

# Carbon Tax Calculator to Foster Informed Voting

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## ABSTRACT

A string of Supreme Court decisions has allowed a massive influx of money into the political processes of the United States. The resulting rapid increase in the amount of biased information has made it difficult for Americans to find relevant facts that they can trust to help them decide on political issues. We have a vision of using online tools to introduce facts into the political sphere in ways that are transparent and fair, and that hold the producers of facts accountable for the information they provide. As a prototypical example, we are working on a calculator for a revenue neutral carbon tax proposal in the state of Washington. We will augment the tool with several novel features aimed at facilitating voters' understanding of the policy and its impacts. To this end we will employ a value sensitive design approach to create the features and evaluate how effective they are at supporting the values people desire from political information sources.

## Author Keywords

Value Sensitive Design; politics

## INTRODUCTION

Several recent United States Supreme Court decisions [1] have significantly weakened campaign finance laws. Corporations and wealthy individuals have taken advantage of these changes by massively increasing their campaign contributions. Spending in 2012 rose to more than one billion dollars, about three times the amount spent in 2008 [8]. This money largely goes to advertising aimed at swaying the public vote towards the preferred outcome of the donor.

The result of this system is a political sphere dominated by a large number of extremely biased and polarized information sources. For citizens it is almost impossible to find information that they can trust in order to make informed decisions about the issues they are supposed to vote on.

The goal of this project is to set a precedent for quality of political information that supports the values that people desire from their information sources - in particular the values of transparency, accountability, and impartiality. This specific project deals with a calculator tool for a revenue neutral

carbon tax swap policy designed by the Carbon Washington organization that may be voted on in the near future. However, we hope that the features developed will be transferable to many other political issues.

The Carbon Washington revenue-neutral carbon tax proposal is composed of four main parts:

1. reducing the state sales tax,
2. funding a tax rebate for low income households,
3. eliminating a business tax for manufacturers,
4. and instituting a tax on fossil fuels.

Revenue-neutral means that the total amount that the Washington state government raises from taxes every year will not change significantly as a result of this policy the revenue reductions (1 and 3 above) and the additional spending (2) will be balanced by the new revenue source of the tax on fossil fuels (4).

The calculator is meant to inform stakeholders about the estimated effects of this policy on their interests. For example, individuals will be able to see how the different tax changes will affect their household finances. But we do not want this tool to be another element of the partisan misinformation campaigns described above. Rather we hope to design a tool that a majority of stakeholders trust to give reliable, accurate information that will allow them to vote on the policy knowing that they have an adequate understanding of its implications. To effectively incorporate the values mentioned above into our tool, we will make use of Value Sensitive Design techniques throughout the design process.

## CONCEPTUAL INVESTIGATION

To get a better sense of the landscape of ideas that could go into this project, we began with a conceptual investigation of the stakeholders and values implicated in the calculator.

## Stakeholder Analysis

We brainstormed a list of stakeholders in the project and analyzed the ways they could be affected by the tool. Then we synthesized values from these effects and determined the value tensions among the stakeholders. This work is shown in Figures 1 and 2.

As we can see, all stakeholders are interested in having a tool they can trust that is transparent, accountable, and impartial. Citizens are divided on the issue of sustainability depending on what they think about climate change. All citizens value economic strength, however some view sustainability

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Direct Stakeholders	Benefits	Harms	Values	Tensions
• All	• Better understanding of the policy	• Deceived by the information provided	• Transparency • Impartiality • Accountability • Usability	• Personal positions on sustainability
• "Green" citizens and businesses	• Portrayal of carbon tax is positive	• Portrayal of carbon tax is negative	• Sustainability • Economic strength	• Usability for other stakeholders • Non-green economic strength
• "Non-green" citizens and businesses	• Portrayal of carbon tax is negative	• Portrayal of carbon tax is positive	• Economic strength	• Usability for other stakeholders • Green sustainability
• Wonks	• More detailed information to analyze		• Detail	• Usability for other stakeholders
• Journalists	• Could have a popular article	• Could have an unpopular article	• Intrigue • Narrative	• Usability for other stakeholders
• Members of marginalized groups	• Portrayal of policy is positive • Website is accessible	• Portrayal of policy is negative • Website is not accessible	• Equity	• Usability for other stakeholders • Economic strength

Figure 1. Direct stakeholder analysis.

as a critical piece of economic strength. Policy wonks and journalists have particular values that relate to their work. Because different users have different needs, their usability values may be in conflict. Members of marginalized groups are often in lower income brackets, so they would benefit from a calculator that portrays the carbon tax policy more positively, since it includes a rebate for low income families. Also, they may have particular usability needs (e.g. blind or low vision people).

Indirect Stakeholders	Benefits	Harms	Values	Tensions
• All	• Constituents have better understanding of the policy	• Constituents deceived by the information provided	• Transparency • Impartiality • Accountability	• Official positions on sustainability
• "Green" politicians and organizations	• Portrayal of carbon tax is positive	• Portrayal of carbon tax is negative	• Sustainability	• Non-green economic strength
• "Non-green" politicians and organizations	• Portrayal of carbon tax is negative	• Portrayal of carbon tax is positive	• Economic strength	• Green sustainability
• Social justice politicians and organizations	• Portrayal of policy is positive • Website is accessible	• Portrayal of policy is negative • Website is not accessible	• Equity	• Usability for other stakeholders • Economic strength

Figure 2. Indirect stakeholder analysis.

For the indirect stakeholders, the value assignments and tensions play out similarly. Many of the aforementioned values are still valued for these stakeholders, but this is often in terms of how their constituents or members would be affected.

## Researcher Stance

To clarify our roles as researchers on this project, we also explored our values, the designer values, in relation to the calculator. We personally value sustainability and equity. We also value economic strength, but through sustainability with the idea that continued human endeavors depend on preventing severe climate change. However, we also value the explicitly supported values of this project in terms of fostering a healthy political system in which citizens can vote confidently with a reasonable belief that they can trust the information they have received. Therefore, we are putting aside our biased personal values for this project to design a tool that all stakeholders will hopefully deem credible.

In the following sections we'll take a more in depth look at the philosophical conceptions of the three key values in order to get a better idea of what our tool needs to support.

## Transparency

The following two definitions offer conceptions of transparency that will be relevant to the work of this project. Moser offers the definition "to open up the working procedures not immediately visible to those not directly involved in order to demonstrate the good working of an institution" [5]. Another definition is "the disclosure of information by an organization that enables external actors to monitor and assess its internal workings and performance" [2].

Therefore, users should be able to access the internal workings of our tool in order to verify that they are in fact calculating the values correctly. This appears to be easy since the Javascript code for the website can be viewed directly in a browser. However, a key part of transparency for our purposes will be comprehensibility. Not all users are going to be able to understand Javascript, so we need to somehow expose the code behind the calculations to demonstrate proper computation in a way that is accessible to stakeholders who do not know programming.

## Accountability

Two definitions of accountability are "the sense of individual responsibility and concern for the public interest" [6] and "public accountability involves answering, through various mechanisms from newspaper reports to hearings, public concerns about administrative activity" [7].

This will be a difficult value to design for - the first definition offers accountability as a kind of spiritual guide to follow to make sure anything that you do is in the public interest. The second definition is more practical and suggests that we design features that allow us to answer to criticisms from users in a public setting.

## Impartiality

John Stuart Mill defined accountability as "being exclusively influenced by the considerations which it is supposed ought to influence the particular case in hand; and resisting the solicitation of any motives which prompt to conduct different from what those considerations would dictate" [4]. Another possible conception is "not that everyone receive equal treatment, but rather that everyone be treated as an equal" [3].

To these ends we will need to make sure that as we try to provide more and more information through new features we are going about this in a balanced fashion - not prioritizing some information agendas as more legitimate than others. And of course Mill's definition restates our promise to leave out personal values other than the explicitly supported values in the design.

The next sections will outline future work for this project, which will consist mainly of a technical investigation, and hopefully an empirical investigation as well if time permits.

## TECHNICAL INVESTIGATION

To inform the design of specific features, we will develop several value scenarios to see what different stakeholders may be interested in having access to. In the meantime, just brainstorming about how to support some of the values has led us to several features that may be worth exploring:

- Showing statewide impacts of the policy in interactive graphs would be helpful to provide a greater understanding of the societal impact, which would be especially helpful for policy wonks and journalist, but also other citizens.
- A "where did this number come from?" tooltip would support transparency by providing some accessible window into the underlying calculations that produce the values seen in the interface.
- Videos explaining how each section of the calculator works could provide transparency about the inner workings through a different medium that may be preferred by some users.
- Showing estimates of how much carbon dioxide would be saved through the policy would help to balance out the current financial focus of the tool.
- Visualizations of the uncertainty in the estimates of the calculator would serve transparency by acknowledging that these values are indeed estimates and real life effects may be different.

#### EMPIRICAL INVESTIGATION

If time permits, the project will include an empirical investigation to determine how well the features from the technical investigation support the values of the stakeholders. Did users think the calculator was fair? Did they understand how the values were being calculated, or at least did they feel like this information was accessible if they wanted to know about the underlying computations? This would involve surveys and interviews with people who have already used the tool, as well as laboratory tests to obtain more detailed information on users during the interaction with the tool.

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