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Environmental community decision making in urban, suburban, and sub-suburban communities

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Minnesota

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ABSTRACT OF THESIS submitted by:
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The city of Hastings, in partnership with Partners in Energy and Xcel Energy, is undergoing the process of creating a long-term Energy Action Plan. This plan will consist of relevant social, economic and environmental issues in a sub-suburban city of the Minneapolis and Saint Paul Metropolitan area in Minnesota.

To further understand the necessary contents of this Energy Action Plan, this thesis will detail community decision making processes, characteristics of the analyzed communities, and previously established Energy Action Plans. Previous Energy Action Plans created in Minnesota, as well as established literature, provide information that prove to be useful when determining the most impactful attributes of a successful long-term plan.

In collaboration with current residents of Hastings, employees of the city of Hastings, and the local energy provider, this thesis will hopefully act as a useful resource to communities with both urban and rural characteristics when trying to establish long-term environmental goals.

Keywords: Community decision making, environmental planning, sustainable development, Minnesota, energy action plan, sub-suburban, environmental politics

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1. Introduction

Partners in Energy, a collaboration with communities and their main energy provider, Xcel Energy, aims to empower willing communities in their efforts to become a more sustainable collection of individuals, businesses, and institutions. Xcel Energy is in eight states across the United States and have developed or is in the process of developing Energy Action Plans in eighteen communities across the state of Minnesota (Gunderzik 2018). The Partners in Energy team helps identify the most effective means in which to reduce greenhouse gas emissions and promote sustainable community development. During the development of the Energy Action Plan, Partners in Energy provides available pertinent Xcel Energy data to the planning committee in order to create programs based off of in-depth analysis. Members of the Partners in Energy team have a goal of finalizing an Energy Action Plan. The Energy Action Plan can be developed through a number of ways. Most commonly, an identified group of willing to volunteers from the community help Partners in Energy and the community in the city developing the Energy Action Plan. Partners in Energy aids in the creation of an Energy Action Plan for the first two years of the planning process, and thereafter allows the community to continue the desired plan.

Since the creation of Partners in Energy by Xcel Energy, fifteen communities across the state of Minnesota have started or finished the process of making a city or community-wide Energy Action Plan. An Energy Action Plan is a document in which the community—residents, businesses, and community engagement institutions—can use to better understand the programs, services, and philosophies the city has to offer and believe in. As of the conclusion of the 2010 United States Census, there were 129 cities across the state of Minnesota with over 6,000 residents. Of which, fifteen have created Energy Action Plans in partnership with Xcel Energy and Partners in Energy. (Strauss 2018)

The fifteen communities that have created Energy Action Plans are diverse in nature. Some cities have well over 50,000 residents, while a number of cities have less than 15,000 residents. The environments of these communities are also very diverse, with some in urban centers and others in the heart of farmland. The city this thesis focuses on is Hastings, Minnesota. Hastings sits on the outskirts of the Twin Cities Metropolitan area with a large portion of the community being commuters to the local metropolitan area in order to work, while the remaining residents work in the agricultural economic sector. As of the 2010 United States Census, Hastings had a population of 22,722 residents, with nearly 95% of them white. The median household income in Hastings was $62,155 in 2010, and the average distance traveled to work was roughly twenty-four minutes.

As a previous resident of Hastings and graduate of Hastings High School, this research is being performed with prior knowledge of the community and environment. With the aid of Xcel Energy and Partners in Energy, as well local business leaders, non-profit leaders, and employees of the city of Hastings, an Energy Action Team was created with the goal of writing the Energy Action Plan and tailoring it to Hastings' needs. With the Energy Action Team, research of existing Energy Action Plans and opinions of the residents of Hastings is a topic which could inform future community decision makers, as well as help develop the Hastings Energy Action Plan. This thesis could be a beneficial resource for a future "Energy Action Team" when creating an "Energy Action Plan" well-tailored to a community developing a planning document. In order to achieve the aims and objectives above, the following must be successfully accomplished and described:

1) Undergo an analysis of what the residents of Hastings understand to be important aims and objectives, projects, and decision-making processes when creating and completing the Energy Action Plan.
2) Analyze existing Energy Action Plans which pertain to Hastings, such as ones with similar demographic and institutional conditions, as well as Energy Action Plans of communities which show differences in demographic and institutional composition.
3) Review relevant prior data and literature in order to create a backdrop of information that can lend insights into the decision making process, community attitudes toward environmental policy and behavioral patterns from effective and ineffective programs.

The impact of environmental plans similar to an Energy Action Plan can be difficult to analyze. Because Partners in Energy through Xcel Energy is a recently created program, documents that describe the progress a community has made are not available. The overall aim of an Energy Action Plan is to understand the most viable and achievable goals for a community. The intricacies of a long-term community plan render the characteristics of the population in which it is addressed to. This thesis aims to understand how a community can determine and create the most impactful environmental policies and programs.

2. Literature Review

This chapter provides some context into previously concluded Energy Action Plans and depicts viewpoints on how to create a tailored Energy Action Plan for a community with certain characteristics. Context of how community decisions are often made and how they can be determined to be successful will also be described. Within this chapter will be a short analysis of the Eden Prairie Energy Action Plan, Red Wing Energy Action Plan, and the Minneapolis Clean Energy Partnership Work Plan. Along with the Eden Prairie, Minneapolis, and Red Wing environmental planning synopsis', one of which being a community similar to Hastings, the others quite dissimilar, will be sections on literature which shed light on reasonings behind why certain decisions were made, and what the most beneficial way may be to go about determining a community policy or plan.

2.1 Community Decision Making

As described by Rossi, there are three decision making types and approaches when communities come together and settle on a policy which will affect the populous: Decision Makers, Partisans, and Decisions. Although the titles may be quite similar on the surface, much of this section is about how each approach can end up with completely different conclusions. One of the most interesting parts about community decision making is the fluidity and changes that can happen over a time span of just a few years. The demographics, institutions, and businesses which exist in a community often completely change over just a few decades or generations. Examples of this can be seen in the United States after World War II with the creation of cookie cutter houses, and later, the "up and out", or movement from urban areas into suburban areas after residents have generated more income and capital. The differences in the

decision making revolve around the characteristics of the decision maker, the social environment of the maker, and the process by which the decision maker comes to a conclusion (Rossi 1957).

Quite obviously, before a decision is made, a problem must be defined. In the case this thesis revolves around, it is the lack of a resource, such as a community garden or an electrical vehicle port, in which the community would need to identify in order to plan for a more sustainable community. The next thing that needs to be determined before a decision can be made is the person or persons who will be coming to the conclusion. This can be a single person, or a group of people; however, to be considered a committee-wide decision, the entity making the decision must have some form of power. It should be said that a decision could be coming from the purview of someone, or some peoples tailored benefits, which could lead to personal gain and inequalities in the community as a whole. In the case described in this thesis, the entity with power that will be making the final decision is the Energy Action Team, which currently consists of business leaders, residents, and important figures who work for the city of Hastings. Besides the energy provider, Xcel Energy, there are not any apparent members of the Energy Action Team who will fiscally benefit from the concluding document.

As described earlier, there are three different modes in which decisions can be made. The first, or *decision makers,* prioritizes the characteristics of the decision makers in the process and therefore, puts most of the emphasis on the decision makers themselves. The second, or *partisans,* delves into the power structures, propaganda, and pressure groups which may impact the decision process. The third, or *decisions,* analyze the decision at a granular scale, often with interviews and group studies. The following sections describe the three modes in depth and detail how one can categorize the process by which a community decision is made.

2.1.1 Decision Makers

Generally, decision maker type community decisions are made by elected or appointed positions, such as legislators, city councils, school boards, or entities even as broad as voters. To study such decisions, researchers have to look into the characteristics of the decision makers. These characteristics can be things such as, but not exclusive to, gender, ethnicity, age, education level, income level, and occupation. With this data, and potentially an interview with the decision maker, it can become quite apparent as to how a person would make a decision and how to extrapolate their beliefs, preferences, and desired outcomes. As Rossi describes, virtually every study on voting behavior uses this type of analysis. The vast majority of decisions can be understood through the lenses of class and location. With that said, the decision maker characteristics tend to not be very useful when analyzing the decisions of the elected officials or persons in power.

In relation to understanding the creation of the Energy Action Plan, gathering the data on the community in order to inform the Energy Action Team on what the preferences of the community may be useful. Along with that, from the purview of a person or entity creating a similar document for a community, gathering this sort of data on the Energy Action Team themselves could be useful when trying to understand why some things are and are not in the document. However, Rossi states that this data is most useful on the largest of scales, such as, for example, general and state elections in the United States. When it comes to smaller scale types of analysis, such as school boards and city councils, other means to understand the decisions may be more preferable.

2.1.2 Partisans

As described above, general information about class and ethnicity do not translate well when trying to understand the decision of elected or appointed officials, much in part due to the tremendous power and influence that comes with political parties and interest groups. This is summed up well in an excerpt from Rossi's text called "Community Decision Making":

> *"The effects of partisan activity have been studied on many levels of decision making… when we examine the outcome of an issue, it is easier to see which individual interests have been served than to judge whether the community interests as such have been upheld. … In the case of power, we imply a relationship in which individual A affects the behavior of individual B because B wishes to avoid the sanctions which A would employ if B did not comply with his wishes. In this case of influence, B's behavior is affected in the absence of sanctions."*
>
> *Rossi, 1957*

Power and influence can be researched by examining the powerful actors, the community's stance in regard to the powerful actor or actors, and analyzing the final decision. In many respects, analyzing the socioeconomic status of the person or persons making the decision could also be useful. Where there is a decision maker with a high socioeconomic status, which in many of cases it is, Rossi observes that there are generally large sums of money being used. Knowing that power and influence are often inherently a part of any decision that affects a large number of residents, such as the creation of public spaces, attracting new industries, creating

policies in unions, or creating a community plan such as an Energy Action Plan, the characteristics of the powerful and influential are very informational when analyzing the conclusion.

The portion of the partisan decision-making lens which pertains to the creation of the Hastings Energy Action plan, at the onset, has shown to be positive, rather than negative, as described above with the sanctions as an example. Considering the Energy Action Team and Energy Action Plan is still in its drafting process, there has yet to be an example of the most powerful actors in the process attempting to subject their power upon the committee. Xcel Energy, as well as the city of Hastings, have not shown malicious intent by describing or implying a "sanction" that may occur. In fact, Xcel Energy, the largest provider of residential and commercial power in the state of Minnesota, has shown to be very helpful and open to any suggestions that could be included in the Energy Action Plan. As well as being helpful with the creation of the Energy Action Plan, Xcel Energy has also committed to provide one-hundred percent of its energy from renewable resources by the year 2050. (Xcel Energy 2018) Because the city of Hastings provided the grant which paid for Xcel Energy to aid in the Energy Action Plan process, it can be assumed that the City will have a large influence on the final draft of the community plan (Strauss 2018).

2.1.3 Decisions

A rather obvious observation from the literature reviewed is the concept of a decision. It is quite vague and ambiguous— in this context, a decision can best be defined as something that impacts the entire community, which could span from something as small as determining the next road construction site, or something as large as what buildings to fund, or what to put on the

election ballot. When thinking about this, the only way to narrow the definition would be to exclude certain decision-makers, therefore, leaving out the analysis of other decision makers who could still have an immense impact on the greater public. It would likewise be ill-conceived to narrow the definition by reducing the areas in which a decision is made. If a decision is to be considered to be only made by elected or appointed officials, the business and non-profit, along with many other entities, are left out. In order to study decisions through the third lens of community decision making, researchers must study the decision makers process through a controlled environment such as in a laboratory, or through long-term observations of a certain decision makers' career. Laboratory studies generally use a psychological framework in regard to their decisions in small groups, which often show insights into their inherent biases. This is used as a way to understand why one may come to a certain conclusion in the lab. While using the long-term career research approach, a scientist would look at behaviors such as voting patterns or periodic observations on past and future decisions on issues which confront them. (Rossi 1957) It would be difficult to use this framework to study the decision-making process of residents of Hastings, Energy Action Team. A large amount of time and finances would be necessary in order to study the decision makers, the people who have the final say in the completion of the Energy Action Plan, such as city of Hastings administrators and Xcel Energy employees, and the greater community in order to comprehensively decided on conclusion.

2.1.4 Decision Making Conclusion

After understanding the concepts described in *Community Decision Making* by Rossi, in order to study the decision-making process of the residents and committee members of Hastings, MN with little expense, using the Partisan framework would be most efficient and cost-effective.

If the analysis of the Hastings Energy Action plan was done under the framework of a Partisan decision making process, knowledge of the most powerful groups and people would have to be gained. Fortunately, there has not been a sense of a malpractice on the part of any organization or individual involved in the decision making process. However, if funds and time were available, the Decision framework, either in a lab or through extensive interview, would likely shed most light into the reasons why the residents and decision-makers came to the conclusion which led to the final Energy Action Plan. Also, if the Energy Action Plan showed to be a success or failure, using the Decision framework would be the best way to understand how and why the plan worked and what the members of the community thought about it.

2.2. Community- Based Environmental Protection: Encouraging Civic Environmentalism

In many respects, the creation of the Hastings Energy Action Plan is a counter-acting force against what Congress in the 1970's was afraid would happen: a "race to the bottom" in order to entice businesses and industries into the community through deregulation. Although the federal legislation passed has created standards for states and cities to comply with, enforcement is often up to communities themselves. The major industries and pollution-producing sources can be enforced through federal and state means; however, it is the thousands of other point source polluters that need to be held accountable through community involvement and regulation (Hamilton 2017). This, in turn, means that through the community, a "bottom-up" approach must be embraced by cities in order to impact their unique and often out of sight polluting practices.

In a Madisonian viewpoint, as described in parts of *The Federalist,* much of what James Madison believed has come to fruition. Large industries and interest groups such as the Koch

Brothers, who own a massive refinery not far from downtown Hastings, have swayed public opinion and created an imbalance in the separation of powers. However, as shown in the pursuit to create the Energy Action Plan, the communities have shown their interest through civic engagement and will to push back against industries and interest group, as described by Madison as what would be necessary (Dewitt 1999). The Energy Action Plan is a perfect example of a place-specific decision in order to address a federal and transnational problem.

2.3 Community Development

Community Development a general term used to describe a communities' pursuit towards an aimed goal. This aimed goal is often put in place to reorder community perceptions and specific behaviors of the population at large, businesses, and large organizations within a certain community (Larrison, 1970). Beginning in the Eighteenth Century, philosophers such as Immanuel Kant, Adam Smith, and Auguste Comte began identifying ways in which a community can increase the standard of living. For Kant, forgiving individual freedoms for the greater population was a topic in which he described regarding community development. With Smith, considering self-interest along the lines of social inequities was a train of thought that Larrison considered to be a large part of Smith's worldview. And with Comte, understanding a large community's behavior and reasoning behind changing attributes from individualistic to collectivist was an important characteristic of developing a community in the age of the enlightenment (Larrison 1970). In Larrison's 1970 research paper, "A Comparison of Top-down and Bottom-up Community Development Interventions in Rural Mexico: Practical and Theoretical Implications for Community Development Programs", he analyzed the outcomes of two different approaches to community development in Central America.

2.3.1. Top-down Models of Community Development

The "Top-down" model of community development revolves around the concept that leadership should lead the way when determining the direction of a community. In what could be considered a form of a technocratic governance system, the community decides upon an issue underneath a structure of professionals. Through the designated professionals, communities would seek advice from them in order to create specific developmental programs or residential goals (Larrison 1970). The supportive assistance given by the professionals or experts in their areas create an arena in which the residents of the community would have to do less work, but would have to put more trust into the motives of the decision makers who are considered "professionals" or "experts."

The simplest of examples of a "professional" or "expert" regarding energy action plans and community decision making in areas similar to Hastings are the companies that help create the energy action plans. In the case of Hastings, Red Wing, Eden Prairie and Minneapolis, the "professional" or "expert" would be the employees of Xcel Energy, alongside the municipal employees designated to work on the creation of a document similar to an energy action plan. Over the course of the creation of the Hastings Energy Action Plan, the employees of Xcel Energy and the city of Hastings have guided the community Energy Action Team in ways that have not been filtered through the wishes of either the energy provider, or Xcel Energy, or the city of Hastings.

2.3.2. Bottom-up Model of Community Development

The social development theory is considered the basis of what a "bottom-up" model of community developmental decision making. This form of community decision making takes into account seven different strategies used by "bottom-up" operations. The seven strategies are: comprehensive community participation, empowering local communities, expanding learning opportunities, improving local resource management, replicating human development, increasing communication and interchange, and localizing financial accesses (Larrison 1970). Because of the far more expansive opportunities for members of the community of Hastings to contribute to the decision making process, the way in which the decisions are being made could be considered to be closer to a true democracy, rather than something like a technocracy, such as described above through the "top-down" model suggests.

When using the viewpoint of the "bottom-up" model of social development and applying it to the creation of an energy action plan for a community, there are more applicable strategies used from the "bottom-up" model than in comparison to the "top-down" model of community decision making. As the synergist, Xcel Energy and the cities it has helped to develop energy action plans have tried to attain as much input from community members in order to provide as many learning opportunities, communication channels, and fiscal sources in order to create the most impactful community energy action plan.

2.4 Public Participation in Environmental Policy Development

In the 2017 article by Gurney et al. titled "Redefining community based on place attachment in a connected world", the authors attempt to quantify the connectedness a

community has to the Great Barrier Reef. While conducting the research, the team received 5,403 responses locally, nationally, and internationally. The significance Gurney's research rests upon the idea that effective environmental policy must involve public participation regarding residential usage of land, as well as resource use. Alongside the aspect of public participation, the analysis and data set rely on the attachment of the land not only from the perspective of local community members, but also from national and transnational people who feel some form of an attraction or connection to the Great Barrier Reef.

The idea of being a member of a community is often referenced when questioning how to deal with the vast environmental problems humanity faces. As a member of a community, one may feel the need to take care and manage critical environments and habitats that are local to their home. Therefore, it is common for community members to aim to be stewards of their environment, or people who wish to protect the land they live on and the land adjacent to their homes. Gurney considers this attitude towards their surrounding environment to be a "localist" perspective. However, Gurney notes, to address the pressing sustainability issues, the localist perspective cannot be the only surrogate for the environment in which a resident lives in.

To move away from the localist perspective and think about the urgent sustainability issues, national and transnational interests must be taken into account when understanding the community at large. In an effort to understand the national and transnational perspective on the Great Barrier Reef, Gurney et al decided to determine how to define a community in a globalized world. In doing so, "Place Attachment" became the focus of their research. Place attachment can be defined by having a place in which you consider to have meaning. There are two frames of references in which Gurney et al. consider to be a portion of place attachment. The first, place identity, is comprised with emotional connection to an acknowledged place, such as the Great

Barrier Reef in this instance. The second, or place dependence, comprises the functionality of the area under consideration. Place identity and place dependency can go hand in hand underneath a localist purview; however, when transitioning into the surveys of national and transnational perspectives, the ideologies of the surveyed participant can drastically change.

The difference between the two are simple when examining a well-defined area, however, place identity and place dependence can be more difficult to understand or determine while looking at an entire habitat or large area. An example of a more difficult area to understand the concept of place attachment would be the adjacent land to Lake Superior in the northern United States. Comprised of two countries and three states within the United States, the greater place dependences are not defined and entail population reliance on both resource extraction and tourist attraction. These two dependencies abruptly collide with each other when trying to determine how to sustain a singular communities' lifestyle when considering what the best use of the land is to a local community.

The Great Barrier Reef is a great example of a specific area to focus on when trying to understand place attachment on a global scale. This is because it is uncommon for an educated person to not know what the Great Barrier Reef is. Therefore, if a surveyed participant cares about the beauty of a well-known environmental attraction, they will likely have a place attachment with the Great Barrier Reef, which would fall underneath the ideal of a place identity. However, it is much less common for an individual to have a place attachment with the Great Barrier Reef that would be determined a place dependence. Another reason why the Great Barrier Reef is a great area to study place attachment is because it is under great environmental stress because of climate change. The extremely sensitive environmental attraction has been drastically decreasing in size with the atmospheric changes of the last century because of the low

thermal tolerance of the Great Barrier Reef (Ainsworth et. al 2016). The dual attributes of being well known and environmentally sensitive created a research problem that ended up compiling copious amounts of data.

The results from the data were categorized into four separate clusters. Each cluster of respondents is defined by their levels of place identity and what community they associate themselves with, such as local, national, or international through indirect place dependence, direct place dependence, and place identity. The first, with 2,314 respondents, are "Armchair enthusiasts." Armchair enthusiasts are described to have little place dependence to the Great Barrier Reef, but they do value the life it supports. The second, with 839 respondents, are considered "Reef connected." Reef connected respondents value the Great Barrier Reef because they consider themselves to appreciate the area for both dimensions of place attachment, meaning they are place dependent and have place identity. These respondents often live in close proximity to the Great Barrier Reef. The third cluster, with 1,096 respondents, are called the "Reef User" cluster. The reef user cluster is characterized by having direct and indirect place dependence, while having low levels of place identity. The fourth cluster, with 1,154 respondents, is named the "Reef Disconnected" community. Respondents who are considered reef disconnected have little place dependency, but value the Great Barrier Reef due to their high levels of place identity. The results show that armchair enthusiasts are the most common, meaning that is most likely to have a high level of place identity and indirect place dependence, while having a low level of direct place dependence.

This research is applicable to the creation or existence of a community Energy Action Plan because it looks into the values of the respondents and/or community members. The place identity of the city of Hastings, and greater Twin Cities metro area, are the many rivers that flow

through the populated area. The Mississippi, Vermillion and St. Croix rivers are waterways that are important to residents of Hastings and would likely have high values of place identity. Respondents to a survey similar to Gurnly et al. would likely show high values of indirect place dependence would likely be tourist and sportsman who use the waterways for the aesthetic beauty and the numerous fish species that live in the rivers. Direct place dependence values from respondents would likely come from the many industries that rely on the health of the waterway ecosystems, such as the roughly 18 million USD aquaculture industry in the Upper Mississippi River System (Garvey 2010). These respondents would likely be local residents who use the rivers for subsistence and recreational purposes. Although the application of Gurnly et al. findings towards the city of Hastings is conjecture, the results from the Great Barrier Reef study do seem to provide useful information for members of the Hastings Energy Action Team.

2.5. Addressing Climate Change Through Social Development

Social Development is a concept that revolves around the social and economic well-being of a community (Drolet 2014). Drolet and Sampson, in their 2014 article called "Addressing Climate Change from a Social Development Approach: Small Cities and Rural Communities' Adaptation and Response to Climate Change in British Columbia, Canada", examined six rural communities or small cities to assess the adaptation and response of the communities in regard to the issue of climate change. Using the social development approach, or the processes, activities and institutions who work together to empower individuals and communities to develop the social and economic capacity to create the ability solve a common problem, Drolet and Sampson assessed how a community impacted by climate change can or should adapt to the changing times. Differing perspectives and attitudes towards environmental impacts create an

environment in which it is necessary for individuals, families, and communities impacted by climate change need to address how to confront the issue and evolve as a greater entity.

Climate change has begun to exacerbate the already numerous problems that small cities and rural areas are already facing due to the globalization of the modern world (Wilson 2012). Natural disasters, changing participation patterns, rising sea levels and increases in global temperatures are all issues that will impact the areas researched in Drolet and Sampson's article, and will certainly impact the communities talked about that are creating or have created Energy Action Plans in Minnesota. The widespread effects on the physical environment, such as wildfires and extreme weather events which displace entire communities, is only one reason for communities to think about social development. Of the many other reasons for municipalities to debate community wide environmental planning, the societal implications in which it may impact negatively, such as the economic, cultural and institutional attributes make for it to be even more important to discuss. As historically described in Rio de Jeneiro, Brazil in 1992, the United Nations described in its opening paragraph of Agenda 21:

> *"Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystes on which we depend on for our well-being."*
>
> *United Nations Sustainable Development, 1992*

Although it has been nearly three decades since the Earth Summit in Rio de Jeneiro, it was still necessary for the Intergovernmental Panel on Climate Change to declare "there is unequivocal evidence of global warming caused by greenhouse gas emissions from human activities, and that

climate change is threatening ecosystems, societies, cultures and economies worldwide" (Drolet 2014). Because of the lack of action within the public sectors of the world has lent the burden of climate change to communities and the private sector. This, in turn, means that communities must work with existing institutions and organizations in order to address the current climate crisis, with one effective way of doing so being social development.

In British Columbia, the site of Drolet and Sampson's research, many areas have had climate warming at more than twice the global average. This has made the many communities vulnerable to the changing forces which are, but not exclusively, more natural disasters, unemployment, and forced migration. Vulnerability, in the lens of socio-economic status, class, religion, livelihood, family, ethnicity, gender, age and ethnicity, is defined to be an at-risk and/or marginalized community with regard to the necessary adaptations to climate change (Ribot et al., 2009). The study on vulnerability takes into consideration the work of social workers because of the inherent needs of the social workers' subjects, such as groups of people who are in need of advocates for environmental change, policy development, and programs that may positively affect their livelihood. In the Drolet and Sampson research findings in British Columbia, the concerned communities describe the vulnerabilities and impacts in which climate change is bringing to the forefront of their friends, families, and social circles.

The Drolet and Sampson survey used the research framework known as community-based participatory action research (CBPAR). This framework is a collaborative approach with the ability to understand the key individuals, practitioners, and communities. The person to environment transaction has been a difficult social work theory to analyze (Besthorn 2002). To help analyze the person/environment transaction, Drolet and Sampson used interviews, focus group discussions, surveys, documentation, and observations in order to quantify community

members' respective attitudes and perspectives on climate change. The 121 participants of the data collection were asked about their thoughts on climate change today and how it could affect them in the future, how to better use resources and adapt to the modern time, and what community resources may be necessary or helpful to individuals, organizations, groups or services. The CBPAR analysis allowed for data which provided substantial social context, opinions, and climate change narratives in the cultures and communities studied. (Drolet 2012)

Of course, the six different communities in British Columbia felt the impacts of climate change in varying ways. Commonly, respondents would talk about how it must not be possible that one single policy or process would be able to address the impacts of climate change. Responses about the social, economic and environmental impacts of climate change varied in topic from the mountain pine beetle, an invasive species threatening over 18 million acres of forest (British Columbia Ministry of Forests), to the dependence a community has on employment from a natural resource extraction industry. With the value of specialized policy and resource extraction in mind, the respondents also showed concern about the need to think about the global implications of climate change, in particular, migration. "With political disruption and destabilized political systems like wars or migration… where are they gonna go?", one respondent asked (Drolet 2012). The responses of concern about climate change and the world order are difficult to hear because of the negative connotation towards them; however, there were many responses that focused on community development and sustainability. Much of the talk around sustainability and community development revolved around empowering volunteers, community education and awareness, and a cultural shift towards a less materialistic way of life. A female interviewee from Kamloops said, "an automobile culture or heavily

consuming culture, … needs to be shifted to a sustainable [culture]", in the Drolet and Sampson article.

The form of social development described in the Drolet and Sampson article is happening on a small scale in Minnesota communities similar to the analyzed communities in British Columbia, as well as in the urban centers of Minnesota. The social development programs in Hastings are being performed by the energy provider, Xcel Energy, through a program called "Partners in Energy," alongside the city of Hastings employees. The few paid members of the Energy Action Team are assisted by roughly twenty volunteers who try to represent the greater population the Energy Action Plan will affect. In the surveys and attempts to create social development programs in the Hastings community, many of the same responses of concern over the changing economic status of the area, community involvement and empowerment, and societal issues were concerns for the six communities analyzed by Drolet and Sampson. The underlying commonality between the data collection from the communities in British Columbia and the creation of the Hastings Energy Action Plan is that the municipality of Hastings, energy provider, and members of the community are willing actors in the pursuit to create a social development program in regards to the environment and sustainability, and therefore working to create a form of sustainable development. (IISD 1999)

2.6 Pathways of Decision-making in a Globalized World

As mentioned in section 2.5, rural communities are having trouble coping with the drastic change globalization has thrust upon themselves. The trouble with globalization can be looked at through the lens of vulnerability and resilience. The intersections of a communities economic, social and environmental resources are the framework in which Wilson describes a communities'

attributes that create a situation in which it is either vulnerable or resilient. In "Community Resilience, Globalization, and Transitional Pathways of Decision-making," Wilson argues there are theoretical concepts that can create parameters to better understand a communities social and community resilience and vulnerability. Community vulnerability and resilience can be best understood when imagining the terms to be on a scale from one to ten, with the most healthy of communities having a score of five. The balance between vulnerability and resilience lies within the dependency on globalization, as well as the dependency on local resources and economic activity. The global capitalist system has created problems with small communities in rural areas of the world because of the rapid change over the last few decades, making it important to discuss how decision making on a granular community-wide scale will affect the greater population.

The concept of "resilience" and "vulnerability" in regard to a community's ability came into fruition thanks to the frameworks in which Adger described in 2006. The currently accepted definition of resilience is:

> *"the capacity of a system to absorb disturbance and reorganize while undergoing change to still retain essentially the same function, structure, identity, and feedbacks… resilience is measured by the size of the displacement the system can tolerate and yet return to a state where a given function can be maintained."*
>
> *Forbes et al. 2009*

This is an important characteristic of a given community to understand during turbulent times, such as an economic recession, extreme weather events like a prolonged drought, catastrophic tornado, snow or rain storm, which would be the sort of event that would affect a community in

the state of Minnesota. Conversely, vulnerability is: "describing exposure and sensitivity of a human system not able to cope with disturbances" (Wilson 2012).

In order to make an informed community decision, the entity determining what to do must take into account the economic, social and environmental capital that exists in the community. When first analyzing "capital", the emphasis was mainly on economic capital. Bourdieu (1987) realigned the thought process around capital by broadening the definition into three forms of capital: economic capital (material property), social capital (institutional capital in the form of networks and social obligations), and cultural capital (in the form of prestige). Bourdieu's concept of capital has been widely accepted; however, it has now been broadened to include all attributes, monetized or not, in order to encompass the "cultural capital, social networks, complex notions of power, the relative inter-connectedness of people, and characteristics such as 'trust' and the cultural and institutional 'glue' that binds communities together" (Bodin and Crona 2008). Because of this broadened definition, the understanding of resilience and vulnerability has changed in order to incorporate societal aspects, such as the human-environment interactions. Instead of using "cultural capital" as a term, as Bourdieu does, Wilson decided to use the term "environmental capital," in order to conceptualize the human-environment interaction alongside the non-monetized forms of culture and community.

As shown in the figure below, the most resilient of communities have characteristics with strong attributes in all three forms of capital. The most vulnerable of all communities only have well developed capital in only once of the three forms. For example, if a rural community highly depended on agriculture in order to sustain its well-being, it would be considered to be highly vulnerable. However, if said rural community also showed characteristics of numerous well

developed economic institutions, a healthy form of a human-environment interaction, and an embedded cultural identity, the community would be considered strongly resilient.

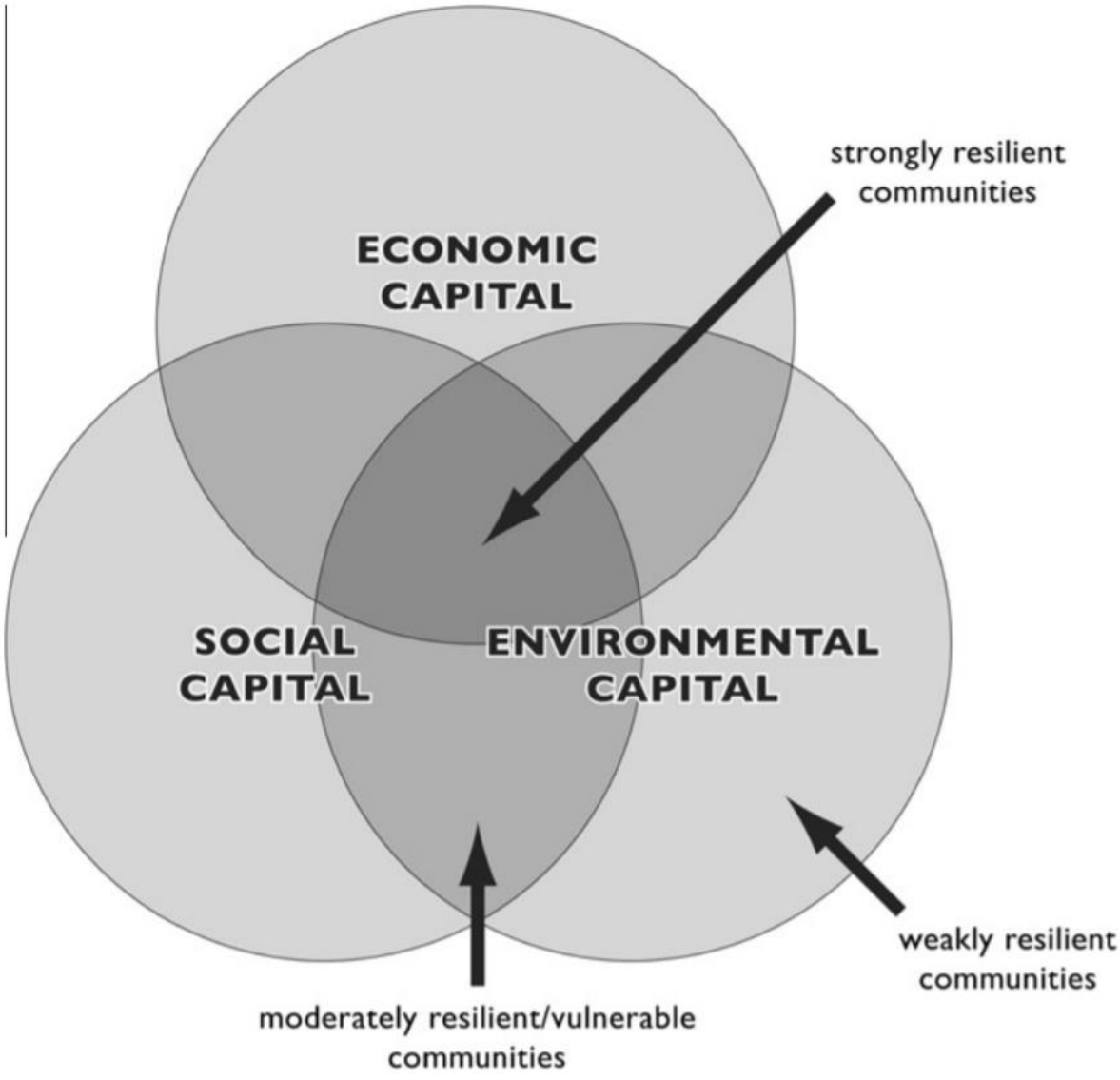


Figure 1 of 2.6: Resilience, vulnerability, and economic, social and environmental capital (Wilson 2012)

Even the most remote of all communities have been impacted by globalization. The term is often used without characterizing what globalization is. The ramifications of globalization span much further than simply the economic catchphrase that usually apply with. Thus, the definition of globalization is:

> *"Globalization… refers to the increasingly global economic interlinkages between geographical spaces, the embeddedness of (almost all) local communities within complex financial and monetary flows, and processes associated with increasingly uniform patters of economic interconnectedness and embeddedness across the globe (Rofe 2009). Globalization is further associated with the global harmonization and uniformity of human processes, especially with regard to tastes and cultures increasingly satisfied through the provision of standardized global products mad by global corporations that have lost their allegiance to place or community, trade liberalization, changing consumer preferences, and virtual networks linked to the internet (Van Rheenen 2009).*
>
> *Wilson 2012*

The ramifications of this definition a multifaceted in so far as that the economic, social and environmental capital can be exported throughout the globe. As seen in figure two, the "globalization bottleneck" depicts community health with the correct balance between its embeddedness with the global capitalist system. On of the oldest economic forms, subsistence farming, is still a critical institution for millions of households across the globe. However, the local production of food has become less of a dependency for many communities thanks to the transformation of agriculture in the modern world, making it ever more important to diversify local economies. The lack of local food production can be a signal of a vulnerable community,

though a loss of subsistence farming can create a pathway in which communities can focus more on the social and environmental capital in order to continue to be a resilient community.

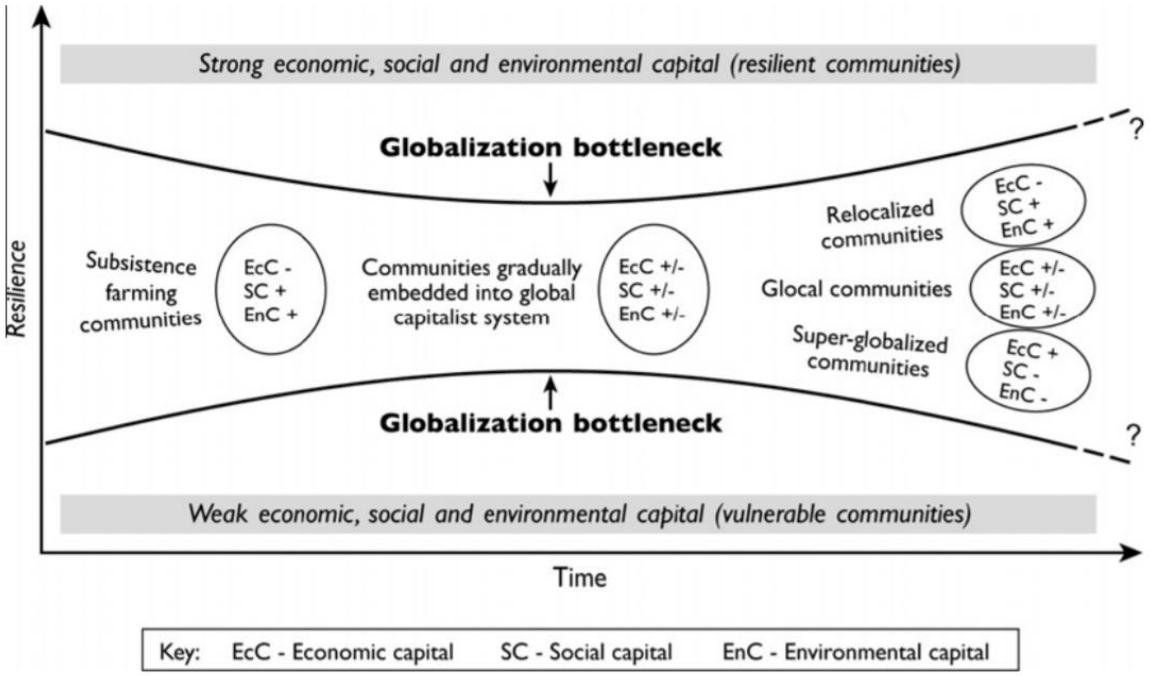


Figure 2 of 2.6: Community resilience over time (Wilson 2012)

Using the framework described by Wilson, community decision-making can be better educated and effective. When planning, the application and assessment of a communities economic, social and environmental capital should be considered. To prevent the over-dependence on globalization and its positive attributes, communities must rely on their local social and environmental traits that can subsist their community's health. It would behoove a community decision-maker to analyze the capital that exists within the community in order to adequately create a plan such as an energy action plan.

2.7. Pride and Guilt Influences in Environmental Decision Making

Researchers Schneider et al. from three prestigious universities, Columbia University, Princeton University and University of Massachusetts Amherst, set out to explore the relationships between the feeling of anticipated pride and guilt along with pro-environmental decision making. Traditionally, pro-environmental messaging included negative emotions in order to promote action on the pressing environmental issue the earth faces (Schneider et al. 2017). The findings from "The Influence of Anticipated Pride and Guilt on Pro-Environmental Decision Making" suggest that using positive emotions and messaging before arguing for pro-environmental decisions lead to a higher likelihood of a pro-environmental decision as the conclusion.

Anticipated emotions, such as donating to a charity or helping a stranger in need, have been studied by a number of psychologists, including Mellers and McGraw, in order to identify the power of cognitive predictions (Baumeister et al. 2007). Research suggests that individuals tend to avoid making decisions that may result in negative emotions (e.g., guilt, sadness) and generally prefer to take action in decisions which often result in positive emotions (e.g., pride, joy) (Schneider et al. 2017). Similar research offers insight into the powerful role in which the anticipated future emotional states shape pro-social and other-oriented behaviors (Baumeister RF., Lobbestael J. 2011) (Van Der Schalk J. 2012). An example of this would be donating blood. If a person feels a sense of future guilt due to not donating blood, it is often that guilt can lead to action (Lindsey LLM. 2005).

Social concerns (Baumeister RF et al. 1994) (Parkinson B. Illingworth S. 2009) and moral considerations (Nelissen R. et al. 2011) (Steenhaut S. Van Kenhove P. 2006) (Wang X. 2011) are pertinent to the analysis of anticipated emotions in regards to pro-environmental

decision. Although research suggests that guilt-oriented messaging can encourage pro-environmental behavior (Elgaaied L. 2012) (Kaiser FG. 2006) (Lu H., Schuldt JP. 2015), the likelihood of alienating and preventing sustainability related behaviors become high (Coulter RH. Pinto MB. 1995) (Center for Research on Environmental Decisions 2014) (Weber EU. 2015). The pride-oriented approach to messaging about pro-environmental causes, although slim in existing research, has shown it could be more successful and impactful long-term (Bissing-Olson MJ. et al. 2016) (Onwezen MC. et al. 2014) (Onwezen MC. et al. 2014). The responses to pride and guilt related pro-environment campaigns have shown to be drastically different in so far as the reaction people experience and feel the need to take action or continue complacency with inaction. Schneider et al.'s 2017 study is the first of its kind due to the way it takes emotions into account. Whereas previous research treated emotion as an indirect factor regarding its translation to behavior, Schneider et al. placed emotion as the motivating factor for how a person acts upon pro-environmental behaviors. The objective of the analysis of emotions is to first, assess the negative and positive anticipated emotions directly before a pro-environmental decision is made, and second; better understand the effectiveness of positive anticipated emotions and in relation to negative anticipated emotions.

The pilot study created tested whether or not making an environmental choice leads to an emotional response. As expected, feelings of guilt often follow a non-environmentally friendly choice, while feelings a pride accompanied pro-environmentally related actions (Shneider et al. 2017). 545 United States participants were given three of ten environmentally related scenarios randomly with a binary decision between a "green" choice, or environmentally friendly, and a "brown" choice, which would be non- environmentally friendly (Shnieder et al. 2017). The data collected associated pride with the environmentally friendly response, and guilt with the non-

environmentally friendly response. The pilot method results were the underlying data which the research team used to understand the causal effects of anticipated pride versus anticipated guilt and the resulting behaviors due to the anticipated emotions.

The following research that built off of the pilot study sampled 1,050 United States individuals through Amazon's Mechanical Turk data set of potential participants. Before making concurrent environmentally related decision, each participant was first asked the future pride they may feel after making a certain pro-environmental action, then the future guilt they may feel due to their inaction on a certain pro-environmental decision. Individuals surveyed were randomly given one of three scenarios, each with pride or guilt as a version of the scenario. The three scenarios either a one sentence reminder, affective forecasting, and writing prompt. For the scenario with just a one sentence reminder, the top of the survey of questions read: "As you make your decisions, keep in mind that you might feel proud [or guilty if the participant received the "brown" scenario] about your decision and the alternatives you have picked." The second scenario, affective forecasting, exposed participants to consider the anticipated pride or guilt associated with the environmental choice they had made. The final scenario presented to the participants, the writing prompt, asked participants to write a brief essay on a future environmental decision in which they may make, and weather it would make them feel proud or guilty. To distract participants from the binary analysis, participants were asked to rate their anticipated pride and also discuss any other emotions that may follow their environmental decision. Following the exposure to anticipated pride or guilt, respondents were asked to make five hypothetical decisions in order to check if participants were manipulating results. The hypothetical decisions revolved around purchasing habits, an "opt in" scenario revolved around apartment amenities that would at $3 per month to their rent (Steffel M. et al. 2015), a graded

scale asking likelihood of buying a green product within the next month, a question about the intention of performing sustainable actions, and a question about a person's willingness to invest in sustainable measures (Zaval L. et al. 2015).

The results of the six groups, two anticipated emotions (pride versus guilt) and three scenarios (one sentence scenario versus affective forecasting versus writing prompt), were analyzed through separate models of ANOVAs type III partition for the sums of squares with the

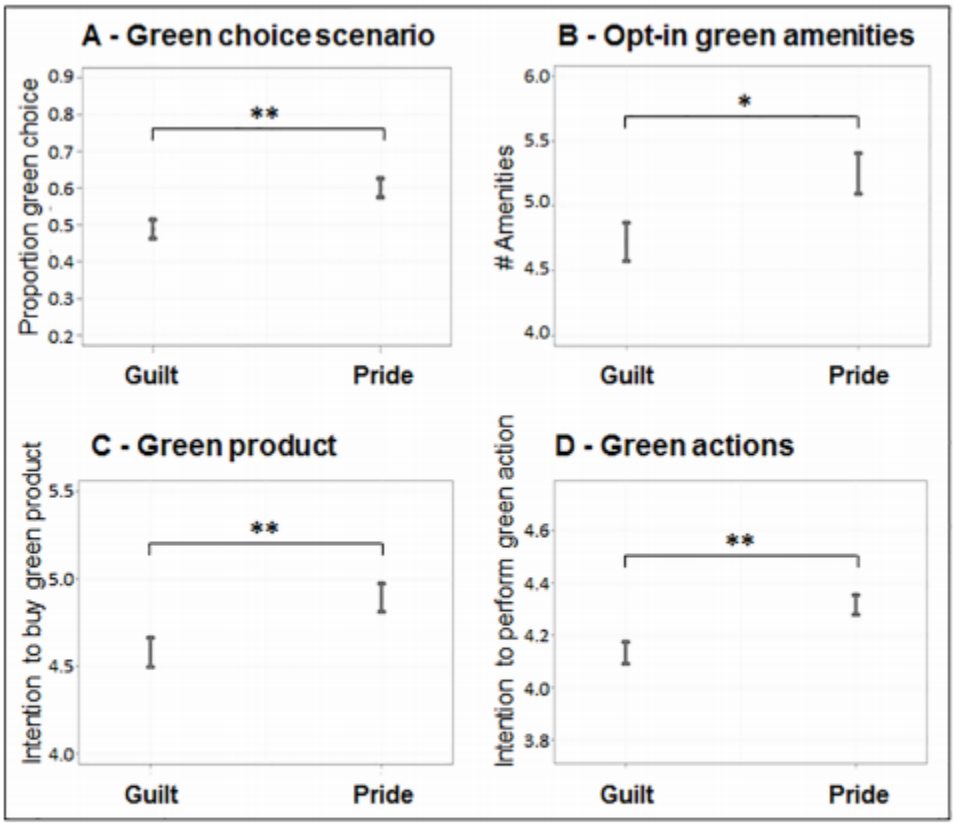


Fig 1. Influence of pride and guilt inductions on pro-environmental behavior per outcome measure. Fig 1 depicts four out of all five outcome measures that show a significant difference in pro-environmental behavior between those induced with pride and those induced with guilt. (A): Analysis of Deviance (Type III partition of the sums of squares); (B)-(D): Analysis of variance (Type III partition of the sums of squares). Y-axes: (A) = proportion of green choice; (B) = number of amenities chosen, range 0 to 14; (C) = intention to buy green product over next month, range 1 (not at all likely) to 7 (extremely likely); (D) = how often participant intends to perform a series of pro-environmental actions, range 1 (never) to 6 (all the time); (A): error bars denote binomial approximation of the standard error; (B)-(D): error bars denote standard error; Donation (not depicted): $F = .23$, $p = .632$.

Figure 1 of 2.7: Outcomes of significant difference in questions analyzing pro-environmental emotions. (Shnieder et al. 2017)

continuous dependent variables (opt-in, behavioral intentions, donation), logistical regression for the categorical dependent variable (social choice scenario) (Schneider et al. 2017). The tests showed to not change across the induction methods when asked about expected pride versus guilt. This means that the effects of the different induction methods did not change due to the scenarios they were responding to, unless the participant was subject to the pro-environmental decision (the green emotion of pride) over the environmentally depredating decision (the brown emotion of guilt) (Schneider et al. 2017).

The graphs above depict the prompted question of whether or not the participant would feel guilty versus feel pride over a certain pro-environmental decision does make a significant difference in the decision a participant makes. The questions about a green choice scenario, opt-in amenities, green products and green actions all show that it is the prior emotion felt before answering the question makes an impact, regardless of if the participant took part in the one sentence reminder questionnaire, affective forecasting questionnaire, or the writing prompt questionnaire. These results quite clearly show that anticipated emotion does play a large role in how one comes to a decision in regard to environmental impact. Rather expectedly, it is common for guilt and pride to guide a decision a human makes, whether it be in regard to environmental impacts or emotional appeal for communications and marketing purposes (Alden DL., Crowley AE. 1995) (Basil DZ. 2008) (Bennett R. 1998) (Hibbert S. et al. 2007), (Linsey LLM. 2005) (O'Keefe DJ. 2002). Schneider et al. explain that when an entity attempts to appeal to an individual through the means of guilt, the ramifications can be far more detrimental to the cause rather than positively impacting the attempt, and can often counteract the intention of the marketer through the means of retaliatory behavior (Lu H., Schuldt JP. 2015) (Truelove HB. 2014).

In conclusion, the complex forms of pro-environmental behavior require far more research and different strategies in order to understand the motivations an individual relies on when making a pro-environmental decision. Along with that, to better understand pro-environmental decisions, the emotional response to a previously made pro-environmental decision (American Psychological Association 2009) could prove to be extremely useful when tailoring a campaign or marketing strategy for issues in regard to climate change and sustainability. In the overall context of garnering world support for pro-environmental policies, the Schneider et al. research could make an immense impact. Additionally, the research can easily be applied to small scale communities such as Hastings, Minnesota. The understanding of positive emotional appeal to a community wide document could be the difference between a successfully implemented Energy Action Plan, and an alienating Energy Action Plan that proves to undermine the initial goal of the document.

3. Theoretical Framework

In order to create a framework of information to better understand the details of how a community-wide decision is made, literature and data from many sources were analyzed. The backdrop provided by the literature review enabled a more comprehensive understanding about the broader subjects of community decision making and environmental planning and how the intersections of the two aid and interfere with effective community environmental planning. The insights gained from the umbrella information from academic articles, city environmental plans, and energy providers statements help in the application of effective environmental community decision making in the city of Hastings, MN.

In order to understand the simple concept of community decision making, Rossi's text called "Community Decision Making" clarified and described the important details necessary to a decision-making process. Forms of decision making and the influences of different types of power are numerous and can be described simply through the lens of Decision Makers, Partisans, and Decisions. Another critical part of community decision making is the connection the community has with the environment they live in. The connection with the land can be in the form of resource extraction, resource use by means of tourism or attraction, and the emotional connectivity a community has with their adjacent lands and the land they reside on. Gurney et al. describe the connection humans have with their environment on a local and global scale in order to comprehend the attitudes towards areas they are both reliant on and also simply attracted to and use for recreation. Literature like Wilson's 2012 article and Drolet and Sampson's 2014 article describes community participation within the public sphere as a central issue to understand how and why a community member possesses the goal to impact community environmental decision making. The dependence on the environment lends important insights

into why a municipality may make certain investments regarding the different forms of capital that relate to environmental impacts (Drolet 2014) (Gurney et al. 2017) (Wilson 2012). The final framework described in the literature review investigates the impacts of globalization on small communities, as well as the factor of emotions when making environmental decision. These articles give insight into the broader global economic and environmental community, as well as the underlying emotions that influence behaviors that can be detrimental to society. The academic and professional work analyzed in order to develop the knowledge of environmental community decision making created a framework in which aided a more substantial understanding of the process of community wide decision making on a large scale with long-term impacts on the greater population.

In order to interpret and analyze the data collected from the community survey, the weighted averages from the 77 respondents were calculated through the survey monkey platform. In most cases, the weighted averages did not show a large variation between the most preferable choice to the least preferable choice. As shown in the graphs in section five, the weighted averages are on a scaled between on and ten, with ten being most important to the participant. Most of the data analysis happened in the form of interpreting the open-ended responses. The many open-ended responses depict Hastings as a community with aims of creating a more sustainable and environmentally friendly city and have less focus on trying to combat climate change.

4. Methods

This chapter will describe the methods used in order to analyze the community environmental plans, community decision making, and the application and importance of the community survey. When developing the survey, a wide array of communities are analyzed in order to find questions which would apply to the city of Hastings most. In doing so, information taken from the city of Eden Prairie, city of Red Wing and city of Minneapolis, all of which in Minnesota, were used to formulate questions. In collaboration with the city of Hastings Communication Director, Lee Stoffel, the questions were tailored to the community.

The approach used when deciphering what the response inferred was through the means of the Survey Monkey survey platform. This tool helped create graphs and weigh the responses in order of importance to the public. These statistics and graphs enabled the ability to understand what the priorities of the public were. This was invaluable due to the style of questions asked. Because many questions in which the respondent had to check the answer on a scale from "not important" to "most important", the tool which weighed the 77 responses was critical when trying to analyze the responses.

When looking at the previously created forms of energy action plans, besides analyzing the plans themselves, demographics, political ideologies and energy usage data available was used. These numbers helped in the understanding of how communities were alike in regard to population, ethnicity, income, industry, transportation, and energy usage. Through those means, it could be determined the city of Red Wing is far more alike to Hastings then what the cities of Eden Prairie and Minneapolis are like in comparison to Hastings. To adequately address and answer the research question, a deeper look into three completed community environmental plans, a dispatched community survey for the city of Hastings, and meetings with the City

Planner of Hastings were the resources used to understand the goals of the city, or a city similar to Hastings. When analyzing the existing Energy Action Plans, and similar community environmental plans, a better understanding of the priorities of the cities in relation to the composition of the demographics, such as ethnicities, mean household income, businesses, and the non-profit and municipal entities within the communities itself was provided by the 2010 United States Census Bureau. When looking into the composition of the community, the likely political affiliations and historical polling data provided by the United States Federal Elections Commission was taken into account.

As well as analyzing previously created Partners in Energy "Energy Action Plans," the use of the University of California- Berkley (UC Berkeley) polling data was used. The immense data set from the UC Berkeley Institute of Governmental Studies has collected non-partisan polling data since 1972. Using the Survey Documentation Analysis program, correlations between political party identity, opinion on environmental spending, and race were used to better understand the opinions of communities that apply to the analyzed communities. With an assumption, the more diverse and democratic party leaning a community is, respondents of surveys find it far more appealing to spend more governmental funds on environmentally related projects (Smith T. 2017). These findings aid in the demonstration that party identification, which race, and diversity can be an indicator, often overweigh the subjective appeal of a certain topic, such as sustainability or the funding of projects which combat climate change.

The data analysis from the survey dispersed through the Survey Monkey was used as an inexpensive resource that was easy to use for participants and data collection. The timely manner in which the data was collected proved Survey Monkey to be a powerful tool to use while collecting public opinion (Collier A. et al. 2005). The asynchronous attributes of the

Hastings Energy Action Plan survey made Survey Monkey a perfect resource to use when collecting data. Other survey collection types, such as focus groups, copious amounts of face-to-face interviews, and by-mail questionnaires, proved to be less practical when attempting to compile data on the community of Hastings. Because the specifics of the Hastings Energy Action Plan were at the beginning stages while the survey was dispersed, the usability and wide-ranging collection potential were beneficial to both the participant and the researcher (Symonds E. 2011).

4.1 Choosing the Energy Action Plans to Analyze

When choosing which Energy Action Plans to analyze, picking one community similar to Hastings and two communities different from Hastings was sufficient under the consideration of the available information. The Eden Prairie Energy Action Plan is different because the community demographics are far less similar to Hastings in comparison to Red Wing. Although both communities are in Minnesota, Eden Prairie is closer to the urban center of the Twin Cities (Minneapolis and St. Paul) metropolitan area, while Red Wing is, similar to Hastings, a commuter city set in the sub-suburban area surrounding the Twin Cities metropolitan area. Below is a map that helps depict the communities with Energy Action Plans in place or in the process of being developed. The map conveys the communities with higher density population and the communities in more rural areas, often adjacent to vast sections of farmland.

To complement the energy action plans that shed light onto the decision making process of a smaller sub-suburban city, the analysis of Minneapolis's form of an energy action plan was performed. The insight learned from analyzing the Minneapolis Clean Energy Partnership Work Plan developed a deeper understanding in how a large community can establish an understanding

between the economic, cultural and environmental sectors. Of all the environmental decision making plans analyzed, the city of Minneapolis' is the most comprehensive. Because Minneapolis is the largest city in Minnesota, the power behind the city's municipal planning holds greater weight than communities like Eden Prairie, Hastings, or Red Wing. In December of 2018, Xcel Energy, one of the main providers of energy for the state of Minnesota, pledged to produce one-hundred percent carbon free energy by 2050 (Xcel Energy 2018). Thanks to Xcel Energy's ambitious goal, the effectiveness of the Hastings, MN, Eden Prairie, MN and Red Wing, MN plans described may drastically increase.

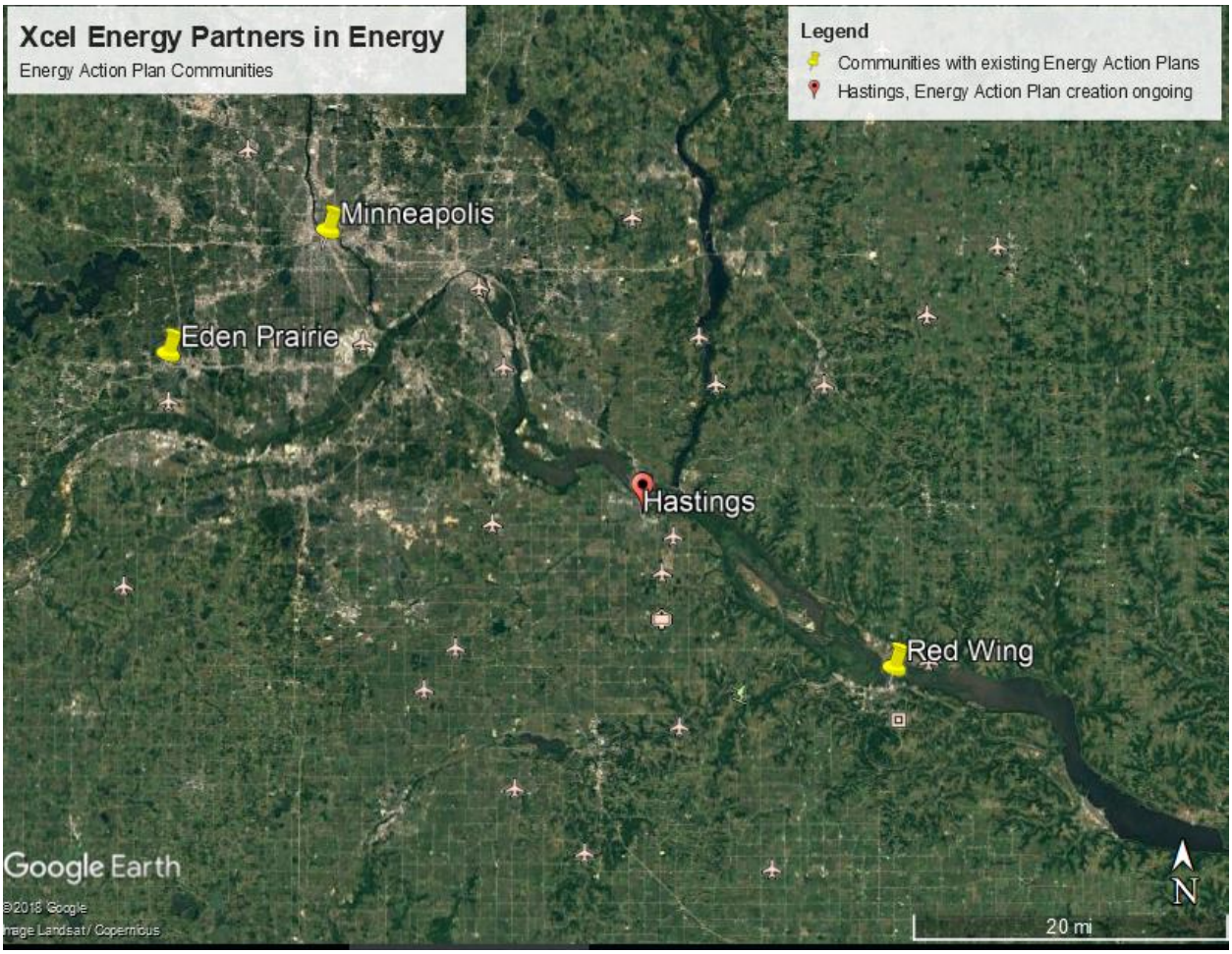


Figure 1 of 4.1 : Map of analyzed completed or upon completion community plans. (Google Earth 2018)

4.1.1. City of Eden Prairie Energy Action Plan

Eden Prairie is a suburban city in the metropolitan area of Minneapolis and St. Paul, MN. With 60,794 residents, according to the 2010 United States Census, the city is roughly three times the size of Hastings, MN, the location this thesis is focusing on. Eden Prairie is nearly 80% white with a median household income of $101,094, with a mean travel time to work being 22.0 minutes (US Census, 2010). These characteristics make Eden Prairie, MN quite different than Hastings, MN, but the usefulness in analyzing the Eden Prairie, MN Energy Action Plan comes with the contents and areas in which the city decided to focus their plan on. When analyzing Eden Prairie's Energy Action Plan, many of their focusing areas were used when creating the survey and deciding what to ask the residents of Hastings. Eden Prairie is in Hennepin County, where the constituency of voters in the 2016 presidential election voted for the Democratic nominee Hillary Clinton by over a 34-point margin, according to the United States Federal Election Commission (Federal Elections 2016). As described in section 4.2, the political leanings of a select portion of the population, such as a city or community, can lend context into why said select population made a certain decision.

In *An Energy Action Plan for Eden Prairie*, there are three areas in which the Energy Action Team decided to prioritize: residential energy usage, large commercial and industrial building energy usage, and public, nonprofit and service organization energy usage. Using the 2015 baseline data, the goal's aim is to reduce greenhouse gas emissions by 30 percent by 2025, and by 80 percent by 2050. To do so, the Energy Action Team aimed to develop programs and tools to have 75 percent of residential households participating in renewable energy or energy efficiency programs by 2025. Along with that, in order to reach the goal of reducing greenhouse gas emissions by 30 percent by 2025, the city plan created programs for the largest commercial

and industrial users to participate in through conservation means with Xcel Energy, with the goal of incrementally increasing the number of participants by 7.5 users per year. To address the public, nonprofit and service organizations, the Eden Prairie School district and nonprofit and service industries will have to reduce their energy usage by 10 percent by 2025, the city of Eden Prairie will need to reduce emissions by having 25 percent of their energy produced through renewable energy, and the Eden Prairie public, nonprofit and service organizations will have to reduce their energy usage by 20 percent (An energy action plan for Eden Prairie 2018).

4.1.2. City of Red Wing Energy Action Plan

The city of Red Wing is roughly an hour drive from the Twin Cities metropolitan area. According to the 2010 United States Census, Red Wing has 16,459 residents, with a mean travel time to work at 21.2 minutes. Far more similar to Hastings (94.8 percent white) in comparison to Eden Prairie (79.5 percent white), Red Wing's ethnicity is less diverse, with roughly 94 percent of the population being white. Red Wing is also more similar to Hastings in regard to median household income. As of the 2010 census, Red Wing's median household income sat at $49,236, whereas Hastings median household income is $62,155, and Eden Prairie's is $101,094.

Although there are many differences between Red Wing and Eden Prairie, their Energy Action Plans are quite similar. The overall plan in which the Red Wing Energy Action Team created has solutions for addressing the current environmental problems and making a more sustainable city not too different than the Eden Prairie Energy Action Plan. Just as Eden Prairie does, Red Wing focuses on the residential, business, and nonprofit sectors in order to become a more energy efficient community. However, the main difference is that the term "greenhouse

gases" does not show up in the finalized Energy Action Plan. While looking into the demographics of the city, as well as the partisan makeup of the community, a term like "greenhouse gas" could dissuade the republican leaning community. The city of Red Wing is in Goodhue County, a county that voted for Republican Donald J. Trump by an 18-point margin in the 2016 presidential elections (FEC 2016). The 2016 election results may shed light onto the mindsets of the community due to the general attitude the political party has towards climate change and pro-environmental considered policies.

4.1.3 Minneapolis Clean Energy Partnership Work Plan

The Minneapolis Clean Energy Partnership Work Plan was created between 2015 and 2016. This document is much more comprehensive in comparison to the Eden Prairie and Red Wing Energy Action Plans because of the scope of the plan and the large difference in population between the cities. Because of the larger scope, this plan has the potential to be far more important when analyzing the impacts of the energy action plans of comparable cities in Minnesota. This document is not only helpful to this thesis in regard to the analysis of community decision making and such plans created, but also helpful because the working partners of the plan, the City of Minneapolis, Xcel Energy, and CenterPoint Energy, have complied data to understand the impacts of the creation of the Minneapolis Clean Energy Partnership Work Plan.

The Minneapolis Clean Energy Partnership, or "CEP", or simply the "Partnership", was created in order to have a new approach when trying to reach the Minneapolis' Climate Action goals and energy vision by 2040. The Clean Energy Partnership Work Plan is reviewed and

approved by a joint City and Utility Board. To aid the CEP Board in making decisions, the CEP Board appoints community members as representatives from businesses, neighborhoods, environmental justice groups, and technical and City staff in order to adequately inform the CEP Board while they are in the process of approving any projects. In 2015, the CEP Board formed the Energy Vision Advisory Committee in order to review and provide feedback on projects and potential future projects, with the following notable excerpt noting a learning document:

> *"This first work plan is a significant accomplishment for the partners. It lays the groundwork for collaborative work to reduce Minneapolis greenhouse gas emissions and advance equity in the energy system. … Along with developing new approaches for climate action in the city, participants will be discovering barriers and learning how to best work together. This work plan should be viewed as a living and learning document, which can adapt as progress is made or as circumstances change."*
>
> *Clean Energy Partnership Planning Team, 2015*

In summation of the broader introduction of the Clean Energy Partnership Work Plan, the first look at this document is more comprehensive, progressive, and has more potential to make an impact on the community and the environment. Contrary to Energy Action Plans created by the city of Red Wing, MN, the Minneapolis Clean Energy Partnership Work Plan unabashedly uses words such as "Climate Change", and "Greenhouse Gasses". This may be due to the demographics of the diverse city of Minneapolis, of which is expanded on in the sections below. This is one of the most important anecdotes learned throughout the creation of this thesis.

The city of Minneapolis is a growing urban area which sits on the confluence of the Mississippi and Minnesota Rivers. According to the 2010 United States Census, the population of Minneapolis sat at 382,578, with a current population estimate of 422,331, making for a roughly 10.5% population increase. The demographic makeup of Minneapolis is: 63.9% white, 18.9% African American, 9.8% Hispanic or Latino, 6.0% Asian, and 1.2% American Indian and Alaskan Native. When comparing these demographic statistics to any of the other analyzed communities that created a form of an energy action plan, the diversity of Minneapolis is far greater than the communities of Eden Prairie, Hastings, and Red Wing. However, when comparing the median household income, the numbers are more comparable, besides Eden Prairie, to the other communities, with an average of $55,720 (United States Census 2010).

Another very important attribute of the city of Minneapolis' to look at when trying to understand why the City of Minneapolis is their recent political leanings. In the 2016 Presidential Election between Donald Trump and Hillary Clinton, the residents of Minneapolis voted 63.8% for Hillary Clinton, while voting 28.5% for Donald Trump. The 35.3-point margin is a useful stat for understanding the contents of the Minneapolis Clean Energy Partnership Work Plan. Section 4.2 below will go in detail about how political affiliations can often determine the view of a voter on the importance of sustainability and action on Climate Change.

4.1.4. Status of the City of Hastings Energy Action Plan

As of December of 2018, the city of Hastings has yet to declare a finished Energy Action Plan with Partners in Energy. Members of the committee preparing the finished Energy Action Plan understand the progress of the Hastings Energy Action plan will be more effective with well thought out decisions and community wide input. Due to city employment issues, it was

necessary for the finalization of the Energy Action Plan to be extended until a supervisor from the city of Hastings was chosen for the Energy Action Plan. Although the timeline of the final document has been delayed, the project will be finished before the end of the 2019 year.

4.2. Historical Polling Data

The University of California- Berkley has been compiling polling data for decades on nearly every issue imaginable. The Survey Documentation and Analysis includes datasets from the General Social Survey (GSS), American National Election Study (ANES), and the Survey of Consumer Finances (SCF), which go all the way back to 1956. Using the Survey Documentation Analysis, it was possible to create graphs to better understand the viewpoints of certain political ideologies and likely beliefs of communities with certain demographics.

4.2.1. Political Affiliation Ramifications on Environmental Spending

Inherent in nearly all community decision making is the underlying political ideologies of each decision maker, in this case, a voter. In the instance of the creation of forms of "energy action plans" in the Minnesota communities of Hastings, Red Wing, Eden Prairie, and Minneapolis, the landscapes of political identities vary in numerous ways. Similar to the varying political identities of each community is the demographic makeup, which can also shed more detail into how a decision was made.

When trying to visualize the layout of the Twin Cities metropolitan area and where the communities of Red Wing, Hastings, Eden Prairie and Minneapolis are set, one would consider Minneapolis as the urban center. As the most diverse and highly populated community analyzed, Minneapolis can be considered the most liberal leaning community that has created a form of an

energy action plan. As can be seen in Figure 1 of Section 4.1, moving out from the urban center, from closest to furthest from Minneapolis, is Eden Prairie, Hastings, and then Red Wing. The

Statistics for all valid cases										
Cells contain: **-Column percent** -Weighted N		PARTYID								
		0 STRONG DEMOCRAT	1 NOT STR DEMOCRAT	2 IND,NEAR DEM	3 INDEPENDENT	4 IND,NEAR REP	5 NOT STR REPUBLICAN	6 STRONG REPUBLICAN	7 OTHER PARTY	***ROW TOTAL***
SPENVIRO	1: SPEND MUCH MORE	**20.9** 42.5	**13.2** 30.5	**20.0** 38.4	**6.6** 15.4	**6.6** 9.7	**4.0** 7.5	**2.2** 2.9	**10.5** 2.9	***11.1*** *149.6*
	2: SPEND MORE	**44.7** 90.6	**40.6** 93.7	**48.2** 92.4	**38.7** 89.8	**29.5** 43.1	**30.8** 57.0	**18.0** 23.2	**45.5** 12.4	***37.4*** *502.2*
	3: SPEND SAME	**26.4** 53.5	**38.5** 88.8	**24.4** 46.9	**37.6** 87.2	**47.2** 69.0	**45.7** 84.6	**48.6** 62.7	**34.1** 9.3	***37.3*** *501.9*
	4: SPEND LESS	**7.0** 14.3	**7.0** 16.2	**6.3** 12.0	**13.9** 32.1	**13.7** 20.0	**15.9** 29.5	**26.6** 34.4	**8.1** 2.2	***12.0*** *160.7*
	5: SPEND MUCH LESS	**.9** 1.9	**.6** 1.4	**1.0** 1.9	**3.1** 7.3	**3.0** 4.4	**3.6** 6.7	**4.5** 5.9	**1.8** .5	***2.2*** *30.0*
	COL TOTAL	***100.0*** *202.7*	***100.0*** *230.6*	***100.0*** *191.7*	***100.0*** *231.8*	***100.0*** *146.2*	***100.0*** *185.2*	***100.0*** *129.0*	***100.0*** *27.2*	***100.0*** *1,344.4*
Means		2.22	2.41	2.20	2.68	2.77	2.84	3.13	2.45	2.57
Std Devs		.89	.83	.87	.90	.88	.87	.84	.87	.92
Unweighted N		206	241	190	228	145	184	134	27	1,355

communities further away from the urban center are exponentially less diverse, more conservative, and less willing to advocate for spending tax dollars on environmental issues. Below are graphs that depict the party identification of a person and their statistical likelihood of believing more spending on the environment in 2016.

Figure 1 of 4.2.1: Correlation between political party identification and environmental spending. (Smith 2018)

Thanks to the graph above, it can be argued that the more democratic a person leans, the more likely it is that the person would be more in favor of spending tax dollars on the environment. Along with that, it can be understood that the more republican leaning a person is, it is more likely that person would not like to see tax dollars spent on environmental issues.

In the bar graph below, it is much easier to visualize the correlation between party identification and environmental spending. In the purple, or the "spend more" category of the

data, 45 percent of strong democrats believe there should be more of a fiscal investment in the environment, while only 18 percent of republicans believe there should be more spending on environmental issues.

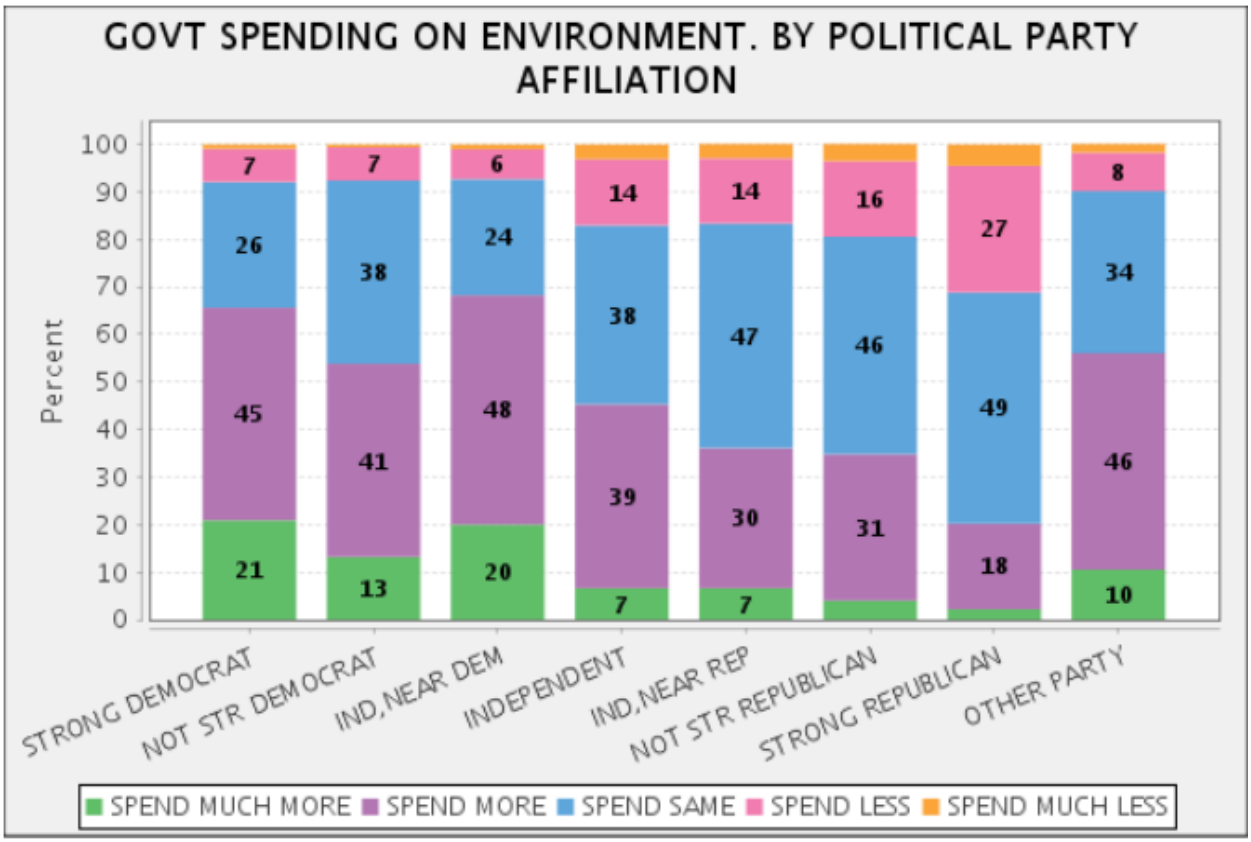


Figure 2 of 4.2.1: Bar graph of political party identification and environmental spending. (Smith 2018)

4.2.2. Community Diversity and Political Implications

As described in the section introduction, the most diverse community, and most explicitly committed to combatting climate change with environmental planning, is Minneapolis. The communities set further away from the urban center of Minneapolis are less diverse and less committed to the explicit idea of creating community policy that aims to combat climate change. From most diverse to least diverse, Eden Prairie, Hastings and Red Wing consecutively get more white and rural. Depicted in the discussion portion of the thesis is the idea that it is not that these

less diverse communities do not want to invest or create plans which revolve around the environment, but it is that the idea that creating a plan to become more sustainable is more attractive than creating a plan to combat climate change.

Statistics for all valid cases					
Cells contain: -**Column percent** -Weighted N		**RACE**			
		1 WHITE	2 BLACK	3 OTHER	***ROW TOTAL***
PARTYID	0: STRONG DEMOCRAT	**11.7** 245.0	**32.8** 148.5	**15.9** 46.1	***15.5*** *439.6*
	1: NOT STR DEMOCRAT	**15.0** 313.0	**22.2** 100.6	**24.6** 71.2	***17.1*** *484.8*
	2: IND,NEAR DEM	**13.8** 288.7	**16.5** 74.7	**13.3** 38.4	***14.2*** *401.8*
	3: INDEPENDENT	**16.8** 351.3	**17.6** 79.8	**18.9** 54.9	***17.2*** *486.0*
	4: IND,NEAR REP	**12.5** 261.1	**3.0** 13.6	**6.4** 18.7	***10.4*** *293.5*
	5: NOT STR REPUBLICAN	**15.3** 318.3	**2.9** 13.3	**12.5** 36.3	***13.0*** *368.0*
	6: STRONG REPUBLICAN	**12.3** 257.0	**2.5** 11.5	**3.9** 11.4	***9.9*** *279.9*
	7: OTHER PARTY	**2.5** 52.9	**2.4** 10.7	**4.4** 12.7	***2.7*** *76.3*
	COL TOTAL	***100.0*** *2,087.3*	***100.0*** *452.8*	***100.0*** *289.7*	***100.0*** *2,829.8*

Figure 1 of 4.2.2: Correlation between party identification and race. (Smith 2018)

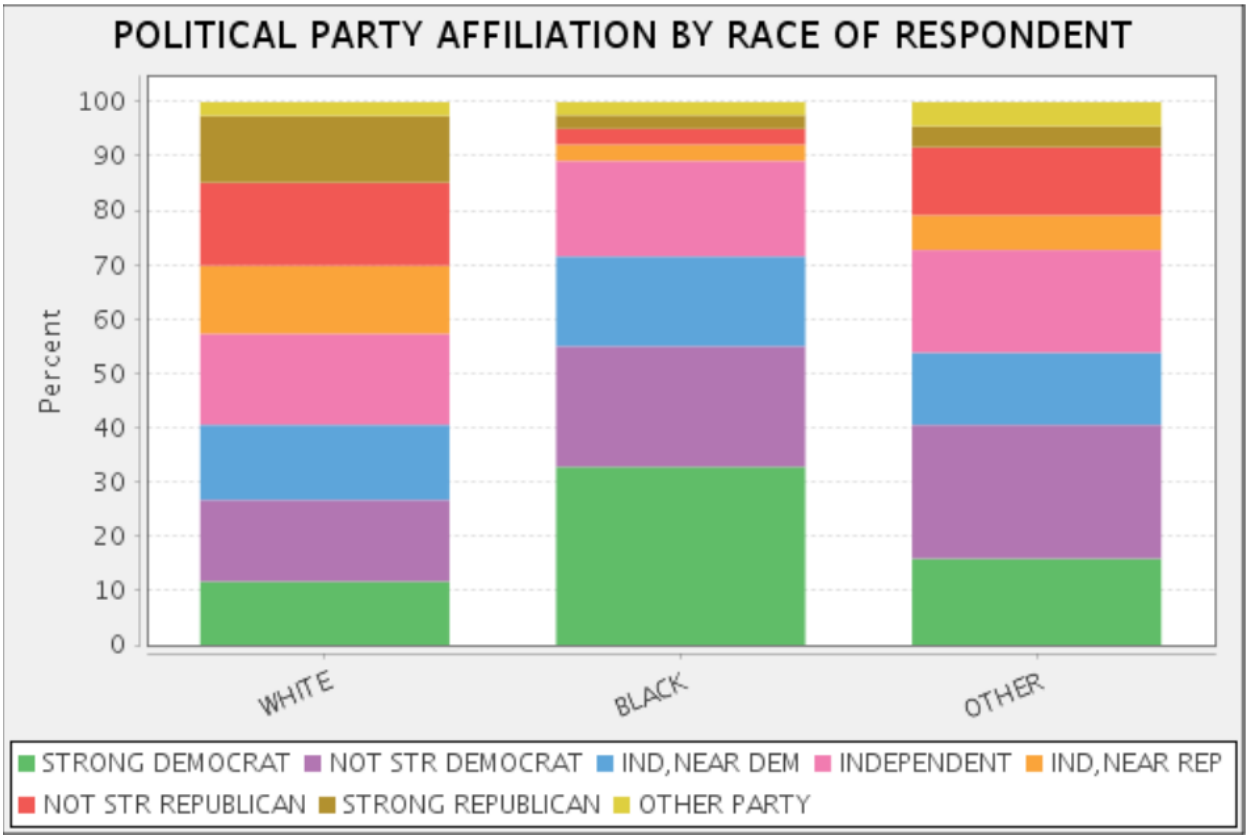


Figure 2 of 4.2.2: Bar graph of political party identification and race. (Smith 2018)

4.3. Community Survey

To assess the beliefs of the community regarding the components of the Hastings Energy Action Plan, the city of Hastings Communications Director, Lee Stoffel, aided in the development in a survey to present to the residents of Hastings. The ultimate goal of the survey was to understand how the public would like the Energy Action Plan to be created, and what the plan should focus on most. From the assessment of previous energy action plans, the general focus is aimed towards residential, commercial and business, and public and non-profit initiatives. In cities similar to Hastings in sub-suburban areas, the use of energy is spilt nearly in half between residential and commercial sectors, with municipal energy usage being nearly

insignificant (as seen in figure 1 of 4.3). As the data from Xcel Energy shows below, the majority of the energy within the city of Hastings comes from residential consumption. This reflects the characteristics of the city: although there are a number of industrial complexes and energy-intensive businesses, a slight majority of the energy is used by the residential sector.

According to the Minnesota Department of Employment and Economic Development, 8,403 people are employed in the city of Hastings (Strass 2018). This, in turn, means that a majority of residents commute out of town in order to generate income. Because so many residents of Hastings commute to work, it is difficult to determine whether the residents identify themselves as urban or rural citizens. This is important due to the connotation of what it means to be a person living in a rural area, and therefore, what their political ideologies may be. As described in the analysis of the Red Wing and Eden Prairie Energy Action Plans, although the solution to the problems was nearly identical, the wording of the aims was completely different. Instead of combating climate change by reducing greenhouse gas emissions, as was the case in Eden Prairie and Minneapolis, Red Wing created the plan without the focus or wording of climate change, though still in turn, making the city more sustainable. The Red Wing marketing strategy was to save the taxpaying residents money. In conclusion, the survey dispersed to the community of Hastings through the Hastings Communications director did not address the political identity of the respondents. This was in order to ensure the respondents of the community did not believe the survey was conducted with any bias towards a United States political party.

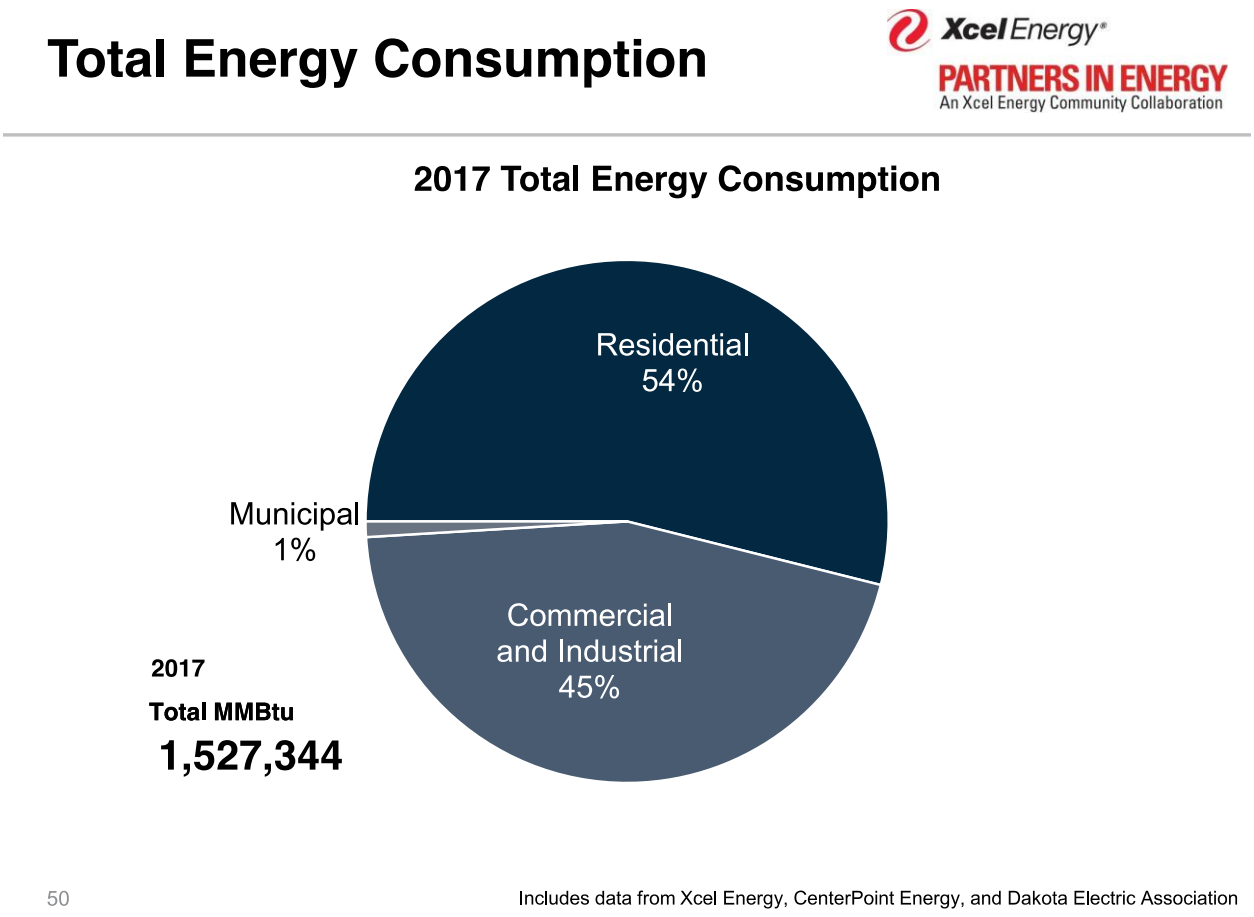


Figure 1 of 4.3: Pie chart of the city of Hastings energy consumption. (Strauss 2018)

4.4 Limitations

Of the many, the most important limitations included education level data of survey participants, survey demographics and distribution, inability to access community data from Xcel Energy and lack of underlying research. Possibly the most important limitation, time, restricted the research due to the status of the Hastings Energy Action Plan. The community committee created by Partners in Energy and the city of Hastings had only gathered twice upon the conclusion of this research. Along with the lack of meetings, the committee meetings had to be postponed because a lack of qualified staff within the city of Hastings. If the conclusion of the

Hastings Energy Action Plan had been finalized, a community survey on the final contents of the document would have been very useful. Also, with more time, more data could have been collected from other communities that previously created Energy Action Plans.

Another limitation that showed itself was the understood education level of the public. Since it was not possible to tailor the survey audience and know the backgrounds of the participants, some of the open-ended responses received described insufficient prior knowledge about the topic. As well as education level, survey demographics was another issue encountered. Although this research gained a lot of data thanks to the city of Hastings Communications Director from the survey, it also meant that the audience which received the survey could potentially have little to no knowledge on the make-up of the community or the environmental problems the city of Hastings' faces. However, the data was still useful when analyzing the community of Hastings and its residents.

The next limitation encountered was the limited accessible data. Xcel Energy did not reply on a number of occasions after being asked for useful data that may pertain to this research, potentially because the creation of the Hastings Energy Action Plan had been put on hold until the city of Hastings had an allocable employee for the project. Then next limitation in terms of Xcel Energy and data was the lack of analysis of the effectiveness of existing Energy Action Plans. The many Energy Action Plans have been created in such recent years that following documents depicting community progress have not been dispersed.

The final limitation necessary to describe regards the amount of underlying published research on community decision making in sub-suburban areas. The decision making described in the literature review revolved around broader decision making processes, environmental behaviors, and human connectivity to their local environmental conditions. In conclusion,

although the limitations were vast, the community survey and existing document analysis were enough to garner enough information to shed light on this issue.

5. Analysis and Discussion

5.1. Community Survey

The community survey was developed in coordination with Lee Stoffel, the City of Hastings Communications Director. While developing the questions, analyzed contents of Energy Action Plans that have been created through the Xcel Energy Partners in Energy program informed the survey questions. The analysis of other Energy Action Plans led to the conclusion that most plans focus on three areas or sectors: Residential, Commercial and Industrial, and Nonprofit and Municipal.

To preface the specific questions about the three sectors, the areas the public would like to focus on most were first asked. Thereafter, questions about the sectors themselves and how the public would prefer the Energy Action Plan to address the areas in question we asked. Each question had an open-ended response in order to see if any residents particular ideas which had not been seen in previous Energy Action Plans. The other four questions were about the overall goal of the Energy Action Plan, the way in which the public would like to see the Energy Action Plan developed and decided upon, how the public would like to see the city become more sustainable, and how the public would like to see the city become more energy efficient. The final question was an open-ended question that asked for any other comments or recommendations.

Of the 77 respondents, 30 of them left comments at the end of the survey with their suggestions, comments, or recommendations. To make the survey applicable to the demographics of the community, and to make sure an adequate amount of responses was recorded, there was coordination with the City Communication Director in order to make the survey as short and easy to do as possible. With the statistics recorded from survey monkey, the

average time spent on the survey was slightly under five minutes and twenty seconds. Of the 77 respondents, only one or two had obviously negative views about the project and seemed to take the survey in order to show their disdain for the creation of a Hastings Energy Action Plan. The survey consisted of two open-ended questions: one "mark all that apply" question, and six weighted order of important questions, each with an "other" option which allowed respondents to give their opinions on the question asked. Below, a complete analysis of the community survey.

5.1.1. Community Survey Question 1

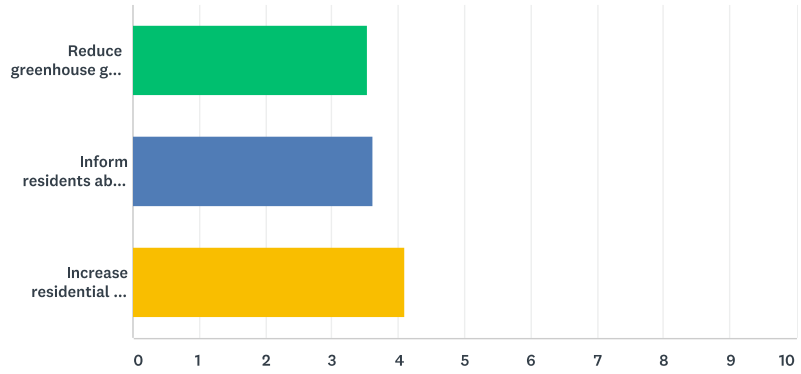
"*What should the goal of the Hastings Energy Action Plan be?"*

1. Reduce greenhouse gas output
2. Inform residents about sustainability initiatives
3. Increase residential and business efficiency
4. Other- please specify

The first questions' importance is because it prefaces the following survey due to the inherent ambiguity of it. In a very broad way, the question sheds light on the priorities of the community and what they feel are the most important areas to address. In a weighted average, answer number three was 4.09, making "increase residential and business efficiency" most important to the community. Answers one and two, or answers that may be more important to less rural communities similar to Eden Prairie, were weighted less by roughly one-half of a point. "Reduce greenhouse gas output" was weighted at 3.53 and was determined to be the least important goal for the Energy Action Plan. "Inform residents about sustainability initiatives" weighed at 3.61 and was the second most important goal in the opinion of the residents of Hastings.

Q1 What should the goal of the Hastings Energy Action Plan be?

Answered: 77 Skipped: 0



	NOT IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	VERY IMPORTANT	MOST IMPORTANT	TOTAL	WEIGHTED AVERAGE
Reduce greenhouse gas output	10.39% 8	10.39% 8	22.08% 17	29.87% 23	27.27% 21	77	3.53
Inform residents about sustainability initiatives	2.60% 2	14.29% 11	20.78% 16	44.16% 34	18.18% 14	77	3.61
Increase residential and business energy efficiency	1.30% 1	7.79% 6	10.39% 8	41.56% 32	38.96% 30	77	4.09

#	OTHER (PLEASE SPECIFY)	DATE
1	Education	7/15/2018 8:34 PM
2	The "plan" should have a measurable output that's not especially controlled by other things. "Reduce greenhouse gas output" is too vague and is impacted by too many outside influences. I like the notion of "increasing energy efficiency" assuming the measurable data can be collected.	7/15/2018 2:29 PM
3	.	7/13/2018 11:33 PM
4	More awareness of alternative energy sources (solar, wind power, ect)	7/13/2018 11:09 PM
5	Can we make more public buildings more green? - solar panels, etc??	7/13/2018 10:20 PM
6	Affordable, clean energy. Too many elderly residents have to go without proper energy because of the cost in winter.	7/13/2018 9:45 PM
7	We need business and Gov to lead the way in reducing emissions and showing the public how it can get done. Thank you for bringing this important issue to light!	7/13/2018 6:29 PM
8	We need to be a 100% renewable electricity city by 2030, we should strive for more community and local food sources, better public transportation.	7/13/2018 4:26 PM
9	Saving residents and businesses money	7/13/2018 4:10 PM
10	Try to address the lack of incentive for landlords to work on efficiency for their units if renters are responsible for utility bills.	7/13/2018 9:08 AM
11	Inform & encourage residents to join sun farm energy cooperatives. J	7/12/2018 7:56 PM

Figure 1 of 5.1.1: Survey results of question 1.

5.1.2. Community Survey Question 2

"Who should be the primary decision makers in the creation of the Hastings Energy Action Plan? Mark all that apply."

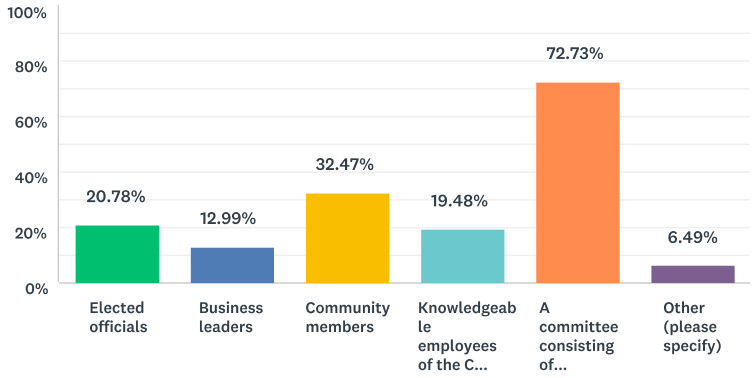
1. Elected officials
2. Business leaders
3. Community members
4. Knowledgeable employees of the city of Hastings
5. A committee consisting of members of the community, business leaders, and city of Hastings employees
6. Other – Please specify

In terms of importance to the application of the research to other sub-suburban cities, this question could shed the most light into what similar communities may wish for. Of all of the questions asked to the community, the responses to question two were the most conclusive. The participants showed obvious wishes for a committee with an inclusive decision making group with a wide array of members on it. From the "other" responses, there were many answers which pointed towards education and having the city of Hastings lead the way. The two answers that showed a negative light on the survey stated "decision by referendum with 'none of the above' or 'do not institute' included," inferring the respondent was unhappy that the process of creating an Energy Action Plan was on going.

Overall, in terms of specific portions of the public, "community members," "elected officials" and "knowledgeable city employees" were the most favorable decision makers. By nearly a factor of three, the rest of the participants preferred "committee that consisted of business leaders, community members, knowledgeable city employees, and elected officials."

Q2 Who should be the primary decision makers in the creation of the Hastings Energy Action Plan? Mark all that apply

Answered: 77 Skipped: 0



ANSWER CHOICES	RESPONSES	
Elected officials (1)	20.78%	16
Business leaders (2)	12.99%	10
Community members (3)	32.47%	25
Knowledgeable employees of the City of Hastings (4)	19.48%	15
A committee consisting of business, community, and City of Hastings employees (5)	72.73%	56
Other (please specify) (6)	6.49%	5
Total Respondents: 77		

BASIC STATISTICS

Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	4.00	3.79	1.48

#	OTHER (PLEASE SPECIFY)	DATE
1	Is this a city of Hastings energy use (facilities) or a energy action plan for all residents to be educated?	7/15/2018 8:34 PM
2	decision by ballot referendum with "none of the above" or "do not institute" included	7/14/2018 9:41 AM
3	All need to be involved!!! If not a committee of diverse backgrounds and focus - it will be viewed as bias and partisan	7/13/2018 10:20 PM
4	Definitely not elected officials	7/13/2018 4:30 PM
5	Involve students by having middle school & high school sit on the committees	7/12/2018 7:56 PM

Figure 1 of 5.1.2: Survey results of question 2

5.1.3. Community Survey Question 3

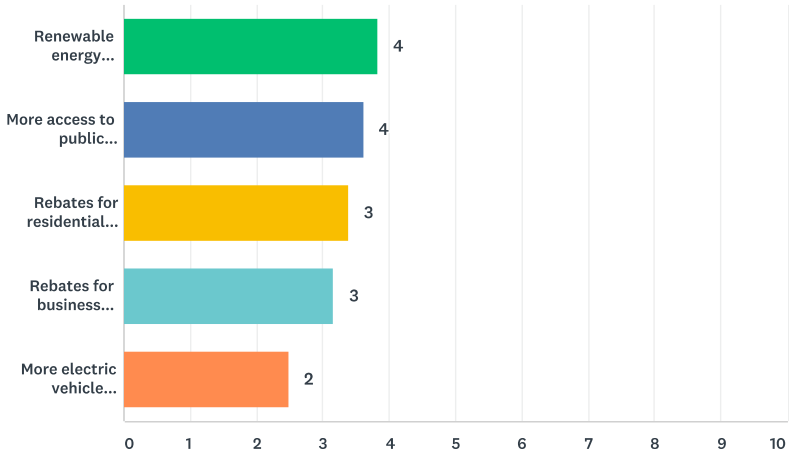
"Please rate the importance of each of these ideas about making the city of Hastings become more sustainable and energy efficient"

1. Renewable energy initiatives
2. More access to public transportation
3. Rebates for residential home retrofitting projects
4. Rebates for business retrofitting projects
5. More electric vehicle charging stations
6. Other- Please specify

On the "not important" to "most important" scale, "renewable energy initiatives" received the most "most important" responses, and had the highest weighted average. The "more access to public transportation" response was the answer which garnered the second most "most important" responses of the rest of the respondents. When analyzing all of the answers weighted averages, none, besides the very lowest, stick out to be something that the public would disapprove of. The lowest, or "more electric vehicle charging stations", was weighed at 2.49, when the highest, "renewable energy initiatives", was weighted at 3.82. This shows that although electric vehicle charging stations were the lowest of all of the choices, there is still a section of the community that would like to see more public access to this type of utility. Interestingly, considering the data from Xcel Energy Partners in Energy, "rebates for \business retrofitting projects" did not score well. Because the business and commercial sector of the community use forty-five percent of the sum energy used in the city, focusing in on this portion of the city could be the sector that would reduce energy usage in the fastest and most efficient manner possible.

Q3 Please rate the importance of each of these ideas about making the city of Hastings become more sustainable and energy efficient

Answered: 77 Skipped: 0



	NOT IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	VERY IMPORTANT	MOST IMPORTANT	TOTAL	WEIGHTED AVERAGE
Renewable energy initiatives	1.30% 1	14.29% 11	15.58% 12	38.96% 30	29.87% 23	77	3.82
More access to public transportation	6.49% 5	10.39% 8	25.97% 20	29.87% 23	27.27% 21	77	3.61
Rebates for residential home retrofit projects	3.95% 3	13.16% 10	32.89% 25	39.47% 30	10.53% 8	76	3.39
Rebates for business retrofit projects	6.49% 5	16.88% 13	36.36% 28	35.06% 27	5.19% 4	77	3.16
More electric vehicle charging stations	14.29% 11	40.26% 31	31.17% 24	10.39% 8	3.90% 3	77	2.49

#	OTHER (PLEASE SPECIFY)	DATE
1	Confusing initive. Is this for city to be giving residents/business rebates or educating them on opportunity to get rebates from the electrical providers.	7/15/2018 8:34 PM
2	I know there's been at least one renewable energy initiative (having the City use a solar farm) that could also save the city money. Maybe a good notion is for the City Council to state whether they consider this something that should affect city policy, or if it's just a fad.	7/15/2018 2:29 PM
3	Which comes first, the stations or the demand?? Hoping we'll "need" more charging stations / but do we need them now, or in a few years??	7/13/2018 10:20 PM
4	Yes!!!	7/13/2018 6:29 PM
5	I can't pick and choose because they are all so valuable! I would really love to see EV charging stations more frequently as it becomes such a popular option for car buying.	7/13/2018 4:26 PM
6	A transportation plan needed within the city limits and also to Minneapolis & St.Paul is needed	7/12/2018 7:56 PM

Figure 1 of 5.1.3: Survey results of question 3

5.1.4. Community Survey Question 4

"Please rate the importance of each of these areas regarding saving dollars in Hastings on energy efficiency"

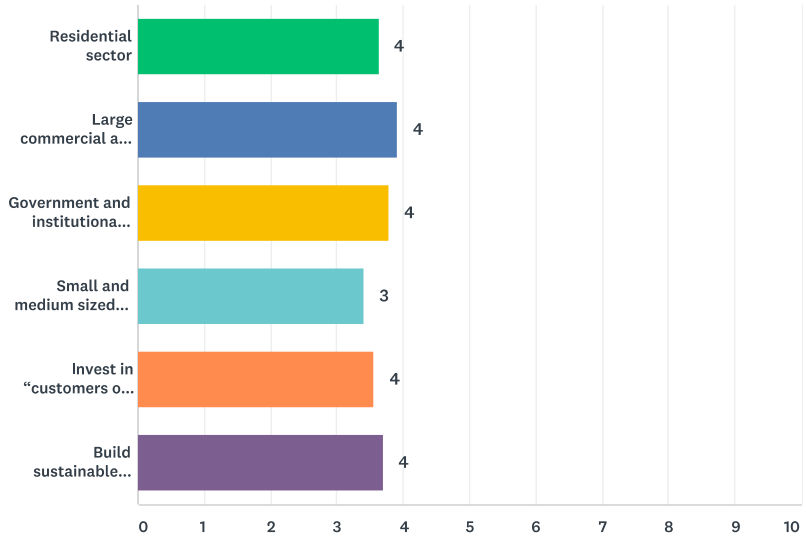
1. Residential sector
2. Large commercial and industrial sector
3. Government and institutional sector
4. Small and medium sized business sector
5. Invest in "customers of the future" by providing Hastings' youth with energy educational opportunities
6. Build sustainable energy programs and processes through the government and institutional sector
7. Other- Please specify

Question four was used in order to address the way in which residents of Hastings would like to address energy efficiency and sustainability through the lens of saving money, rather than through preferable projects aimed towards a certain sector. As mentioned in section 5.2.3, it was interesting that residents did not find it important to have projects or rebates tailored towards the industrial and commercial sector. However, when the question is framed in the form of saving money, "large commercial and industrial sectors" was the highest weighted response out of all the potential answers. Although "large commercial and industrial sectors" was the favorite of all the responses with a weighted average of 3.92, the lowest answer was "Small and medium sized business sector", which received a weighted response of 3.42.

Of three open-ended responses, youth engagement was the main point in which the respondents tried to address. "Our youth will be what guides us to a better future, invest in them," one of the respondents said. Although the answer closest to this sentiment received the most "Not Important" responses, the people who seemed most invested in the survey tailored their answers towards the importance of young people.

Q4 Please rate the importance of each of these areas regarding saving dollars in Hastings on energy efficiency

Answered: 77 Skipped: 0



	NOT IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	VERY IMPORTANT	MOST IMPORTANT	TOTAL	WEIGHTED AVERAGE
Residential sector	1.35% 1	5.41% 4	36.49% 27	41.89% 31	14.86% 11	74	3.64
Large commercial and industrial sectors	1.30% 1	9.09% 7	23.38% 18	28.57% 22	37.66% 29	77	3.92
Government and institutional sector	1.32% 1	7.89% 6	19.74% 15	52.63% 40	18.42% 14	76	3.79
Small and medium sized business sector	1.32% 1	11.84% 9	39.47% 30	38.16% 29	9.21% 7	76	3.42
Invest in "customers of the future" by providing Hastings' youth with energy educational opportunities	6.49% 5	15.58% 12	14.29% 11	44.16% 34	19.48% 15	77	3.55
Build sustainable energy programs and processes through the government and institutional sector	2.60% 2	11.69% 9	25.97% 20	31.17% 24	28.57% 22	77	3.71

#	OTHER (PLEASE SPECIFY)	DATE
1	I don't know enough to answer this question.	7/15/2018 2:29 PM
2	Your 5th about teaching our youth is important, however, city, state, and federal governments have proven time and time again they can not be trusted to teach anyone without extreme bias.	7/14/2018 6:25 AM
3	Our youth will be what guides us to a better future, invest in them.	7/13/2018 4:26 PM

1 / 1

Figure 1 of 5.1.4: Survey results of question 4

5.1.5. Community Survey Question 5, 6 and 7

Question 5:

"Please rate the importance of each of these ideas about making the Hastings residential sector become more energy efficient"

1. Engage residents through a community marketing program about renewable energy and energy efficiency programs
2. Engage residents through a community wide energy challenge
3. Energy savings in multi-family buildings
4. Increase energy efficiency in construction and renovation projects
5. Other- please specify

Question 6:

"Please rathe the importance of each of these ideas about making the Hastings Commercial and industrial sector become more energy efficient"

1. Use established networks to raise awareness about available energy rebates and programs
2. Use trusted messengers to conduct targeted outreach to individual businesses
3. Engage local service providers and contractors to ensure identified energy efficiencies are known
4. Provide technical tools to assist commercial buildings in taking action
5. Other- Please specify

Question 7:

"Please rate the importance of each of these ideas about making the Hastings public, non-profit, and service sector become more energy efficient"

1. Recognize leadership among institutions who take action as a way to encourage others
2. Provide targeted information and support to institution facility managers to encourage energy and cost savings
3. Promote renewable energy options to Hastings institutions
4. Pursue on-site renewable energy on City buildings
5. Capture additional energy savings at Hastings schools by engaging students and teachers in energy conservation
6. Other- Please specify

When analyzing previous Energy Action Plans, the primary focus was on how to make the residential, industrial, and non-profit sectors of the community more energy efficient. What the answers to this question show is that there is not a definitive opinion on how to address the

negative environmental impacts all of these sectors have on the environment. As shown in the responses to question four about the areas to focus on, there was not a conclusive choice between the three main sectors.

In question five, although "increase energy efficiency in construction and renovation projects" was the preferred choice by the 77 respondents, it was only weighted at 3.57, while the lowest response was "engage residents through a community wide energy challenge", with a 3.19 weighted average, which was not far behind. In the "other- please specify" response, focusing on multi-family houses was a noticeable area of concern. This online response was likely from Bryce Lebrun, the city of Hastings Engineer. During an interview Mr. Lebrun about the status of sustainability and environmental issues in Hastings, he stated he would like to see some sort of program with incentives for landowners to upgrade their heating and cooling utilities in the drafts of the Hastings Energy Action Plan. (Lebrun 2018)

In question six, the main preference for addressing the Hastings industrial and commercial sector was deemed to be to "provide technical tools to assist commercial buildings in taking action." This response garnered a 3.68 weighted average, compared to the other responses which were weighted just slightly under providing technical support. The other answers pointed to using established networks, trusted business leaders, and service provider engagement in order to make the community more sustainable and environmentally friendly.

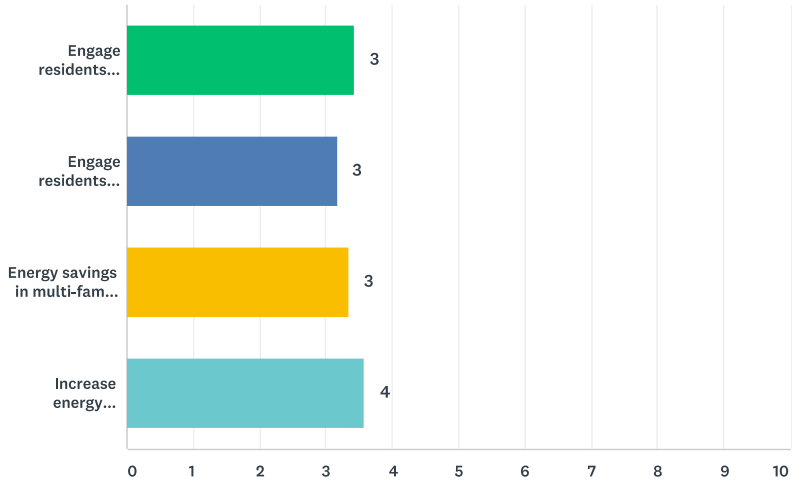
Like the previous two questions about the residential and commercial sectors, the respondents did not have any conclusive opinions about how to make the non-profit, public and service sectors more sustainable. The favored answer was: "promote renewable energy options to Hastings institutions," which received a weighted average of 3.92. The other responses, such

as “pursuing on-site renewable energy on City Buildings” fell shortly behind the most favored answer with a weighted average of 3.83.

The most comprehensive conclusions drawn from questions five, six and seven, is that there does not seem to be any conclusive actions in which the public would like the Energy Action Plan to include. This can be considered with two viewpoints: first, it could be that the residents of Hastings believe all of the options are positive and should be pursued, or, the second, the residents of Hastings do not find any of the options to be the best and would like to see the Energy Action Plan go in a different direction.

Q5 Please rate the importance of each of these ideas about making the Hastings residential sector become more energy efficient

Answered: 77 Skipped: 0



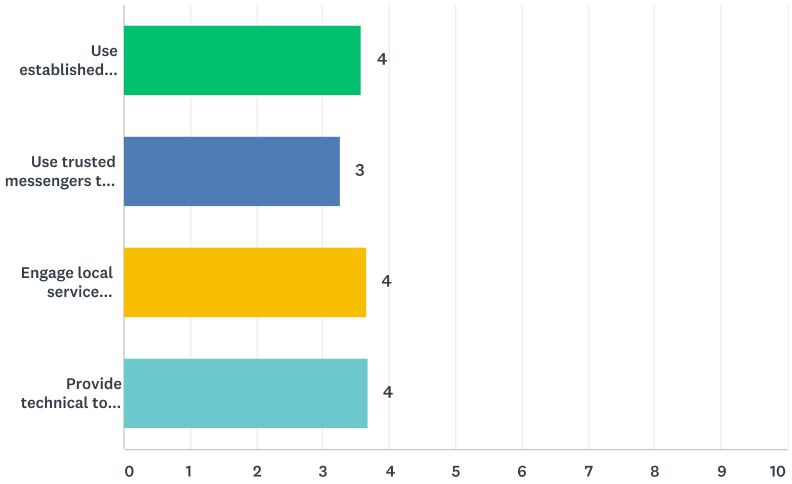
	NOT IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	VERY IMPORTANT	MOST IMPORTANT	TOTAL	WEIGHTED AVERAGE
Engage residents through a community marketing program about renewable energy and energy efficiency programs	5.19% 4	12.99% 10	29.87% 23	37.66% 29	14.29% 11	77	3.43
Engage residents through a community wide energy challenge	11.69% 9	12.99% 10	29.87% 23	35.06% 27	10.39% 8	77	3.19
Energy savings in multi-family buildings	5.19% 4	11.69% 9	36.36% 28	36.36% 28	10.39% 8	77	3.35
Increase energy efficiency in construction and renovation projects	5.19% 4	9.09% 7	29.87% 23	35.06% 27	20.78% 16	77	3.57

#	OTHER (PLEASE SPECIFY)	DATE
1	Please educate the public on the initiative more. Is this a community wide request or idea by staff/elected official?	7/15/2018 8:34 PM
2	Easier to make new construction efficient, but existing homes need reason, help and incentive to upgrade.	7/13/2018 10:20 PM
3	Multi-family is a HUGE untapped sector we need to focus on...along with recycling in these properties. Refer to Dakota County's $10,000 business grant for more info	7/13/2018 6:29 PM

Figure 1 of 5.1.5: Survey results of question 5

Q6 Please rate the importance of each of these ideas about making the Hastings commercial and industrial sector become more energy efficient

Answered: 76 Skipped: 1



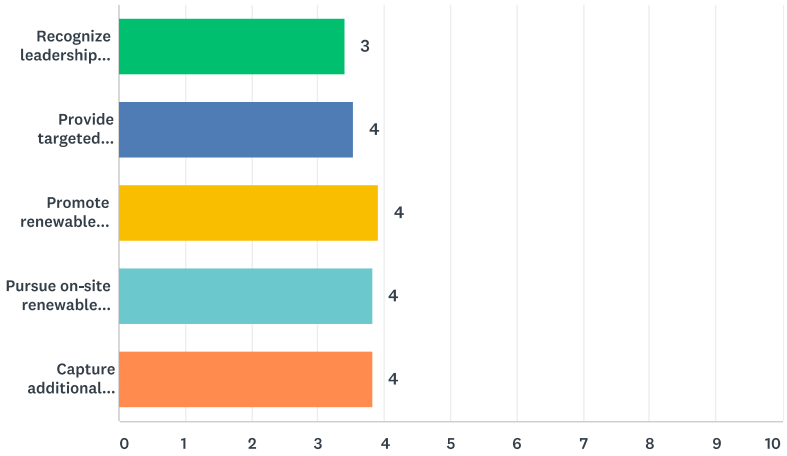
	NOT IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	VERY IMPORTANT	MOST IMPORTANT	TOTAL	WEIGHTED AVERAGE
Use established networks to raise awareness about available energy rebates and programs	3.95% 3	5.26% 4	36.84% 28	38.16% 29	15.79% 12	76	3.57
Use trusted messengers to conduct targeted outreach to individual businesses	5.26% 4	13.16% 10	39.47% 30	34.21% 26	7.89% 6	76	3.26
Engage local service providers and contractors to ensure identified energy efficiencies are known	2.63% 2	11.84% 9	23.68% 18	39.47% 30	22.37% 17	76	3.67
Provide technical tools to assist commercial buildings in taking action	2.63% 2	10.53% 8	23.68% 18	42.11% 32	21.05% 16	76	3.68

#	OTHER (PLEASE SPECIFY)	DATE
1	I would think if it could save them money, just like home owners - they will upgrade if help is available. The problem is when a business is only renting or leasing a commercial building. Then who does any upgrades benefit???	7/13/2018 10:20 PM

Figure 2 of 5.1.5: Survey results of question 6

Q7 Please rate the importance of each of these ideas about making the Hastings public, non-profit and service sector become more energy efficient

Answered: 76 Skipped: 1



	NOT IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	VERY IMPORTANT	MOST IMPORTANT	TOTAL	WEIGHTED AVERAGE
Recognize leadership among institutions who take action as a way to encourage others	4.00% 3	12.00% 9	33.33% 25	40.00% 30	10.67% 8	75	3.41
Provide targeted information and support to institution facility managers to encourage energy and cost savings	2.63% 2	10.53% 8	31.58% 24	40.79% 31	14.47% 11	76	3.54
Promote renewable energy options to Hastings institutions	2.63% 2	6.58% 5	25.00% 19	27.63% 21	38.16% 29	76	3.92
Pursue on-site renewable energy on City buildings	4.00% 3	10.67% 8	21.33% 16	26.67% 20	37.33% 28	75	3.83
Capture additional energy savings at Hastings schools by engaging students and teachers in energy conservation	3.95% 3	9.21% 7	17.11% 13	39.47% 30	30.26% 23	76	3.83

#	OTHER (PLEASE SPECIFY)	DATE
1	Education Recognition Getting the people involved in the fun! All great ideas.	7/13/2018 10:20 PM
2	Most bang for your buck at large buildings and institutions that use a lot of energy.	7/13/2018 6:29 PM
3	The Hastings City Council was not interested in pursuing Solar Power initiatives.	7/13/2018 1:40 PM

Figure 3 of 5.1.5: Survey results of question 7

5.1.6. Community Survey Question 8 and 9, open-ended

The following open ended questions were asked:

> *"With the aid of Xcel Energy, community members, local institutions and business leaders and employees of the city of Hastings will create a Hastings Energy Action Plan. Do you have any recommendations on who else should help create and decide the components of the Energy Action Plan?"*

And

> *"Please list any other comments or recommendations."*

When analyzing the open-ended responses, understanding how the community would like to see the decision made, and what they community would like the Energy Action Plan to focus on was what was drawn from the responses. Underneath both of the open-ended responses are something called "word clouds". Word clouds analyze the responses and determine the most common responses and important points made. The responses and word clouds make it clear the community would like to see the schools, average community members, and local businesses as integral decision makers in the process of creating the Energy Action Plan.

Of all of the open-ended responses, the vast majority of them were positive and wanted the decisions to be made in an inclusive way. One of the respondents said, "highly recommend the schools to take action on energy savings to teach the next generation of people how important it is to preserve energy as well as educate factual and reliable data about energy." This was the most common theme throughout the open-ended responses. However, there were a few negative responses that indicated the respondent was unhappy that either the survey or creation of an Energy Action Plan was happening. Responses like, "The whole thing is a waste of time",

although uncommon, still shed light onto the opinions of the community. While watching the surveys come in, correlating responses similar to the negative response above with the checking of "not important" to every answer on the previous questions could be inferred quite easily.

Q8 With the aid of Xcel Energy, community members, local institution and business leaders and employees of the city of Hastings will create a Hastings Energy Action Plan. Do you have any recommendations on who else should help create and decide the components of the Energy Action Plan?

Answered: 30 Skipped: 47

#	RESPONSES	DATE
1	Highly recommend the schools take action on energy savings to teach the next generation of people how important it is to preserve energy as well as educate factual and reliable data about energy.	7/19/2018 10:36 PM
2	Include engineering representatives from schools and hospital	7/18/2018 3:11 PM
3	Dakota Electric	7/17/2018 11:14 AM
4	~representatives of surrounding farmers ~Is there a moral message and should faith communities be contacted? ~County is largest employer ~Scott Sinclair- has solar consulting company	7/16/2018 11:32 AM
5	no	7/16/2018 9:12 AM
6	Dakota electric should be at table also as they serve residents also. If this is an Xcel project then they should be doing the marketing and leading the program not going through the city or school	7/15/2018 8:34 PM
7	No	7/15/2018 2:29 PM
8	High school kids	7/14/2018 5:48 PM
9	community members	7/14/2018 2:40 PM
10	persons concerned about the raising of taxes for special interests	7/14/2018 9:41 AM
11	Community members across all socioeconomic groups, including renters.	7/14/2018 8:15 AM
12	Other leaders of adjecent cities that have run a successful plan already (for input/feedback)	7/14/2018 7:00 AM
13	.	7/13/2018 11:33 PM
14	I think it would be a great idea to consult with educational professionals and researchers in universities/Colleges nearby who are doing research on these types of initiatives.	7/13/2018 10:28 PM
15	School board member Any hastings based environmental groups Someone to help represent the businesses - maybe from the chamber of commerce??	7/13/2018 10:20 PM
16	None	7/13/2018 10:03 PM
17	.	7/13/2018 10:02 PM
18	Dakota Electric is our provider on south end of town. I think having them involved is a good idea.	7/13/2018 9:59 PM
19	Engineers, scientists, and educators.	7/13/2018 9:45 PM
20	Sounds like more wasted money when this city has other more important issues it is facing	7/13/2018 7:55 PM
21	As long as business managers have a seat at the table, we should be good.	7/13/2018 6:29 PM
22	A wide pool of people, young and old, rich and poor, apartment and home owners, small and large business'.	7/13/2018 4:26 PM
23	Cities in our region who have made marketable strides toward efficiency and sustainability.	7/13/2018 4:12 PM
24	Please make sure Hastings City Council members are part of this mix.	7/13/2018 1:40 PM
25	No	7/13/2018 7:16 AM
26	County Courthouse and Jail Complex	7/12/2018 10:43 PM

27	Experts who have experienced or have knowledge of success in other places	7/12/2018 9:29 PM
28	Businesses Who Provide Alternative Energy: Wind, Geothermal, and Solar Power	7/12/2018 8:28 PM
29	Students	7/12/2018 7:56 PM
30	Develop energy storage facilities, without these renewal energy won't be effective	7/12/2018 7:26 PM

Q8 With the aid of Xcel Energy, community members, local institution and business leaders and employees of the city of Hastings will create a Hastings Energy Action Plan. Do you have any recommendations on who else should help create and decide the components of the Energy Action Plan?

Figure 1 of 5.1.6: Survey results of question 8, along with most commonly used words when responding to open ended questions

Q9 Please list any other comments or recommendations

Answered: 17 Skipped: 60

#	RESPONSES	DATE
1	Make sure this is not “creating” work for city or school.	7/15/2018 8:34 PM
2	None	7/15/2018 2:29 PM
3	Excited to turn Hastings green! Let’s be a roll model for other cities to follow.	7/14/2018 5:48 PM
4	Make sure that you do not spend other peoples money without their best interests, not your best interests.	7/14/2018 9:41 AM
5	.	7/13/2018 11:33 PM
6	Thank you for helping Hastings stay progressive in renewable energy!! Love Hastings!!!!	7/13/2018 10:20 PM
7	None	7/13/2018 10:03 PM
8	.	7/13/2018 10:02 PM
9	.	7/13/2018 9:45 PM
10	Start improving this community with better services, welcome new businesses, instead of bombarding then with unending fees & difficulties getting here & starting a business.	7/13/2018 7:55 PM
11	I think increased recycling AND implementing organics collection could be a valuable addition to this, especially since Dakota County is offering up to $10K for business to do this! We need to ban styrofoam (I’m looking at you Emily’s Bakery and Hasting’s Creamery!) and advertise companies who are making more sustainable choices, like Lock & Dam having almost NO single use plastic at their establishment. Encourage companies to adopt those principles—can Schoolhouse Scoops stop using plastic spoons? Is Las Margaritas willing to stop using styrofoam to-go containers? Can we encourage the County to choose Hastings as their next organics drop site? West St. Paul and Eagan have one...why not us?	7/13/2018 6:29 PM
12	The whole thing is a waste of time	7/13/2018 4:30 PM
13	Thank you for doing this!	7/13/2018 4:12 PM
14	How do community members get involved? My husband would love to be a part of this (crwaits@gmail.com is his email.	7/13/2018 7:16 AM
15	It would be good to become a community which supports itself on renewable energy. The education needs to begin.	7/12/2018 10:43 PM
16	Any plan should be earth friendly.	7/12/2018 8:28 PM
17	Identify and visit cities in the area who have exemplary energy initiatives.	7/12/2018 7:56 PM

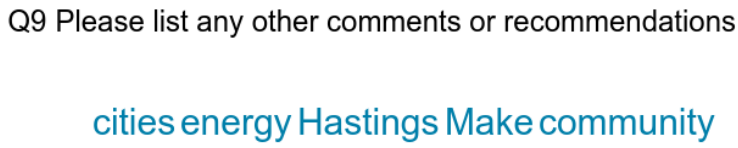


Figure 2 of 5.1.6: Survey results of question 8, along with most commonly used words when responding to open ended questions

The surveys collected in the distribution of the survey monkey Hastings Energy Action Plan highlighted the wishes of the community of Hastings for the long-term plans for the city.

The majority of the community showed interest in environmentally friendly progressive projects in the sectors of the residential, business, and non-profit institutions in the local area. Including the three main sectors affected by the Hastings Energy Action Plan, residents also wanted a great focus on the younger population of Hastings. "… Teach the next generation of people how important it is to preserve energy as well as educate factual and reliable data about energy," said a respondent from question eight. These sorts of responses were very common when analyzing the open-ended responses. Although there were a few negative responses to the survey, the discussion about the Energy Action Plan was about positive engagement between the community, city, local businesses, and non-profit institutions.

6. Conclusion

Community decision making in the realm of environmental planning will be an issue to further research due to the dire circumstances the global community is facing in climate change. The infrastructure established by an Energy Action Plan, or something similar to it, can provide a community with a guide on how to develop their institutions in the coming decades. Community decision making has been well researched and the framework for how to make a well-informed community decision has been identified by a number of academics such as Rossi, Wilson, Gurney, and many others. The research provided by this thesis identifies the needs and wishes a small, sub-suburban city with geographical, demographical and political characteristics similar to Hastings in regard to environmental planning.

This research tried to identify the working characteristics of a sub-suburban city that has or is in the process of developing an energy action plan. Community decision making is at the core of the issue, which is why the context of Rossi's text, *Community Decision Making*, is so important to understand. Due to the current status of the Hastings Energy Action Plan, it is difficult to define who the end decision makers will be, and what the decision makers aims and objectives could be. Although the Hastings Energy Action Plan has yet to conclude, this research sheds light onto how Hastings' community decision making is made, and how a similar community to Hastings may wish to go about creating a policy or document that could potentially affect the entirety of the community.

Community development, in reference to Larrison's analysis of "top-down" and "bottom-up" strategies, can be understood from the birth of the initial idea that a decision or plan was necessary or identified. How a community decision was concluded upon can help understand how successful or effective said plan may turn out to be. With a "bottom-up" community

decision, or a decision that was made by the majority of a community, it is far more likely that the attitudes, emotions, and needs of the community in regard to their connectivity to the surrounding environments are met. Gurney et al. believed that attachment and dependence to a certain place determine the environmental needs of a community. The public participation that revolves around a local environmental issue or policy should determine the concluded document or decision. Unfortunately, if a community is economically dependent on resource extraction and has very little other capital in the form of social or cultural characteristics (Wilson 2012), it is likely that an environmental policy or plan similar to an Energy Action Plan will not succeed without the understanding that environmental degradation will need to continue in order for the community itself to continue. This, in turn, leads towards the dependence on globalization if a community wishes to become a more sustainable and less resource extracting city. The vulnerability and resilience of a community may rely upon the reliance on negative impacts on a city, making long-term environmental planning ever more so important (Wilson 2012).

Throughout the process of writing this thesis it was found that the aims and objectives of the creation of an Energy Action Plan for any community, regardless of demographics or particular characteristics, seem to be the same. As almost anything is in the United States in 2018, the way a constituent comes to a conclusion is dependent on the frame in which the issue is purposed upon. For example, in Eden Prairie, a relatively liberal and progressive community, the main focus for their Energy Action Plan was to reduce greenhouse gas emissions. However, in Red Wing, "greenhouse gas" was not mentioned in any portion of the entire document. Although this is an important point to understand, it is also critical to understand the goal of the documents, referencing greenhouse gasses or not, is to create a more sustainable, energy efficient

community that will make more environmentally friendly decisions when future planning is decided upon.

When understanding what was learned from the research conducted in Hastings regarding an Energy Action Plan, it is easy to see there is not a conclusive viewpoint as to how to make any city more sustainable. This shows through in the weighted averages of all of the responses to the answered questions. Besides the question that asks how and who should make the final document, there is not an opinion on how to make the city more energy efficient and sustainable. Although this may seem like a bad thing for the future of the creation of the Hastings Energy Action Plan, it could prove to make for a very beneficial final document that could sway community decision making for decades to come. Since the final document will not be published until 2019, there is plenty of time for Xcel Energy, the city of Hastings, and the Energy Action Team to understand the wishes of the community and to specify and tailor the final Energy Action Plan for the city of Hastings.

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