

**FINAL REPORT AND
EVALUATION OF THE COMMUNITY ROADMAP TO
RENEWABLE WOODY BIOMASS ENERGY¹**

REPORT TO THE NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

Funded by the

NEW HAMPSHIRE GREENHOUSE GAS
EMISSIONS REDUCTION FUND

Submitted by the

NORTH COUNTRY RESOURCE CONSERVATION
AND DEVELOPMENT AREA, INC.

June 30th, 2011

¹ Original proposal to the New Hampshire Greenhouse Gas Emissions Reduction Fund submitted on March, 20th, 2009.

Original Program Title: Roadmap to Position NH Communities to Explore and Implement District Heating and Combined Heat and Power Options Using Renewable Carbon Neutral Wood Biomass

Current Program Title: The Community Roadmap: A Civic Decision-making Tool for Evaluating the Viability of Wood Biomass District Heating Systems for New Hampshire Communities.

Application: The Community Roadmap project was designed to meet the requirements set fourth in the NH Greenhouse Gas Emissions Reduction Fund, program Type 8, “To improve the electric and thermal energy efficiency of new and existing residences and commercial buildings” and Type 10, “Education, Outreach, and information programs that promote energy efficiency, conservation, and demand response”. I find that *The Community Roadmap to Renewable Woody Biomass Energy* tool resulting from the Community Roadmap project has every potential to increase electric and thermal energy efficiency, as well as promote energy-saving measures within New Hampshire communities.

Purpose and Background: The Community Roadmap tool is intended to assist communities² with assessing a woody biomass district heating project. The tool guides decision-making groups through the various issues pertaining to district heating. Such issues were identified by the Biomass Task Force Sub-Committee³ and presented in The Request for Proposal⁴ (RFP) to design the Roadmap. The topics were:

- Technology, Equipment, and Suppliers
- Systems Installation, Operation, and Management
- Funding Opportunities
- Air Quality Regulation and Benefits
- Fuel Sources and Availability
- Public Policy and Regulation

The North Country Resource Conservation and Development Area, Inc. (RC&D), acted as the lead contact interacting with the sub-committee and contractors. The contract was awarded to a collaborative team consisting of the Biomass Energy Resource Center (BERC) of Montpelier, VT and Yellow Wood Associates of St Albans, VT.

Work Performed: The scope of work within the RFP provided the contractors with a basic guideline of the themes, processes, and layout that were expected in final product. The following is a list of main guiding principles and a summary of the *Community Roadmap*'s performance in addressing those key elements.

² Communities loosely defined as a municipality, educational institution or campus, industrial park, or housing project.

³ A diverse group of educational, non-profit, and industry representatives convened to develop the project's scope and ensure the success of the Community Roadmap program.

⁴ Issued on November 18th, 2009 for public bid. Three proposals were received.

- 1) The tool will follow “a graphically illustrated decision making process” to help guide communities through “determining an outcome that suits their energy needs and opportunities” and “navigate the options for district heating, biomass energy, combined heat and power, ancillary opportunities, energy efficiency strategies, and complementary renewable energy”.

Summary: The *Community Roadmap* tool takes the form of a workbook, containing tabs, charts, and illustrations that lead the reader through the decision-making process. A community group would follow a basic three-step plan: gather the information, evaluate that information, and reach a decision based on the outcome of the evaluation. The group may establish energy-related goals or skip directly to evaluating a district heating project. The types of projects outlined as well as the approach to evaluation are diverse and adjustable to needs of each group. Complementary renewable energy is not referenced directly, though the information gathered through the process would help with determining other alternative energy options. Among those with whom I have discussed the *Community Roadmap*, the Community Engagement chapter, as well as the Financing section of the Next Steps chapter, are the most praised for their straightforward approach to communicating nuanced, technical information to stakeholders. When considering any alternative energy project, it is key for a community group to engage stakeholders with a wisely planned, clear set of points.

- 2) The tool will be relevant “regardless of how technologies change”, and be fully revisable should policies and information change.

Summary: To decrease the amount of information needing future updates, the *Community Roadmap* is not technology-specific. Rather, it helps community groups identify the information necessary to begin energy planning, and learn how to communicate an energy assessment effectively to stakeholders. An important demand was that the tool be current and fully updateable should any information become outdated. For this reason, the Biomass Task Force Sub-Committee did not pursue a website version of the Roadmap. The Sub-Committee was unsure of how policy updates would be administered on an internet-based tool without the aid of a web designer. With a PDF version, aspects that are subject to periodic change—like funding, site permitting, and air quality and emissions regulations—can be updated as needed. The Emissions, Permitting, and Air section also fulfills the requirement that the tool “consider regulatory and policy restrictions/ implications/hurdles at all stages of the project” by outlining current regulations pertaining to district heating.

- 3) The tool will “provide community members with a list of informational resources”, as well as “a decision-making tree to navigate the overwhelming number of options”.

Summary: The Appendices section, which contains a glossary of terms, as well as the Common Questions About Biomass chapter, is an example of informational resources that will help guide users through the decision-making process. At each

sections end, there reader is prompted with the option to either “Stop” or “Go”, each with a list of next steps to follow. Though these prompts are similar to a decision-tree format, the document does not contain an overarching graphic representation of a decision-making tree. Through various meetings, the contractors and the Sub-Committee agreed that a graphical depiction of the *Community Roadmap* would be disorienting and unhelpful to community groups.

- 4) “The contracting team will develop, package, [and] test” the tool “with particular communities with geographic diversity”.

Summary: To assist in the tool’s development, the contractors held a meeting⁵ in late June 2010 to troubleshoot the first draft of the *Community Roadmap*. Although the validity of some criticism of the *Community Roadmap* was questioned by the contractors, the meeting was largely successful, with important issues brought to the fore, such as the need for a comprehensive Q and A section, an explanation of assumptions for certain calculations, and to strengthening the community engagement section. As outlined in the RFP, it was intended for the Roadmap to be tested on five different New Hampshire communities. This request could not be fulfilled due to time and budget constraints, and was agreed upon at the onset of the project to be undeliverable.

Tracking the use of the *Community Roadmap* has proven difficult. Although the document itself is available for download through several websites, giving interested parties free, convenient access, tracking the tool’s download and use is all but impossible. Google Analytics data tracking visitor activity on the RC&D website shows the majority of visitors are from within the state, particularly in Laconia, Gilford, and Concord. Though we can assume that most site visits result in a download of the *Community Roadmap*, there is no definitive proof that the document has been downloaded⁶ or used other than word-of-mouth feedback.

Since the *Community Roadmap* has been publicly available, members of the Sub-Committee have principally executed its education and outreach. Thus far, there have been no formal requests to the partnership organizations for guidance or assistance in using the tool. At the Local Energy Solutions Conference in Penacook, NH on April 2nd, 2011, Allison Grappone delivered a

⁵ The meeting was composed of industry representatives, Sub-Committee participants, town planners, and local energy committee members and facilitated by YWA and BERC. Those in attendance were Shanna Ratner (YWA), Samantha Dunn (YWA), Chris Recchia (BERC), Cindy Wyckoff (BERC), Rick DeMark (RC&D), David Van Houten (Coos Community Energy LLC), Richard Harris (Coos Community Energy LLC), Thad Guldbrandsen (Plymouth State U.), Allison Grappone (Northern Forest Center), Dorn Cox (Town of Lee’s LEC), Laurel Cox (member of Town of Lee’s LEC), Kevin McKinnon (Town of Colebrook’s Public Works), Mark Saltsman (Concord Steam Corp.), Ian Raymond (Town of Sanbornton’s LEC), Michael Kowalski (Town of Barnstead’s Planning Board), and Alan Rosetto (A. Rosetto Construction (VT)).

⁶ Nor does it account for multiple visits from one user, or download activity on other sites hosting the *Community Roadmap* document.

PowerPoint presentation⁷ to roughly 30 people interested in the concept of community-scale woody biomass energy development. The presentation itself is a brief (20-30 minutes long) educational overview of how the Roadmap is used and its potential benefits to the user. Sarah Smith presented the same PowerPoint to an audience of approximately 50 people at the Heating the Northeast with Renewable Biomass 3rd Annual Conference in Manchester, NH on April 15th, 2011. Discussing Smith's presentation, Earle Rich of the Mont Vernon Conservation Commission blogged:

The emphasis was to involve everyone in the decision process right from the beginning. The technology choices are relatively easy. Getting citizens to support the conversion is probably the hardest and most important step. The Roadmap is a great document on how to accomplish the change⁸.

Smith also shared the *Community Roadmap* slideshow with approximately 30 people at the Woody Biomass Energy Research Symposium in Burlington, VT on April 28, 2011. At that same conference, I presented my thesis research on the tool to a similarly sized crowd. The reaction of the audiences were mainly positive, although some argued if net carbon biomass emissions could still be considered "zero", as it is referred to several times in document's text, given our present knowledge of the carbon cycle's complexity. Smith also presented the *Community Roadmap* at the Northeast Area Utilization and Marketing Committee meeting of the Northeastern Area State Foresters Association on June 20-23, 2011. Her synopsis of that outreach activity is attached.

After each *Community Roadmap* educational session, all attendees received promotional brochures⁹. The brochure, a concise visual overture of the *Community Roadmap* designed to pique interest and educate, was distributed by mail to every town planner, state legislator, local energy committee, and conservation commission on June 15, 2011. The brochure provides a list of outreach partnership organizations, and the RC&D website where the document can be downloaded.

- 5) The tool will "help communities navigate existing and anticipated funding opportunities for community-scale energy projects", "consider ownership and operation components, as well as the costs and benefits of different ownership options".

⁷ Created by Sarah Smith (Forest Industry Specialist at the University of New Hampshire's Cooperative Extension).

⁸ Posted response on granitegeek.org, "Heating with wood – something New England needs to do more of", April 16th, 2011 at 8:06 am.

⁹ Designed by Lisa Lundari, True Colors Print and Design, Plymouth, NH (2011).

Summary: The Funding Opportunities section in Appendix C and the Community Outreach & Education section in the Next Steps Chapter have been cited¹⁰ as the most helpful aspects of the tool. Finding funding and writing grants can be time consuming, and the *Community Roadmap* assists community groups with finding and pursuing funding sources, as well as conveying the necessary information to grant organizations and communicating potential benefits to stakeholders. Contained in the Funding Opportunities section is an overview of municipal and vendor leasing, power purchase agreements, and ESCOs. Although additional research is critical, decision-making groups will become familiar with key concepts and the ownership options available by utilizing these sections.

- 6) The tool will “help communities understand fuel availability” and provide the ability to “consider a range of fuel options”.

Summary: The *Community Roadmap* contains a chapter on Biomass Fuel that allows communities to delve into wood fuel supply issues, such as sourcing, availability, suppliers, and type of fuel. By calculating fuel requirements and creating lists of potential suppliers, community groups can decide what best fits their unique needs. As with other chapters, the Biomass Fuel chapter ends with a checklist that advises decision-making groups if biomass energy is a best fit for their community based on the information gathered.

Summary of project completed: The Community Roadmap project was initiated as a response to public demand¹¹ for a civic decision-making tool to assist New Hampshire communities navigate the complex web of information pertaining to woody biomass district heating. The success of the collaboration between the Biomass Task Force Sub-Committee, Yellow Wood Associates, and BERC is noted in the clear definition of the problem and the collectively agreed-upon vision of a solution. The interaction between diverse members of the Sub-Committee was consistently democratic, relying upon discussion and majority rule to overcome obstacles encountered.

The *Community Roadmap* tool is a straightforward, user-friendly means to “promote energy efficiency and conservation” within New Hampshire towns. The tool holds great potential to “improve the electric and thermal energy efficiency of new and existing residences and commercial buildings” by requiring decision-making groups to methodically examine their energy needs and compile a list of realistic energy-related goals. Dick Harris a member of Colebrook’s Energy Committee and an advocate of biomass district heating explained:

The biggest difficulty [before the *Community Roadmap* existed] was that it was way over our head. We didn’t know what to do, or how to go about anything. We learned a lot from [other groups]. We were walking down a dark tunnel with no lights on, calling out, ‘What now? We were supposed to do that before?’. People were really interested in what we were doing

¹⁰ Information gleaned through interviews with members of the Sub-Committee as well as several individuals engaged in local energy planning in New Hampshire.

¹¹ As posited by Rick DeMark, RC&D and individuals engaged in local energy planning.

in the community, but we didn't know what to tell them. In fact, what we should've done was to record our progress, but we felt like we weren't making any progress¹².

Evidenced by this response, the *Community Roadmap* tool will be widely successful in elucidating the potential of biomass district heating application in New Hampshire communities. The difficulty lies in finding communities willing to devote the necessary time to the decision-making process.

Although the *Community Roadmap* tool exists as a time-saving resource, it will not eliminate the large time commitment required of community groups. I suggest that the original request be fulfilled to test the *Community Roadmap* with several geographically diverse New Hampshire communities. Not only will this serve to promote the use and validity of the tool, but it will also contribute to the larger knowledgebase of how decisions are made within communities and how such decisions benefit local economies into the future. The tool, while a valuable, do-it-yourself guide to preliminary alternative energy planning, is only as strong as the number of communities who are able to access and utilize it. In this sense, the *Community Roadmap* has not nearly reached its full potential, and further work is necessary to promote its use.

¹² Interview conducted by phone on April 6th, 2011.