EXPLORING WRITTEN COMMUNICATION TECHNIQUES FOR COMPLEX NATURAL
RESOURCE ISSUES

By

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Many natural resource issues are increasingly complex and multi-faceted, and solutions may not be readily apparent. Increasing public understanding and encouraging public involvement is assumed to create more successful solutions to natural resource problems. However, citizens are often overwhelmed with information, may feel helpless to make a difference, and may perceive issues to be irrelevant or distant. Written communication is an easily accessible, familiar option to aid in increasing public awareness and knowledge. It may also be a useful strategy to help motivate citizens to become further involved in the issue. The purpose of this research was to explore effective written communication strategies for informing and motivating citizens about the option of using wood to generate energy—a complex, technical, and controversial natural resource issue.

To gain in-depth understanding, focus groups were used to review written text that was developed for this research. The text explains the issue of using wood for energy, aims to motivate citizen involvement, and incorporates interesting text characteristics. Three research questions were addressed in the focus groups. Using written, informative, interesting text that explains the option to use wood for energy and aims to motivate citizen involvement: (1) how do citizens perceive the information about using wood for energy, (2) how do citizens perceive the

characteristics of interesting text, and (3) how does the text affect citizens' motivation to become involved? Three focus groups, n=16, were conducted in Gainesville, Florida with citizens who are interested and/or involved in community issues. Participants were mostly female, educated, and over 50 years old. In general, the participants were environmentally concerned. Data analysis of the focus group transcriptions resulted in five themes that address the research questions.

Three themes address the first research question concerning how citizens perceive written text about using wood for energy: mistrust, the right information, and balance of information. The second and third research questions are addressed by two themes: perceptions of interesting text and motivation for involvement. The use of interesting text helped the participants consider the technical information, and the vivid and concrete examples provided the participants with meaningful and relevant information. In addition, many participants were motivated to become further involved in the issue and could imagine themselves taking part in comfortable and informal actions. However, mistrust, misconceptions, and perceptions of bias remain barriers to communicating the issue of using wood for energy through text. Unfortunately, the characteristics of written text that increase interest may also unwittingly increase perceptions of bias. These results suggest that for complex issues similar to using wood for energy and when communicating with a similar audience, communicating and educating through written text is challenging. It should not be the sole outreach effort and may not be the first. Recommendations for improving written text based on the focus group discussions are provided.

CHAPTER 1
INTRODUCTION

As the demands placed on natural resources and environmental systems continue to increase, many communities are faced with an expanding collection of environmental issues. Natural resources issues and decision-making processes no longer have simple solutions and tend to involve the consideration of environmental, economic, and social factors. From decisions about landfill site permits to those concerning renewable sources of energy, each decision involves several factors, different perspectives, and difficult tradeoffs. Some natural resource issues result in divisive situations within communities, where finding satisfactory solutions is timely and costly (Wondolleck & Yaffee, 2000). For example, in Massachusetts, seven years of opposition to a proposed offshore wind farm has been named the "Seaside Civil War" and has cost both sides several million dollars (Cape Wind, 2007).

Citizen involvement in the decision-making process is often perceived to create more democratic and effective solutions (Irvin & Stansbury, 2004; Wondolleck & Yaffee, 2000). Citizen participation allows policies and regulations to reflect citizen values and can help create public support for decisions. While collaborative efforts for resource management are increasing, the public is becoming less engaged in participatory processes (Wondolleck & Yaffee, 2000). Most people have little time to spare to become part of a lengthy process to resolve an issue they know little about. In addition, getting the public motivated to become involved in natural resource decisions can be a difficult task, especially when the issues are perceived as distant and unimportant or when the public is complacent with current environmental situations (Irvin & Stansbury, 2004).

Building on this situation is the lack of American's environmental knowledge; most of the public do not understand or are misinformed about environmental issues (Coyle, 2005). While 50

to 70% of Americans are aware of most environmental subjects (e.g., pollution, habitat loss), a very small percentage, estimated at 1 to 2%, have enough knowledge and skills to be considered environmentally literate (Coyle, 2005). In fact, only one in three Americans can pass a basic environmental knowledge quiz (Coyle, 2005). When the public has little understanding of the issues, their opinions are usually inconsistent and based on emotional responses rather than informed public judgment (Yankelovich, 1991). Informed public judgment is a form of "public opinion that exists once people have engaged an issue, considered it from all sides, understood the choices it leads to, and accepted the full consequences of the choices they make" (Yankelovich, 1991, 6). These types of opinions are likely to be carefully considered, long-lasting, and valuable to decision-makers (Friedman et al., 1999; Yankelovich, 1991). By acting on informed judgments versus raw opinions and through effective participatory processes, the public can help create acceptable solutions to environmental issues.

Environmental educators and natural resource Extension agents are key players in helping communities consider solutions to complex issues. The commonly accepted goal of environmental education is "to develop a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, attitudes, motivations, commitments, and skills to work individually and collectively toward solutions of current problems and the prevention of new ones" (UNESCO, 1975, 3). The Cooperative Extension Service is also an important provider of research-based education and communication about natural resources, agriculture, environmental topics, and community development. As topics have become more complex, educators have developed new techniques to meet the public's needs. For example, public issues education is a helpful framework for communicating and educating the public about controversial issues (Dale & Hahn, 1994).

Educators can engage the public in natural resource issues using a variety of outreach techniques. Outreach techniques are chosen by educators based on program goals, audience needs, and available time and resources (Jacobson et al., 2006). The literature often divides outreach techniques into two main communication channels or delivery methods, based on the flow of information: one-way (or mass media) communications and interactive (or interpersonal) communications (Rogers, 1995; Toman et al., 2006). Rowe and Frewer (2005) also use information flows to divide the concept of public engagement into three categories: public communication, public consultation, and public participation. Table 1-1 shows how communication channels and levels of public engagement can describe various outreach techniques.

Table 1-1. Public engagement levels and communication channels.

Levels of public engagement	Communication channels	Information flow	Example outreach techniques
Public communication	One-way	Source to the audience	Brochures, TV or radio, documentaries, fact sheets, feature stories, flyers, bulletins, informational displays, newsletter
Public consultation	One-way	Audience to the source	Opinion polls, needs assessments, letter to the editor, comment periods
Public participation	Interactive	Between source and audience	Community forums, citizen advisory boards, discussion groups, study circles, guided walks, demonstrations, workshops, informal conservations

(Jacobson et al., 2006; Rogers, 1995; Rowe and Frewer, 2005; Toman et al., 2006)

Educators often use a mixture of delivery methods and techniques to achieve different program goals. For example, a one-way delivery method, such as feature story in a newspaper or magazine, may be used to raise issue awareness, but an interactive delivery method, such as a community forum, would be needed to ensure understanding and engage the public in

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participatory processes. While one-way communications can efficiently reach many people, interactive communication is more effective at ensuring the audience understands the information, forming or changing attitudes, persuading someone to accept a new idea, and creating effective public participation (Rogers, 1995; Toman et al., 2006; Wondolleck & Yaffee, 2000). To fully create informed public judgment, people should be engaged in interactive and deliberative learning opportunities (Yankelovich, 1991). However, one-way communication is useful in the first stage of the process—raising consciousness. This stage consists of not only providing information to raise issue awareness and understanding, but also raising public concern. After a person is aware and concerned about an issue, they can become active in the next two stages, working through and resolution (Yankelovich, 1991).

Statement of Problem

Written materials, such as brochures, informational fact sheets, and pamphlets are often used to raise awareness and increase understanding because they are easy to disseminate to large audiences and relatively inexpensive (Jacobson et al., 2006; Rodewald, 2001). For example, the University of Florida's online database of Extension publications disseminates over 10 million print and electronic educational products each year (University of Florida, 2008). Written materials are also familiar to most audiences and can be used at their convenience (Jacobson et al., 2006). Perhaps for these reasons, Extension agents, natural resource professionals, and landowners have been found to prefer receiving information through printed materials, such as fact sheets (Howell and Habron, 2004; Rodewald, 2001).

However, studies have shown that written materials are not always as effective as educators intend. A recent evaluation of informational brochures, regarding wildlife and conservation, in southern California found that residents who received a brochure in the mail had only minor statistical differences of knowledge and perceptions compared to residents who did

not receive the brochure (George & Crooks, 2006). While the color brochure was specifically designed for these residents, who live in the wildland-urban interface, only 21% of those who received the brochure recalled receiving it seven months later (George & Crooks, 2006). In addition, an evaluation of 11 fire outreach techniques in the western United States found that while more participants were exposed to one-way delivery methods than interactive delivery methods, less than half of the participants who had experience with the one-way methods (ranging from 29 to 47%) rated them as very helpful (Toman et al., 2006). Finally, Kearney (1994) suggests that when environmental issues are large-scale and abstract, such as global climate change, providing technical information that does not relate to people's daily experiences is not effective at creating public understanding and solutions to the problem.

Despite the need to improve their effectiveness, written materials remain an important part of public communication and education about the environment and natural resources. To raise issue consciousness, the public may need information that is easily accessible, uses familiar media, and invites public engagement. Among other communication characteristics, text that is interesting, imaginable, and relates to the reader's existing knowledge allows technical information to be understood in a meaningful and memorable manner (Kearney, 1994). In addition, Young and Witter (1994) suggest that environmental brochures that are high in communication effectiveness (text characteristics assumed to improve readers' interest in and understanding of written information) are most useful for increasing knowledge among readers. Thus, a better understanding about the use of effective communication characteristics in written text and how the public perceives written text about complex natural resource issues is needed.

Research Questions

This research explores effective written communication strategies for informing and motivating citizens about the option of using wood to generate energy—a complex, technical,

and controversial natural resource issue. The objective of this research is to determine how to increase the effectiveness of written text to both explain a natural resource issue and involve the public in the issue. To gain in-depth understanding, focus groups were used to answer three research questions. Using written, informative, interesting text that explains the option to use wood for energy and aims to motivate citizen involvement: (1) how do citizens perceive the information about using wood for energy, (2) how do citizens perceive the characteristics of interesting text, and (3) how does the text affect citizens' motivation to become involved?

Issue Focus: Wood to Energy

The option to use wood to generate energy is a complex and often controversial issue that presented an opportunity to investigate the research questions of this thesis. Many energy facilities are trying to expand their renewable energy portfolios, and communities are making decisions about which renewable sources of energy are available and appropriate to utilize. In areas with an increasing population, demands for additional energy, and nearby forests, wood might be an option to generate heat, power, or electricity. Decisions about which fuel sources should be used for generating energy and how forests should be managed are complicated. Key stakeholders, including the public, often have different ideas about which decision is best. In addition, a lack of public awareness and knowledge surrounds the issue of using wood for energy, and misconceptions are common (Monroe et al., 2007). Thus, the need for public education and community discussions about using wood for energy is apparent.

This research uses written outreach materials from the Wood to Energy Outreach Program, which is designed to facilitate discussions about using woody biomass to generate energy in wildland urban interface (WUI) communities of the southeast United States (Monroe et al., 2007). This combined research and Extension program contains a variety of fact sheets, case studies, and community economic profiles for woody biomass outreach. Selected written

materials were compiled, condensed, and modified into one written document, which was used in focus groups to address the research questions.

      The subsequent chapters address the thesis research questions in journal article format. Chapter 2 investigates how citizens perceive information in written text that explains the option to use wood for energy and aims to motivate citizen involvement. Chapter 3 addresses how citizens perceive the use of interesting text and their motivation to become involved in the issue. Finally, Chapter 4 concludes with a discussion of key research findings, recommendations for practice, and future areas of research. This research contributes to expanding the knowledge of community outreach techniques, effective written communication, and public involvement in natural resource and energy decisions.

CHAPTER 2
USING WRITTEN TEXT TO INFORM THE PUBLIC ABOUT WOOD TO ENERGY
OPTIONS

As communities search for renewable resources to meet their energy needs, wood may be a

potentially viable resource in areas with nearby sources of woody biomass. Similar to other

environmental issues, the decision of whether or not to use wood to generate energy is complex.

The stakeholders, including industries, community leaders, and the public may have different

perspectives about advantages and disadvantages of fuel sources. Citizen involvement is

typically perceived to be an important part of creating acceptable resource plans and solutions

(Irvin & Stansbury, 2004; Wondolleck & Yaffee, 2000). However, a lack of public awareness

and knowledge surrounds the issue of using wood for energy (Monroe et al., 2007). Without

better understanding, public opinions are often based on preconceived ideas and emotions

(Yankelovich, 1991). In contrast, informed public judgment is a type of opinion that occurs when

the public thoroughly considers an issue and potential solutions. These opinions tend to be more

stable and can be meaningful to decision makers. For citizen involvement to be effective and to

begin creating informed public judgment, the public first needs to be aware of the issue, better

understand the factors involved, and motivated to become involved (Yankelovich, 1991).

The Cooperative Extension Service plays an important role in providing research-based

education and communication about natural resources, agriculture, and other environmental

topics. Many of the environmental situations facing communities today are complicated

controversial issues, with multiple perspectives. Communicating and educating the public about

these issues can be a difficult task, one that Extension has recognized by developing strategies

for public issues education (Dale & Hahn, 1994). Many Extension programs use written text,

(e.g., fact sheets, brochures, bulletins) to communicate with audiences; written text can reach

large audiences and is easily accessible and familiar to the public (Jacobson et al., 2006).

However, Extension publications tend to be written in an academic style that may not be interesting or motivating to an audience that is not already seeking information on the topic. In addition, when issues are complex and involve diverse perspectives, traditional styles of written communication may not be adequate. To attract audiences to a topic, help them understand the issue, and motivate them to become engaged, a different type of written text may be needed. The purpose of this research was to examine the strategy of using interesting and informative written text to communicate and educate the public about the option of using wood to generate energy. Specifically, focus groups were used to gain in-depth understanding of the following research question: using written text that is informative, interesting, and aims to motivate citizen involvement, how do citizens perceive information about using wood for energy?

The written text reviewed by focus group participants was specifically designed for this research by compiling information from existing written materials from the Wood to Energy Outreach Program. This integrated research and Extension program was designed to promote public engagement in woody biomass energy decisions (Monroe et al., 2007). The written text accomplished its goal of sharing information about using wood for energy, but themes expressed in all three focus groups highlight the challenges of creating written materials for the public on controversial issues. This article focuses on these concerns to help others overcome similar challenges.

Literature Review

Perceptions and Knowledge of Wood for Energy

Energy decisions, including what types of fuel sources to use for energy and the consideration of wood as a renewable source of energy, are complex. Because energy decisions affect the environment, economy, and society, many stakeholders are involved. These stakeholders often have differing viewpoints, values, and ideas about the "best" solution. In some

situations, a lack of public support has led to renewable energy proposals coming to a standstill. Upreti (2004, 785) states that "public opposition is one of the major obstacles to promote biomass energy." For example, in the United Kingdom, a proposed wood-to-energy project was halted due to citizen opposition (Upreti & van der Horst, 2004). An in-depth investigation found that public mistrust was the main cause of public rejection of the wood-to-energy project. In addition, the public was unfamiliar with biomass energy, which may have led to the opposition (Upreti & van der Horst, 2004). Indeed, the public has little trust for government agencies and big businesses, and mistrust is often expressed by the public as skepticism and fear (Wondolleck & Yaffee, 2000).

Mixed opinions about the use of wood for energy were found in a recent survey of residents in Alachua County, Florida (Monroe et al., 2007). Slightly less than one-third of respondents, or 31%, had negative feelings toward the use of wood for energy, while 41% of respondents were neutral, and 27% had positive feelings. The majority, 54.5%, of respondents considered themselves "not at all knowledgeable" about the issue and was confused about the advantages and disadvantages of wood compared to fossil fuels (Monroe et al., 2007). Nationwide, only one in eight Americans, or 12%, can pass a basic energy quiz, consisting of 10 questions based on information that an average person would likely come across in the media (NEEFT, 2002). In addition, these respondents believed they knew more about energy than they actually did. This national survey also revealed that most people feel that energy education should be increased in schools and by private and governmental institutions (NEEFT, 2002). This type of situation where the public has limited knowledge and mixed opinions can serve as opportunities for Extension agents and environmental educators to help communities learn about and consider available energy options.

Educating about Complex Issues

Several key considerations can help provide an understanding for public education about natural resource issues and their potential solutions: categories of communication, advocacy, balanced messages, and the audience's prior knowledge. First, however, some background on the Cooperative Extension Service and public issues education provides a useful context for considering education about complex and controversial issues.

Since the Smith-Lever Act established the Cooperative Extension Service in 1914, Extension services around the nation have been involved in educating adults in both rural and urban areas. Extension programs address a variety of topics from agriculture and natural resources to youth and community development, and the programs have evolved over time to address society's needs. "Since the 1960s, the focus [of Extension] began to shift away from farm and family management, toward leadership development, community development, socialization, and public affairs" (Birkenholz, 1999, 3). For years, Extension professionals have provided educational programming to help communities learn about important public issues (Dale & Hahn, 1994; Patton & Blaine, 2001).

Public issues education developed in the early 1990s as an approach to help communities gain the knowledge, capacity, and skills necessary to effectively deal with issues that are controversial and contain different viewpoints (Dale & Hahn, 1994). Patton and Blaine (2001) categorize public issues as those with a clearly defined problem and solution, a clearly defined problem with several alternative solutions, or an unclear problem with solutions that are not yet apparent. For the second and third case, the public has an important role to play in framing the problem and defining potential solutions (Patton & Blaine, 2001). Extension agents and other educators may be educating about issues that are not yet on the forefront of the public agenda or those that have already escalated into a controversy. In either case, educators seek to raise

awareness and increase comprehension, as "learning is the cornerstone of any society's ability to address public issues" (Dale & Hahn, 1994, 11). Educators have developed several step-by-step facilitated exercises for addressing public issues, such as alternatives and consequences, the ladder, and contrasting viewpoints (Dale & Hahn, 1994; Goodwin, 1993).

The information presented in Extension programs generally falls into two categories—informative communication and persuasive communication. Informative communication is the practice of sharing, explaining, and instructing with facts. The information is accurate, has an identifiable source, and aims to create mutual understanding and reduce uncertainty (Jowett & O'Donnell, 1999). For example, Florida's Cooperative Extension Service offers 7,000 online publications that cover a variety of topics, such as water regulations, poinsettia care, and prevention of house foreclosure (University of Florida, 2008). Many of these publications fall into the category of informative communication. Often, the audience is seeking this type of information to solve a problem or gain desired knowledge about a topic. Other publications and programs may involve persuasive communication, as they advocate for voluntary adoption of a specific belief, attitude, or behavior (Jowett & O'Donnell, 1999). For example, consider a program that aims to reduce residential water use or involves the removal of invasive plant species. These programs usually deliver more than just factual information; they also seek to change values, points of view, and beliefs surrounding the behavior. For these educational efforts, the audience may not be seeking the information, so getting and holding the reader's attention is a priority (Jacobson et al., 2006). When the purpose of communication shifts from a mutually satisfying and voluntary adoption process to one that promotes one group's objectives, without care or concern for the audience's objectives, the communication becomes propaganda

(Jowett & O'Donnell, 1999). Since propaganda is often manipulative and not in the best interest of society, it is not appropriate in most educational settings.

When educating about controversial issues, walking the line between education and advocacy is an important consideration. Blaine and Patton (2000, 1) argue that "*All* education—no matter what the topic, no matter the form of presentation—carries values (or bias)." Just the act of developing a program means that the program is worth the organization's time and consistent with their mission and goals (Blaine & Patton, 2000). Similarly, Jowett and O'Donnell (1999) consider the fine line between informative communication and white propaganda—when the information is accurate and the information source is identified, but the purpose is to promote a specific ideology. When society agrees with ideology (e.g., violence is wrong), white propaganda is usually not considered a problem in education. However, when educating about complex issues where stakeholders are likely to have different values, beliefs, and attitudes, promoting one ideology may not be appropriate. Educators can quickly lose credibility with the public if they are perceived as advocating for one side of an issue over another. Clarifying to the audience that the program reflects values but does not promote one solution may help the program be more effective (Blaine & Patton, 2000).

Information concerning an issue can be presented as a one-sided message (i.e., where only one side of the argument is discussed) or as a two-sided message (i.e., where supporting and opposing arguments are balanced) (Bright & Manfredo, 1997; McKenzie-Mohr & Smith, 1999; Walton, 1999). One-sided messages or arguments are regarded as biased because they do not take into consideration the arguments of the other side of the issue, but instead advocate one viewpoint (Walton, 1999). Two-sided messages that provide arguments for different sides of an issue but do not refute either side are considered balanced messages that have the purpose of

educating rather than persuading audiences (Bright & Manfredo, 1997). The North American

Association for Environmental Education's Guidelines for Excellence (2004) provide guidance

for educators concerning the fairness and accuracy of educational materials. The fairness and

accuracy guideline suggests that "materials should reflect sound theories and well-documented

facts about subjects and issues, a range of perspectives should be presented in a balanced way,

and materials should encourage learners to explore different perspectives and form their own

opinions" (NAAEE, 2004, 5-6). The balanced presentation of information and perspectives may

allow individuals to fully consider the problem and potential solutions, which may help create

informed opinions about the issue.

In educational program development, considering what the target audience already knows

and does not know about the topic is critical to meeting learner needs and selecting appropriate

messages and strategies (Jacobson et al., 2006). The two assumptions underlying cognitive or

information learning theories are that the learner's memory is an "active processor of

information" and that "prior knowledge plays an important role in learning" (Merriam et al.,

2007, 285). Understanding what the audience knows or does not know can help educators bridge

new information with existing knowledge, link to existing values and beliefs, and break-down

misconceptions. Misconceptions do not represent a lack of knowledge, but are alternative

explanations or understandings for concepts, which are not consistent with science-based

knowledge (Jacobson et al., 2006; Munson, 1994). Indeed, the public has several misconceptions

about the use of wood for energy, such as wood is a "dirty" fuel and increases air pollution

(Monroe et al., 2007). In addition, knowing the audience's attitudes and behaviors related to the

topic is important, especially if the purpose of the communication is to influence these factors.

Understanding the target audience's prior knowledge, attitudes, and behaviors can help educators

to tailor their message to meet both the learner's needs and the educational objectives (Jacobson et al., 2006; McKenzie-Mohr & Smith, 1999).

In sum, the complexity and controversial nature of some natural resource issues requires careful planning of education and communication strategies. While written materials are common components of education programs that seek to raise awareness and increase understanding of natural resource topics (Jacobson et al., 2006), traditional styles of written materials may not be effective for this context. To promote public engagement, written materials need not only explain the issue but should also spark public interest and motivate further involvement in the issue. Such written text becomes a blend of informative and persuasive communication. This style of written text differs from a typical Extension fact sheet and is more similar to a magazine article or feature story. This research explored how citizens perceive informative written text that explains the option of using wood for energy and aims to motivate citizen involvement.

Methods

Written text (hereafter called the "article") that explained the option to use wood to generate energy and aimed to motivate citizen involvement was developed for this study (Appendix A). The article was written to contain simple, understandable background information about the use of wood for energy, to address common questions, to include differing perspectives, and to provide procedural information about public involvement in energy issues. The text also included interesting text characteristics—storyline, mystery, concrete examples, people/characters, and vivid descriptions. A team of nine professors, graduate students, and professionals who conduct natural resource and agricultural communications reviewed the article. Each reviewer rated the article on the text characteristics (Appendix B). The article was revised based on review results, paying particular attention to revising the information's

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objectivity. However, since the study was funded by a federal grant for woody biomass outreach, alternative energy sources were not specifically discussed in the article.

Focus groups, a group interview process, were chosen to gain in-depth understanding into how readers perceive the information in article. A focus group is an appropriate data collection method for qualitative research that seeks "to understand and explain the meanings, beliefs, and cultures that influence feelings, attitudes, and behaviors of individuals" (Rabiee, 2004, 655). Focus groups are facilitated through the use of an interview guide, which leads participants from introductory, rapport-building questions to in-depth questions that address research objectives. Ideally, focus groups contain six to eight participants, and a series of three to four groups are conducted or until a "saturation" of ideas is reached (Krueger & Casey, 2000).

Since generalizing results to the population is not the goal of qualitative research, collecting data from segments of the population who can provide rich information about the research topic is important. Therefore, participants are selected because of similar characteristics, which relate to the research topic at hand (Krueger & Casey, 2000). For this research, citizens who are at least somewhat interested and/or active in community issues were assumed to be more likely to see and read informative articles. In addition, due to their availability, retired citizens may be more likely to read this type of article and become involved in the issue.

Thus, participants were recruited in Gainesville, Florida from community and environmental organizations and a retirement community for a pilot focus group and three subsequent focus groups (Appendix C). Recruitment announcements were distributed in newsletters, list serves, and at general meetings. Each interested volunteer completed a screening survey, which asked about their level of community interest and involvement, along with general demographic characteristics. Table 2-1 provides a summary of the number of interested

volunteers, respondents, and participants for each focus group. The pilot focus group was conducted on November 10, 2007 to provide feedback on the interview guide. Based on pilot group comments, the article was also modified and evaluated by two additional expert reviewers. When a limited number of participants are available, conducting more groups with fewer participants is advisable (Krueger, 1998). As this was the situation, three small groups were held rather than two large groups. Respondents were assigned to three scheduled focus groups so that each group contained similar characteristics, making the groups as homogenous as possible (Krueger & Casey, 2000). Approval was obtained by the University of Florida's Institutional Review Board, and each participant signed an informed consent letter prior to participation (Appendix D).

Table 2-1. Summary of focus group recruitment.

Type	Pilot group	Total of groups one, two, and three
Interested volunteers	12	27
Respondents	8	19
Participants	8	16

At the beginning of each focus group, participants were asked to read the article and complete a short worksheet, which helped ensure they thoroughly read the article (Appendix E). The same interview guide was used for each group (Appendix F). At the end of each group, the moderator summarized the main points of the discussion to check for accuracy and differing perspectives. An assistant took notes throughout the discussion, including notes about non-verbal body language. In addition, the moderator and assistant debriefed after each group to record initial thoughts about the key points and the general atmosphere of the group.

The focus group discussions were audio-recorded and transcribed verbatim. Thus, the main unit of analysis is words, sentences, and multi-sentence chunks (Miles & Huberman, 1994). The first step in the analysis process included becoming familiar with the data. This was done by

reading the moderator and assistant's notes, listening to each audio-recording multiple times, and reading the transcriptions. Next, the transcripts were descriptively coded. Codes were chosen and defined based on participants' similar ideas, perspectives, and research question topics. Next, portions of the transcripts containing the same codes were arranged together in a process similar to the "long-table approach." This approach involves cutting the transcripts by coded sections and combining segments of text into categories with the same or similar codes (Krueger, 1998; Krueger & Casey, 2000).

These new groups of coded text were read together and through a process of comparison the groups were refined, revised, or eliminated. In addition, segments of coded text were rearranged if they fit better in another category. Through this process, the descriptive codes were interpreted and meaning of the code groups developed—essentially developing themes or "big ideas." A matrix was used to display the data in a reduced and easy-to-access format (Appendix G) (Miles & Huberman, 1994). This data analysis process follows a framework analysis approach (Rabiee, 2004). This approach to data analysis was chosen because it is a series of steps, which can be easily applied to qualitative data from focus groups, and it allows themes to emerge from both the transcripts and the research questions (Rabiee, 2004). Several steps were taken to ensure the validity of this research, which include: pilot testing the interview questions, creating a comfortable group atmosphere, verifying key points in a summary for each group, debriefing with the focus group assistant, and analyzing data is a systematic manner (Krueger, 1998).

Results and Discussion

Three focus groups were conducted at the same location in Gainesville, Florida on two consecutive Saturdays—December 7th (Group One) and December 15th, 2007 (Groups Two and Three). Overall, 16 participants participated in the focus group discussions (five participants in

Group One, six participants in Group Two, and five participants in Group Three). All participants considered themselves somewhat to very interested in community issues, and most participants considered themselves somewhat active in community issues. All participants were white and non-Hispanic. Most participants were over 50 years old and female, with only 3 of the 16 participants being male. Overall, the participants were a highly educated group, with 13 of the 16 participants having at least a bachelor's degree.

Each group included two residents of a retirement community and three to four members of a community organization, most of which were environmental-based organizations (e.g., Clean Water Action Network) rather than service-based organizations (e.g., Kiwanis Club). Many participants discussed a concern for the environment while introducing themselves in the focus group. Comments such as "I'm interested in environmental and pollution issues" were common among the groups. One explanation for this trend is that the recruitment announcement stated the discussion would focus on natural resource issues, which may have encouraged those with environmental concerns to respond. However, in order to avoid recruiting participants with strong opinions about using wood for energy, the announcement did not state the particular issue for discussion (Krueger & Casey, 2000). In fact, at the time of the focus groups, the city of Gainesville had been involved in long-standing discussions about the need for additional energy and was considering woody biomass as a fuel source. However, only one participant was aware of this ongoing community discussion.

Three themes about the use of written text to inform people about a controversial issue developed from the focus groups. They are: mistrust, the right information, and balance of information.

Theme: Mistrust

Focus group participants expressed feelings of mistrust and skepticism toward the energy and forest industries that might be involved with a wood-to-energy project, which affected how they perceived the information in the article. Many comments reflect this basic lack of trust in industry. For example, one participant questioned whether an energy company that hired foresters really could ensure sustainable supplies of wood: "It was the business that hired the foresters. What checks and balances are there to make sure that their integrity and their loyalty are not to the company but to the community and forests? They are still working for the company. So if the company says, we will fire you if you don't produce this much wood. There is always that. I mean it is human nature." On a similar strand, another participant expressed skepticism toward the actual use of good forest management practices by referring to an expert quoted in the article, "He says 'through good forest management practices the environment can not only be protected' and that's just like an ideal because everybody hopes there is going to be good management practices, and we all know how that often works out." Other participants in the group agreed with this comment.

Participants questioned the industries' ability to keep promises about which sources of woody biomass they were using: urban wood waste, forestry residues, or trees grown for energy production. Most participants were more positive about using urban waste wood and forestry residues than trees grown for energy. One participant summed up this perspective by saying, "If it's waste, *if* it's waste, it's great. And only if it's waste." However, some participants wondered, "How much more do you have to cut to sustain a real community?" One participant used the cypress mulch industry as a specific example of how business ventures have broken promises in the past: "I mean that started out, yeah we'll just use scrap. Well, it's not scrap now. They are cutting down [trees]." Another participant expressed skepticism by saying, "My concern

immediately became…this is going to spiral into actually using the forests again. And it's because urban waste wood and forestry residues are not of a high enough quantity to really run these plants."

In addition to mistrust in industry, other examples of mistrust came up during the focus group discussions. One participant said that having mostly governmental references listed within the article "sounds not trusting." For some participants, lack of trust was their norm. No text would be able to overcome their skepticism of experts: "Even though they claim to be an expert on a subject, I don't think that they know what they are talking about. It's very scary. I'm very, very skeptical about things.…So I just don't believe people always know what they are talking about."

Some participants also had feelings of mistrust for the information source. In order to gather responses concerning the objectivity of the text, participants were not told that the article was a potential educational product from an Extension program until the last question of the focus group. Several participants immediately agreed that knowing the article "is produced by a university gives it more credence." However, participants in all three groups also discussed the possibility that even though the university is a credible source of "fact-based" information, it may not be "objective" due to research funding. One participant stated, "My first question is who gave the university the grant to do this research?" This feeling of a hidden agenda was summed up by a comment made in Group Two, "The [university] helps me, but I am also familiar with…their commercial interests and that kind of thing too."

Throughout the three focus groups, participants conveyed feelings of mistrust in several of their comments. These feelings were mainly directed toward industry; however, some participants also discussed other entities such as government agencies and information sources.

Overall, the "mistrust" theme shows that participants believe that attractive promises and conservative predictions can fall by the wayside if they are not ultimately in the best interest of business. This sentiment agrees with Walton's (1999, 199) suggestion that the public perceives corporations "as primarily pursuing their own interests, even if this may conflict with the interests of the general population." Even when participants read predictions about wood availability, they may not believe the information because they basically do not trust the industries involved. Wondolleck and Yaffee (2000) explain that feelings of mistrust, such as those the public often has for government institutions and big businesses, can increase one group's suspicion and skepticism of another group's motives, methods for data analysis, and interpretation of data.

Theme: The Right Information

This theme emerged from discussions in all three focus groups and revolves around comments that several participants made about the information that was or was not provided in the article. Some participants wanted "more information" than was presented, while some thought there was "too much information." Others felt that it was not more information that was needed, but the right information. This was explained by one participant who said, "Isn't it weird? Like we're saying it's too much information, but not enough information about other things." One participant strongly stated, "I got a lot of facts. But as I continue reading, my head kept telling me it's not answering the questions that I have in my mind. And I got to the end and my questions were still not answered." There was also discussion in all three groups where the participants recognize that they are "an educated group" and that this level of information is not appropriate for the "general public."

Participants questioned information that disagreed with their prior knowledge and in some cases revealed basic misconceptions and confusion. For example, in reference to information

about air pollution and carbon-neutrality of wood, one participant stated, "I was puzzled by the section on how is wood carbon neutral….Because I have always assumed that you know when you have a forest fire and everything is smoky. I have pulmonary problems, so I am aware of this. And they tell you go inside—don't go out. And so now when they are saying its carbon neutral, I am puzzled at the discrepancy at the warnings we get about forest fires." Another participant agreed by responding, "Yeah, I questioned that too as I read it. What I know of this from breathing. How much [emissions] can they take out? [The emissions] may not be as bad as something else, but it's not good either." Two other participants also agreed that they were confused at the discrepancies between what they know about wood burning and the information in the article. In another group, one participant stated, "It's smelly. It's dirty, when you run your fireplace a couple days." However, the article specifically tried to address this misconception by discussing the difference between burning wood at an energy facility with emission controls and burning wood in a fireplace or a forest fire.

Similarly, the article contained information to address concerns about sustainable forestry practices and sustainable supplies of wood. However, this information did not seem to impact participants' fear of forest loss. One participant said, "I keep thinking that there will come a day just like with the oil when we're going to run out of wood and the main concern I would have is how fast is this wood going to run out?" While this relates to the "mistrust" theme, where participants were skeptical of the wood supply data, it also relates to a possible misconception that wood is not a renewable resource or that forests can not be harvested in a sustainable manner.

While the article covered several typical concerns about using wood for energy and all of the concerns these participants mentioned, they did not seem to be satisfied with the provided

information. Participants made conflicting statements over whether there was too much information, not enough information, or just not the right information. For some participants, the text was unable to break down misconceptions. Misconceptions persist in one's cognitive framework, and they influence how new information is processed until they are confronted and new understandings are constructed (CUSE, 1997; Jacobson et al., 2006). Sometimes learners may correct simple misconceptions by themselves when they learn new information; however, some misconceptions are deeply held by individuals and must be addressed through interaction between the educator and the learner (CUSE, 1997).

Theme: Balance of Information

In each group, there was general agreement that the text was biased toward using wood. The first topic of the questioning guide asked participants their general reaction to the article. Participants in all three groups immediately responded that text seemed "more pro for using wood for energy" and "made short shrift of the negative." Participants discussed several aspects of the text that led to their perceptions of bias. First of all, while the article does cover the common concerns about using wood for energy, participants felt these concerns were not fully explained but the benefits were well-explained. One participant said, "Some of the concerns were addressed very briefly in the article, but yeah, not nearly to the extent [needed]." Other participants thought that the article should "compare [wood] with alternative sources" or that wood should be "presented in tandem with other small energy sources" instead of solely focusing on wood as an energy source.

Participants within each group recognized the possibility that they might not have "all the facts." One participant stated, "References are the truth, but they are not the whole truth.…They [a group with contrasting viewpoints] could probably write a rebuttal to this just as well written and just as many references in about an hour." Another participant expressed concern for how

facts can be manipulated to frame a certain message, "It's almost trying to mislead you into a more positive outlook because if indeed all the dry wood waste available in the county only provides enough wood for 1% of homes, then is it really worth the effort? And to me, you could easily have made that conclusion [that wood is not worthwhile] with the same facts that are presented here. But instead somebody chose to write it in a way that puts a more positive spin on it rather than what I think the actual situation is." So while the information may be accurate, participants feel the same facts can be used to tell two different stories depending on how the information is framed.

The article did contain an opposing viewpoint, but all three groups perceived this opposition as "token" or easy to dismiss. Since the opposing argument seemed so easy to counter, it actually appeared to one participant as a "pro" argument. One participant noticed that the oppositional viewpoint was only given "like two sentences...and they don't really explain what their argument is." Another participant noticed that "there is not a balance of opinion there." Overall, the groups agreed that this opposing viewpoint was just a gesture or "token opposition." In light of this "token opposition," participants are left feeling as though they need to find out more information that supports the opposite viewpoint. One participant expressed this by saying, "If I were going to seriously think about using wood for energy, I would find someone who wrote a paper against wood for energy before I made up my mind. I mean I don't know if I'm for or against it." Another participant wanted "more of the negative" examples. This need for differing viewpoints can be summed up by one participant's statement, "Well, I don't care if it's biased, as long as I get both biases, for and against, I could form my own conclusions."

Overall, the need for balancing supporting and opposing information about the use of wood for energy is apparent. Although the article intended to objectively explain the use of wood

for energy, participants perceived the article as biased for several reasons. They felt the concerns were not addressed as adequately as the benefits. Participants wondered if they have all the facts and if the facts are framed to promote wood. Furthermore, the opposing viewpoint included in the text did not adequately fulfill the role of a counter opinion, and participants were left wanting additional viewpoints on the subject. Bias is a normal part of many arguments and is expected in some situations, such as when an environmental group advocates their position of old growth forest protection. However, when an information source is supposed to be balanced, connections to interested parties who have something to gain are not transparent, or when bias is hidden or unexpected it can be harmful and deceptive (Walton, 1999). These factors that the participants felt created a biased argument are important considerations for educators who are communicating complex issues such as this one. Recognizing that the media are expected to provide different viewpoints, even when one viewpoint is in the minority of the mainstream opinion, and that the public has become accustomed to receiving multiple views is also important (Friedman et al., 1999).

Conclusions

Three themes developed from the focus groups' review of an article that explained the option to use wood for energy and aimed to motivate involvement. The first theme, "mistrust," suggests that participants have underlying feelings of mistrust, primarily for forest and energy industries, but also for information sources and government agencies. They approached the information provided in the article with skepticism which fueled their suspicions about the motives of the information source. The theme, "the right information," focuses on the participants' need for information that addresses their specific issue questions and concerns. Although the article was written to include common questions and concerns, participants were not satisfied with the provided information, and the text was ineffective at addressing their

misconceptions. Within the theme of "balance of information," participants discussed characteristics that they perceived as increasing the bias in the article. The participants felt the concerns were not addressed as adequately as the benefits, they wanted to know more about alternative energy sources, and they wanted more representation of different viewpoints.

These themes suggest that using written text as a communication and education tool for an issue such as the use of wood for energy is challenging. While written materials are useful for reaching large audiences, the effectiveness of text is questionable when the issue at hand is controversial. As Dale and Hahn state (1994, 31), "It isn't easy…to present complex material, either spoken or written, in a way that accurately reflects multiple points of view and satisfies a diverse audience." Building trust among parties, addressing individualized questions and concerns, and identifying and overcoming misconceptions are processes that often require time and personal interaction (CUSE, 1997; Toman et al., 2006; Wondolleck & Yaffee, 2000). Interactive learning opportunities, such as community forums and discussion groups, may be more effective than text at achieving these outcomes.

When public mistrust surrounds an issue, any unequal treatment of arguments, whether intentional or not, is likely to result in the educator being perceived as biased. In this case, the participant's suspicion of the motives of the information source and the funding entity combined with the unbalanced argument resulted in perceptions of bias that were unintended by the author. Dale and Hahn (2004) note that "you may find it difficult to remain neutral, or be perceived as neutral, in the face of [complex issues] because you will be viewed as the purveyor of the information."

These findings do not mean that written materials should be dismissed, but rather that we should reconsider how the information is framed and the role of written materials can play within

a larger, interactive outreach effort. Before researchers and professionals transfer these results to other issues and audiences, the issue's context and the characteristics of the target audience should be compared to those described in this research (Krueger, 1998). The participants of this research are not representative of the general population; they represent a portion of the population who are interested and may be involved in environmental issues. For issues with a similar context to the option of using wood for energy and with audiences that resemble the research participants, the following lessons learned for written text may be helpful:

- Acknowledge the motives of the involved industries to begin the trust-building process.

- Provide transparency about the agendas of both the information source and the funding entity.

- Acknowledge that there are multiple questions and concerns that can not be adequately covered in the text and provide several methods for future research.

- Adequately think through the concerns that are addressed within the text, making sure to fully consider the underlying problems and potential solutions.

- Create an equal number of positive and negative examples, including examples of communities or people who denied the solution of interest.

- Provide the same amount of space for differing viewpoints and give equal strength to the viewpoints.

In addition, when discussing potential solutions to issues, the clarification of alternatives and consequences to the solution is suggested over emphasizing the solution's advantages and disadvantages (Dale & Hahn, 1994). Distributing written materials at interactive outreach events, where the public has the chance to be involved in discussion and ask individualized questions may also be helpful (McCaffrey, 2004). By addressing the audience's mistrust and skepticism, desire for transparency and balanced information, and acknowledgement of legitimate concerns, written text may become a more effective strategy for educating about complex, technical, and

controversial environmental situations. Future research could evaluate the effectiveness of text that exhibits these characteristics.

CHAPTER 3
INFORMING AND MOTIVATING CITIZENS ABOUT COMPLEX NATURAL RESOURCE
ISSUES THROUGH INTERESTING TEXT

Natural resources issues and decision-making processes are increasingly complex and tend to involve the consideration of environmental, economic, and social factors. For example, a community struggling with a dwindling water supply and an increasing population may be faced with decisions about how to balance economic growth with environmental protection. Public and private agencies can involve citizens in issue resolution, and together these stakeholders can create innovative and locally satisfying solutions (Wondolleck & Yaffee, 2000). However, when the public is not aware or has little knowledge of the issue, their opinions are usually inconsistent and not fully thought out (Yankelovich, 1991). Educators first have to raise awareness and increase understanding before public participation is useful. In addition, most people have little time to spare to become part of a lengthy process to resolve an issue they know little about. Thus, getting the public motivated to become involved in natural resource decisions can be a difficult task, especially if the issue seems distant or irrelevant.

Educators can use a variety of outreach techniques to raise public awareness, knowledge, and involvement in natural resource issues (Jacobson et al., 2006). Often, written materials (e.g., fact sheets, brochures, bulletins, news articles) are a key component of outreach programs. Written materials are relatively inexpensive to produce, can reach many people, and can be distributed as needed (Jacobson et al., 2006; Rodewald, 2001). In addition, the public is familiar with receiving information in this format and can access it at their convenience (Jacobson et al., 2006). However, the technical nature of natural resource information can be overwhelming, abstract, and boring for readers (De Young & Monroe, 1996; Kearney, 1994). In fact, research has found that written text about natural resource topics can be ineffective at increasing comprehension and changing perceptions (George & Crooks, 2006). Alternatively, text that

provides information in an understandable, memorable, and meaningful manner and invites public engagement may be helpful for both increasing comprehension and motivating future issue involvement (Kearney & De Young, 1995; Monroe & De Young, 1994).

This research explores effective written communication strategies for informing and motivating citizens about a technical, controversial, and complex natural resource issue—the option of using wood to generate energy. The objective of this research is to determine how effective communication characteristics can best be applied to technical information to both explain the issue and involve the public in the issue. Because of the need for a rich understanding of this topic, focus groups were used to determine how citizens perceive the use of interesting text characteristics in written text that explains the option to use wood for energy and how the text affects citizens' motivation to get involved in the issue.

Literature Review

Similar to mass media, written text is often used to raise awareness and increase understanding about environmental topics with large audiences (Jacobson et al., 2006). However, studies point to the fact that providing information alone may not effectively achieve educational goals. For example, a recent evaluation of natural resource informational brochures in southern California found that residents who received a brochure did not have, or had only minor, statistically significant changes in knowledge or perceptions of the issues compared to residents who did not receive the brochure (George & Crooks, 2006). In addition, Toman et al. (2006) found that while more people were exposed to mass media than interactive communications concerning fire outreach programs, interactive communications were generally rated as more helpful. As McCaffrey (2004, 12) states, "The availability of information does not necessarily mean that it will reach its audience or be effective once it gets there."

Furthermore, the objectives of environmental education programs are often not limited to merely raising awareness and increasing knowledge; they intend to increase motivation for involvement, help form and change environmental attitudes, teach problem-solving skills, or create opportunities for participation (UNESCO, 1978). Interactive communications are considered more effective than mass media at changing attitudes, persuading people to accept new ideas, and effectively engaging the public in participatory processes (Rogers, 1995; Rowe & Frewer, 2005; Toman et al., 2006). Thus, educators striving to reach multiple environmental education objectives may want to consider how text can be effectively written to not only inform but also engage the reader and motivate future involvement. Strategies for writing effective text will be discussed by focusing on the role written text can play in motivating readers, considering different types of information and how information is processed by readers, and finally discussing how information can be conveyed in an interesting and engaging manner.

If the goals of an educational program include enhancing public involvement in the issue, written materials associated with the program may help to motivate the reader to become further involved. Motivation is a concept that helps explain "why people behave as they do" (Wlodkowski, 1999, 37). People are motivated both extrinsically and intrinsically. Extrinsic motivations include incentives or disincentives, such as rewards or fines, while intrinsic motivations rely on a person's natural instinct to be curious and active, the need to make sense of and participate in the surrounding world, and feelings of satisfaction (De Young, 2000; Kaplan, 2000; Wlodkowski, 1999). Strategies such as provoking curiosity through questions and using relevant examples to promote interest can create conditions where the reader is "desirous of information, knowledge, insight, and skill" (Wlodkowski, 1999, 69). Focusing on intrinsic

motivations of competence and participation gives people proximal, self-satisfying reasons to become engaged in natural resource issues (De Young, 2000; Kaplan, 2000).

Competence is an intrinsic motivation that can build confidence in skills and abilities and lead to empowerment. The intrinsic motivation of participation stems from the desire to feel needed and trust that participation efforts really make a difference (De Young, 2000). Alluding to the possibility of choice and need for exploration of solutions within text can increase motivation for participation (De Young, 2000; Kaplan, 2000). On the other hand, people tend to avoid overwhelming and confusing situations, which increase feelings of helplessness (Kaplan, 2000), as when people feel that their actions will not make a difference. Yet, feelings of helplessness must be addressed if the public is to be motivated to participate in solving environmental problems (Kaplan, 2000). Simple, accessible information that is not overwhelming or filled with technical jargon may help to reduce the feelings of helplessness and increase competence.

Text that increases intrinsic motivations of competence and participation has also been found to increase knowledge. Young and Witter (1994) tested several communication characteristics by evaluating educational brochures about a natural resource management issue. Two of the four characteristics determined to be the most effective at increasing knowledge were legibility (text that is easy to understand, lacks jargon, and relates to one's prior knowledge and experience) and inclusion of motivational information (text that encourages the reader to be involved in the issue and specifically states the importance of their involvement).

Recognizing that all information is not equal is an important step for educators who seek to create effective text. Schultz (2002) distinguishes different types of information that lead to different types of beliefs and knowledge. Impact knowledge is information about the

implications of an action or non-action. Procedural knowledge is "how to" information that when absent can be a barrier to change, action, and participation. Normative knowledge is developed from information of other's attitudes and behaviors and may contribute to social norms and learned behaviors. Normative information can be provided in written text through describing examples of other communities and citizens who are engaging in the specific action or behavior (Schultz, 2002). In addition to impact, procedural, and normative information, readers should be provided with a sufficient amount of background information to understand the issue.

Research in the field of social psychology has produced theories of information processing and the influence of messages on attitude and behavior change. McGuire's information processing model (1968) focuses on how communication inputs (source, message, recipient, channel, and context) influence audience reception of the message and formation of new attitudes or behaviors. Cognitive response theory built upon information processing to recognize that individuals are active participants who incorporate messages into existing knowledge structures and have favorable and unfavorable thoughts toward messages (Petty et al., 1981).

The Elaboration Likelihood Model (ELM) accounts for both active and non-active processors of information (Petty & Priester, 1994). When the person is motivated and has the ability to process the message, the central route to persuasion is activated; the peripheral route to persuasion occurs when cognitive involvement is low, meaning the person is either not motivated or able to process the message. Several text characteristics affect which route to persuasion is activated. Petty and Priester (1994) state that personal relevance, questions, multiple information sources, and surprising headlines increase a person's motivation to cognitively process a message. The most important variable to invoke interest and motivation is perceived personal relevance of the message. Messages can be self-relevant by making them location specific and

by using first and second person pronouns, such as *I*, *we*, *you* and *us*. Asking questions, rather than using summarizing statements, can also increase cognitive processing and motivation to be engaged in the information. In addition, having multiple information sources present the arguments and using surprising headlines can increase thinking (Petty & Priester, 1994). Attitude changes resulting from the central route are long-lasting and predictive of behavior, while attitude changes resulting from the peripheral route are temporal, unstable, and not predictive of behavior (Petty and Priester 1994).

Technical environmental information can be conveyed to the reader through the use of interesting text (Kearney, 1994; Monroe & De Young, 1994). Interesting text, or text-based interest, is created through the use of "action, mystery, imagery, and meaningful characters" and is also referred to as interestingness (Monroe & De Young, 1994, 244). Some environmental issues, such as grizzly bear attacks, are interesting to the reader because of the topic. Other environmental issues, such as mountain-top removal, may be perceived by readers as abstract, boring, irrelevant, and distant; the use of text-based interest is especially useful for these types of issues (Kearney, 1994; Monroe & De Young 1994). The following list includes characteristics that have been identified for creating interesting text (Kearney, 1994; Monroe & De Young, 1994):

- CHARACTERS. The use of realistic characters or people within text that readers can identify with.

- MYSTERY. The promise of new information, which leads the reader to the answers they are seeking.

- VIVIDNESS. The reader's attention is held by text that is action-oriented, relevant, imaginative, and personalized.

- CONCRETENESS. The use of specific examples, numbers, and details.

- STORYLINE. Explanation of a problem, potential solutions, complications, and problem resolution.

- RELATING TO PRIOR KNOWLEDGE. Information that relates to existing knowledge, beliefs, and experiences will be easily for the reader to process.

Effective use of true stories (e.g., case study examples and analogies) and characters or people within text can help provide normative information, give the reader a sense of direct experience, and take advantage of text characteristics that facilitate information transfer and cognitive processing (Kearney, 1994; De Young & Monroe, 1996). In addition to legibility and motivating information, Young and Witter (1994) also determined that mystery and vividness were the most effective text characteristics for increasing knowledge about a natural resource issue.

A comparison of story-based text verses factual text by Kearney and De Young (1995) showed that text perceived as interesting (in this case the factual text) had a greater impact on perceived knowledge, confidence, and comfort with knowledge than less interesting text. Their study also showed that knowing if the target audience is accustomed to receiving technical information or story-based information will affect the type of text they perceive as interesting. Kearny and De Young (1995) suggest that story-based text may be more effective when people do not have a strong understanding of the issue. In addition, the authors conclude that combinations of story-based and factual text may more effective than one or the other alone.

Principles of adult learning can also be used to write interesting and engaging text. Taylor-Davis (2000) evaluated a theory-based newsletter on older adult's knowledge, attitude, and behavior. Specific adult learning characteristics were targeted within the different sections of the newsletter, such as citing credible sources, drawing on previous reader experiences, providing relevant information and problem-centered approaches, and promoting active participation. The theory-based newsletter was successful at providing nutrition information, increasing patient knowledge, and encouraging some behavior change in older adult's dietary habits (Taylor-Davis, 2000).

In summary, the literature offers the following list of suggestions for educators seeking to write effective text:

- Provide motivational information to encourage the reader to become involved in the issue.

- Incorporate different types of information in an understandable and accessible format.

- Consider the text variables that will encourage active message processing.

- Include appropriate characteristics of interesting text—storylines, identifiable characters, mystery, concrete examples, and vividness.

- Account for how adults prefer to learn by drawing on existing knowledge and experiences.

- Provide relevant information and problem-based approaches.

These communication characteristics may help to reduce feelings of helplessness and build competence, provide memorable and meaningful information, and encourage more widespread participation in environmental issue resolution.

Methods

Article Development

Written text (hereafter referred to as the "article") that explained the option to use wood to generate energy and aimed to motivate citizen involvement was developed for this study (Appendix A). Informational content was compiled from several Extension fact sheets and case studies from the Wood to Energy Outreach Program (Monroe et al., 2007). The article was written to contain simple, accessible information that lacks technical jargon, to discuss both the benefits and concerns of using wood for energy, and to include photographs, tables, and bulleted lists to break up the text. Personal relevance was emphasized through the use of first and second person pronouns, relevant questions to the reader, and the reasons to learn the information and become involved. In addition, normative and procedural information about citizen involvement in energy plans was included in the article.

Several text characteristics to promote interestingness were incorporated throughout the article. First, an overarching storyline (introducing the energy problem, explaining trial solutions of wood as an energy source, and concluding with a potential solution of citizen involvement in developing wood-to-energy plans) was used. The article was divided into sections to address common concerns of the issue, and each section transitioned into the next with a new question for the reader to consider. Short case study examples, including people and places that are involved in using wood for energy, were interspersed throughout the article. The treatment of the examples and locations varied; some were described vividly and concretely, while others were generalized and abstract. Each person included in the article was identified by name and title; however, the use of personal pronouns and quotations varied among the characters. This variation of interesting text characteristics enabled focus group participants to discuss different types of text characteristics within the same document. Thus, the article contained interesting text characteristics and represents a mixture of narrative and expository text.

Prior to using the article, a team of nine communication experts reviewed and rated the article on the text characteristics (Appendix B). This team consisted of professors, graduate students, and professionals who conduct natural resource and agricultural education and communication. Experts also rated the paragraphs based on vividness and imagery levels of the examples, people, and locations. The article was slightly revised based on review results in order to better meet the desired text characteristics.

Data Collection and Analysis

Focus groups, a group interview process, were chosen to gain in-depth understanding into how readers perceive the article and their motivation to become involved in the issue (Krueger & Casey, 2000). For this research, citizens who are at least somewhat interested and/or active in community issues or have increased availability of time were assumed to be more likely to see

and read informative articles. Participants were recruited from community and environmental organizations and a retirement community (Appendix C). A pilot focus group was conducted to provide feedback on the interview guide and the article. For the pilot group, there were 12 interested volunteers, of which eight responded to the screening survey and participated in the pilot group. For the three subsequent focus groups, there were 27 interested volunteers, of which 19 responded and were assigned to a scheduled group, making the groups as homogenous as possible (Krueger & Casey, 2000). A total of 16 participants attended the three groups. Each participant signed an informed consent letter (Appendix D).

At the beginning of each focus group, participants read the article and completed a short worksheet, to ensure they read the article thoroughly (Appendix E). The same interview guide was used for each group, which revolved around the following research topics: current interest/involvement in community issues; general perceptions of text; perceptions of locations, people, and examples; motivation to become involved; perceptions of information source (Appendix F). The moderator concluded the discussion by summarizing key points and checking for accuracy (Krueger & Casey, 2000).

The focus group discussions were audio-recorded and transcribed verbatim. The steps of data analysis included: data familiarization, identification of thematic framework (codes), indexing (sorting codes), charting (rearranging codes), and mapping and interpretation (seeing the relationships) (Krueger, 1998; Krueger & Casey, 2000; Rabiee, 2004). This framework analysis approach was chosen because the steps can be easily applied to focus group data, and it allows themes to emerge from both the transcripts and the research questions (Rabiee, 2004). A matrix was used to display the data in a reduced and easy to access format (Appendix G) (Miles & Huberman, 1994).

Results and Discussion

All focus group participants considered themselves somewhat to very interested in community issues, and most participants considered themselves somewhat active in community issues. All participants were white and non-Hispanic; all but three participants were over 50 years old. Most participants were female, with only three of the 16 participants being male. Overall, the participants were a highly educated group, with 13 of the 16 participants having at least a bachelor's degree. Each group included two residents of a retirement community and three to four members of a community organization, most of which were environmental-based organizations. In addition, almost all participants made comments reflecting environmental interest and concern. The results of the focus group discussions are organized into two themes: perceptions of interesting text and motivation for involvement.

Theme: Perceptions of Interesting Text

While some participants said the interesting text "doesn't help, but doesn't hurt" their understanding of the information, participants in all groups used the interesting text characteristics to consider the technical information about using wood for energy. In each group, participants compared the provided examples to local situations to think through the possibility of using wood for energy in their community. For example, one participant stated, "[The example] does tell you 25,000 residents can use [wood for energy]. Could Gainesville, with 150,000 [residents], use it?" Other participants considered how "environmentally conscious" their community was compared to described places or how local railroad systems could be used in a manner similar to that described in an example. Through these types of comments, it was clear that participants used the examples and locations to learn more about how wood can be used for energy and to generate important questions for their community.

In addition to using the interesting text characteristics to consider local possibilities, participants discussed how the examples, locations, and people provided opportunities to learn from others. For example, the information described within the case study examples provided some participants with an understanding of how others "worked around the negatives and if they were successful." Providing normative information also helped some participants better understand wood to energy possibilities. One participant stated, "I think the examples for me, as a citizen…it enhances [the information] just to see this has been successfully used here and there." Another participant expressed this sentiment by stating, "My first reaction when they said using wood, was those forests…and was very anti. And as I read it and how they were doing it in certain places, it opened my mind a bit to say, well, certain places where they have a facility and they have enough supply and people who know what they are doing, it might work."

Participants in each group identified with locations and examples that were personally relevant. Several participants across the three groups mentioned the locations from Florida. None of the Florida locations were described vividly, instead they stood out to participants because they were "close to home." Similarly, Burlington, Vermont was mentioned in each group because a participant had prior knowledge that it is a "green state" or had previously lived there, despite the fact that this location was also not vividly described. Other participants were drawn to concrete descriptions that related to their personal interests, such as "historic towns" or "football teams." Examples that involved high schools or universities generating energy from wood were mentioned by participants more than the larger wood-to-energy facility examples. One participant's reasoning for this was: "It seems doable on a small scale like a university.…It seems sustainable for a campus to do that." As all participants are residents of a county with a large university, these types of examples may have been relevant and familiar to them. In sum,

familiar examples and places were more frequently mentioned and seemed more meaningful to participants, whether the example was concretely and vividly described or not. However, without the descriptive vivid terms (e.g., quaint, historic town), some examples would not have been meaningful to participants.

Many participants agreed that the people described in the article were not as important to them as the examples. A typical comment in each focus group was, "I was more focused on the use of the wood not the actual person." However, the person's credentials and levels of expertise were important, as expressed by this participant's comment, "I like to know why they are saying what they are saying." While some people in the article were vividly described and used first and second pronouns in their quotes, other people were not described at all. However, this treatment did not seem to influence how participants related with the people. In fact, participants did not appear to relate to any one person more than another. The only people that were discussed by participants were ones that played a role in making the information seem opinionated. For example, a participant mentioned, "I noticed [the article] was real happy and positive about burning wood. He waved [the truck] through with a friendly smile, and it's all happy and friendly." In this case, the described emotions of one person resulted in participants perceiving the person as happy to be cutting down trees, which was not the intent of the author.

In addition, participants in each focus group wanted more details within the examples. While some participants were concerned that the examples simplified a complicated situation, others wanted more concrete details, such as what wood sources were being used, how much money was being saved, and how long the facilities have been in operation. As each example was chosen to explain different aspects of the issue, not all examples included all the possible

information. This is a function of the decision to include multiple, short examples or fewer, detailed examples.

Many participants recognized that this article was unlike other written materials they have been exposed to that discuss similar topics or come from similar information sources (in this case, the Cooperative Extension Service). The use of interesting text reminded them of "a magazine article" rather than a "scientific fact sheet." Some participants recommended that separating the facts from the stories in the article would help clarify and organize the information. Participants discussed reorganizing the article into sections of fact-based information and story-based information, or as one participant put it, "Here is the science part. Here is the local discussion part." Since the readers seemed unfamiliar with the mixed format of the article, providing more organization or reader guidelines as to where the case study examples begin and end may be helpful.

While participants made recommendations for reorganizing the text and some seemed unsure of whether they liked the interesting text, overall, this theme recognizes that providing descriptive examples and locations can help participants process technical information, compare local and distant possibilities, and provide relevant, meaningful, and familiar information. One participant summed up the benefits of interesting text by saying, "If we don't relate to [the text] somehow, whether the name, people, or place, then we're going to lose interest.…You need to make sure it reaches out to a bunch of different individuals and different personalities."

Theme: Motivation for Involvement

Many participants seemed to be interested in taking part in the actions suggested in the article to encourage citizen involvement. Participants from each group mentioned that they would be motivated to learn more about the issue. Some participants would be interested in the subject, but did not imagine they would actively seek out more information. These participants

mentioned being sensitized to the subject: "If I saw an article in the newspaper or magazine about it, where in the past I might have just gone by it, now I would stop and read it." Others would seek out more information either on the internet or at the library. Some participants mentioned they would continue learning to "get my questions answered" about the issue. Another motivation for continued involvement was to learn different points of view of the issue. One participant expressed positive feelings about the procedural information included in the article by stating, "One thing I did like is the reference to how to search for it on the internet. I like that. I like putting the power to the person to continue their own research."

Participants from each group expressed interest in "touring a local power plant." Some participants suggested that providing contact information for each person or example mentioned in the article could help them continue researching the case study examples. For example, one participant stated, "It would have been nice to have, if you want to visit this place, the website or the number to call to schedule a tour." In addition, several participants mentioned that they would discuss the issue with others: "All I know is that I'll be curious now when I meet a few of my neighbors, either at my house or upstairs or at lunch or dinner, to bring up the wood issue, out of curiosity.…Are they as well informed as I am now?" Other participants would "respond to a news article with a letter to the editor."

The actions mentioned were ones that the participants felt comfortable with, as opposed to actions they perceive as threatening. For example, participants from each group recognized that they are not experts and said they would be intimidated to speak at public meetings. One participant expressed these feelings by stating, "I would still be afraid to discuss my perspective with community leaders and officials because I wouldn't think I would know enough as far as facts go. And they would just say, oh you don't know what you're talking about, and kind of

move on.…You really have to know your subject like the back of your hand in order to be able to be effective." Other participants said that they would go to public meetings to listen, learn more, and ask questions.

As this article was not specifically written for one community, some participants felt they needed more locally relevant information before they would take action. One participant stated that action would not be a priority "unless they were going to cut down my trees." Others would wait and see what developed locally before taking any action, as expressed by this participant's comment, "It would depend on what is happening. And what kind of [opportunity] it was to get involved. But potentially, yeah, I would be interested."

Overall, this theme suggests that while the article was not specifically targeted toward one community, most participants were interested enough after reading the article to learn more and become involved in some way. While participants recognized that one article did not make them experts, the article did spark enough interest and curiosity for participants to imagine themselves becoming involved in the issue in ways that suit their comfort and knowledge levels. Participants were also interested in learning more about the case study examples that were included in the text. The inclusion of the procedural information along with the case study examples seemed to help participants consider what actions they might take.

There are limitations to this theme that should be considered. First, after leaving the focus group, the participants' motivation to perform these actions will have to be great enough to overcome any barriers to taking action. In addition, the interview guide did not address motivation to become involved until near the end of the discussion. In most groups, the participants had been discussing how the article was written and the article content for about an hour. Thus, the participants had been involved in an interactive discussion in addition to reading

the text, which may have affected how they imagine themselves being involved in the issue. However, considering the overwhelming nature of energy issues and the helplessness that many people feel to make a difference, the idea that participants wanted to learn more and become involved in some actions is promising. In addition, these participants were not overly confident and were able to recognize the limits to their knowledge about the issue.

Conclusion

This research investigated how text characteristics, especially the use interesting text, can best be applied in written text to explain the issue of using wood for energy and to motivate public involvement in the issue. The research questions of how citizens perceive interesting text and their resulting motivation to get involved in the issue guided three focus group discussions. Data analysis of the focus group discussions resulted in two themes: perceptions of interesting text and motivation for involvement. The participants of this study do not represent the general population, and participant characteristics should be recognized when considering the results and lessons learned from these focus groups. These participants represent a portion of the population who are interested in and may be vocal about environmental issues.

The "perceptions of interesting text" theme validates prior research that descriptive and concrete examples within text can help readers process technical information and provide relevant, meaningful, and familiar information. While all participants did not perceive the interesting text as helpful, they did utilize the examples, locations, and people to discuss the technical information and to consider energy possibilities. The descriptive examples and locations allowed participants to learn from other communities about energy decisions and may be a part of creating social norms.

Another facet of this theme is that participants did not find the people described in the article as helpful as the examples. This may be a function of the issue's scale. Since energy

generation decisions are at the community level rather than individual level, the community examples were utilized to consider the information. In other contexts, such as promoting the individual behavior of carpooling, people and characters are effective at providing imagery about how the behavior is performed (Kearney & De Young, 1994). Thus, the context and scale of the issue can help educators decide whether to focus on creating vivid imagery about characters or examples of communities. For community issues, people can be used to help explain the case study example, but for these participants they do not appear to be a vital component of the interesting text.

In addition, participants had suggestions for reorganizing the text and separating the fact-based information and story-based information. One could imagine this as two totally different sections of a document, or clarification of text segments could be created through graphic design elements. The literature suggests that mixing short stories within factual text may be more effective than one or the other alone (Kearney & De Young, 1994). If the facts are separated from the stories, then the case study examples may not help to explain the expository text.

From the focus group discussions, the following lessons learned may help educators develop effective text to explain complex natural resource issues:

- Provide structure or reader guidelines to clarify story-based and fact-based segments of text. This may be achieved through headings, indentations, blocks of text, shaded boxes, or font changes.

- Plan the use of emotion with careful consideration of how readers will perceive the emotion. This may be especially important when the issue being discussed is contentious or has multiple perspectives.

- Provide concrete, vivid, and relevant details for all examples and people. This will help diverse audiences relate to the information.

- Provide fewer, more in-depth case study examples rather than many, short examples. This will help the reader grasp the power of case study examples instead of becoming inundated with examples.

- Consider the context and scale of the issue. This will help you know whether community-level or individual-level details and imagery are appropriate.

- Include each character's credentials and levels of expertise if characters are used in the text. This will help tell the reader why the person is included and important to the example.

The second theme revolved around participants' motivation to become involved in the issue. This theme suggests that while the article was not targeted to one community, most participants were interested enough after reading the article to want to learn more and become involved in some way. Learning more and becoming involved in natural resource issues can help create a more environmentally literate society. Perhaps with time and acquisition of new knowledge, they will become more comfortable taking part in additional actions. In addition, informal opportunities to share ideas, such as community forums (Monroe et al., 2007), might lessen the perceived threat of interacting with community leaders in the traditional public meeting format, which are sometimes perceived as unhelpful by the public (Toman et al., 2006). Including procedural information for how citizens can get involved in the issue was an important part of helping participants understand that issue involvement can take many forms.

Recognizing that participants had both read the text and been involved in a discussion about the information is an important consideration for the "motivation to get involved" theme. After reading an article nearly five pages long and participating in a two-hour discussion, participants were still interested in learning more. The fact that the participants could imagine themselves taking additional actions on this issue is a positive consideration for educators. In addition, a national energy survey found that Americans are supportive of increasing energy education (NEETF, 2002). Thus, providing the public with increased opportunities to consider energy issues and potential solutions is an important task for environmental educators.

In conclusion, the use of interesting text and effective communication characteristics in written text helped to inform and motivate these participants to learn more about the use of wood

for energy. For a complex, community-level issue, the use of interesting text characteristics helped to make what may have been abstract and boring information palatable, memorable, and relevant. The examples of other communities and places where wood is used for energy provided participants with normative information that helped them consider the local possibilities and learn from others. In addition, participants used the provided procedural information about how to become involved in the issue to consider and imagine their own involvement. For similar audiences and issues, this type of text may provide memorable and meaningful information and may encourage more widespread public participation.

CHAPTER 4
CONCLUSION

This research investigated the use of written text to explain and motivate citizen involvement about the option to use wood for energy. Three focus group discussions provided in-depth understanding of how citizens perceive the information provided in the text and the use of interesting text characteristics throughout the technical information. In addition, the participants' motivation to continue being involved in the issue was explored. Five themes emerged from analysis of the focus group transcriptions. This chapter reviews the five themes, provides recommendations for practice, and identifies future research areas.

Key Research Findings

Five themes developed from the focus groups, which are briefly reviewed below:

- MISTRUST. These participants had feelings of mistrust for forest and energy industries, information sources, and government agencies. Thus, when they were presented information about using wood for energy, they approached the information with skepticism and were suspicious about the motive of the information source.

- THE RIGHT INFORMATION. Participants were not satisfied with the information that was provided in the article. While the article was written to address common questions and concerns, participants wanted more information to address their specific ideas and questions. In addition, the text was ineffective at helping address common misconceptions about using wood for energy.

- BALANCE OF INFORMATION. The concerns of most participants were not adequately addressed by the article. This, along with the fact the article only discussed wood as an alternative energy source, led to the perception that the article was biased toward the decision to choose wood as an energy source. In addition, the opposing viewpoint in the article was not perceived as valuable since it was easy to dismiss.

- PERCEPTIONS OF INTERESTING TEXT. The case study examples were used by participants to discuss and consider the use of wood for energy and were more important to participants than the people or characters. The examples and locations that were vividly and concretely described allowed the information to become meaningful and relevant to the participants. In addition, participants suggested the article be reorganized to clarify the fact-based information from the story-based information.

- MOTIVATION FOR INVOLVEMENT. Participants could imagine themselves taking part in comfortable and informal actions that were suggested by the article. Most participants were interested in learning more about the issue. Some participants would only be interested in becoming involved if the issue was locally relevant.

Recommendations for Practice

First, considering these recommendations in the context they developed is important. In qualitative research, results cannot be generalized to the population. In addition, the transferability of results must be undertaken with caution (Krueger, 1998). Researchers and practitioners should compare how these research participants and the issue of using wood for energy compare to audiences and issues in question. Other community-level issues that may have similar characteristics include the balance of urban growth and natural areas, water supply and demand, and other renewable energy sources such as wind energy. The participants of this study represent a portion of the population that are interested in environmental issues and may be involved in expressing their ideas and concerns in decision-making processes.

While the use of interesting text characteristics was helpful and participants were motivated to become further involved, mistrust, misconceptions, and perceptions of bias are key considerations for those who want to educate about issues similar to using wood for energy. These underlying feelings, beliefs, and perceptions influenced the way that information was perceived by participants. Without addressing these considerations, the intended outcome of the outreach effort may not be achieved, perhaps whether the text includes effective communication characteristics or not. Therefore, for this issue and audience, educators must work to build trust, address misconceptions, and provide open and objective information. These outcomes are best achieved in interactive settings, such as community forums or discussion groups (Toman et al., 2006; Wondolleck & Yaffee, 2000). In addition, the combination of personal contact when distributing written materials or incorporating written materials into interactive outreach

activities may be helpful for building trust and answering individualized questions (McCaffrey, 2004; Wondolleck & Yaffee, 2000).

However, written materials remain an important component in environmental education and outreach. This research suggests that it is important to develop text that strives to be transparent about the motives of all involved parties. In addition, adequately covering key concerns, and then recognizing that there are probably several more concerns that can not be adequately addressed in the text may be helpful. The author could also provide multiple resources for finding out more information about the briefly mentioned concerns. In addition, all examples and people should be given equal treatment in terms number, text space, and argument strength. Providing both positive examples of where wood is being successfully used for energy and examples where communities decided not to use wood for energy may help to create a more balanced argument.

Several recommendations for incorporating interesting text characteristics into technical, complex information also developed from this research. First, graphic design elements can be utilized to help readers clarify and transition between story-based and fact-based segments of text. Providing fewer examples, with concrete, vivid, and relevant details may provide more meaningful information than several superficial or generalized examples. Finally, the context and scale of the issue and intended outcome for the audience can help determine whether to focus on examples of communities or individual people or characters. If the issue or decision is at the community-level, then providing descriptive and imaginative examples of other communities is more relevant than describing individual people within the examples. In these cases, the people are only included to help explain and breathe life into the example.

The characteristics that help to create interest in text may also unknowingly increase the perceptions of bias when the issue at hand is controversial. When using emotion to describe a person or character, authors must carefully consider how readers may perceive the emotion. For example, developing characters that are happy and proud of their job may make them seem biased toward one side of the issue. This is an important consideration for educators who are addressing complex natural resource issues that have multiple perspectives.

Future Research

The results of this research contribute to the fields of environmental education, Extension and community outreach, interestingness of text, and written communication. Several opportunities for additional research are apparent. Exploring different audiences, different issues, and bias are all interesting research areas that could enrich our understanding of communicating and educating about complex issues. When considering bias, research could investigate whether written materials can be developed that are perceived as unbiased by an audience who has mistrust for the involved parties and is prone to feel strongly about the issue. Similarly, investigating if materials that are produced for a particular purpose, and thus promote a specific ideology, can be perceived as unbiased is an areas of future research.

To determine the generalizability of these results, the article developed for this research could be quantitatively tested with different audiences. Another interesting addition to this research would be to provide similar participants with a document that does not contain interesting text characteristics and investigate whether the similar feelings of mistrust and perceptions of bias occur. Likewise, while only one document with varying text characteristics was tested in this research, two or more documents exhibiting different text characteristics could be tested using either qualitative or quantitative studies. This would allow for more in-depth comparison of text characteristics. Finally, text could be developed to reflect the

recommendations of these research findings, and this document could be tested to determine its

effectiveness.

Article

University of Florida, IFAS Extension
Fact Sheet

Can Wood Help Meet Our Energy Challenges?

1) Many Americans are concerned about global warming and the rising cost of energy. Recent newspaper headlines, such as "Energy Crunch on the Way" and "Can Alternative Fuels Delay Global Warming?" reinforce such concerns. Solutions to the growing crisis, however, are not obvious. Citizens are increasingly frustrated with the situation, but they are often hampered by the complexity of energy issues and a lack of access to alternatives.

2) Helping community leaders consider different sources of energy is one way citizens can be a part of developing solutions to growing energy needs. Gaining a better understanding about possible energy sources is often the first step. While communities should consider all feasible energy sources that could meet their needs, this fact sheet introduces one option, using wood for energy. It features examples of communities and people that are involved in the field of using wood to generate heat, power, and electricity.

Can wood be part of the solution?

3) Although using wood may not be the right solution for all communities, it may be one option for communities interested in local, renewable sources of energy. Even advocates of woody biomass as an energy source accept that it does not represent a silver-bullet solution. Many scientists agree that no one solution (such as solar, nuclear, wind, or wood) can solve our energy challenges alone. The question is not *which* of these energy sources should be used, but how can we use feasible alternatives in combination to collectively meet future energy needs and reduce greenhouse gas emissions.

4) Populations are growing and areas of urban development are increasing. Between 2004 and 2005, the South was home to 64 of the 100 fastest-growing counties in the nation (Bernstein 2006). Within these growing communities, new homes, hospitals, and schools create demands for additional energy (Figure 1). In fact, by 2030 the U.S. is projected to use 34 percent more energy than we use today (EIA 2007). Currently, fossil fuels (petroleum products, natural gas, and coal) generate most of the nation's energy. Fossil fuels have many advantages, such as portability, relatively low economic cost, and existing infrastructures. However, fossil fuels

Figure 1. Energy demand and costs are increasing across the South. Photo courtesy of greenhouse.gov.

are a limited resource, are subject to cost fluctuations, and emit greenhouse gases that scientists link with climate change.

5) As communities seek better methods to meet energy demands, part of the solution will include using renewable energy sources (such as biomass, wind, hydroelectric, geothermal, and solar). Each renewable energy source can play a role in shifting the nation toward a more secure and sustainable energy supply. The feasibility of using a particular energy source may depend on the local availability of that source, environmental impacts, technology, cost, economic impacts, and community acceptance.

6) Woody biomass is one source of renewable energy that may be a possibility for some communities. Woody biomass is plant material from trees and shrubs and can be obtained from several sources (Table 1). Interest in using wood for energy stems largely from the idea that wood is a locally produced and renewable resource that is available for harvest every month of the year in most parts of the South.

How can wood be used for energy?

7) A community can use woody biomass to produce energy for residential, commercial, and industrial purposes. Wood-fueled facilities are typically smaller than most coal and natural gas facilities and produce less than 80 megawatts (MW) of electrical power, which is enough to power more than 32,000 homes per year. Craven County Wood Energy is an example of a facility that produces 50 MW of electrical power from biomass every day. This power plant is located near New Bern, North

Carolina, a quaint historic town of about 25,000 residents just outside of the Croaton National Forest. Forests surround the power plant, and about 61 percent of the county consists of timberland. Plant Manager Paul Garrett explains that his facility uses more than 500,000 tons of waste wood per year. Standing near a massive pile of wood chips and several conveyor lines, Garrett proudly speaks of how his plant uses a waste resource. "Much of this wood would have ended up in county landfills. Instead we use it to supply energy, offsetting the demand on fossil fuel resources," he explains.

Table 1. Potential Sources of Woody Biomass

1. Urban waste wood
   – yard trimmings
   – power line trimmings
   – land-clearing debris
   – storm damage debris

2. Forestry residues
   – forest thinning material
   – branches from harvesting
   – sawmill and factory wastes

3. Wood grown specifically for energy

8) Since wood resources vary by location, some communities may not have enough wood to support a large facility like Craven County Wood Energy. However, they may have enough wood to use in a smaller facility, like a hospital, school, or industry. Since the 1980's, Rowan County High School in Morehead Kentucky, for example, has been using sawdust to heat the high school building and a nearby vocational technical institute. Today, the school uses more than 750 tons of sawdust annually. There are, of course, many factors that must be considered when weighing wood as a potential energy option. Communities that are exploring this option might consider the following questions: what are the expected energy needs, what type of local facility could use wood, and what are the local sources of woody biomass?

Does your community have enough wood to consider a wood-to-energy project?

9) Many scientists are working to help communities estimate how much wood is locally available and how much energy it could generate. Dr. Matt Langholtz is a project director with BioResource Management who researches the economic availability of wood. Sitting in his office, he describes the colorful figures displayed on his computer screen. "I created supply curves using three sources of woody biomass—urban waste wood, logging residues, and pulpwood," he says. "The supply curves show how much wood is economically available within a one-hour radius of the county's center. For example, this supply curve for Santa Rosa County, Florida suggests that there is enough wood within a one-hour radius to produce 13 MW of electricity at a cost competitive with coal, which is enough to power 5,000 homes per year. The data are location specific, due to variations in county size, forest cover, and forestry practices."

10) As Matt opens another computer file containing several tables, he continues, "An average county population size in the South of 75,000 residents produces about 9,000 dry tons of urban waste wood per year. This is enough fuel to power more than 400 homes per year. The U.S. Department of Energy's Billion Ton Report estimates that about 8 million dry tons of wood currently grown for conventional timber products could be used for energy nationwide. This could be enough fuel to power more than 500,000 homes per year."

11) While having enough wood is often the first consideration when deciding whether or not to use wood for energy, an equally important factor for communities to consider is how nearby forests and the environment will be affected. Forested landscapes provide multiple benefits, from wildlife habitat to cleaner air and water (Figure 2). Many citizens value the natural areas that surround their community and are concerned about forest sustainability.

Figure 2. Forested landscapes provide both social and environmental benefits.

Can we use wood for energy and still keep our forests?

12)There are diverse perspectives on forest management and sustainability. For example, people may fear that using wood over time will increase negative environmental impacts, such as land-use changes, reduced soil fertility, and degraded wildlife habitats. Some environmental organizations are reluctant to support using wood for energy. According to Sid Cullipher, Executive Director of Dogwood Alliance, an environmental group dedicated to the protection of Southern forests, there is already an enormous amount of pressure on forests to provide timber and pulp. "To think that we can also use the forests to provide for our substantial and growing energy needs is a recipe for massive forest devastation. Increased demand for wood for energy could lead to greater conversion of natural forests to plantations, which will result in increased loss of natural forests. It could also shift forestry for wood products to developing countries, increasing natural forest loss locally and globally," he says. Some people who are concerned about forest sustainability believe that adding additional demands on the resource, such as using wood for energy, will eliminate the potential for sustainability.

13)Another perspective is that forests can be sustainably managed to lessen negative impacts, increase long-term yields, and conserve natural areas. Dr. Patrick Minogue, a forest scientist, explains, "I believe that sustainable forest management practices can provide both wood products and environmental services, such as watershed protection, wildlife habitat, aesthetics, and recreation. Through good management practices, the environment can not only be protected, but enhanced. Pulpwood markets are declining, and forest landowners need incentives to keep their lands forested and out of developer's hands." Thus, important considerations for communities are healthy forests, sustainable management practices, land-use changes, and the economic markets that may drive land-use changes.

14) Air quality is another important aspect of energy production. Many people worry that using wood for energy will produce a lot of air pollution, which is a valid concern. When wood is burned in fireplaces, wood stoves, or in open areas, the irregular and inefficient combustion emits smoke and ash. Burning wood in a wood-powered facility allows the temperature, moisture level, and size of wood

particles to be controlled. Energy facilities are also required to have air emission control devices to capture and filter pollution.

15)Conventional wood-fired power plants produce some of the same emissions as coal-fired power plants including carbon dioxide and carbon monoxide, but produce very little sulfur and mercury and lower levels of nitrogen oxides (U.S. EPA 2006). Also, as long as new trees grow in place of those used for wood energy, wood does not contribute carbon dioxide to the atmosphere, meaning it is a carbon-neutral energy source (Matthews and Robertson 2005). The type of wood fuel, power plant, and emissions control technology used determine both the emissions produced and the overall impacts on air quality.

How is wood carbon neutral?

16)Wood, coal, and natural gas are made of carbon-based compounds. Burning them releases carbon, which becomes carbon dioxide in the atmosphere. The difference between wood and fossil fuels is that the carbon released by burning or decomposing wood has been recently circulating through the atmosphere. Growing plants and animals absorb and release carbon everyday, and cycling this amount of carbon is a benefit that our ecosystems provide (Figure 3). Fossil fuels release fossilized carbon that has been out of the system for millions of years. This newly released carbon, when added to the atmosphere, is thought to be responsible for a significant amount of the changing global climate (UNEP 1997).
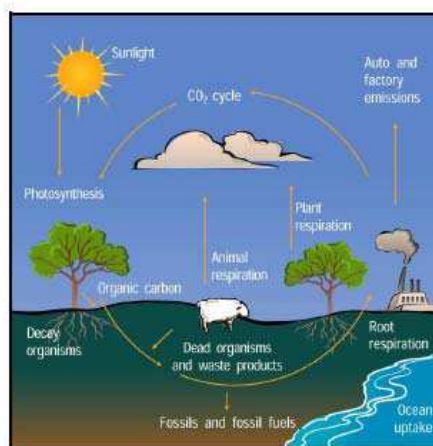

Figure 3. Carbon continuously cycles through living organisms, soils, oceans, and the atmosphere. Illustration courtesy of Windows to the Universe, http://www.windows.ucar.edu.

17)Along with environmental considerations, communities may need to consider the potential economic impacts of using wood.

How does using wood for energy affect our local economy?

18)When and where it is readily available on a sustainable basis, wood can cost about the same or less than other energy sources. In addition, using wood for energy can provide communities with economic benefits, such as local job creation, strengthened forestry markets, and increased economic activity with more money remaining in the local community.

19)For example, Ridge Generating Station employs 40 full-time workers and 10 laborers. The facility is located between Orlando and Tampa, two of the fastest-growing cities in Florida. Using waste wood and scrap tires, the facility generates 40 MW of power. The plant manager, Phil Tuohy, estimates the facility has a regional economic impact of more than $6 million a year.

20)Northwest Missouri State University also uses wood for energy, which influences the local economy. The university is located among the rolling hills, forests, and farmland in the small town of Maryville and serves about 6,500 students. James Teaney supervises the university's energy system, which uses wood chips to heat and cool campus buildings. He has been keeping the system running smoothly for more than 10 years. Teaney smiles as he waves one of his truck drivers through the gate at the facility. Closing the gate, he says, "By using local wood resources, the university has saved over $375,000 per year for the past 20 years. I feel that just as important is the fact that we use a locally controlled, secure energy source and that the money we pay our local suppliers stays in northwest Missouri."

21)Addressing community perspectives and concerns about energy options is an important step toward developing a comprehensive and sustainable energy plan. An energy plan will not win community acceptance without first addressing citizens' concerns. Thus, additional questions for communities to consider are: how can community members become involved in the decision-making process and how can energy plans reflect their values, concerns, and ideas?

How can you influence your community's energy plan?

22)In Burlington, Vermont, concerns and ideas from the local community helped to shape decisions regarding the 50 MW wood-fueled utility that provides power to the area (Figure 4). Local resident Tom Hudspeth remembers the community meetings to design the McNeil Generating Station. "Lots of folks were not happy with the idea of burning trees. They did not have a sense of how much wood is locally available. They had concerns about the impacts on nearby forests," he says. However, wood was not disregarded as a potential energy source, Tom continues. "We learned about the issues and got involved in the local energy discussions. In response, the utility worked with us to address our concerns. They developed strict environmental standards regarding tree harvests, promising to purchase only wood that is harvested in compliance with these standards. They also hired four foresters to make sure that the wood comes from timber stand improvements. So, we are able to obtain energy from wood resources while ensuring local forest health and sustainability," he says.

23)Another major community concern was increased truck traffic through suburban streets for wood delivery. The utility agreed to receive 75 percent of all deliveries by rail from a remote loading yard 35 miles away, even though it meant a 20 percent increase in transportation costs. Today, two-thirds of the energy consumed in Burlington comes from wood and other renewable sources.

Figure 4. This wood-to-energy facility in Burlington, Vermont, addressed citizen concerns within their energy plan. Photo courtesy of McNeil Generating Station.

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24)Within the option to use wood for energy generation, several choices exist, such as facility size and location, wood transportation methods, sources of wood, and standards for sustainable forest management. As Tom Hudspeth explains, citizen involvement is a key component in developing an acceptable energy system.

25)If your community is considering the use of wood for energy, there are several ways that you can become involved in the local discussions. Learning more about options for energy production and the current use of energy in your community is an important first step. This helps you have informed opinions about local energy options. Other ways to get involved include
- attending public meetings/forums that discuss energy choices;
- discussing the topic with family, neighbors, and friends;
- touring your local power plant;
- visiting and learning about a sustainably managed forest;
- writing a letter to your community leaders;
- responding to a news article with a letter to the editor of the newspaper; or
- discussing your perspectives with community leaders and industry officials.

26)To learn more about this topic, visit www.interfacesouth.org/woodybiomass or www.forestbioenergy.net. You can also search the internet or your local library using phrases such as "using wood for energy" or "renewable energy." In addition, you can contact your community leaders and energy officials who may be able to provide local information about energy choices.

Summary

27)Community decisions about energy require careful consideration. Every energy source has associated advantages and disadvantages. Wood can be considered with other energy sources to meet energy demands and move toward sustainable fuel supplies. Using woody biomass is not the only option, but may be part of a solution for some communities. Table 2 summarizes the potential concerns and benefits of using wood for energy that are introduced in this fact sheet.

Table 2. Concerns and Benefits of Wood for Energy

Potential Concerns
- Where will the wood come from?
- Is there enough wood?
- Will we lose our forests?
- How will air quality be affected?
- What about soil fertility and wildlife habitat?
- How will the wood be transported?
- How will using wood affect my electric bill?

Potential Benefits
- Renewable and locally-produced energy source
- Useful way to manage "waste wood"
- Lower mercury, nitrogen oxides, and sulfur dioxide air emission levels than fossil fuels
- Carbon-neutral fuel source
- Local job creation
- Potential for positive regional economic impacts
- Additional wood market for forest landowners

28)Sustainable energy supplies, environmental quality, economic impacts, and community acceptability are key concerns in community energy discussions. By working through the issues and discussing all possible choices together, citizens, leaders, and industries can find new solutions to meet energy demands and create a more sustainable future.

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U.S. Environmental Protection Agency (EPA). 2006. Electricity from non-hydroelectric renewable energy sources. http://www.epa.gov/cleanrgy/renew.htm#biomass (accessed May 3, 2007).

Interesting Text Variation

Characters/People
Setting description vivid, 1st person with quotes:
      Paul Garrett (paragraph 7)
      Matt Langholtz (paragraph 9)
      James Teaney (paragraph 20)

Setting description not vivid, 1st person with quotes:
      Tom Hudspeth (paragraph 22)

Setting description not vivid, 3rd person with no quotes:
      Phil Tuohy (paragraph 19)

No setting, 1st person with quotes:
      Sid Cullipher (paragraph 12)
      Patrick Minogue (paragraph 13)

Locations
Location description concrete and vivid:
      New Bern, North Carolina (paragraph 7)
      Maryville, Missouri (paragraph 20)

Location description, not vivid:
      Burlington, Vermont (paragraph 22)
      Morehead, Kentucky (paragraph 8)
      Orlando and Tampa, Florida (paragraph 19)

Generalized locations throughout text:
      The South
      Florida, Georgia, and Texas
      Average County with 75,000 residents
      Counties with moderate forest industry
      Nationwide
      Kentucky

Case Study Examples
Craven County Wood Energy (paragraph 7)
Rowan County High School (paragraph 8)
Ridge Generating Station (paragraph 19)
Northwest Missouri State University (paragraph 20)
McNeil Generating Station (paragraph 22, 23)

Vivid, Descriptive Paragraphs
Paragraphs 7, 9, 20

EXPERT REVIEW

Thank you for your assistance in reviewing this fact sheet. I will use this fact sheet in focus groups to engage participants in discussion about the effect of some text characteristics, particularly the use of characters and imagery of locations on creating informed opinions and empowering citizens to become involved in natural resource issues.

This fact sheet is trying to explain a technical issue to the general public just like a traditional extension fact sheet. The purpose is to give readers a variety of text characteristics while objectively informing them about using wood for energy. Your review of the fact sheet will help ensure that the text does or does not contain certain text characteristics.

This should take about 45 minutes to complete. This review is anonymous, so please do not write your name anywhere on the documents.

Table 1 lists characteristics that may be located throughout the fact sheet. Please rate your level of agreement with each statement. Write the corresponding number for your rating in the space provided.

Table 2 lists characteristics that may be evident in some paragraphs of the fact sheet and not in other. Please write the numbers of the paragraphs where the statements below apply. You need not write down every paragraph number, just the ones that are most obvious.

Comments on your rating are welcome and encouraged. Notice that the paragraphs on the fact sheet are numbered, so you can easily refer to locations in the text.

Please return the review to me by campus mail by November 2nd.
Annie Oxarart, School of Forest Resources and Conservation
PO Box 110410

Or place it in my mail box in the graduate student mailroom (2nd floor of Newins-Ziegler Hall)

Please let me know if you have any questions. I can be contacted at oxarart@ufl.edu or 904-540-2861.

Thank you very much! ☺

Annie

Table B-1. Text characteristics for expert review.

Text characteristics	Ratings: 1=Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree	Comments
A	The fact sheet asks the reader relevant questions about the topic.		
B	The text is free of technical jargon.		
C	Information is understandable.		
D	The text is easy to read.		
E	The background information is sufficient to understand the issue of using wood for energy.		
F	The information is sufficient to understand the costs of the issue.		
G	The information is sufficient to understand the benefits of the issue.		
H	The information is overwhelmingly complex.		
I	The information is biased.		
J	The text makes the issue personally relevant to the reader.		
K	The title is appropriate for the fact sheet.		
L	The title is interesting.		
M	The introduction is attention grabbing.		
N	The introduction entices the reader to continue reading.		
O	The introduction presents a problem that needs to be addressed.		
P	An overarching storyline can be detected throughout the fact sheet (problem leading through series of trial solutions to a possible solution).		
Q	The same information is repeated throughout the sections.		
R	The sections effectively lead the reader to a possible solution of the problem.		
S	Each section concludes with a promise of new information, enticing the reader to continue.		

Table B-1. Continued.

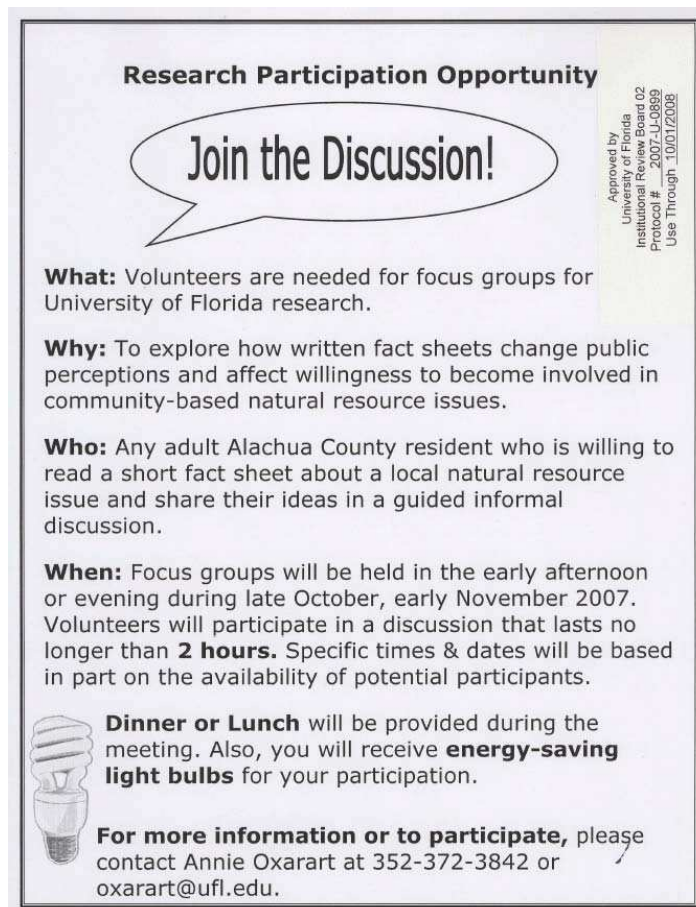|	Text characteristics	Ratings: 1=Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree	Comments
T	The conclusion effectively summarizes the reasons to consider one possible solution to the problem presented in the introduction.		
U	Transitions are used between the sections.		
V	Transitions are effective at connecting the sections.		
W	The fact sheet is visually attractive		
X	The photographs enhance the text.		
Z	Specific reasons to learn the information are articulated.		
A1	The text gives the reader reasons to the involved in the issue.		
B1	Implications of being involved in the issue are given in the text.		
C1	Procedural information for becoming involved in the issue is provided.		

Table B-2. Paragraph characteristics for expert review.

Paragraph Characteristics		Paragraph Numbers	Comments
a	The text is vivid. I can imagine the information.		
b	The text is not vivid. I can not imagine the information.		
c	The characters are described well enough that you can imagine talking to them.		
d	The characters are not described well enough that you can imagine talking to them.		
e	Locations are described well enough that you get a feeling for the area.		
f	Locations are not described well enough that you get a feeling for the area.		

APPENDIX C
FOCUS GROUP RECRUITEMENT PROCESS

Organizations Contacted for Participant Recruitment

Civic Media Center
Clean Water Action Network
Current Problems
Florida Trail Association, Florida Cracker Chapter
Friends of Nature Parks
Friends of Paynes Prairie
Kiwanis Club
League of Women Voters
Master Gardeners, Alachua County
Oak Hammock Retirement Community
Rotary Club
Sierra Club
Sustainable Alachua County
Wilhelmina Johnson Resource Center
Women for Wise Growth

Flyer for Participant Recruitment

Recruitment Announcement

Would you like to volunteer for a focus group for University of Florida research? For my thesis research, I am exploring how written fact sheets influence public perceptions and willingness to become involved in community-based natural resource issues. To obtain information about this topic, I am conducting focus groups with residents of Alachua County. Participants will need to be willing to read a short fact sheet and share their ideas in an informal discussion. In addition, participants should be interested or active in community issues. The focus group will last no longer than 2 hours. Participants will receive energy saving light bulbs and lunch as compensation for participation! Focus groups are currently scheduled for December 8th and December 15th and will be held in the morning and afternoon. For more information or to participate, please contact **Annie Oxarart at 352-372-3842 or oxarart@ufl.edu**.

Letter Mailed to Interested Volunteers

October 29th, 2007

Dear interested participant,

Thank you for your recent interest in participating in a focus group for University of Florida research. I have included the following information with this letter.

Consent Letter: This provides you with information about the focus group. If you choose to participate, please sign this letter and bring it with you to the focus group. The additional copy is for your records.

Participant Questionnaire: To participate, please take a moment to fill this out. Send the completed questionnaire back to me in the stamped envelope.

After I receive your participant questionnaire, I will schedule you for a focus group time and provide you with directions to the focus group location.

Please let me know if you have any questions.

Thank you,

Annie Oxarart

Interested Volunteer Questionnaire

Thank you for your interest in participating in the upcoming focus groups. Please take a moment to fill out this questionnaire. This information will ensure that the focus groups represent a diversity of Alachua County residents and that participants are among the people we are trying to reach. Your identity will be kept confidential to the extent provided by law and will only be used for placing you into one of the focus group time slots. The questionnaire will take less than 5 minutes.

Your Name_____

Contact Information (phone or email)_____

1. How **interested** in community issues do you consider yourself?
   ☐ Not at all interested   ☐ Fairly interested
   ☐ Somewhat interested   ☐ Very interested

2. How **active** in community issues do you consider yourself?
   ☐ Not at all active   ☐ Fairly active
   ☐ Somewhat active   ☐ Very active

3. What is your residential zip code? _____

4. How old are you?
   ☐ < 18 years   ☐ 50-64 years
   ☐ 19-29 years   ☐ 65-79 years
   ☐ 30-39 years   ☐ > 80 years
   ☐ 40-49 years

5. What is your sex?
   ☐ Male
   ☐ Female

6. What is your race or ethnicity?
   ☐ White and non Hispanic   ☐ Black/African American
   ☐ Asian   ☐ Native Hawaiian/Pacific Islander
   ☐ Native American   ☐ Latino/Hispanic (of any race)
   ☐ Other (Please specify) _____ ☐ Multiple races or ethnicities

7. Please check the highest level of education you have completed.
   ☐ Less than a high school diploma   ☐ Bachelor's degree
   ☐ High school diploma or equivalent   ☐ Master's degree
   ☐ Some college credit   ☐ Professional degree
   ☐ Associate degree   ☐ Doctorate

Thank you for providing this information. Please return it in the envelope provided as soon as possible. You will be contacted shortly with the date and time of the focus group.

Protocol Approval Letter

UF | **Institutional Review Board**
UNIVERSITY *of* FLORIDA

PO Box 112250
Gainesville, FL 32611-2250
352-392-0433 (Phone)
352-392-9234 (Fax)
irb2@ufl.edu

DATE: October 9, 2007

TO: Annie Oxarart
             PO Box 110410
             Campus

FROM: Ira S. Fischler, PhD; Chair
             University of Florida
             Institutional Review Board

SUBJECT: **Approval of Protocol #2007-U-0899**

TITLE: Fact Sheet Focus Groups

SPONSOR: Wood to Energy Outreach Program, a cooperative agreement with USDA Forest
             Service

I am pleased to advise you that the University of Florida Institutional Review Board has recommended approval of this protocol. Based on its review, the UFIRB determined that this research presents no more than minimal risk to participants. Given your protocol, it is essential that you obtain signed documentation of informed consent from each participant. Enclosed is the dated, IRB-approved informed consent to be used when recruiting participants for the research.

> It is essential that each of your participants sign a copy of your approved informed consent that bears the IRB approval stamp and expiration date.

If you wish to make any changes to this protocol, *including the need to increase the number of participants authorized*, you must disclose your plans before you implement them so that the Board can assess their impact on your protocol. In addition, you must report to the Board any unexpected complications that affect your participants.

If you have not completed this protocol by **October 1, 2008**, please telephone our office (392-0433), and we will discuss the renewal process with you. It is important that you keep your Department Chair informed about the status of this research protocol.

ISF:dl

An Equal Opportunity Institution

Letter of Informed Consent

School of Forest Resources and Conservation
PO Box 110410
University of Florida
Gainesville, FL 32611

Dear Focus Group Participant:

I am a graduate student at the University of Florida. As part of my thesis research, I am exploring how text-based fact sheets change perceptions and willingness to participate in complex community-based natural resource issues. To obtain information about this topic, I am conducting focus groups with residents of Alachua County. I am asking you to participate in this focus group because you are an adult resident of Alachua County and you are associated with a community organization. The focus group will last no longer than 2 hours. A focus group is similar to a group interview, containing 6 to 8 participants. I will moderate the focus group by using a few general questions and I will listen to the discussion. The use of a focus group enables the participants to bounce ideas off of each other and come up with comments they might not have generated on their own. It will be an informal process (more informal than this letter!).

You will not have to answer any question you do not wish to answer. The focus group will be conducted in Gainesville where it will be easy to park. Please bring this signed consent with you to the focus group. With your permission, I would like to audiotape and possibly videotape the focus group. Only the researchers in my group will have access to the tapes which I will personally transcribe, removing any identifiers during transcription. The tapes will then be erased. Your identity will be kept confidential to the extent provided by law, and your identity will not be revealed in my thesis or any related publication.

There are no anticipated risks or direct benefits to you as a participant in this focus group. We can offer you a bit of compensation, however. You will receive compact fluorescent light bulbs and a meal (either lunch or dinner, depending on your focus group time) as compensation for your participation. You are free to withdraw your consent to participate and may discontinue your participation in the focus group at any time without consequence.

If you have any questions about this research protocol, please contact me at 352-846-0873 or my faculty supervisor, Dr. Martha Monroe at 352-846-0878. Questions or concerns about your rights as a research participant rights may be directed to the IRB02 office, University of Florida, Box 112250, Gainesville, FL 32611; (352) 392-0433.

Please sign and bring this copy of the consent letter to the focus group. A second copy is provided for your records. By signing this letter, you give me permission to report your responses anonymously in my thesis manuscript, which will be submitted to my faculty committee and to the University of Florida.

Approved by
University of Florida
Institutional Review Board 02
Protocol #   2007-U-0899
Use Through 10/01/2008

Thank you for your valued assistance!

Annie Oxarart

_____

I have read the procedure described above for the Fact Sheet Focus Groups. I voluntarily agree to participate in the focus group, and I have received a copy of this description.

_____   _____

Signature of Participant   Date

APPENDIX E
WORKSHEET

Part of the focus group discussion will be about the examples, people, and locations introduced in the fact sheet. Please take a moment to fill in this worksheet. Feel free to look back to the fact sheet if you don't remember this information.

People and Examples: Write the letter of the description that matches the person or example from the fact sheet.

Descriptions

A. Uses sawdust to heat their buildings and nearby technical institute buildings

B. Believes in the use of sustainable forest management practices

C. Is proud of how Craven County Wood Energy uses a waste material for energy

D. Has worked at Northwest Missouri State University for over 10 years

E. Involved in energy discussions in Burlington, Vermont

F. Believes using wood for energy is not sustainable

G. Plant manager at Ridge Generating Station

H. Researches the economic availability of wood

People or Examples

____ Paul Garrett, Plant Manager (paragraph 7)

____ Rowan County High School (paragraph 8)

____ Dr. Matt Langholtz, Research Project Manager (paragraphs 9 and 10)

____ Sid Cullipher, Executive Director of an environmental organization (paragraph 12)

____ Dr. Patrick Minogue, Forest Scientist (paragraph 13)

____ Phil Tuohy, Plant Manager (paragraph 19)

____ James Teaney, Energy System Supervisor (paragraph 20)

____ Tom Hudspeth, Citizen in Burlington, Vermont (paragraph 22)

Locations

Where is wood being used for energy?

Where could wood be used for energy?

Welcome and Participants Read Fact Sheet

Thank the participants for coming. Introduce myself and the assistant.

Our discussion will last no longer than 2 hours. The bathrooms are located____. We will have lunch after the focus group.

The purpose of the focus group is to learn more about how text-based fact sheets effect public perceptions and willingness to participate in complex community-based natural resource issues. I will analyze the discussion we have here today to gather data for my thesis. During the analysis, I will remove any information regarding your identity. In this way, your answers will be anonymous. You have all been given a letter with this information. Does anyone have any questions about the research? Has everyone signed the letter?

Before we begin our discussion, I would like you all to read a short fact sheet about using wood for energy. When you finish reading, I have a few questions on this worksheet for you to answer. You can stay in this room, go sit on the couch in the hall, or use the picnic table outside. This may take about 25 minutes. When you are done, come back to this room.

Wait until everyone returns and has answered the questions to begin introduction.

Introduction

So, now we will begin the discussion portion of the focus group. I am going to ask some questions and feel free to respond openly and honestly. There are no right or wrong answers to these questions. You can respond directly to the question, and I encourage you to respond to other participant's answers in order to build upon the discussion. My role is to guide to the discussion and make sure that everyone has a chance to share their ideas, not to provide information about using wood. The purpose of our discussion is to talk about how the fact sheet is written. If you have specific questions and comments about using wood for energy, we can write them down and talk after the focus group or during lunch, and I have folders that contain additional information that you are welcome to take home.

If it is ok with everyone, I will record the discussion we have here today. Do I have everyone's permission to record the discussion? Please make sure you speak clearly and loudly so that we can all hear each other, and so that your voice is picked up by the recorder. Does anyone have any questions about the process?

Turn on recorder(s).

Opening Question

1. To get started let's go around the room and introduce ourselves. Tell us your name, how long you have lived in Alachua County, and briefly tell us about your interest or involvement in community issues.

In-depth Questions

A. General reaction to fact sheet

2. In general, what did you think about the fact sheet?

   Possible Prompts:
   What were some of the topics that you remember?
   Was it interesting? *(Might need to give them the comparison fact sheets.)*
   What did you like about it?
   What did you not like about it?

B. Examples, People, and Locations in the Fact sheet

Have a list of all the people and locations and their paragraph #'s on flip chart paper.

3. Now, I would like you to think about the examples, people, and locations that were mentioned in the fact sheet. These lists show all the people and locations used in the fact sheet and the paragraph numbers where they are found.

   How closely do you identify/relate with the people and locations in the fact sheet?

   Possible Prompts:
   Which person made an impression on you? What kind of impression?
   Which person did you like? What about the person did you like?
   Which person did you dislike? What about the person did you not like?
   Which person did you feel like you learned the most from?
   What sort of places can you imagine using wood for energy?
   Which communities seem like a place you know? What makes you feel that way?

C. Willingness/Motivation to Get Involved

4. Some people don't know how to get involved in community issues or don't feel like their participation could make a difference. What information in the fact sheet might motivate you or increase your willingness to become involved in community discussions?

   Possible Prompts:
   Can you imagine what you could do to become involved?
   Which parts of the fact sheet are effective at this?
   What would make this a more powerful tool for encouraging public involvement?
   What would you change about the fact sheet?

Ask the participants to point out relevant paragraphs, examples, characters, or locations in the fact sheet.

D. Organizations and Changes in Perceptions

Pass around the front pages with the logos/header.

5. If the fact sheet has the information that is at the top of the page, would this change the way you think about the fact sheet?

E. Closure

Summarize/link together key points of discussion. Remember to get agreement for any assumptions/ideas that you were not stated by participants.

Is that an accurate summary of our discussion? Does anyone have anything else to add? Thank participants again.

If anyone has questions about the use of wood for energy, feel free to ask them now or during lunch.

Table G-1. Data matrix used in analysis.

Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How do citizens perceive the information provided in the written text?	Mistrust	MTRST	Mistrust in industry, experts, government	Skeptical can control what they say, forest industry green-washes products, how loyal can business be to the community, business greases up politicians, government references not trusting, skeptical of experts	G1 (2) G2 (4) G3 (2)	Mistrust and skepticism in many entities (mainly directed toward industry, but also government, experts, and the information source). Feel that promises and predictions can fall by the wayside if they are not in the best interest of business. Even when participants read about wood source predictions, they may not believe the information due to underlying mistrust.
		SPIRAL	May get out of control, mistrust of predictions	Sounds good now, but will be hard to control once it begins. Industry will not be able to just use waste once it starts, hard to keep promises. Checks and balances are not in place.	G2 (3) G3 (3)	
		CRED	University is credible source of information	Having the university as the source of information is more credible than other groups	G1 (3) G2 (1) G3 (2)	
		AGENDA or FUND	Source of information may want to promote wood, who funded the article	There may be a hidden agenda depending on who is funding this research	G1 (3) G2 (3) G3 (1)	

Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How do citizens perceive the information provided in the written text?	The right information	MORE or CONC	Need more/different information	Want more information, different information, the information provided does not address my concerns and questions, lots of questions asked – ones that were addressed in the text, but were not understood	G1 (4) G2 (2) G3 (5)	How well the information that was or was not presented in the article addressed the questions and concerns that participants had. While the article covered many aspects of the issue of using wood for energy, several participants had questions and concerns about the information.
		TMI	Too much information	Just need the "guts", skipped over parts, too much information	G1 (2) G3 (2)	
		TARG	Target audience needs to be considered	Too long for the average person, too dry, they want info quick and accurately, too high level	G1 (2) G2 (1) G3 (1)	Participants made conflicting statements over whether there was too much information, not enough information, or just not the right type information.
		NEW	Provides new information, opens mind, new thinking	Never thought of this before, opens mind, first I had heard of this	G1 (2) G2 (1) G3 (2)	The text was unable to break through existing beliefs, knowledge, and experiences surrounding the information.

Table G-1. Continued.

Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How do citizens perceive the information provided in the written text?	Balance of information	PRO	More pro than con, glosses over concerns,	The article is biased toward using wood. Trying to convince you to use wood. Advocacy. Concerns aren't well addressed, benefits are.	G1 (5) G2 (4) G3 (4)	Need for balanced supporting and opposing information about the use of wood for energy is apparent. The concerns are not addressed as adequately as they would like, but the benefits are well explained. Only wood as a fuel source is discussed verses discussing wood in comparison to other alternative fuel sources. Participants wonder if they have all the facts and if the facts are framed to promote wood. The opposing viewpoint included in the text did not adequately fulfill the role of a counter opinion, and participants were left wanting different viewpoints on the subject.
		TOKOP	Token opposition	Only one person who says this isn't a good idea, unequal weight in number, length, or strength (DR. vs. some guy). Easy to cut down.	G1 (5) G2 (4) G3 (4)	
		DIFF	Need different viewpoints, counter opinions	More examples of negative, want both points of view, find other people with different views	G1 (2) G2 (2)	
		ALT	Need alternative fuels information	Should compare wood with other sources of energy.	G1 (1) G3 (1)	
		MANIP	Can manipulate the same information to tell two different stories, misleading	The truth, but not the whole truth. Might be another story to write with the same facts, message oversold based on the facts, do we have all the facts, how somebody puts the facts together frames the message.	G1 (5) G2 (4) G3 (4)	

Table G-1. Continued.

Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How do citizens perceive the use of interesting text characteristics, including case study examples, places, and people?	Perceptions of interesting text	HELP	Thoughts about whether the interesting text approach was helpful or not	Doesn't bother me one way or another, didn't bother, sounds like someone trying to make it interesting, don't object, doesn't necessarily help my understanding Don't mind, didn't like, distracting Like b/c it reaches out to different kinds of people	G1 (2) G2 (1) G3 (4)	Participants had mixed feelings about the use of interesting text characteristics. Several participants say the interesting text "doesn't help, but doesn't hurt." their understanding of the information. A couple participants – don't like or distracting. And a couple like it b/c it reaches out to different types of people.
		ART	More like an article than a fact sheet	Wouldn't call a fact sheet, reader's digest, magazine article	G1 (1) G2 (2)	
		ORG	Organization of text	Need section that lays out the facts clearly, separate facts and story, disorganized when all mixed together, can't have dual personality as creative writing and scientific fact sheet, divide by issues and case studies at end, organize by concerns, examples throughout make it disjointed	G1 (4) G2 (1) G3 (3)	Interesting text makes it more like an article than a traditional extension fact sheet that some of the participants are accustomed to. Most participants discussed the organization of the text, and made suggestions that the stories be separated from the facts.

Table G-1. Continued.

Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How do citizens perceive the use of interesting text characteristics, including case study examples, places, and people?	Perceptions of interesting text	PEOP	People mentioned	1. People not important, too many people 2. Focused on examples, not the people 3. Like the quotes 4. People's credentials are important 5. Teaney mentioned in relation to bias, happy friendly wave, proud 6. Cullipher mentioned in relation to bias, token opposition	G1 (2,3,3,0,2,3,) G2 (3,0,0,2,0,5) G3 (3,0,0,2,4,2)	Almost all participants agreed that the people don't seem important, especially their names. People need credentials. Some like the quotes. Only people mentioned were ones who made the information biased. Some of the people descriptions seemed silly, out of place. Participants used the examples to help think through if the solution could work here.
		COMP	Comparison of locations, examples to home	Having populations helps them understand if it could work here	G1 (4) G2 (2) G3 (3)	
		NORM	How others solved problems could be useful	Like to hear about other locations are doing. Can attract different readers. Shows successes, mistakes made, longevity of projects, opens mind to it might work, shows grassroots citizen involvement	G1 (3) G2 (2) G3 (3)	Through examples, able to learn about how other places solved the problem. When prompted about the citizen character – one group said no, one said shows other people have concerns, shows grassroots and people having an opinion. The examples could be improved with more information and by being more realistic.
		EXAM-SIMP	Example was simplified	Example sounds canned, good mgnt sounds to easy	G1 (2) G2 (1) G3 (2)	
		EXAM-MORE	Want more information about the example	What wood sources are they using, how long running, how much $	G1 (3) G2 (1) G3 (3)	

Table G-1. Continued.

Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How do citizens perceive the use of interesting text characteristics, including case study examples, places, and people?	Perceptions of interesting text	RELE-EPL	Examples, people, location mentioned because relevant	Florida stands out b/c we live here, close to home any FL examples relevant, Santa Rosa County and the south are memorable. Burlington stood out b/c people had been there, and know it is a green state. Other interesting text that stood out – historic New Bern and NW Missouri football. Like the small locations like universities, high schools.	G1 (4) G2 (4) G3 (3)	Identified with locations that were relevant to them in some way Several participants across the three groups mention Burlington, VT and Florida. These locations the ones that stood out to them, not the vivid paragraphs. They were relevant to reader b/c close to home or past experience. The relevant text is more impactful than the vivid text. However, without some of the descriptions (quaint, historic town) the example may not have stood out). Need the descriptions to get the relevance and interest to be able to compare areas. Maybe the small locations like high schools or universities because they can imagine it working.

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Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How does the written text affect citizens' motivation to get involved in the issue?	Motivation for involvement	SENST	Sensitive to subject now	Would read an article in the newspaper if they saw it, notice it more, opened up mind to the subject	G1 (3)	One group mentioned being sensitized to subject, so they may not seek information out but would read it if they came across information.
		LEARN	Want to learn more information	Would research on internet or at library, motivated to get their questions answered	G1 (3) G2 (6) G3 (2)	Several participants across the three groups were motivated to seek more information about using wood for energy.
		LEARN-DIFF	Learn about another point of view	They are motivated to seek other points of view. They would Google the terms rather than use the listed web sites.	G1 (2) G2 (1)	Some participants mention they want to continue learning to find answers to *their* questions and concerns. Others want a different point a view so they would be motivated to seek out counter opinions.
		LEARN - RES	Give additional information for those who want to do more research can	Like giving the person the power to continue their research, could be more information (web sites)	G3 (1)	
		LEARN-EXAM	Give resources for examples so we can research further	Would like more information about the examples – contact information (phone and web site), names, positions are important	G1 (3) G3 (5)	Some participants wish the examples had more information so they can use them to learn more about their experiences or visit the locations.

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Table G-1. Continued.

Related research question	Theme	Code	Code definition	Descriptive data summary	Group and number of people	Interpretation
How does the written text affect citizens' motivation to get involved in the issue?	Motivation for involvement	ACT	Actions they would take to be involved	Some would only want to learn more, others would tour the energy or forest (each group), write a letter to the paper, discuss with others.	G1 (4) G2 (3) G3 (3)	Would become involved at their comfort level. Participants recognize they are not the experts, but they might be interested in doing some suggested actions: touring power plant, discussing with friends, writing a letter, etc.
		COMF	Not comfortable to discuss at traditional meetings	Other people are the experts, better know what you are talking about, might ask questions but don't want to be the fact stator, not the experts, I would be afraid, would prefer a more informal meeting setting (not the traditional public meeting	G1 (4) G2 (5) G3 (2)	If the issue was locally relevant, some would be likely to get involved Even though the information was not specific to a location, many participants wanted to learn more and become involved in some ways. Of course, once they get back to the "real world" there are many barriers to these actions taking place.
		LOCAL - RELE	Issue needs to be locally relevant	Would wait and see what is being offered as far as citizen participation Need localized relevance to be motivated to get involved One person says if it is happening in the world it is relevant If happening here, likely to get involved	G1 (3) G2 (3) G3 (5)	

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BIOGRAPHICAL SKETCH

Annie is a native Floridian. While she was born in Jacksonville, Annie grew up in the central part of the state and graduated from Winter Park High School in 1998. In 2004, Annie graduated from University of Florida with a bachelor's degree in natural resource conservation. She worked with the Florida Park Service as a park ranger before deciding to pursue graduate studies at the University of Florida. In August of 2008, Annie received her master's degree with a focus on environmental education and communication. Annie lives in Gainesville with her husband, Taylor, and is excited to continue her career in natural resource conservation and education.