

2019

## **Boise's Energy Future Survey: Technical Report**

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# BOISE'S ENERGY FUTURE SURVEY

## Technical Report

This report was prepared by the Idaho Policy Institute and Energy Policy Institute at Boise State University and commissioned by the City of Boise.



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# INTRODUCTION

Many cities across the United States are establishing community-wide goals for a transition to clean and renewable energy sources. In line with a rising tendency toward planning and strategic engagement around transitioning to more sustainable operations,<sup>1</sup> Boise initiated a planning process in 2017, entitled *Boise's Energy Future*.

The intention of *Boise's Energy Future* is to develop a plan that will provide a roadmap on how the City of Boise moves towards renewable energy, increased efficiency or other savings, local resilience, and energy security. The planning process includes engaging key stakeholders, such as local utilities, major employers, environmental organizations and the general public. As part of the broader community engagement effort, the City of Boise contracted with the Idaho Policy Institute and Energy Policy Institute at Boise State University to develop, implement and analyze a community survey to gain a better understanding of community members' views on topics the plan will address.

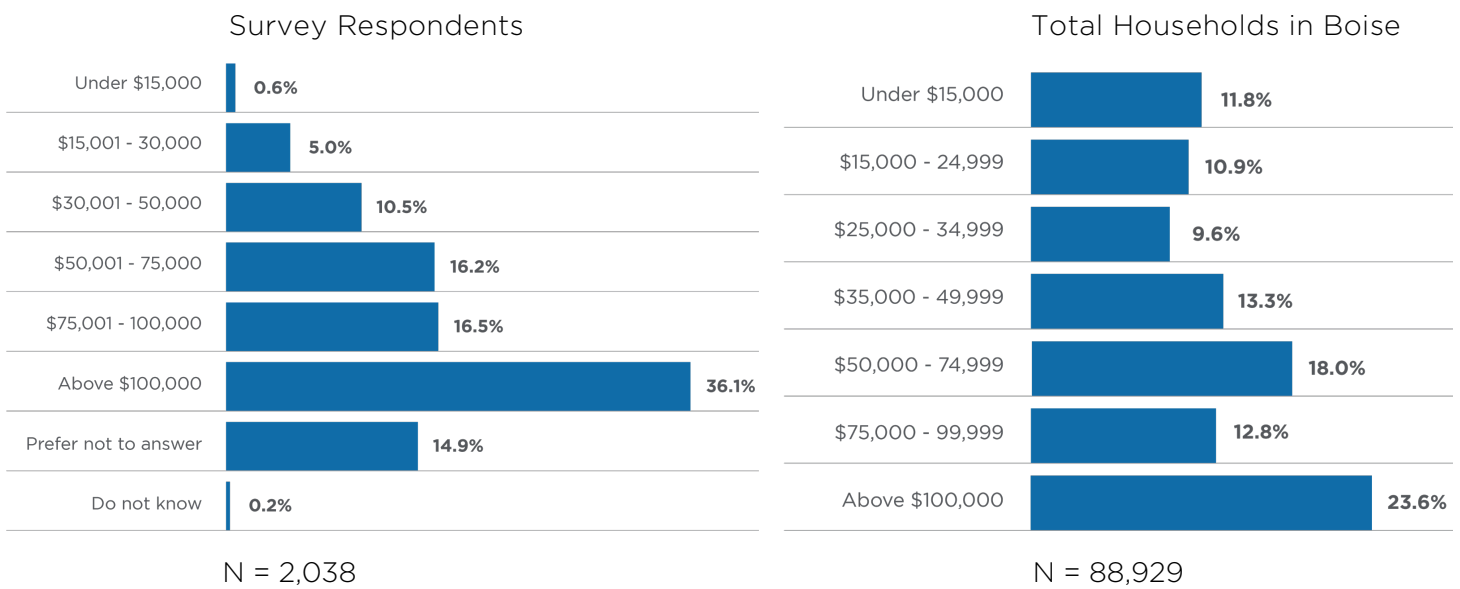
# SURVEY METHODOLOGY

Idaho Policy Institute and Energy Policy Institute collaborated with City of Boise to design a survey instrument suitable for measuring community members' attitudes and experiences regarding home energy use, energy generation and climate change. Qualtrics, a web-based online survey software, was used to distribute the survey instrument, which was administered from January 5-21, 2019. The survey was distributed to a sample drawn from a list of 72,433 residential utility account customers. Contact information was provided by the City of Boise. A total of 19,145 invitations were sent out to utility account holders, among which 9,143 were sent through email and 10,002 by postcard. Email and postcard recipients were selected in a manner that prioritized representative distribution across Boise's 10 zip codes. Respondent confidentiality was ensured by managing and reporting data in a manner that maintained the anonymity of the respondents.

The survey received 2,129 total valid responses, among which 1,774 were from email (19.4% response rate) and 335 from postcard (3.5% response rate). The total response rate was 11.1%, although each question varied on number of respondents. This qualified the results with a 95% confidence level with a 2.1% margin of error.

# LIMITATIONS

This study is not without limitations, which fall into two categories: respondents and survey design/distribution. The respondents tended to be slightly older, wealthier and more educated than the general City of Boise population. Figure 1 compares survey respondent household income to actual household incomes in Boise, in which the median household income of Boise residents is \$54,547.<sup>2</sup> This is likely because the vast majority of the utility account holders, the population that fed into the respondent pool, were property owners who are more likely to be older and have higher incomes than property renters. The higher response rate of emailed residents (relative to those who received a card through the postal service) may reflect an implicit bias toward technologically savvy respondents.



**Figure 1: Household income of survey respondents versus actual household income**

The research was conceptualized, developed and implemented in conjunction with the City’s needs. The timing of the survey distribution closely followed open house events associated with the planning process. This may have had some bearing on the response rate or the responses.

Finally, the survey was not a purely open-ended and academic study, in line with the City’s scope of needs. Thus, this study had limits on the types and coverage of questions and answers. Definitions could have increased internal validity and response options could be expanded and vary across sectors, technologies, practices, etc.

# RESULTS

The results indicate strong and consistent agreement with the City of Boise’s goals to reduce energy use and to transition to clean/renewable energy (57.5%), as well as concern about the impact of climate change (57.1%). As Figure 2 shows, the direction of the public sector effort in these areas aligns with respondent interests. Among those who oppose the City’s goals or who do not agree with climate concerns, there are slightly more respondents who are unconcerned with the impact of climate change on Boise (16.2%) relative to those who disagree with the City’s goals (10.3%). Additionally, the results show strong agreement with the city’s energy goals and climate concerns across all demographic groups.

**The City of Boise has initiated a planning process, Boise’s Energy Future, to establish goals to reduce energy use and transition to clean/renewable energy. Do you agree or disagree with this effort?**

**Please select your level of agreement with this statement: I am concerned about the impact of climate change on Boise.**

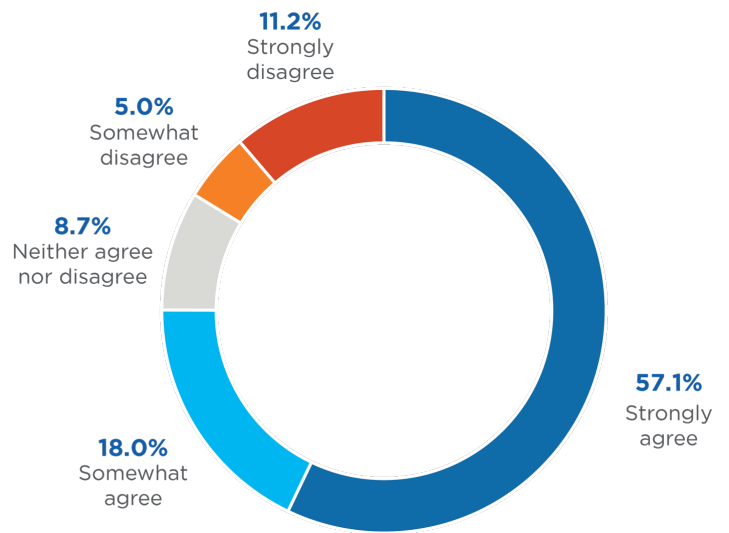
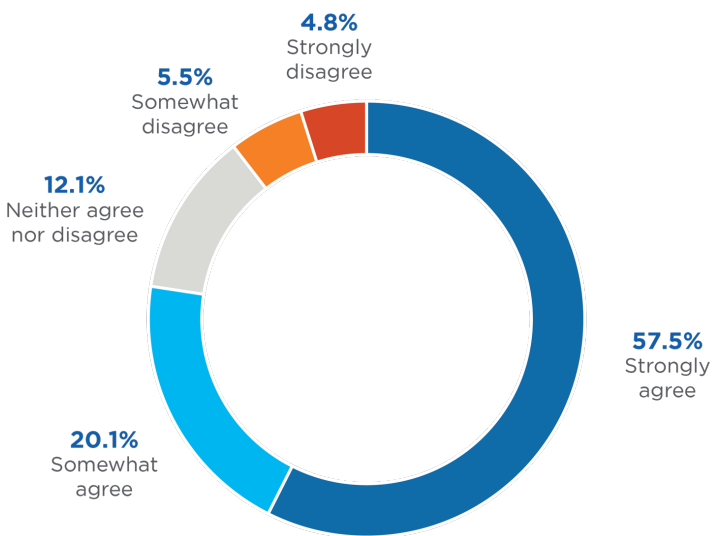
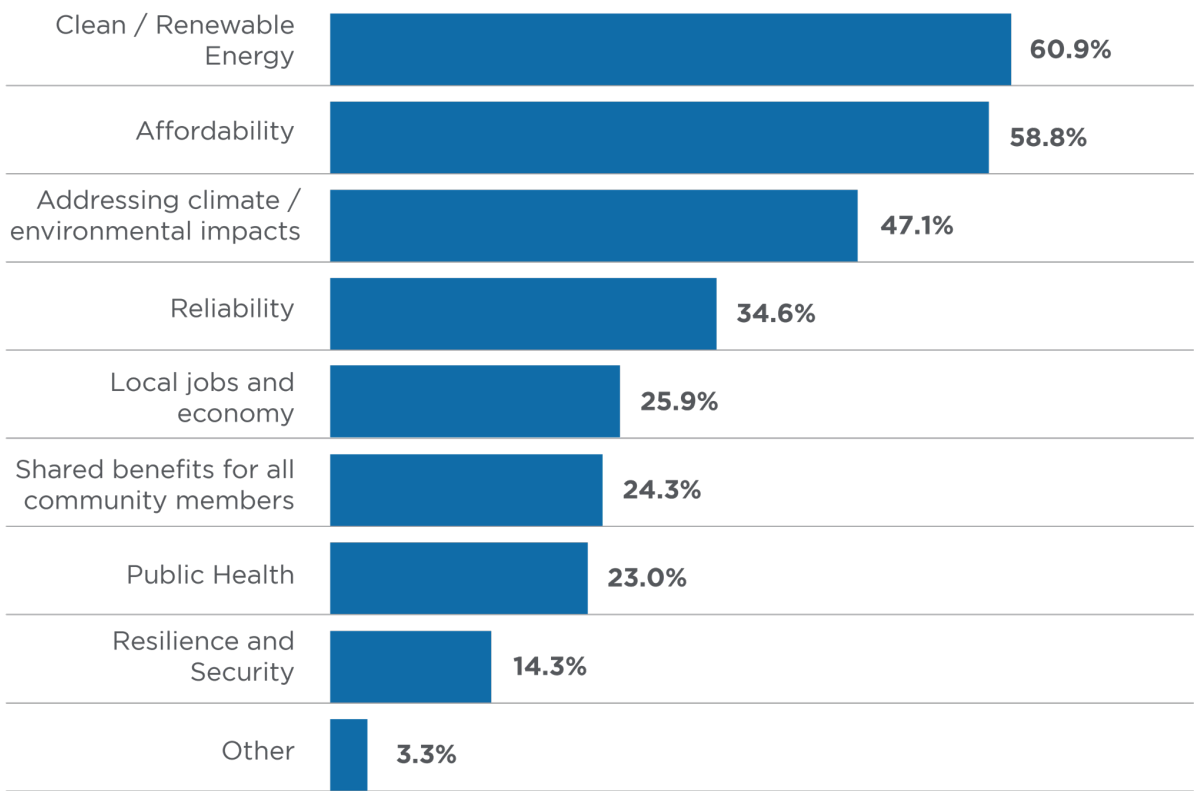


Figure 2: Survey respondents’ agreement with *Boise’s Energy Future* and climate change

When presented with a choice of multiple priorities, there is dual interest among respondents in clean/renewable energy (60.9%) and affordability (58.8%) as top-ranked priorities in an energy future, as shown in Figure 3. Boise residents prioritize clean/renewable energy sources, but are equally concerned with potential costs associated with a new energy future. The results show that Boise residents are also concerned with a range of other priorities, but to a lesser degree. Roughly half of residents prioritize addressing climate/environmental impacts and just over one-third of residents are concerned with the reliability of energy systems. About a quarter of residents prioritize local jobs and economy, shared benefits for all community members and public health. Only 14.3% of residents chose resilience and security as a top priority.

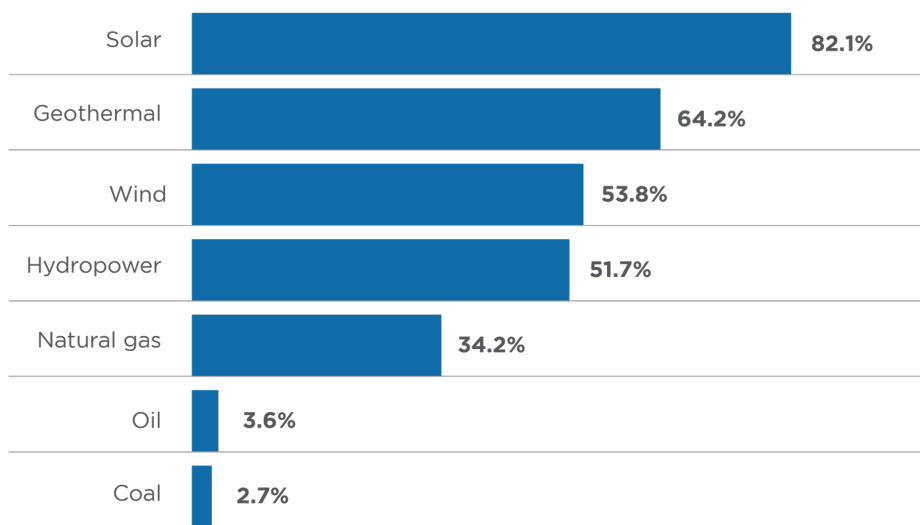
**As the City of Boise plans a new energy future, which priorities should be considered? Please choose your top 3.**



**Figure 3: Survey respondents' top energy priorities**

The top four fuel choices for Boise’s Energy Future are all renewable, as demonstrated in Figure 4. These results indicate that respondents’ preferred energy sources align with Boise’s clean/renewable energy goals. When asked to choose the top three fuel choices from among seven options, solar energy is favored as a top energy choice by a large majority of residents (82.1%), and is popular across demographic groups. Geothermal is also chosen by 64.2% of residents as a highly preferred option, possibly due to Boise’s tradition of geothermal heating in many historic downtown buildings. Wind and hydropower are among the top choices for roughly half of respondents and just over one-third favored natural gas. Only about 5% of residents prioritized oil and coal energy sources.

**Which of the following sources of energy would you want to represent the future of energy in Boise? Please choose your top 3.**



**Figure 4: Survey respondents’ preferred energy sources**

The cost preferences for acceptable, new energy scenarios are mixed. The majority of respondents would accept energy goals that reduce monthly utility costs (71.9%) or result in no change to energy costs (54.7%). A majority of respondents (62.4%) would also accept an initial increase in utilities costs with the potential for long-term savings. A smaller number of respondents (14.4%) would accept energy solutions with no long-term savings. With the survey, respondents could select all of the cost alternatives that were acceptable to them and many respondents chose multiple or all of the four possible scenarios. In fact, 228 respondents chose all four options and 676 respondents chose at least three scenarios. Respondents that selected all four options tended to be younger, wealthier, highly educated and live downtown (83702) and in the foothills (83712). The respondents selecting all four may be indicating their preference for renewable energy outweighs their concern for any associated costs.

Participation in efficiency/clean energy programs and home energy improvements appear to have potential for further development. A slight majority of respondents (52.4%) reported participation in energy efficiency programs offered by utility companies, but almost a third do not participate to

date and 16.5% are unsure. Very few respondents reported installing solar panels (8.1%) or wind power devices (0.3%) in their home. Solar panels were reported to be too expensive for a majority (57.3%) of respondents and nearly half were not aware of wind power options. Most respondents indicated installing energy efficient appliances (90.8%) and LED light bulbs (97.4%). 62.2% of respondents reported installing additional insulation. 440 respondents indicated other energy efficiency home improvements. The most common response was upgraded windows or doors (44.8%), which could also be classified as insulation. About 10% of respondents reported changing everyday behaviors to reduce energy use. Other open-ended responses included measures such as energy efficient appliances, electric cars, solar devices and landscaping.

## DEMOGRAPHIC ANALYSIS

The results show strong support for the City of Boise's energy goals and concern for climate change across demographic groups. This finding indicates broad agreement with the city's transition to clean/renewable energy sources. However, there is notably more support for clean/renewable energy and varying energy priorities among certain groups. For instance, the installation of energy efficiency upgrades is more prevalent among some demographic groups.

### Age

Respondents of all ages agree with *Boise's Energy Future* initiatives and share concern for climate change. In terms of energy priorities, respondents that prioritize climate issues, equity and clean/renewable energy are younger on average, whereas respondents that prioritize resilience and local jobs and economy tend to be older. Prioritizing natural gas is more prevalent among older respondents. When asked about utility cost, younger respondents are more supportive of the new energy plan regardless of impacts on monthly utility costs. Older respondents are less likely to agree that changes in utility costs are acceptable. A greater proportion of young people chose each of the four potential cost scenarios. The starkest difference by age is that older respondents are more likely to have installed all types of energy efficiency upgrades than younger residents.



## Zip Code

A majority of respondents in all zip codes show support for *Boise's Energy Future* initiatives, as well as concern about climate change. However, support is stronger downtown (83702) and in the foothills (83712) for both the City of Boise's energy goals and concern for climate change. Similarly, respondents that prioritize climate/environmental impacts and clean/renewable energy are also more likely to live downtown (83702) and in the foothills (83712), whereas respondents that prioritize the local economy and affordability are more likely to live in west Boise (83713 and 83709) and in the Boise bench area (83704). These differences extend to preferred energy sources, as respondents that prioritize solar, wind and geothermal are more likely to live downtown (83702). Notably, there is high support for hydropower in the 83716 zip code, which includes Lucky Peak Dam. Respondents downtown (83702) and in the foothills (83712) seem less concerned about increased utility costs and are more likely to have installed solar panels than respondents in other areas. Residents in the Boise bench area (83705) are less likely to have installed energy efficient appliances.

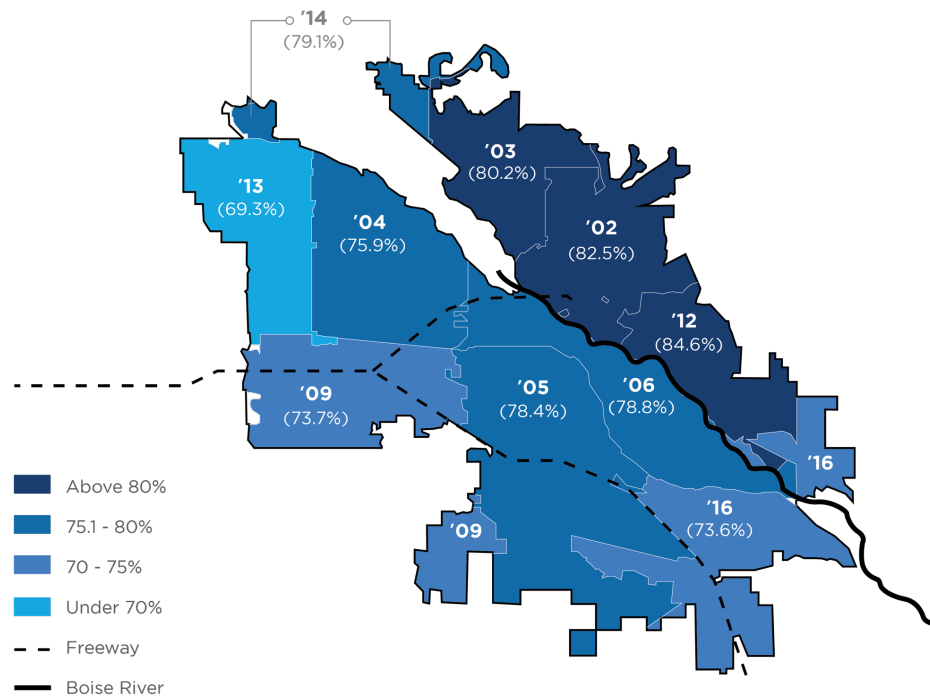


Figure 5: Boise's Energy Future - % respondents agree by zip code

## Years in Boise

There are some differences based on how long a respondent has lived in Boise. Respondents that prioritize resilience, climate impacts and clean/renewable energy tend to have lived in Boise for fewer years, whereas those who prioritize equity and affordability tend to have lived in Boise longer. Respondents that have lived in Boise fewer years tend to also be less concerned about increased utility costs. Respondents that have lived in Boise longer were more likely to have installed energy efficient appliances and additional insulation.

## Gender

On average, women and men have somewhat different views of Boise's Energy Future. Although a majority of both women and men agree with clean/renewable energy solutions, women are more likely to agree. Women are somewhat more likely to favor options that will reduce utility costs or result in long-term savings. Although men and women both prioritize affordability, men tend to prioritize the local economy, reliability and resilience at higher rates, whereas women prioritize equity, climate concerns, clean/renewable energy and public health. Respondents that prioritize solar and wind are more likely to be women. Respondents that prioritize natural gas, oil, coal and hydropower are more likely to be men.

## Education

There are a few associations that are evident in the study, based on respondent education level. Respondents with more education tend to agree with climate issues at higher rates, but are less concerned about cost and affordability. When asked about utility costs, respondents with at least a four-year degree are less concerned with increased costs. There is strong support for geothermal among college educated residents and a trend in support of natural gas for those without college degrees.

# DISCUSSION AND FUTURE RESEARCH

Looking across the findings, an opportunity exists for future research and to implement near-term and longer-term policies to support City of Boise's vision for a clean and renewable energy future.

The mixed results on cost preferences for acceptable, new energy scenarios could be better understood with additional research. Respondents valued affordability while showing mixed preferences for different utility cost scenarios. Specific cost scenarios or exact dollar amounts may have impacted responses. In addition, the relationship between clean/renewable energy goals and affordability is nuanced and complex. These results illuminate a need to better understand residents' preferences by taking into consideration a more complete scope of options and tradeoffs including specific economic, social and environmental factors.

It would also be worthwhile to explore more fully why some residents are not participating in home improvement efforts, and if various age groups respond differently to attainment options. Information sharing appears to be an important area for continued effort, such as with energy audits or peer benchmarking to advance home energy improvements. Future research would benefit from surveys or focus groups that present more nuanced options of energy efficient upgrades. This would ensure a better understanding of the barriers to installing energy efficient upgrades and could be used to direct policy or programmatic changes.

Future research should also try to correct for the limitations encountered by this study. This study drew its respondents from city utility account holder information provided by the City of Boise

Public Works Department. A more representative survey could draw respondents from more inclusive sources. Other sources of respondent contact information may lead to a more representative sample that does not disproportionately capture the views of affluent residents. However, gaining access to such contact information can be cost-prohibitive.

It is noteworthy that the response rate for postcard invitations was significantly lower than email invitations. This suggests that the benefits of mailing survey invitations and inclusion might not outweigh the costs of producing and distributing the postcards. The additional steps required to complete a survey from a postcard invitation are the likely reason for the low response rate. Future research should consider the ease of accessing online surveys and use electronic distribution when possible.

## CONCLUSION

This study is a critical step in determining the compatibility of the City with respect to *Boise's Energy Future* and the priorities of Boise residents. The research demonstrates a high affinity with *Boise's Energy Future* on behalf of the respondents. The top-ranked and nearly equal interests in clean/renewable and affordable energy highlight a balance that the City of Boise should strive to maintain in its planning efforts. Although the results show strong support for the City's energy initiatives, this study points to areas for future research to develop more nuanced insight on Boise residents' views on energy use and energy efficiency upgrades. As *Boise's Energy Future* efforts move forward, the City of Boise has an opportunity to continue engaging stakeholders in evaluating tradeoffs, monitoring and reviewing the plan's progress. Doing so will ensure that the City of Boise continues to deepen its understanding of the perceptions and priorities of its residents.

# ENDNOTES

- <sup>1</sup> Bouton, S., Newsome, D., and Woetzel, J. (2015). Building the Cities of the Future with Green Districts, McKinsey & Company, <https://www.mckinsey.com/business-functions/sustainability/our-insights/building-the-cities-of-the-future-with-green-districts>.
- Mitroliou, E. and Bizzotto, M. Resilient Cities 2018, Report, <https://iclei.org/en/publication/resilient-cities-report-2018>.
- The U.S. Conference of Mayors and C2ES, American Mayors and Businesses: Building Partnerships for a Low Carbon Future Volume II, January 2019, <https://www.c2es.org/document/american-mayors-and-businesses-building-partnerships-for-a-low-carbon-future-volume-ii/>.
- <sup>2</sup> U.S. Census - 2017 American Community Survey. The Census data includes additional income categories.