

## Introduction

When issues, such as energy policy, are complex and when acting on knowledge requires significant change in values or policy, knowledge rarely leads directly to action. Information must be shared in multiple forums, and arguments must be made over time, and with various decision makers. Rhetoric joins with science to convince decision makers.

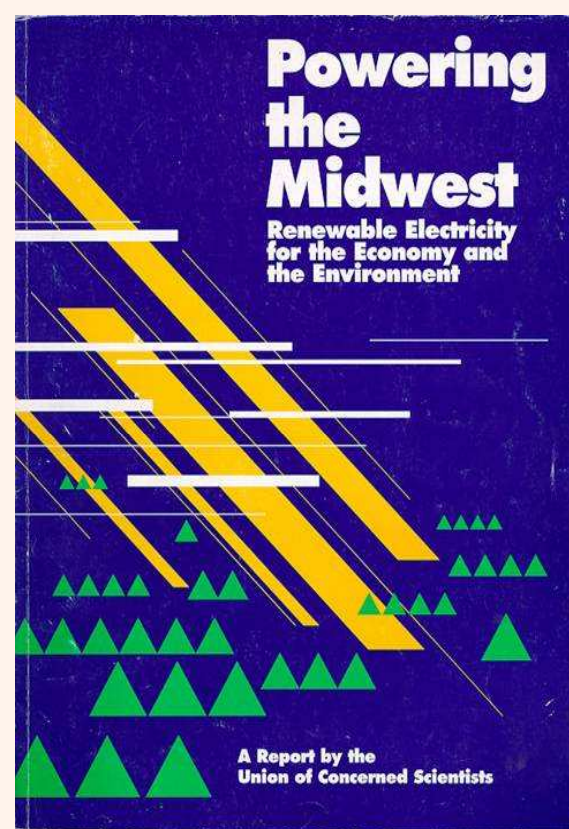
Knowledge about rhetorical strategies is most developed as it applies to the single instance, such as a report or a speech. Yet, even the perfectly developed argument or the perfect scientific study are unlikely to have policy-changing impact. Understanding of the uses of documents in policy change must look beyond single documents to networks of documents and groups.

### Research questions:

- How does (energy) knowledge become (energy) policy?
- How do documents influence policy and action?
- How do individual documents work with others to promote change?

## Methods

The uses of a 1993 report on renewable energy by the Union of Concerned Scientists (UCS) are traced over an 8-year period. These uses include modifications in new genres, such as newsletter articles, websites, a PowerPoint presentation, and ultimately a new edition of the report published by a second advocacy group. The main source of information is the UCS itself as it reports on changes in energy use in the Midwest and links the changes to advocacy efforts in which the report plays a role.



**Fig. 1 1993 Report.** The University of Concerned Scientists (UCS) researched the feasibility of generating electric power from wind, biomass, and solar energy and published the results in *Powering the Midwest*. The publication was just the start of a variety of advocacy efforts.

Textual analysis is also used to compare the original report to its variations. For example, the tables of contents of the 1993 and 2001 reports are compared to show how the topics and issues have evolved, and style is compared as it becomes increasingly urgent.

Case study and textual analysis are informed by rhetorical theory, especially as it addresses the canon of “delivery,” or presentation. The concept of delivery is expanded to include uses of documents after publication.

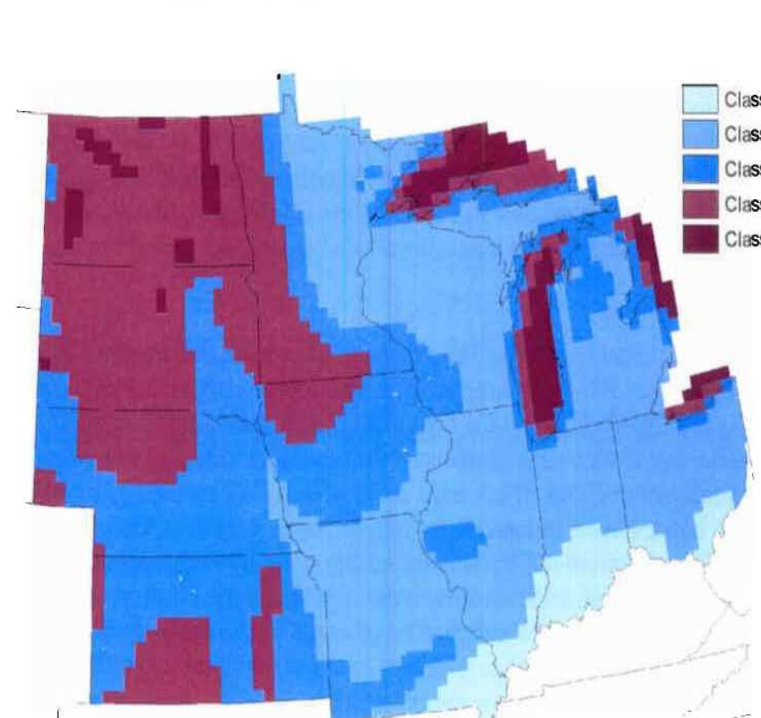
## A “rhetorical exigence” leads to research

A rhetorical exigence is an urgent situation that discourse can modify. Fossil fuels are linked to global warming and geopolitical instability. But renewable energy sources, such as wind, sun, and biomass, are perceived to be expensive and impractical. Discourse can modify this perception and also show the environmental consequences of fossil fuels. A good argument needs evidence. A research question is defined: Where and how is renewable energy feasible in the Midwest?

## Science and advocacy work together

One key to policy change is good science. But when issues are complex, *facts do not speak for themselves*. They need to be interpreted and contextualized. Likewise, arguments need data to give them power. One question related to the broad research question is whether and where the wind blows enough in the Midwest to make wind generation of electricity efficient. Some research is original; some is collected from related studies.

Wind resources  
Pacific Northwest Laboratory wind map



**Fig. 2 Wind Patterns in the Midwest.** Wind maps enable utility companies to make decisions about locating wind turbines. Wind, solar and biomass data is analyzed for each state in the Midwest.

The original problem was economic as well as technical: is renewable energy cost effective? Economic analysis is included in the report.

Cost of electricity	New power plants (1995-2000)													
	Coal		Gas Combined Cycle		Gas Turbine		Wind		Biomass		Distributed Generation			
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High		
Capital (\$/kW)	1500	1800	500	600	350	400	950	1050	1000	1800	3700	6500	1350	3500
Operating (¢/kWh)	1.3	1.6	0.6	0.6	1.0	1.0	1.0	1.5	0.7	1.9	0.2	0.5	0.3	0.75
Fuel (¢/kWh)	0.8	2.0	2.2	5.0	3.9	9.0	N/A	N/A	2.1	4.3	N/A	N/A	N/A	N/A
Duty Cycle (%)	Base	Base	Inter	Inter	Peak	Peak	N/A	N/A	Base	Base	N/A	N/A	N/A	N/A
Capacity Factor (%)	85	65	45	35	15	10	43	25	85	65	24	19	37	15
Baseline Cost of Electricity (¢/kWh)	4.2	6.9	4.1	7.7	7.7	14.8	3.6	6.5	4.2	9.5	18.7	41.5	4.7	28.7
Adjustments (¢/kWh)														
Debt Financing	-0.3	0.0	-0.2	0.0	-0.4	0.0	-0.3	0.0	-0.2	0.0	-2.5	0.0	-0.6	0.0
Tax Credits	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	-0.6	0.0	-1.6	0.0	0.0	0.0
Transmission	0.1	0.5	0.2	0.9	0.0	3.0	0.0	1.2	0.0	0.2	-6.5	0.0	-2.1	0.0
Range (¢/kWh)	4.0	7.4	4.1	8.6	7.5	17.8	2.7	7.7	3.4	9.7	8.1	41.5	2.0	28.7

The “bottom line” shows that renewable energy may sometimes cost less than coal.

**Fig. 3 Numbers from economic analysis lead to the claim that renewable energy may be cost effective.**

## The report is used for 8 years

### In the field

UCS advocates use the report as they talk with utility companies, legislatures, and citizen groups. The document, with its convincing data, has become a tool of persuasion.

**The report in Minnesota**  
UCS linked with citizen groups and rural electric co-ops

- Results**
- 1,200 customers committed to wind energy with green pricing
  - pilot project--3 turbines by one co-op

**The report in Iowa**  
UCS linked with citizen groups and legislators

- Results**
- Defeated repeal of Iowa law mandating utilities to use some renewable sources
  - SEED Coalition formed
  - Legislative proposal to strengthen the law

### In other genres and media

The information from the report is modified and distributed:

- UCS **newsletter articles** tell the outcomes
- Other **related reports** carry the message to different audiences
- A **website** includes changing information
- A **PowerPoint presentation** lets local groups download and use information in their own education and advocacy efforts
- Press releases** keep the news of renewable energy and projects as a topic in public conversation
- Email messages** to members of UCS who have declared an interest in renewable energy keep the topic in mind



**Fig. 4. Website.** The website “pushes” the information to visitors, some of whom do not have particular interests in renewable energy. Such efforts develop public understanding.

In addition to doing the research and preparing the report, UCS accepts responsibility for distribution, diffusion, and circulation.

## UCS engages others

A 2001 version of the report is published by the a Midwestern organization, the Environmental Law & Policy Center, with a credit to UCS. The Midwest group focuses on the Midwest while UCS expands its initiatives.



**Fig. 5 2001 Report.** The subtitle identifies the report’s purpose as action, the next step in policy change. This report uses data and economic analysis, but its advocacy intention is clear: to provide a “blueprint for producing economically robust and environmentally sound electricity.”

UCS self assessment (2003): “We’ve played a significant role in winning support for renewable energy in key federal electricity-restructuring bills and in laws enacted recently in a number of states.”

## Conclusions

A change in policy and behavior about a major issue such as energy does not occur once research makes the desired direction clear nor once a report is published. The process of turning energy knowledge into energy policy is long term, involves direct action as well as research and writing, engages multiple people and organizations, and uses multiple genres and media.

The report is one component in a web of strategic actions. It may be the beginning of a series of actions aimed to change policies, values, and behavior.

## References

Brower, Michael C., et al. *Powering the Midwest: Renewable Electricity for the Economy and the Environment*. Cambridge, MA: Union of Concerned Scientists, 1993.

*Repowering the Midwest: The Clean Energy Development Plan for the Heartland: Executive Summary*. Environmental Law & Policy Center, et al. Chicago: ELPC, 2001.

Rude, Carolyn D. *Toward an Expanded Concept of Rhetorical Delivery: The Uses of Reports in Public Policy Debates*. *Technical Communication Quarterly*, Vol. 13, No. 3: pages 271-288. 2004