

**NORTHERN FOREST  
BIOMASS ENERGY**

**Action Plan**



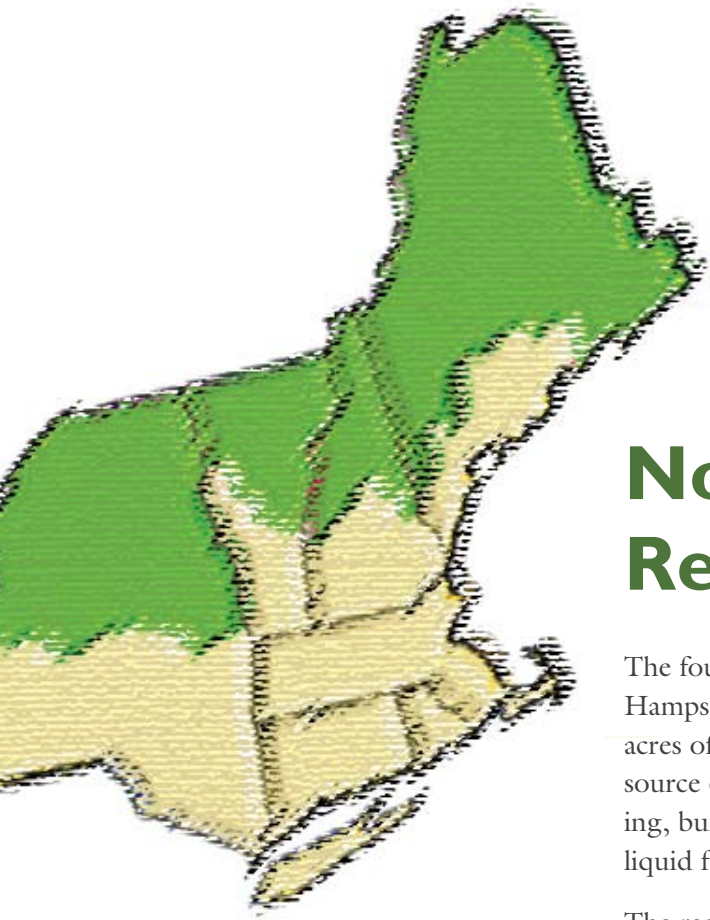
# Endorsements

The following organizations and agencies endorse the Northern Forest Biomass Energy Action Plan and participated in its development:

Adirondack Council  
Adirondack North Country Association  
Adirondack Park Agency  
Allenby Associates, LLC  
American Forests  
Appalachian Mountain Club  
Biomass Energy Resource Center\*  
Carsey Institute\*  
Center for Rural Partnerships, Plymouth State University  
Clean Energy Group  
Crotched Mountain Foundation  
Forest Guild  
Katahdin Energy Works  
Lyme Timber  
MAGIC  
Maine Rural Partners  
Mount Washington Valley Economic Council  
National Wildlife Federation  
Natural Resources Council of Maine  
Natural Resources Defense Council  
Natural Resources of Canada, Community Energy Planning Group  
New Energy Capital  
New England Wood Pellet, LLC  
New York State Forester, Robert K. Davies  
North Country Resource Conservation and Development Area, New Hampshire

Northern Forest Alliance  
Northern Forest Center\*  
Public Service of New Hampshire  
R. J. Turner Company  
Rainforest Alliance  
Society for the Protection of New Hampshire Forests  
State University of New York, College of Environmental Science and Forestry  
The Irland Group  
Threshold to Maine Resource Conservation and Development Council  
University of Maine, Center for Research on Sustainable Forests  
University of Maine, Forest BioProducts Research Initiative  
Vermont Family Forests  
Vermont Land Trust  
Vermont Natural Resources Council  
Vermont Public Interest Research Group  
Vermont Sustainable Jobs Fund  
Vermont Woodlands Association  
Wagner Forest Management  
Washington Electric Cooperative  
Yellow Wood Associates

\*The Biomass Energy Resource Center, the Carsey Institute, and the Northern Forest Center convened the Northern Forest Biomass Energy Initiative and endorse its recommendations.



## Northern Forest Region

The four-state Northern Forest region (including Maine, New Hampshire, Vermont, and New York) contains more than 26 million acres of forestland that has great value—both locally and globally—as a source of wood for pulp and papermaking, wood products manufacturing, building heating, electricity generation, wood-pellet production, liquid fuels, and bio-based chemicals and other products.

The region's forest is also a valuable ecological resource providing essential wildlife habitat, plant diversity, clean air, and clean water for the Northeast and beyond. The Northern Forest provides abundant and diverse recreational opportunities for residents and visitors; supports the watershed for major rivers, lakes, and drinking water supplies; and offers a sense of place and connection to nature for those who love the outdoors.

The Northern Forest is the largest contiguous forested region in the eastern United States. More than two million people reside in the region, many of whom derive their livelihood directly or indirectly from the forest economy. The Northern Forest has supported a diverse wood and wood products industry for more than a century. In addition, with growing focus worldwide on the need to reduce carbon emissions, the forest is increasingly understood (as are all forests) as an important mechanism for sequestering and storing carbon.

This large forest ecosystem has the potential to continue to be the cornerstone of widespread and long-term economic development and revitalization in the region. The extent of such benefits—and who enjoys the benefits—will depend largely on whether the resource is managed on a long-term sustainable basis, whether new uses for the forest resource are compatible with existing and future uses, whether wood is used for its highest value-added purpose, and whether markets (and the infrastructure to supply those markets) develop in a way that provide maximum economic benefit to local, state, and regional economies.

**This large forest ecosystem has the potential to continue to be the cornerstone of widespread and long-term economic development and revitalization in the region.**

# Opportunities and Challenges Confronting the Northern Forest Region



In the global economy of the 21st century, knowledge, innovation, energy supply, and access to natural resources are keys to economic competitiveness and vitality. As communities within the Northern Forest region continue to face significant transition and globalization in the wood products industry (with related loss of local employment and income), wood-based biomass energy and biofuels are important components of the region's future wood-products economy.

Energy supply and use is currently a central focus of national, state, and local policymakers across the United States. The impacts of climate change, the need to increase energy efficiency, the national priority to reduce reliance on foreign oil, and international security threats are central concerns among many. These challenges bring much opportunity to the Northern Forest due to the region's large biomass resource, and they also bring substantial risk. Several important issues will influence the future of the region's economy and communities for decades to come:

**Will the Northern Forest region become a world leader in the innovation, production, and sustainable use of biomass energy, biofuels, and bioproducts created from the local wood resource, just as the region once did with pulp and papermaking and traditional wood products?**

**Or, will the shift from a fossil-based economy to a bio-based economy lead to exploitation of Northern Forest biomass in a boom-and-bust cycle that does not sustain the region's economy, energy supply, or forests on a long-term basis?**

# Northern Forest Biomass Energy Initiative

The Biomass Energy Resource Center, the Northern Forest Center, and the Carsey Institute at the University of New Hampshire convened the Northern Forest Biomass Energy Initiative in 2006.

The purpose of the initiative is to explore the potential for woody biomass from the Northern Forest to provide an increased source of renewable, sustainable energy for the region, and to determine what needs to happen in the region for that potential to be realized.

A multi-stakeholder Steering Committee was formed and a Working Session Conference and two Steering Committee meetings were held to engage the expertise and insights of a diverse cross-section of experts from throughout the region in the areas of:

- Forest resources
- Wood products
- Conservation and recreation
- Economic development
- Biomass energy
- Financing
- Environmental impacts

Results of these efforts are reflected on the following pages.

**The purpose of the initiative is to explore the potential for woody biomass from the Northern Forest to provide an increased source of renewable, sustainable energy for the region, and to determine what needs to happen in the region for that potential to be realized.**



# The Vision and Principles of Local Biomass Energy

The future envisioned by the Northern Forest Biomass Energy Initiative is one in which biomass energy is harvested within the region in a way that provides a stable, secure, cost-competitive, sustainable, and clean source of energy that maximizes benefits for area residents, municipalities, institutions, and owners of small and large businesses. The vision can be summarized in the term “Local Biomass Energy” and is premised on the belief that local biomass energy should be achieved in a manner consistent with five guiding principles:

**Sustainable Forestry** — to keep the forest healthy and ensure that harvest management supports the overall ecological function and integrity of the forest ecosystem.

**Maximized Efficiency** — to ensure the energy value of biomass harvested for fuel is utilized as fully and cleanly as possible.

**Local Energy** — to use local wood resources for community and regional needs at the appropriate scale.

**Energy Security** — to provide communities and businesses with a stable, uninterrupted, affordable, clean energy supply using local resources.

**Climate Change Mitigation** — to reduce net carbon emissions and increase carbon sequestration in order to mitigate global warming.

A commitment to local biomass energy helps achieve a larger objective of re-invigorating the economies of Northern Forest communities by substituting local, renewable, biomass fuels for imported fossil fuels. While payments for fossil fuels cause a huge drain on the wealth of the region, purchase of wood fuel keeps energy dollars circulating in the local economy.





# Key Recommendations for the Northern Forest Region

Presented below are 17 recommendations in six key areas developed by the Northern Forest Biomass Energy Initiative and directed at the Governors, the Congressional Delegation, state and municipal public policymakers, and industry leaders in the Northern Forest region. The recommendations support the vision of local biomass energy and accomplishment of that vision consistent with the principles stated on the previous page.

There are critical roles for both the private and public sectors in achieving the vision of local biomass energy. The private sector will likely raise and invest the majority of capital needed to expand biomass energy in the region, own and manage most of the forest resources, and build and operate the majority of future energy facilities. The public sector can support and complement private initiative by providing incentives for innovation and creating policies that safeguard public resources and promote the public good. In all cases, the interests of large and small forestland owners need to be taken into account.

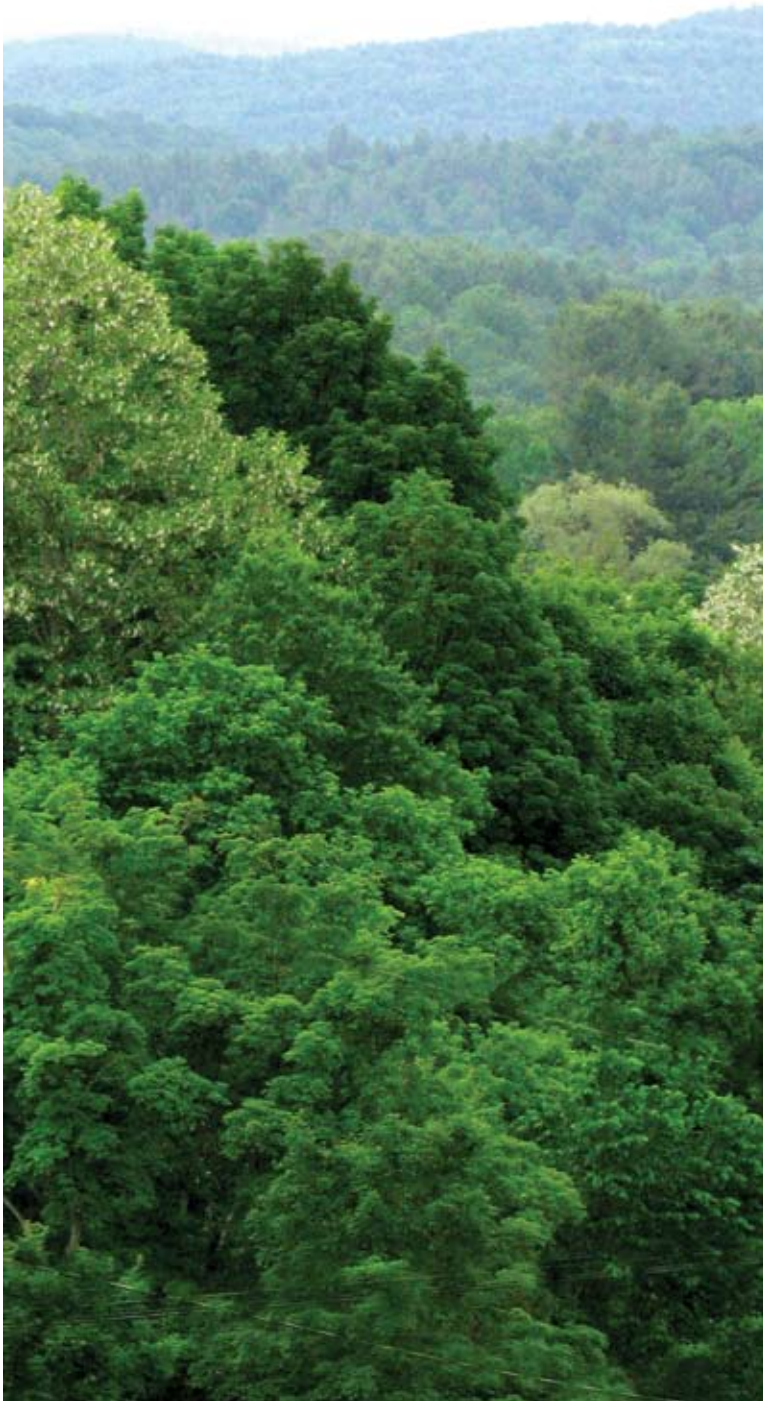
The recommendations on the following pages:

- Encourage private-sector initiative inspired by public-sector leadership and support.
- Emphasize public- and private-sector partnerships that leverage action and investment in each sector while adding substantial value for private industry, government, and local communities.
- Address issues of interest to large forest landowners (both public and private) as well as small private landowners increasingly referred to as “family forest landowners.”

Implementation of the recommendations will yield economic returns, increase energy supply, improve energy security, and result in significant environmental benefits in the Northern Forest region for decades to come.

These recommendations are offered as a broad call to action across the four states of the Northern Forest region. Some may apply more to certain states and less to others. Implementation will vary from state to state. Some recommendations may be possible to achieve within existing budgets but others will undoubtedly require increased state or federal funding.

# Key Recommendations for the Northern Forest Region



All action items listed below will begin soon or be put into play over the next two years, with many of them ongoing.

## ■ Wood Supply

**To understand the capacity of the forest to supply woody biomass on a sustainable basis and to safeguard against over-harvesting:**

1. Using existing federal and state inventory data and newly developed information, conduct a four-state wood supply assessment that identifies the amount of low-quality woody biomass potentially available from the Northern Forest for use as energy on a long-term, sustainable basis.

WHO: State Forestry Agencies in collaboration with others

2. Develop and implement methods for tracking total annual harvest volumes used, for energy and for forest products, and compare to data on forest growth in the four states. Update annually and use results to guide future management and harvesting policies.

WHO: State Forestry Agencies in collaboration with others



## ■ Harvesting & Procurement

### To support sustainable forest management:

3. Fully fund and support state and federal agencies to practice sustainable forest management on public lands managed for timber harvesting using appropriate regulatory and legal mechanisms.

WHO: Federal and State Forestry and Land Management Agencies, with support from Congress and State Legislatures

4. Strongly support sustainable forest management on private lands through a variety of voluntary approaches, such as independent verifiable certification, current use taxation programs, tax incentives, and other mechanisms.

WHO: State Legislatures and State Forestry Agencies

5. Develop a model wood fuel procurement standard that ensures biomass is harvested on a long-term sustainable basis. Require its use for public facilities and encourage its use for private facilities.

WHO: Public- and Private-Sector collaboration including Industry Experts and State Forestry Agencies

#### *Use of Standard by Public Facilities:*

WHO: Congressional Delegation for Federal Facilities, Governors for State Facilities

#### *Use of Standard by Private Facilities:*

WHO: Private- and Public-Sector Leaders

6. Maintain, support, and expand the existing forest harvesting and wood-products supply infrastructure through workforce development and training, policies, legislation, and incentives that help forest land owners, loggers, truckers, and others involved in the forest-products supply chain.

WHO: State Forestry, Employment, and Economic Development Agencies

7. Expand education and outreach to forest landowners, the public, and other stakeholders on: sustainable forest stewardship; the variety of public benefits from using biomass energy in a clean, sustainable way; and mechanisms, such as certification, for realizing those benefits.

WHO: State Forestry Agencies, Private Landowner Groups, and others

## ■ Efficient Technology

### To encourage clean and efficient use of biomass fuel and improve technologies that are matched to community-scale uses:

8. Create and fund a “Northeast Biomass Energy Incubator Center” to bring clean, efficient biomass energy technology to commercialization, and to support biomass energy project development and implementation.

WHO: Private Industry and Nongovernmental Organizations, State Energy and Economic Development Agencies, US Department of Energy, Institutions of Higher Education

9. Create and/or expand federal and state grant programs, tax incentives, and other financial mechanisms to help develop and bring to market clean, efficient biomass energy technologies.

WHO: Private Industry and Nongovernmental Organizations, State Energy and Economic Development Agencies, US Department of Energy, USDA-Rural Development, and US Forest Service

10. Ensure that federal and state policies and programs that seek to stimulate renewable electricity production—such as Resource Portfolio Standard (RPS), Renewable Energy Credit (REC), and Systems Benefit Charge (SBC) programs—include clean, efficient biomass energy technologies and their use.

WHO: US Department of Energy, State Energy Offices, State Public Service Commissions, State Legislatures, and others

## ■ Emissions

**To ensure that biomass energy is used in ways that meet or exceed air emissions regulations:**

11. Establish consistent federal and state air emissions standards and regulations for biomass facilities using multi-pollutant strategies that require the analysis of total pollutant exposure, including net carbon emissions.

WHO: State and Federal Air Regulators



## ■ Climate Change Mitigation

**To increase carbon sequestration and decrease atmospheric carbon dioxide levels by supporting utilization of woody biomass to replace or offset fossil fuel:**

12. Evaluate and document the carbon cycle of biomass energy to increase understanding of the factors and conditions that lead to carbon-neutral biomass energy utilization and carbon sequestration in forests supplying wood fuel.

WHO: Public/Private/Academic-Sector collaboration involving Climate, Energy, and Forestry Experts

13. Use state, regional, or national carbon registries to measure, aggregate, and verify carbon offsets through substitution of biomass energy for fossil fuels. Structure the programs so they interface with national and international carbon markets.

WHO: Public- and Private-Sector collaboration involving Climate, Energy, and Forestry Experts

14. Support and expand national, regional, state, and municipal carbon sequestration and reduction policies and initiatives—such as the Regional Greenhouse Gas Initiative (RGGI) and carbon taxes—and identify the role of sustainable biomass energy in achieving the objectives of those initiatives. Assist biomass energy project developers in marketing and selling the carbon sequestration and carbon emission reduction values of their projects.

WHO: Public- and Private-Sector collaboration involving Climate, Energy, and Forestry Experts

## ■ Investment & Financing

**To stimulate the purchase and use of a variety of clean, efficient biomass energy technologies and develop biomass energy projects that enhance local economies:**

15. Create or expand federal and state financing mechanisms—such as grants, loans, loan guarantees, Industrial Revenue Bonds, and tax incentives—that help capitalize and support the use of clean, efficient biomass energy in publicly owned facilities. Provide new state or local bonding capacity (through mechanisms such as the creation of state renewable energy finance authorities) to support capital investments in projects that use and/or produce renewable energy from biomass or other sources.

WHO: Public- and Private-Sector collaboration involving Investment, Financing, and Economic Development Experts

16. Develop public policy mechanisms and financial incentives that support the use of clean and efficient biomass technologies in thermal applications for institutions, communities, and businesses.

WHO: Public- and Private-Sector collaboration involving Investment, Financing, and Economic Development Experts

17. Support local ownership of biomass energy projects that deliver public benefits by encouraging the creation of energy service companies that allow local capital investment and equity and provide consolidated technical, financial, tax, regulatory, permitting, and marketing expertise.

WHO: Public- and Private-Sector collaboration involving Investment, Financing, and Economic Development Experts



## Time is of the Essence

The potential for increased use of biomass for energy is more and more in the national and international spotlight as interest grows in addressing climate change and finding new sources of energy. Biomass is becoming recognized for its potential as an important new source of secure, renewable, carbon-neutral energy. Woody biomass is being considered for liquid transportation fuels, increased wood pellet production, substitutes for diesel and fuel oil, new wood-fired power plants, distributed generation, combined heat and power, heating plants for buildings and campuses, as a substitute for petroleum in making a vast range of bioproducts, and as an export product for overseas markets.

In his 2007 State of the Union Address, President Bush further accelerated national interest in stimulating biomass energy use by calling for a major effort (backed by a substantial commitment of funds in the President's 2008 budget) to produce ethanol from woodchips and other cellulosic feedstocks. The President's target: to "continue investing in

new methods of producing ethanol—using everything from wood chips, to grasses, to agricultural wastes ... and reduce gasoline usage in the United States by 20 percent in the next 10 years."

What some describe as "the race for the resource" of forest biomass is on. How will the many potential uses of this renewable yet finite woody biomass resource compete with one another? What will be the role of biomass in the bigger picture of the nation's renewable energy future?

These are unprecedented national questions that have great implications for the Northern Forest region. Congressional and state leaders from the region would provide valuable service by inspiring thoughtful planning and policy development to support wise use of the Northern Forest biomass resource in anticipation of pressure to shift away from fossil fuels to renewable energy both within the region and nationwide.

## The Next Step: Increased Regional Collaboration at the Highest Levels

The Northern Forest Biomass Energy Initiative strongly encourages the Congressional Delegation and the Governors of the Northern Forest region to coordinate across the four states—at the highest levels of government—to ensure implementation of

the recommendations of the Northern Forest Biomass Energy Initiative. Such collaboration could build on, and expand, the public- and private-sector dialogue started by the Northern Forest Biomass Energy Initiative.

# Notes

# Notes



The Biomass Energy Resource Center, the Carsey Institute, and the Northern Forest Center wish to acknowledge and thank the numerous biomass energy, forestry, wood industry, economic development, conservation, and recreation professionals from throughout the Northern Forest region who served on the Steering Committee and/or participated in the Working Session Conference for the Northern Forest Biomass Energy Initiative. Their work inspired and informed this Action Plan and provided valuable expertise and insights throughout the process.

**The Biomass Energy Resource Center** is a nonprofit technical assistance center whose mission is to achieve a healthier environment, strengthen local economies, and increase energy security across the United States through the development of sustainable biomass energy systems at the community level.

[www.biomasscenter.org](http://www.biomasscenter.org)

**The Carsey Institute** seeks to build diverse, resilient rural communities by providing in-depth research, analysis, and policy papers to help develop strategies for rural areas in New England and across the nation.

[www.carseyinstitute.unh.edu](http://www.carseyinstitute.unh.edu)

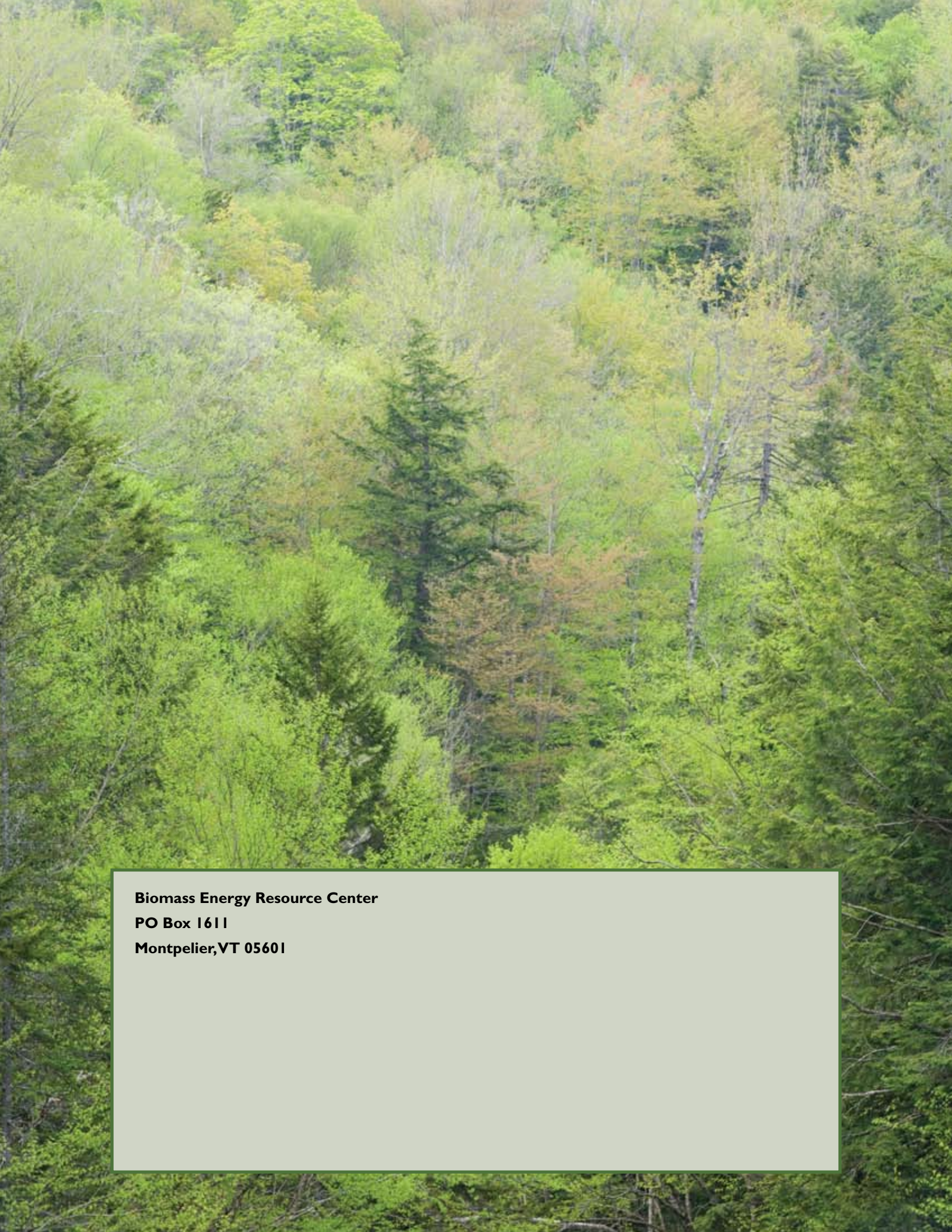
**The Northern Forest Center** is a nonprofit organization that mobilizes people to build healthy communities, economies, and ecosystems by working together across the Northern Forest region.

[www.northernforest.org](http://www.northernforest.org)

Major funding for the work of the Northern Forest Biomass Energy Initiative has been provided by the US Department of Energy through the support of US Senator Patrick Leahy.

Photography on back cover courtesy Jerry and Marcy Monkman, [www.ecophotography.com](http://www.ecophotography.com). All other images Biomass Energy Resource Center.

Printed on 100% post-consumer recycled FSC-certified paper manufactured using 100% wind-generated electricity.



**Biomass Energy Resource Center  
PO Box 1611  
Montpelier, VT 05601**