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Huxley Small Grant Application: Debating Building Electrification as a Climate Mitigation Strategy in Bellingham, WA

Background

The City of Bellingham, Washington has proven to be a leader in local climate action. In 2007, Bellingham adopted a Climate Protection Action Plan (CPAP) which set targets for the City to reduce its greenhouse gas emissions by 2012 and 2020. In 2018, the City updated the CPAP with an accelerated timeline and new emissions reductions targets.

That same year, the City passed Resolution 2018-06, which prompted the formation of the Climate Action Plan Task Force (Task Force), a group made up of nine community members with expertise in topics surrounding transportation, buildings, energy supply, energy efficiency, land use, and carbon emissions and several employees from the City. The Task Force developed recommendations for action the City can take to achieve its emissions reductions targets. The recommendations include measures that would reduce emissions in the sectors of transportation, land use, buildings, and energy supply. Although there is substantial support from the public for this city-wide climate action, there is also skepticism and opposition.

Within the report, the Task Force suggests that in order to meet the targets outlined in the CPAP, the City must prioritize significant building sector decarbonization (Climate Action Task Force, 2019). According to the Task Force, building electrification is key to decarbonizing the building sector. The Task Force recommended two building electrification measures in their report. The first measure, Measure B4, calls for all existing buildings in Bellingham to be electrified and for natural gas to be phased out of heating and cooling (Climate Action Task Force, 2019). Upon the point of replacement, existing space and water heating systems within buildings must be replaced with an electric heat pump or another efficient technology. By 2040, all space and water heating systems that rely on natural gas must be replaced with a heat pump. The second proposed measure, Measure B5, calls for the electrification of all new buildings upon construction (Climate Action Task Force, 2019).

The two recommended building electrification measures have proven to be particularly divisive in Bellingham. Though the Climate Action Task Force Report suggests that the transition to electrification will have positive impacts on the climate, health, safety, energy costs, jobs and more, the Task Force did not reach consensus on these measures (Climate Action Task Force, 2019). A representative from Puget Sound Energy (PSE), a local electricity and natural gas provider and member of the Task Force, was the dissenting vote and commented that the necessary analysis has not been completed to move forward with these recommendations (Climate Action Task Force, 2019). Another group of stakeholders, including the Northwest Gas Association, is pushing a $1 million campaign to fight one of the proposed policies that would

phase out natural gas in the City (Baker, 2020). Still, members of the public and other local groups have voiced their support for these measures and stressed the immediate need for climate action.

Purpose

The fate of these proposed building electrification measures will be determined, in part, by the perspectives and perceptions of the public. Similarly, the viability of similar proposals in other cities might be predicted by the perceptions in Bellingham. In this thesis, I aim to answer the following questions:

1. What perspectives do stakeholders have regarding building electrification in the City of Bellingham, Washington?
2. What are areas of consensus and points of tension between the different perspectives?

Through detailing the perspectives that exist towards these proposed measures, I intend to offer insight into potential framings of these measures that would be attractive to more stakeholders. In so doing, I hope to contribute to the literature on the framework of 'clumsy solutions', or solutions that combine components of opposing perspectives on an issue and how it should be resolved (Verweij et al., 2006). According to this framework, each perspective represents certain elements of the issue that others neglect, and each tells a potentially valid but selective story (Verweij et al., 2006). Any decisions that are modeled off just one perspective are incomplete. 'Clumsy solutions' hold social meaning and appeal to multiple perspectives and can make complex problems like climate governance tractable (Verweij et al., 2006).

Research Orientation

Through this research, I aim to elicit perceptions of the topic from local stakeholders in their own words and in their own framings. I aim to describe a reality that exists amongst a specific group of people in a specific place. I will highlight what is most important to those with different perspectives, where there is common ground between perspectives, and what issues are most divisive.

Methods

I will use Q-methodology (Q) to complete this research. Q is a powerful tool that can highlight multiple perspectives. It combines elements of quantitative and qualitative methods to study human subjectivities, or the things going on in people's minds, in the words of the participants. Unlike traditional social science methodologies like interviews and surveys, Q studies do not describe causal relationships or measure frequency and the results are not generalizable.
Q studies do provide rich descriptions of the ways that the people included in the study think and feel about a topic in the words of the participants themselves. Because Q allows for the researcher to look for patterns and similarities between participants' views, including areas where perspectives converge and areas that they diverge, it can be useful in recasting intractable controversies.

In a typical Q-study, participants rank order a set of statements that represent the spectrum of beliefs and ideas surrounding the issue. A quantitative analysis then groups similar rankings into a reduced number of factors. These factors represent the variety of accounts or perspectives that exist about the topic amongst the study participants.

This Q-study will include the following steps (see Figure 1):

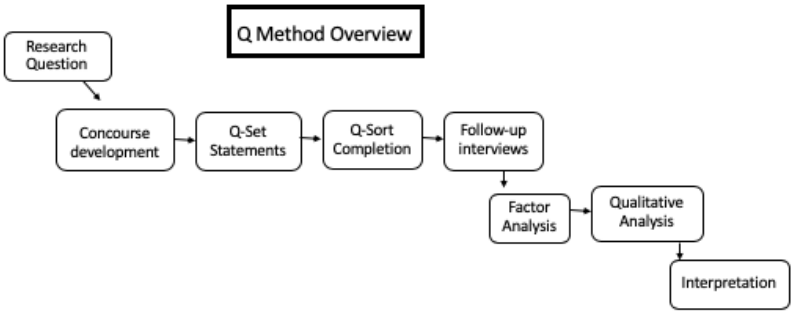

Figure 1: Overview of steps of a typical Q-Study

1. Complete semi-structured interviews with participants to develop the 'concourse' or a set of statements that represents a wide suite of the sentiments that a group holds about the topic.
2. Transcribe interviews from step 1 and create the Q-set, or a reduced sample of statements that capture the essence of the full concourse. Example Q-set statements from another study are included in Figure 2.

Q-Sort Statements
The time for debate over the question 'is global warming real?' is long over. The question now is 'what are we going to do about it?'
More time is needed to study the science of global warming before specific action steps to reduce greenhouse gases are developed.
Sustainable societies must be small in scale and modest in technology.
Energy efficiency offers the safest and most economical near-term strategy for slowing carbon dioxide build-up while industrialized countries lay the foundations for a renewable energy future.
Global warming is essentially a problem of market failure. Because the atmosphere is a common property resource, the cost of its degradation is not born by the producers of CO2 nor reflected in market prices.

Figure 2: A sample of Q-set statements from a study conducted by Dayton (2000).

3. Twenty to 30 participants, including those from step 1 and additional participants, complete the Q-sort by sorting the Q-set statements from step 2 onto a distribution board (see Figure 3) based off of those they most and least agree with.

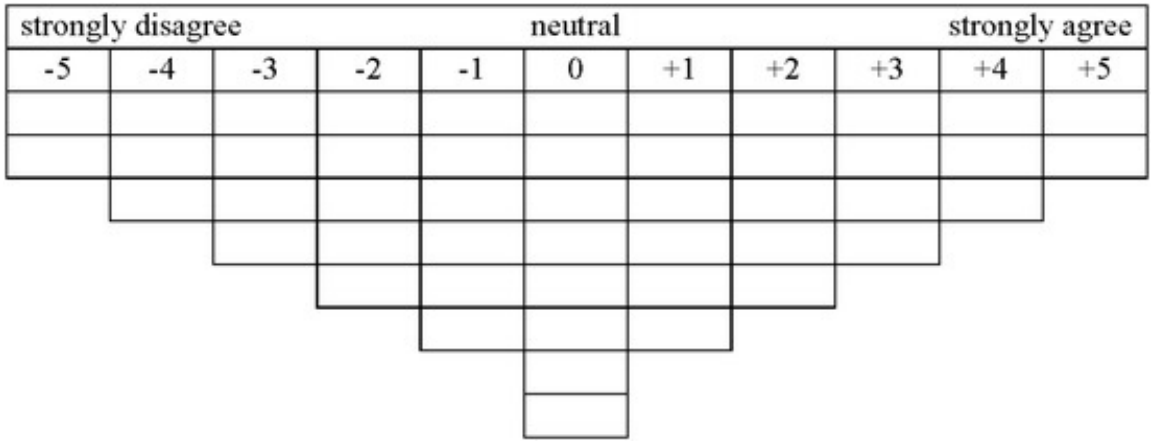

Figure 3: Example Q-sort ranking grid

4. Conduct a follow up interview with participants directly after they finish the Q-sort (step 3).
5. Complete a factor analysis on the completed Q-sorts. Factors that emerge show clusters of highly correlated Q-sorts that have assigned similar values on the distribution board to each statement in the Q-set. An 'ideal sort' will be created for each factor by essentially averaging the similar Q-sorts described by each factor. The 'ideal sorts' are a single Q-sort that represents the viewpoint of a particular factor.
6. Transcribe and analyze interviews from step 4.
7. Interpret factors by looking for patterns amongst Q-sorts and interviews (steps 3 and 4) in each factor group. The interpreted factors describe the perspectives towards the research topic.

Anticipated Results

Q is an inductive and emergent process. The point is for the researcher to not introduce their own framework or understanding, but rather to elicit those from the participants. I anticipate that I will find multiple perspectives with several areas of overlap between perspectives.

Schedule for Completion

I will complete this thesis on the following timeline:

Spring 2020:

- Write, revise, and defend proposal
- Submit IRB
- Apply for Huxley Research Grant
- Identify 'preliminary' interview participants and begin interviews

Summer 2020:

- Finish 'preliminary' interviews
- Determine Q-set statements, identify additional participants, and administer the Q-sorts and 'follow-up' interviews

Fall 2020:

- Administer the Q-sorts and 'follow-up' interviews
- Data analysis

Winter 2021:

- Data interpretation
- Write draft thesis
- Determine editing plan with committee

Spring 2021:

- Edit and revise thesis
- Defend thesis
- Submit final thesis

Budget

1. Detailed budget:

Item	Number	Reason	Amount
$50 gift cards	4	The methods I will use for my thesis research require considerable time and commitment from study participants. As an incentive to encourage participation, I will put participants names in a drawing for these gift cards.	$200
Q method software ($99/month)	3	Due to COVID-19 social-distancing guidelines, participants will complete the Q-sort online. I will set up the Q sort using the Q Method Software (https://qmethodsoftware.com/) or a similar program. A three-month subscription will give me adequate time to complete this study.	$297
Total required costs:			$497
Total requested funding amount:			$497

2. Funded items: N/A
3. Pending requests: N/A
4. If my request for funding is not approved in the requested amount, I will reduce the amount of gift card incentives available. Because this research requires considerable time and commitment from the participants, I do want to provide adequate incentives to encourage participation. If I do not receive adequate funding to cover the Q method software, I will use a free online Q-sort program called FlashQ. This program requires participants to have a specific version of Adobe Flash software and the interface is not as easy to use as Q Method Software. This might affect the quality of my final results if participants have a hard time using the program.
5. I intend to cover the total budget amount $497 with funds from the Huxley Small Grant.

Works Cited

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