement to be key.

**Takeaway:** People in Dover believe it is important to involve stakeholders when making decisions about climate adaptation.

## Who should be responsible

In Poll 2, respondents were asked “If the climate is changing, who do you think should be responsible for preparing for the possible impacts this might have on your community?” and were allowed to choose up to three options in rank order, starting with most important (Table 8).

Forty percent of Poll 2 respondents chose “individuals” as their first ranked response. A fifth of respondents chose the “national government” for their first ranked response. The city government was the third most popular choice, with 16 percent selecting this option first.

These findings are generally consistent with the findings from Poll 1, in which 33 percent of people gave “individuals” as their first said response and 21 percent gave the “national government” as their first said response.<sup>5</sup> Only 14 percent of Poll 1 respondents said “city government” as their first response.

The full results for Poll 2 respondents’ first ranked responses, as well as the corresponding percentages for their second and third ranked responses, can be found in Table 8 below.<sup>6</sup>

		First Ranked Response	Second Ranked Response (if given)	Third Ranked Response (if given)
If the climate is changing, who do you think should be responsible for preparing for the possible impacts this might have on your community? (Please select up to 3 options, in rank order, starting with most important)	Individuals	40%	11%	14%
	National government	19%	13%	47%
	City government	16%	20%	21%
	State government	12%	45%	16%
	Businesses	6%	6%	1%
	Neighborhoods	2%	6%	1%
	Other	2%	0%	0%
	All of the above	4%	N/A	N/A

**Table 8:** Poll 2 respondents' responses regarding who should be responsible for adapting to a changing climate

**Takeaway:** Many people see preparing for climate change as primarily an individual, national, or state government concern. This is not entirely surprising—not only is New

<sup>5</sup> It is important to note that Poll 1 and Poll 2 are not directly comparable. Poll 1 did not ask respondents to rank their responses, and NECAP staff only obtained respondents’ first given response. Additionally, Poll 2 contained an extra answer choice - “all of the above” – that was not in Poll 1.

<sup>6</sup> Not all polled residents gave second or third responses. As a result, the percentages given for second and third responses are the portion of people who selected a given option out of the number of people who gave second and/or third responses, not out of all respondents.

Hampshire known as being individualistic, but poll data from some of the other NECAP towns and elsewhere suggest similar trends. Yet this finding is problematic in light of the fact that adaptation will primarily occur at the local planning level. This finding suggests a need to raise local awareness of the importance of city government in adaptation and climate risk management.

## Conclusion

The findings of these two polls provide valuable information about Dover residents' beliefs regarding climate change and climate adaptation, as well as a sense of whether and how these sentiments changed between May 2013 and May 2014.

Our findings indicate there is a surprisingly high level of awareness and concern about climate change risks among the public in Dover. Additionally, our data suggest that public concern about climate change has increased somewhat within the past year, even though people may be thinking about climate change risks less often (which we hypothesize might be due to the lack of a recent severe weather event in the region). Most people perceive sea level rise, increased flooding, more severe storms, and heat waves to be the most significant climate risks for Dover.

While many residents in Dover believe that incorporating climate change risks into decision-making is important, they generally lack confidence in the city to take near-term action to prepare for climate change risks. We found a similar confidence gap in all other NECAP towns. While the public polls do not provide an exact sense of why this is, our data suggest that people see financial constraints and uncertainty about the future climate as key barriers to Dover being able to effectively prepare for climate change. Lack of agreement about what to do and lack of political will were also commonly cited primary barriers.

Related to the above point, poll data suggest that residents of Dover see preparing for climate change as primarily an individual and national government responsibility. Given the important role local government will need to play in preparing for and managing climate change risks, this suggests that effort may need to be put into raising public awareness of the role of city government in adaptation.

In our 2014 poll, we found a surprisingly high percentage of people who may be willing to pay slightly higher taxes to help Dover undertake climate adaptation efforts. However, most respondents indicated they are not entirely ready to do so. When asked what would increase their willingness to pay slightly higher taxes to support their town in preparing for climate change, people gave very mixed responses. While people may not be entirely ready to pay more in taxes to support local adaptation efforts, and it isn't entirely clear what it would take to increase this readiness, it is worth note that most people are far from opposed to doing so.

One of the clearest takeaways from this data is that most people in both polls indicated that they think it is important to engage stakeholders, such as local businesses and residents, in making decisions about how to respond to climate change risks. Dover has an important challenge ahead in figuring out how to involve these people. We are optimistic that effectively doing so will raise awareness of the important role that the city must play in responding to climate change risks, as well as build widespread buy-in for and win financial support for adaptation efforts.