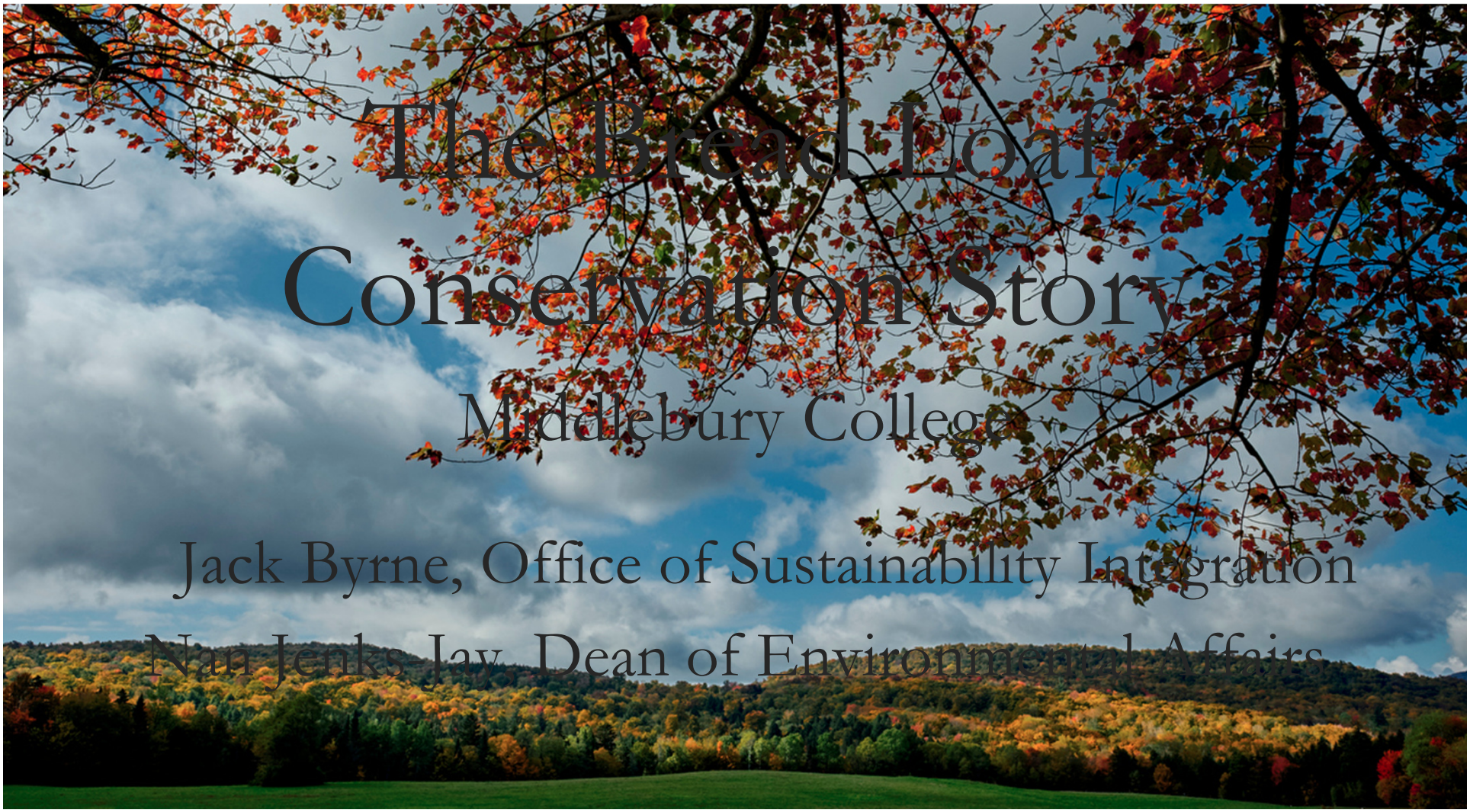


The Bread Loaf Conservation Story

Middlebury College

Jack Byrne, Office of Sustainability Integration

Nan Jenks-Jay, Dean of Environmental Affairs

VT Forest Sequestration Working Group, September 16, 2019

Photo © Brett Simison

Bread Loaf's History

Photo © Brett Simison

Uses of the Bread Loaf lands

Photo © Brett Simison

Values of the Bread Loaf lands

Photo © Brett Simison

Assigning Land Values Beyond Market Price

Lands Advisory Committee

Agriculture

Aesthetic

Protective Buffer

Climate Change Mitigation & Adaptation

Education

Biodiversity

Gateways

Historic

Creative Arts

Energy

Community Connections

Research

Recreation

Transportation

Restorative / Spiritual

Development

Water Quality

The Conservation Project

Photo © Brett Simison

Partners

Middlebury

Vermont
Land Trust

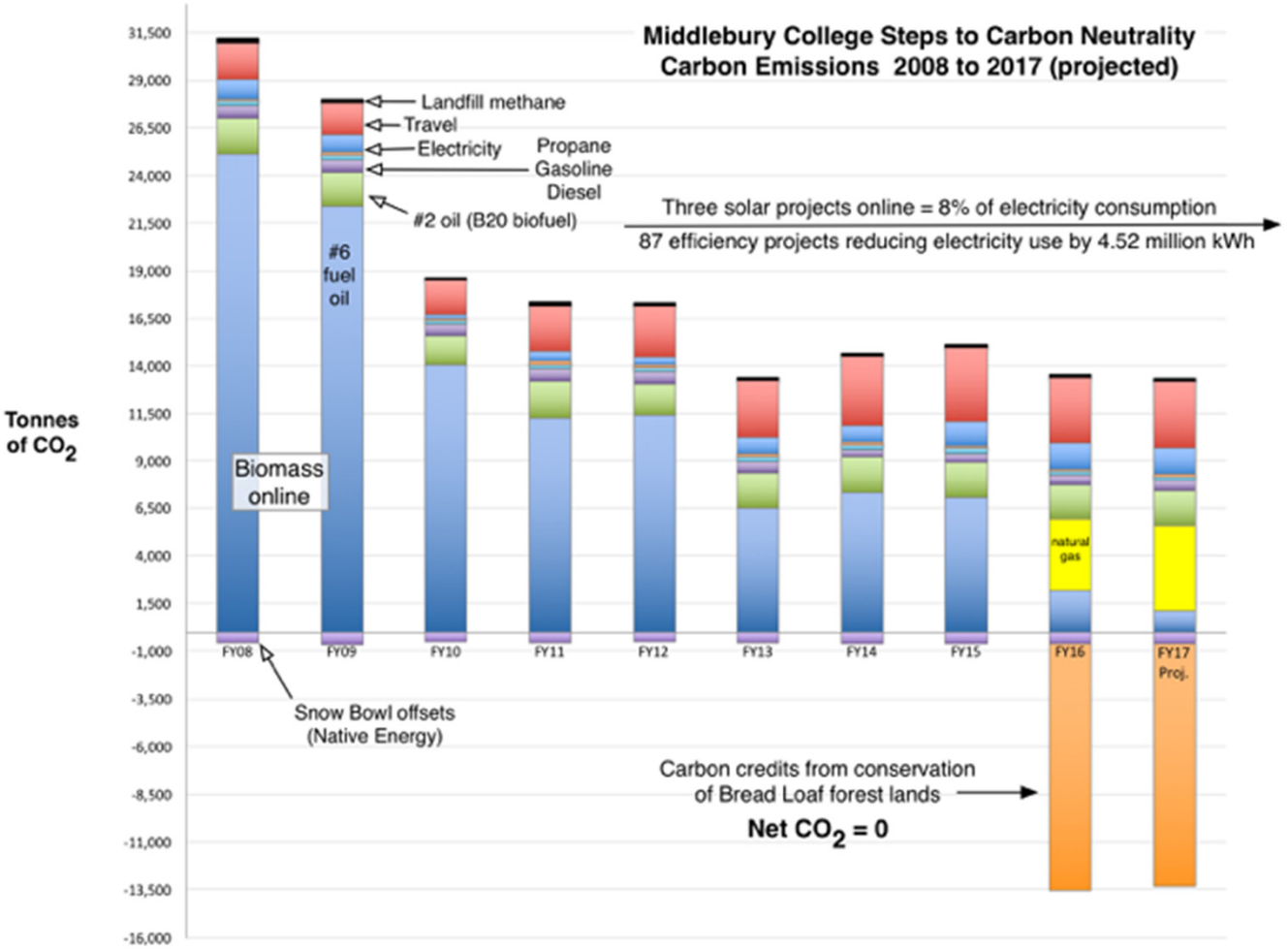
The Nature
Conservancy

Protecting nature. Preserving life.™

Academics for Land Protection in New England

Land Conservation Supports Middlebury's Climate Commitment

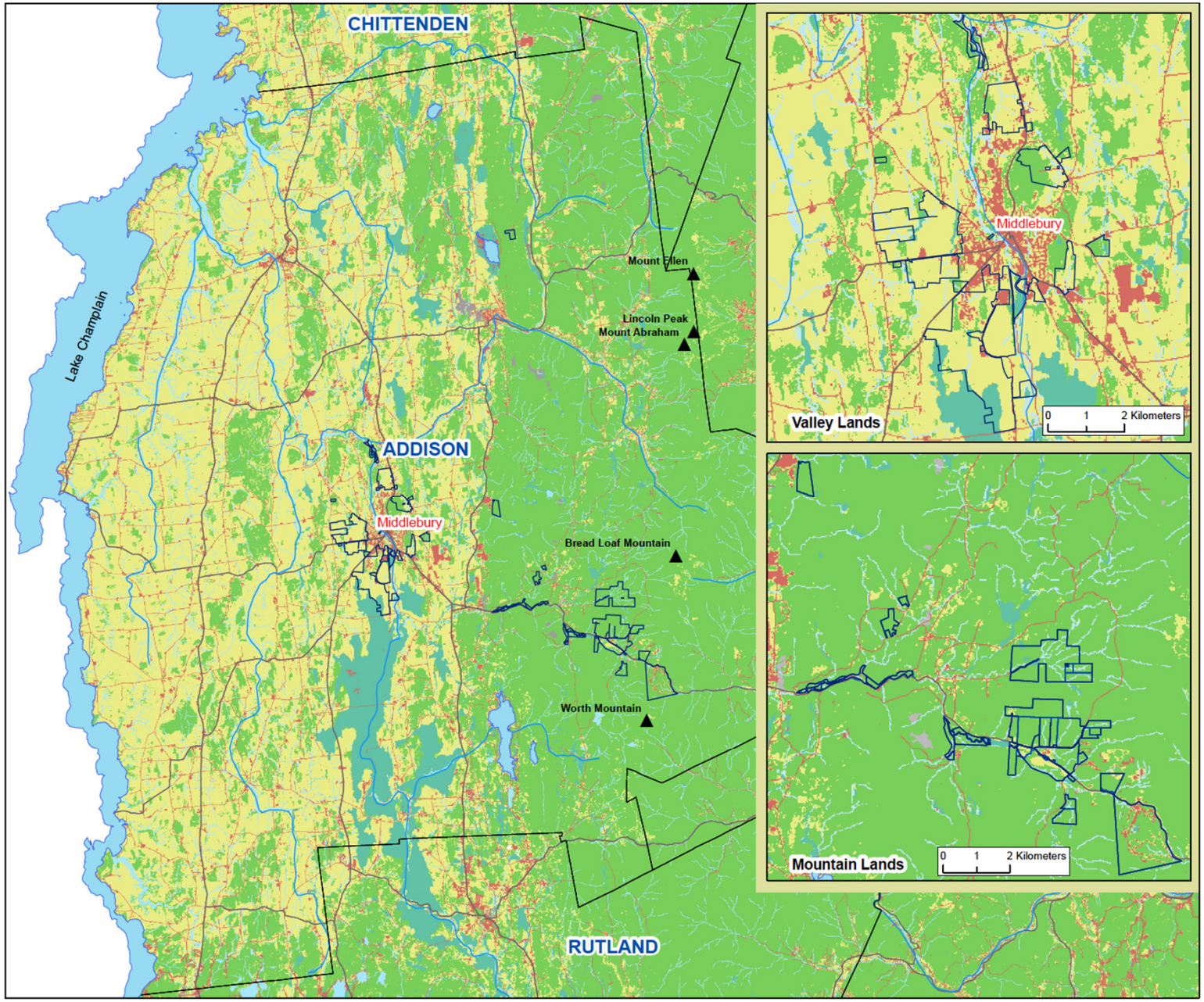
Middlebury's path to carbon neutrality



Middlebury Lands Ecological Evaluation

Figure 1. Study Area: Middlebury College Lands Ecological Evaluation

Addison County and adjacent areas



- Middlebury College properties

Land cover/use

- Water
- Barren
- Developed
- Agriculture
- Upland forest
- Wetland
- Vermont County
- Lakes
- Major rivers
- Major roads
- ▲ Selected mountain peaks

0 2.5 5 10 Kilometers

The study area excludes developed lands and Middlebury College central campus.

College lands by land cover type:

Valley lands

Field:	1319 acres (43%)
Forest:	884 acres (29%)
Pasture:	400 acres (13%)
Developed:	258 acres (8%)
Open wetland/drainage:	106 acres (3%)
Tree island:	52 acres (2%)
Other:	33 acres (1%)

Mountain Lands

Forest:	2918 acres (96%)
Field:	88 acres (3%)
Developed:	32 acres (1%)

Sources:
Middlebury College property: Middlebury College
Middlebury Wetlands Data: Middlebury Wetland Project, Springston 2001
All others: www.vcgi.org

BL easement's influence on land stewardship

Designing a Model Landscape for Multiple Values:

Envisioning a Sustainable Future for Middlebury College Lands

Prepared for Middlebury College Office of Sustainability Integration and Office of Environmental Affairs

Environmental Studies Senior Seminar (401)
Spring 2017

Gabriel Antonucci, Matthew Barr, Sarah Gledhill, Jordan Killen, Mandy Kimm, Sierra Moen, Donald Jones, Scott Waller, Jeremy Vandenberg, and Sebastian Zavoico

ES 401 Senior Seminar 2017

Initiate a cultural shift to more conscious, integrative land stewardship

Recommended Management Actions:

General:

- Initiate a cultural shift to more conscious, integrative land stewardship
- Connect Middlebury College Campus with the local community and the surrounding landscape
- Set goals for the future
- Commit to Middlebury College's responsibility as an environmental leader

Forest Management

- Conserve forest for connectivity and carbon sequestration
- Actively manage forests to increase carbon sequestration
- Re-establish forest connectivity across college lands

Biodiversity Conservation

- Permanently protect the section of the Otter Creek Swamp on college-owned lands
- Maintain early-successional habitats for key shrubland birds
- Conserve threatened and endangered species on a case-by-case basis
- Protect upland habitats surrounding the vernal pool
- Maintain natural water levels and fluctuation regimes in wetlands

Water Quality

- Support implementation of Vermont Required Agricultural Practices (RAPs)
- Establish student-managed nutrient measuring stations in parcels that abut Otter Creek and its tributaries
- Collaborate with towns of Middlebury and Cornwall to inventory and restore ditches and culverts
- Create and manage green infrastructure to mitigate floods and provide benefits to college

Agriculture

- Extend length of leases to five years
- Support and enforce implementation of RAPs
- Incentivize specific sustainable agricultural practices above and beyond RAPs
- Transition relationship with college Dining and collaborate with UVM Extension to create demonstration plots

Energy

- Bring Middlebury College to 90% renewable energy
- Establish a sustained energy conservation and efficiency campaign
- Improve transportation efficiency through increased electric vehicles and better fuel efficiency
- Support a biomethane digester project
- Install rooftop and parking lot solar PV
- Install wind turbines
- Build a microgrid

Bread Loaf Carbon Sequestration Credits – Project Timeline to Credit Issuance

- Screening and Selection of Project Developer/Managers – September, 2015 to May, 2016
- Lands Inventory and Project Documentation – June to November, 2016
- Pre-marketing of Credits to Be Sold – November, 2016 to June, 2017
- Verification of Inventory and Modeling – November, 2016 to May, 2017
- Registration and Delivery of Credits – June 2017

Projected Cash Flow (estimate based on preliminary modeling) ~ 2400 acres

Reporting Period Commencement Year	Total Volume	Volume Sold	Volume Retained	Price	Gross Value	Total Expense	Net Value
2016	30,069	16,453	13,616	$10.00	$300,690	$85,103	$215,587
2017	23,654	10,932	12,722	$10.00	$236,540	$12,925	$223,615
2018	23,481	10,781	12,700	$10.00	$234,810	$12,873	$221,937
2019	23,481	10,781	12,700	$10.00	$234,810	$12,873	$221,937
2020	23,481	10,781	12,700	$10.00	$234,810	$12,873	$221,937
2021	21,522	11,522	10,000	$10.00	$215,220	$55,963	$159,257
2022	21,522	11,522	10,000	$10.00	$215,220	$12,513	$202,707
TOTAL	**167,210**	**80,772**	**86,438**	**$10.00**	**$1,672,100**	**$205,123**	**$1,466,977**

Estimated total volume after 2022 is 5,250 credits per year. First tranche sale of credits at $9.50/credit

Thank You

Photo © Brett Simison

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