



Citizen preferences for possible energy policies at the national and state levels



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ABSTRACT

Without knowledge of citizen preferences, policy makers most often rely on their intuition to infer such preferences or on biased information provided by special interest groups. Using a choice-modeling approach, the study features two large-scale, field-research projects—one done nationally in the US, and another composed of separate data collection efforts across eight states where energy policies have a high profile in public discourse. The results suggest four outcomes of energy policies are most important to citizens at the national level: 1) environmental quality, 2) energy costs, 3) job creation, and 4) greenhouse gas emissions. This pattern of importance for the outcomes of energy policy persists across important demographic groups including those related to political-party affiliation. At the state level, the four preferred outcomes of energy policies seen at the national level also appear—although in a different order of preference in some states. Further analysis of citizens' willingness to change energy policy at the state level suggests that risk aversion characterizes citizens' views about revising energy policy.

1. Introduction

Conflict characterizes efforts to develop policies that result in cheap, secure and clean energy (Griffin, 2014, p. 3). Although technology improvements related to fracking used in oil and gas exploration have boosted the ability of markets in recent years to deliver cheap and secure energy in what is being termed the Shale Revolution (Braziel, 2016), markets continue to struggle in delivering clean energy cheaply and in sufficient quantities to be considered secure (Lee et al., 2016).

Policymakers contend with uncertainty pertaining to public attitudes and acceptability of outcomes of energy systems (Butler et al., 2015). This study offers an empirical approach for reducing uncertainty in policymaking by capturing citizen preferences for possible energy policies at the national and the state levels.

This study features two large-scale, field-research projects—one done nationally in the US, and another composed of separate data collection efforts across eight states where energy policies have a high profile in public discourse. In this way, the study reports on how citizens view the outcomes of energy policies made at two primary levels of government. This study also offers insight on how citizens perceive the risk associated with possible energy-policy changes and how citizen perceptions align with concepts from behavioral economic theory (Thaler, 2015).

2. Background

2.1. Coping with uncertainty in policymaking

Policy makers are bombarded with survey information that presents the views of those who have the most to gain or lose if a policy is implemented (Leggett, 2014). Such survey information is usually presented as part of lobbying efforts. Here, the survey information is presented as free-floating polling numbers lacking context or any trade-off for citizens. In addition, public opinion surveys key-in on sound-bite issues and fail to deal with detailed policy options and do not include any meaningful discussion about trade-offs.

Despite the low-level of valuable information on citizen preferences in energy policy currently available to policy makers, energy industry consultancies now understand the implications of a networked world for extractive companies and for energy service companies. Accenture notes the coming importance of public engagement in energy policy:

"In the future, consumers will need to understand the trade-offs and competing objectives in energy policy to provide suitable support to political officials and regulators. Governments need to find ways to educate and include the public in choices for the longer-term changes. It is critical that consumers be aware that there are no simple solutions and that any choice will have direct implications. This awareness will allow

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“policymakers to begin a more informed debate about future energy policy.”

(Accenture, 2010)

Accenture's call implies that citizens can rapidly learn about issues related to energy and the environment. Obtaining the expertise of knowledgeable elites from across society would be attractive to those scholars advocating “cognitive democracy” as a means for solving complex issues facing society, such as energy policy (Farrell and Shalizi, 2015; Noveck, 2015). By comparison, those advocating collective intelligence or crowdsourcing cite variations of Condorcet's Jury Theorem when asserting that large groups perform better when making a decision (although large groups will not be infallible) (Dietrich and Spiekermann, 2013; Landemore, 2012; Surowiecki, 2004). In such crowdsourcing, each person votes independently and each voter is assumed to be competent. Importantly, each voter receives equal weighting in the tabulation and analysis of the votes.

2.2. Deriving citizen preferences through choice modeling

Such equal weighting is a hallmark of survey research in social science and in commercial marketing research. Conjoint analysis is one approach for deriving the relative importance among product attributes for customers in new product development (Hair et al., 2010). It is particularly effective in informing marketing managers how to improve current or planned offerings (McQuarrie, 2016, p. 277) because it puts respondents in a series of trade-off situations.

Conjoint analysis is a decompositional modeling technique developed on the idea that individuals can evaluate objects based on the distinct amounts of value provided by each attribute (Hair et al., 2010). Conjoint analysis can be fielded in a variety of ways and can return ranked data, rating data, or merely the self-stated importance weights given by respondents to different features. This latter approach is termed self-explicated conjoint.

In pursuit of measuring citizen policy preferences in trade-off situations, Peterson put respondents in trade-off situations in order to gauge the relative importance citizens accord to different dimensions of living in society, such as freedom, conservation of the environment, economic opportunity and cost of living (Peterson, 2006). This research utilized conjoint analysis and featured primary data from respondents in three countries (the US, France and Turkey).

A conjoint study can also be designed as a discrete choice experiment (DCE) through the construction of a hypothetical market that can be administered in the field using a survey approach (Louviere et al., 2006; Carson et al., 1994; Louviere and Woodworth, 1983). DCE methods are a method of stated preference elicitation. They consist of several choice sets with each set comprised of mutually exclusive hypothetical alternatives from which respondents choose their preferred one. Because these configurations have been mathematically generated, the importance weights for the entire groups can be derived. By comparison, conjoint analysis allows modeling at the individual level, so that the importance weights for the attributes and the varying levels of each attribute are the principal output of the conjoint analysis. Despite this limitation, Bayesian methods with bootstrapping can be employed with discrete choice studies, so that the importance weights at the individual respondent-level can be estimated. Policy researchers have applied DCEs for a variety of purposes, such as 1) deriving natural environment valuations (Hoyos, 2010), 2) estimating preferences for green-energy type (Borchers et al., 2007), 3) quantifying public preferences for the siting of wind farms, (Álvarez-Farizo and Hanley, 2002), as well as informing decision-making in healthcare policy (Lancsar and Louviere, 2008).

In sum, DCEs offer policymakers a sophisticated method for deriving citizen preferences for policy outcomes. The analysis of DCEs offer researchers the relative importance weights for separate dimensions of comprehensive policies that might be implemented. In this

way, the results of DCEs represent collective intelligence about the public interest in policy domains, such as energy and the environment. The use of DCEs in policy research takes advantage of policymakers' and their staff members' expertise in interpreting the outputs of quantitative statistical methods to derive the aggregated value individuals might have for policy outcomes. DCEs offer citizens a means to participate directly in policymaking by informing policymakers about citizen priorities.

3. Research questions

Prior to conducting the discrete choice experiment (DCE) in field research, we set the research objectives and then conducted supporting qualitative research (Louviere et al., 2006). The qualitative research phase was combined with a literature review of national political parties' published stances on energy and environmental issues. We ultimately wanted to assess the preferences of citizens for energy policy components via a survey. Too often in survey research, respondents are presented with a series of individual items and simply asked to rate how important each item is to them. The problem with this approach is that it does not account for the trade-off context for most choices humans typically encounter, so it fails to capture the reality of actual decision-making and the mental processing being used.

Our first objective was to assess how preference for environmental outcomes of energy policies compare to preferences for outcomes for consumers' energy consumption and for economic development in society. Our second objective was to conduct sub-group analysis in each study to better understand the possible moderating effects of important demographic variables, such as political-party affiliation. In this way, we intended to better understand the public interest by assessing the degree of fragmentation or unity about priorities for energy policy outcomes. Our third objective was to assess bounded-rational views of citizens when put in trade-off situations concerning risky choices (Jones et al., 2006; Kahneman and Tversky, 1979). In other words, we intended to better understand how citizen support for policy choices would be characterized by risk aversion.

Translating our objectives into research questions results in the following:

RQ1: How will environmental outcomes of energy policy compare in preference to outcomes for energy consumption and for economic development?

RQ2: What would be the pattern of preferences across sub-groups defined by political-party affiliation?

RQ3: How much risk-aversion will citizens manifest in anticipated response to changes in outcomes of energy policies?

4. Study 1

4.1. Developing components of a comprehensive federal energy policy

We conducted a series of in-person and phone interviews with staff members of elected representatives in Congress, as well as with academics, and leaders of NGOs focused on energy issues, such as the Center for the New Energy Economy (based at Colorado State University). Additionally, researchers interviewed author and environmentalist Auden Schendler, Vice President of Sustainability at the Aspen Skiing Company. These interviews began in the April of 2012 and continued up to the deployment of Study 1 (fielded nationally in September 2013). After analyzing the content of these interviews, researchers decided to focus on energy and environment elements of the two dominant political parties in the US. Accordingly, researchers used the 2012 Democratic Party platform (Democratic Party, 2012) and the Republican Governors Public Policy Committee's (RGPPC) energy policy proposals (RGPPC, 2012) to develop the focal policy outcomes for the discrete-choice task in the national survey of Study 1.

In general, the Democrats and Republicans addressed similar issues,

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