

# REACHING ACCORD ON MEETING WATER SUPPLY NEEDS: CITIZEN & DECISION MAKER PERSPECTIVES

Aaron S. Routhe<sup>1</sup>, Emily N. Heinrich<sup>2</sup> and David L. Feldman<sup>3</sup>

---

*AUTHORS:* <sup>1</sup>Graduate Research Assistant, Department of Sociology, University of Tennessee, 901 McClung Tower, Knoxville, TN, 37996;

<sup>2</sup>Graduate Research Assistant, Department of Biosystems Engineering and Environmental Science, 2506 E.J. Chapman Dr., Knoxville, TN, 37996; <sup>3</sup>Director, Southeast Water Policy Initiative, The University of Tennessee, 311 Conference Center Building, Knoxville, TN, 37996.

*REFERENCE:* *Proceedings of the 2003 Georgia Water Resources Conference*, held April 23-24, 2003, at the University of Georgia. Kathryn J. Hatcher, editor, Institute of Ecology, University of Georgia, Athens, Georgia.

---

**Abstract.** Like many areas in the Southeast, water supply decisions are failing to keep up with population and economic growth in Cumberland County, TN. Despite six technically feasible options, social factors such as the attitudes of residents toward building a new dam and the conflicting views of decision-makers about how to meet water supply needs are impeding the implementation of a regional strategy for managing the county's water resources. Better understanding these social impediments could improve the effectiveness of local and regional water management strategies. Preliminary results suggest that when conflict arises over reconciling economic growth and environmental protection concerns, decision makers must move beyond considering only technical or engineering solutions for meeting water supply needs and contend with the underlying values of stakeholders involved in the water policy process.

## INTRODUCTION

Citizens and decision-makers in the southeast United States increasingly find themselves embroiled in water resource disputes as they simultaneously try to economically grow and achieve environmental protection in their communities (Arrandale, 1999; Feldman, 2000). Established in 2001, the Southeast Water Policy Initiative (SEWPI) employs an interdisciplinary approach to identify environmental and social factors that contribute to water disputes as well as impede their resolution. The Initiative's mission is to facilitate the development of long-term, adaptive water policies and to further assist communities in anticipating, averting, and resolving water resource disputes.

SEWPI's objective is to develop practical policy and management tools for addressing the rising number of water supply conflicts in the historically

water-abundant Southeast. This paper provides an overview of environmental and social factors driving a water dispute in Cumberland County, Tennessee – an important case study that exemplifies changing conditions in the region. We discuss the theoretical frameworks of two ongoing projects – one focusing on county residents, another on decision-makers.

## THE PROBLEM & PROJECT METHODOLOGY

While there are social, economic, and political aspects to Cumberland County's water supply dispute, citizens and decision-makers are also cognizant of environmental factors such as geography. Located on the eastern edge of Tennessee's Cumberland Plateau, the county lies atop limited groundwater resources. Historically, the county's communities captured stream-flow in small-scale impoundments to meet water supply needs. Since 1992, when one of the county's five utility districts proposed a new dam on Clear Creek, decision-makers have struggled to craft and implement a long-term strategy for meeting the county's water supply needs – despite engineering and technically feasible options. While geography and low stream carrying capacity limit the county's new supply sources, social, economic, and political factors exacerbate efforts by citizens and decision-makers to reach accord.

Water supply decisions have failed to keep up with population and economic growth in the county. Moreover, without changes in the process of how decision-makers choose future supply sources, existing inequities in who pays for water will be exacerbated. County residents pay considerably more than their counterparts do in Crossville – the county seat. Many citizens and interest groups are aware that the county is encountering difficulty in meeting anticipated demands.

One project assesses factors affecting public support for how to meet county water supply needs. In addition, it identifies which of six policy options county residents prefer and their expressed support or opposition for a

regional water authority. Focus groups conducted in the fall of 2002 confirmed residents were most familiar with the policy option of building a new dam. Resident's beliefs about the positive and negative outcomes of building a dam were incorporated into a mail survey questionnaire. The questionnaire was mailed to 1100 residents, 18 years or older, using a four-wave survey approach. After deducting ineligible, deceased, non-deliverable, and refusals, 438 of 944 eligible and completed questionnaires were returned for a 46.4% response rate.

The survey project tests a number of theoretical and policy related hypotheses. The theoretical hypotheses test linkages between the determinants of peoples' intentions based on the Theory of Planned Behavior. For example, residents who express more positive attitudes about building a new dam, who believe other people important to themselves think they should support it, and who believe it is easy to express support for building a new dam – are more likely to express personal intentions to perform behaviors expressing support for building a new dam in the county. Policy related hypotheses include: 1) most residents favor building a dam to meet the county's supply needs, and 2) support for a regional-based effort to manage the county's water resources will vary between city and county residents.

Another project examines the perspective of decision makers on the county's water supply problems. Decision makers hold contradictory notions on which option, if any, should be chosen for meeting future water supply needs (Rich, 1997). However, before any option is implemented accord must be reached. In this project, SEWPI is assessing decision makers' views regarding the advantages and disadvantages of these options. Face-to-face interviews will be conducted with approximately eighty decision makers from four groups: (1) utility district board members and managers, (2) city and county officials, (3) state and federal agency officials, and (4) representatives of environmental, conservation, and recreation organizations from in, and around, the region. The primary purpose of the interviews is to determine which option decision makers most favor and explore their reasons.

Based on preliminary observations, we are testing four hypotheses in the formal interviews. The first is that utility districts and local officials are more likely to support structural options. Second, environmental, conservation, and recreation groups will be less likely to support any structural option. These groups, however, will support any option that promotes

conservation, limits growth, or encourages regional cooperation. Third, state and federal agencies will support any option that has consensus. Finally, contention between the county and city for control over water supply options will block accord. While some citizens embrace a regional approach, most decision makers continue adhering to a fragmented, community-by-community approach for managing water resources.

An online interactive web site will display the projects' results. Information available will include reports, graphical displays of findings, and maps using a Geographic Information System (GIS). The GIS atlas will display comprehensible spatial relationships including water dependent resources and socio-political data on water use.

## THEORETICAL FRAMEWORK

The dominant paradigm for meeting water supply needs takes a structural approach – building new dams and impounding rivers. It employs a management strategy based on political jurisdictions and emphasizing increased supply for society's needs (Cortner and Moote, 1999). An alternative paradigm employs a holistic approach embracing watersheds, encouraging inter-jurisdictional cooperation, and emphasizing sustainability and demand-side management (Blatter and Ingram, 2001).<sup>1</sup> As we move toward adopting this alternative paradigm, a greater number of attitudes and values about water resources management come into conflict (Donahue and Johnston, 1998). Local and regional decision-makers, historically on the frontline of managing their community's water resources to meet water supply needs, must increasingly navigate the often treacherous waters of arbitrating which values should be incorporated into their community's water policy. If communities desire to reconcile divergent views about water supply, it is important to identify the constraints impeding consensus. The Theory of Planned Behavior (Ajzen, 1985) provides a theoretical framework for identifying these social factors.

In the survey project, we test the utility of this theory by focusing on one possible management option – building a new dam in Cumberland County. This option for satisfying future water supply needs is serving as a catalyst for eliciting peoples' opinions and predicting people's intentions to support or oppose it. TPB suggests that peoples' actual behavior is correlated with intentions they express. Intentions are influenced by attitudes about a behavior, subjective norms – the perceived social

---

<sup>1</sup> Some refer to this new paradigm as a social ecological approach (Ingram, 2000)

pressure to perform or not perform the behavior, and perceived behavioral control – a person’s subjective assessment of how easy or difficult it will be to perform a behavior. TPB suggests each of these predictors of intention have underlying factors, e.g. for attitudes – people’s beliefs about the outcomes of a behavior and their negative or positive evaluation of those outcomes. In general, the theory postulates that residents, who more positively evaluate the outcomes of building a new dam, believe other people think they should support it, are motivated to comply with those wishes, and believe they have the ability and opportunity to support the policy, are more likely to intend to support building a new dam in Cumberland County.

## RESULTS & FINDINGS

For the project examining the citizens’ perspective, two focus groups, comprising twenty (20) residents, were conducted, and a mail survey was sent to 1100 residents, 18 years or older. These were used to identify and evaluate residents’ views about Cumberland County’s water resources, existing management policy, and possible options for meeting the county’s water supply needs. Preliminary findings from the focus groups show that more than 50% of the participants favor building a new dam, 50% identify county residents and water users approving the construction of a new dam, and that there are either no disadvantages to building a new dam or that they only include “dealing with the environmentalists”, the “long permitting process”, and “cost.” The objectives of the mail survey were to: 1) assess awareness of county water supply needs, 2) identify which policy option residents prefer, 3) measure how they view the regional water authority, and 4) examine why they intend to support or oppose building a new dam in the county. Preliminary analysis indicates residents are aware of the county’s water supply needs, prefer building a new dam in the county over other possible policy options, and identify “having the county and city utilities work together” as the best option for meeting the county’s water supply needs.

## MOVING TOWARDS AN ALTERNATIVE PARADIGM: CHALLENGES

Employing the Theory of Planned Behavior to identify social factors influencing public opposition or support for building a new dam enables us to 1) *identify* the public’s preference for *how* to meet future

water supply needs, 2) *evaluate* the factors influencing *why* the public expresses that preference, and 3) *understand* the impediments to reaching accord between management paradigms. Preliminary results suggest that when conflict arises over reconciling economic growth and environmental protection concerns, decision makers must move beyond considering only technical or engineering solutions for meeting water supply needs.

This is significant because the Theory of Planned Behavior can also apply to other water supply disputes across the region and nation. Just as in Cumberland County, Tennessee, decision makers and citizens involved in the ongoing ACF-ACT disputes have failed to reach accord over how to satisfy future water supply needs. For example, these disputes hinge on how to manage two large river basin systems straddling parts of three states. As yet, there is no consensus over how to allocate water supply in order to balance off-stream demands (e.g. public supply and agriculture) against in-stream needs (e.g. freshwater inflow into Apalachicola Bay, Florida), and there is also no agreement over whether, or how, to manage demand for water.

## LITERATURE CITED

- Arrandale, T, 1999. The eastern water wars. *Governing* (August): 30-34.
- Ajzen, I, 1985. From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.). *Action-control: From cognition to behavior* (pp.11-39). New York: Springer.
- Blatter, J. and H. Ingram, 2001. *Reflections on Water: New Approaches to Transboundary Conflicts and Cooperation*. Cambridge, MA: MIT Press.
- Cortner, H.A., and M.A. Moote, 1999. "Setting the Political Agenda: Paradigmatic Shifts in Land and Water Policy," pp. 365-377, in R. E. Grumbine, ed., *Environmental Policy and Biodiversity*. Washington, D.C.: Island Press.
- Donahue, J.M. and B.R. Johnston, 1998. *Water, Culture, and Power: Local Struggles in a Global Context*. Washington, D.C.: Island Press.
- Feldman, D.L., 2000. "Southeastern Water Conflicts: Can a Stakeholder Forum Enhance Long-Term Planning? *Rivers - Studies in the Science, Environ. Policy, and Law of Instream Flow* 7 (3): 191-204.
- Rich, M., 1997. "Water Utilities in Tennessee To Pool Efforts," *The Wall Street Journal*, September 10: S1, S5.