New England Conservation Finance Roundtable

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Supplementary Materials

Submitted by Roundtable Speakers

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New England Conservation Finance Roundtable Supplementary Materials

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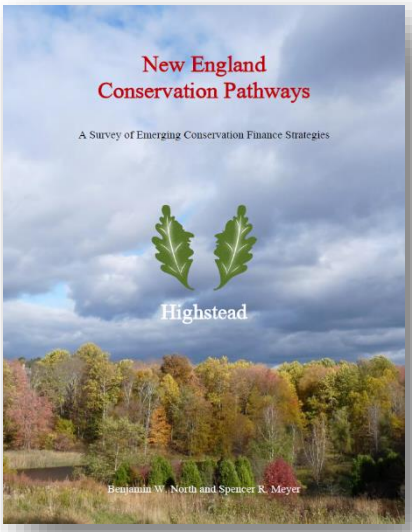
New England Conservation Pathways

A Survey of Emerging Conservation Finance Strategies

Benjamin W. North and Spencer R. Meyer

About this Report



This working paper was written in preparation for the New England Conservation Finance Roundtable, held at the Harvard Center for the Environment on March 17, 2017. It will serve as a foundation on which to build promising strategies for advancing public and private finance for land conservation in the region in the coming years. Our goal for this paper and the Roundtable is to stimulate discussion, inspire collaboration, and advance nfew strategies for increasing the pace of land protection in New England. Highstead and its Wildlands and Woodlands Initiative partners are committed to providing new capacity to help regional conservation organizations incubate, iterate, and implement conservation finance approaches that make land protection possible.

About Highstead

Highstead is a regional conservation organization situated among the forests, fields, and waters of Redding, Connecticut. Since its founding in 1982, Highstead has been dedicated to conserving the landscape of New England through sound science, stewardship and conservation. Highstead is a major partner in the Wildlands and Woodlands Initiative (W & W), which calls for protecting 70 percent of New England's forest by 2060 to keep it permanently free from development. Highstead achieves its mission by advancing regional conservation partnerships, innovative conservation financing, Wildlands and Woodlands Science, conservation internships, and science-informed policy analysis.

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University of Massachusetts, Boston
Governance and Financing Mechanisms Project

Goal:
Develop recommendations for the City of Boston and Greater Boston Region for implementation of financing mechanisms and best practices for regional governance to support the resiliency initiatives recommended in Phase I of Climate Ready Boston.

Team:

- *Project Team* includes faculty from UMass Boston and other area universities, Boston Harbor Now staff and practitioners in the resilience field.
- *Advisory Council* includes additional faculty, representatives from public agencies and private sector stakeholders.
- *International Review Panel* includes experts in climate resilient governance and financing from the U.S. and around the world.

Scope:
This analysis will seek to explore the connections between the challenges associated with financing and governance and expose opportunities in both arenas and the intersection of the two.

For finance we seek to:

- Define the primary financing tools that can be used to support climate preparedness investments and how they might apply to CRB Resiliency Initiatives.
- Clarify how Return on Investment (ROI) calculations can be applied to these financing methods in order to justify investments.
- Differentiate financing methods by the degree to which they create new sources of funds vs. diverting funding from existing sources and by how costs, benefits and risks are allocated.

For governance we seek to:

- Define a planning framework for long-term climate preparedness that clarifies the functions that will need to be carried out by a new set of governance structures.
- Develop a taxonomy of types of governance infrastructure for consideration at multiple scales, including regional planning entities; new municipal departments or units; quasi-public authorities; etc.
- Describe operating examples of existing entities from other sectors.
- Describe existing entities for regional climate preparedness governance in North America and internationally.
- Recommend processes by which Boston and its regional partners can decide what kind of climate preparedness governance infrastructure to put in place. Recommend what types of structures are most likely to serve the needed functions in the Boston region.

Timeline:

The Project Team and Advisory Council will convene in January and again in April and will submit a draft of recommendations by early June. A final report, including comments from the International Review panel will be submitted in September.

Deliverables:
This project will result in specific recommendations to the City of Boston and other agencies on next steps for preparing for the long term impacts of climate change.

Watershed Protection & Restoration Financing through Clean Water State Revolving Fund Sponsorship Programs

Watershed protection and restoration is an increasingly important part of the multiple barrier approach to protecting water quality and reducing risks to water supplies. Natural features such as wetlands and forests are also important for stormwater and wastewater concerns and are part of an integrated approach to water management. Watershed projects provide other economic, social, and environmental "triple bottom line" benefits desired by communities. Clean Water State Revolving Fund (CWSRF) Sponsorship Programs provide an effective way to finance watershed projects to complement more traditional water treatment and management.

CWSRF Sponsorship Programs offer communities and utilities funding for watershed projects by including them in their wastewater utility infrastructure improvement loans. CWSRF Sponsorship Program loans typically offer a reduced interest rate to encourage financing for both infrastructure and watershed projects at the same time. CWSRF Sponsorship Programs capitalize on the natural benefits of linking financing for traditional infrastructure and watershed protection and restoration. Ohio's CWSRF Program pioneered CWSRF Sponsorship Programs, which are catching on in other states.

CWSRF Sponsorship Programs Integrate Water Management Costs

In 1987, Congress amended the Clean Water Act by replacing the $70+ billion wastewater treatment plant construction grant program with a loan program called the Clean Water State Revolving Fund (CWSRF). Congress also authorized CWSRF loans to address water quality problems caused by nonpoint source pollution. Nonpoint source pollution projects include the protection of surface water, ground water, and watersheds to prevent future water quality contamination. (CWA Sec. 603(c)(7)). Through 2016, the CWSRF has provided loans for more than $117 billion of projects, 96 percent of which has gone to waste water treatment plant infrastructure. Although authorized to do so, the CWSRFs are rarely used for watershed protection

This is so largely because wastewater treatment plant and traditional infrastructure projects are typically decoupled from watershed projects. CWSRF loans for wastewater treatment projects are repaid from revenue generated by customer sewer rates. Watershed projects, despite providing water quality and other benefits, aren't usually paid for by sewer rates. The organizations that implement watershed projects are expected to secure grants or other financing.

The result is that far fewer than needed watershed projects are funded, despite the valuable role they play in "one water" management. Inattention to watershed health creates liabilities for water management. When watersheds deteriorate, it can complicate or raise the cost of water management and increase risks to water supplies.

The beauty of CWSRF Sponsorship Programs is that they integrate two highly complementary approaches to water management—traditional treatment and watershed protection—into a single loan repaid by water rates. To incentivize this approach to water management, CWSRF Sponsorship Programs may offer lower interest rates.

In the late 1990's, the State of Ohio began to address their challenges in watershed funding with CWSRF Sponsorships The Ohio CWSRF Sponsorship Program was developed by the state's Environmental Protection Agency in conjunction with the Ohio Water Development Authority, which manages the CWSRF. To date Ohio has sponsored more than 128 combined wastewater infrastructure and water quality improvement projects valued at more than $165 million. So far, 39 different "sponsors" and 53 different "implementers" have participated in Ohio's program. Iowa, Idaho, and Oregon through their respective CWSRFs, have now followed Ohio's lead. Other states are currently considering developing such programs as well.

CWSRF Sponsorship Program Mechanics

Through SWSRF Sponsorship Programs, a traditional CWSRF loan recipient (a municipal waste water utility) voluntarily sponsors a watershed project. Projects could include, for example, restoration of degraded stream banks, forest health programs to reduce the potential for catastrophic watershed wildfires, or protection of watersheds to prevent development that is incompatible with water management. By sponsoring a watershed project along with their wastewater infrastructure project, the loan recipient qualifies for a reduced interest rate. The interest rate for the sponsored project (waste water + watershed) is reduced so as to keep the payment in line with what it would have been for the wastewater project alone

The reduced interest rate serves as a "carrot" for the wastewater utility to implement the watershed project. The cost of the watershed project is paid through savings realized from the reduced loan interest rate. The result is that a beneficial watershed project with triple bottom line benefits gets implemented for about the same cost as a waste water project alone.

CWSRF Sponsorship Program Examples

In 2014 Sioux City applied to Iowa's CWSRF Program for a $14.4 million loan to modernize their wastewater treatment facilities. At the time, the City was concerned about degraded water quality in the stream in Ravine Park, which ran right through town – the result of eroding stream banks. The City needed $1.4 million to restore gullies and stream banks to reduce erosion, which would, in turn, reduce turbidity and contamination downstream. The challenge was securing funding for a watershed improvement project of this size, as there are very few large grant and loan funding sources for such projects.

The Iowa CWSRF Program offered Sioux City two options:

1) A 2.0 percent interest rate subsidized loan for $14.4 million for 20 years, with $880,657 annual payments. This option would pay for the waste water infrastructure upgrades but not the water quality improvement project, or
2) A 1.03 percent interest rate for $15.8 million for 20 years, with $878,209 annual payments. This option would pay for the wastewater infrastructure upgrades ($14.4 million) AND the watershed restoration project ($1.4 million) at the same time, for slightly lower annual payments.

Not surprisingly, Sioux City chose the second option with lower annual payments and the ability to undertake their high priority watershed restoration project. Through Iowa's CWSRF Sponsorship Program, two projects were funded for the price of one, and even provided modest cost-savings to the city.

Here is another example from Ohio.

The Water Resource Restoration Sponsor Program (WRRSP) is an Ohio EPA initiative that provides funds, through loans for publicly-owned treatment works, to finance planning and implementation of projects that protect or restore high quality water resources. Warren County sponsored such a project that provided an estimated maximum of $1,321,000 in WRRSP funds towards the purchase of riparian lands and conservation easements within the corridor of the Little Miami River and its Yellow Springs Creek tributary in Greene County. In exchange for sponsoring the project, the Warren County Water and Sewer
Department will receive an interest rate reduction of 0.1% on its estimated $15 million Water Pollution Control Loan Fund (WPCLF) loan that is being used to finance the county' s Lower Little Miami Wastewater Treatment Plant (WWTP) Phase III project.

The purchase of streamside land and/or conservation easements within the existing privately-owned Glen Helen Nature Preserve will help protect and maintain the aquatic integrity of portions of the Little Miami River and Yellow Springs Creek by preserving the native riparian trees and vegetation, along with undisturbed areas of some unnamed tributary streams, floodplains, wetlands, and property adjacent to all of the surface water features within the nature preserve. The water quality and environmental benefits realized from this project will remain in perpetuity through the care and management of the property by the Tecumseh Land Trust.

Who Pays for CWSRF Sponsorship Projects?

The citizens of the state where the Sponsorship Project takes place pay for CWSRF Sponsorship Projects, just as they would pay for a traditional CWSRF loan. CWSRF funding comes from three sources: 1) annual federal capitalization grants, 2) state matching funds at a 1:5 ratio, and 3) interest and income earned on the loans and temporary investments. The citizens of Iowa own these funds.

A key to the success of the CWSRF Sponsorship Projects is the lower, or subsidized, interest rate. By subsidizing CWSRF loans, states decide to trade some CWSRF interest income for the clean water and other community benefits provided by watershed projects.

CWSRF Sponsorship Project Math

CWSRF Sponsorship projects work best when they are 20 percent or less of the value of the primary waste water infrastructure project.

Imagine that a community needs a $10 million loan for a waste water infrastructure project. If market interest rates are 4 percent, most state CWSRFs would make their subsidized loan in the 2 percent range. The annual payment on a $10 million CWSRF loan with a 2 percent rate for 20 years is $611,567. If a $1 million sponsored watershed project was added to the loan (10 percent of the infrastructure project value), an $11 million loan is required. In this case, the interest rate on a 20 year, $11 million loan is reduced to 1 percent, with annual payments of $609,568, covering the cost of the sponsored project.

If the sponsored project is $2 million--20 percent of the infrastructure project--the total loan would be $12 million. To cover the additional cost of a sponsored project, the CWSRF Program would reduce the interest rate further, to about one-tenth of one percent. At 0.1 percent interest, the annual payment on a $12 million loan for 20 years would be $606,319.

TABLE 1 - Financing options for CWSRF Sponsorship projects of different sizes:

Project Type	Loan Amount	Interest Rate	Term	Annual Payment
Waste Water Infrastructure Project Only	$10 M	2%	20 yrs.	$611,567
Waste Water Infrastructure Project + 10% Sponsored Watershed Protection Project	$11 M	1%	20 yrs.	$609,568
Waste Water Infrastructure Project + 20% Sponsored Watershed Protection Project	$12 M	0.1%	20 yrs.	$606,319

Creating a CWSRF Sponsorship Program in Your State

Using the CWSRF to sponsor watershed projects can be an invaluable tool for encouraging communities to undertake watershed projects that otherwise might not be

implemented. Communities trade some lost interest revenue in return for social, environmental, and other financial benefits such as lower water treatment costs or future remediation.

Can any state CWSRF sponsor a watershed project?
As long as the state's Intended Use Plan includes provisions for watershed projects, the sponsor approach should be possible. No new legislation or policy changes are required.

To learn more or for assistance creating a CWSRF Sponsorship Project, contact:

Michael Curley at the Environmental Law Institute, 443-691-1874; curley@eli.org

Case Study: Building Public Support to Expand Tax Incentives for Land Conservation

Starting in 2009, Tea Party conservatives have called for an end to federal land acquisitions and the transfer of conservation lands to the states for mining, oil exploration or development. ln May 2016, the House of Representatives approved transferring to the State of Nevada the largest wildlife refuge in the lower 48 states, stripping away its conservation protections. While the Senate did not approve that bill, anti-environmental voices in Congress have been emboldened by the election of Donald Trump. In February, Jason Chaffetz (R-Utah) introduced legislation to sell 3.3 million acres of public land in 10 Western states, but was stunned by the immediate and harsh criticism from hunting and fishing groups from his district and around the country. The pressure was so intense that Rep. Chaffetz withdrew his bill after just two weeks.

There is a lesson here for those seeking to expand land conservation in New England: Conservation groups have millions of potential supporters who do not call themselves environmentalists. These people may have different political views, economic class, race or ethnicity than the typical membership of an environmental group, but they share many common values. Conservation groups can build public support by showing how land conservation benefits ordinary people: places to hunt and fish, clean water, health, and jobs.

As a case study, this paper will examine the national campaign to expand federal tax incentives for conservation. With the decline in federal funding, conservation leaders have increasingly turned to conservation easements to protect private lands. From 2000-2010, state and local land trusts achieved nearly a four-fold increase in land protected by conservation easements (Land Trust Alliance Census). The National Conservation Easement Database estimates that governments and non-profits now hold 130,000 easements protecting about 25 million acres.

Preserving Public Trust:
In May 2003, the *Washington Post* ran a series of front page stories criticizing exaggerated appraisals, lack of conservation purpose, insider dealing and conflicts of interest by the Nature Conservancy. This resulted in calls from Congress to entirely eliminate the tax incentives for conservation, a change which would drive many small land trusts out of business. Without public trust, it would be impossible to expand tax incentives and funding for conservation.

In response to these attacks from Congress, the Land Trust Alliance (the Alliance) revised the *Land Trust Standards and Practices* and created the Land Trust Accreditation Commission which conducts an independent verification process and recognizes organizations that meet the national standards. Now, over 77% of conserved land is held by an accredited land trust.

Proposal to enhance the conservation tax incentives:
The tax incentives approved by Congress in 1980 were not sufficient to motivate most of the landowners, especially moderate income farmers and ranchers. When Congress

threatened to eliminate the tax incentives, the Alliance could have played defense and protected the status quo. Instead, it played offense and pushed to expand those incentives. The Land Trust Alliance sought to extend the carry-forward period from 5 years to 15 and to raise the cap on donations from 30% of taxable income to 50%, and, if the landowner earns the majority of their income from agriculture or timber production, they could deduct 100% of their income. This change could result in as much as a nine-fold increase in the tax incentives, depending on the appraised value of the gift and the landowner's income.

Coming up with the policy proposal was the easy part. Getting a bill through Congress is tough - especially an environmental bill. Of the approximately 5000 bills that are introduced each year, only about 5% are signed into law. Land trusts had traditionally avoided politics and did not have well-established relationships with Congress. They needed to quickly build relationships with elected officials and build coalitions with 70 hunting, fishing and agricultural partners that could persuade Republicans in Congress.

The key to success was recruiting congressional champions who have the power to attach a bill to a larger piece of legislation that is moving through Congress. For example, the Grand Traverse Regional Land Conservancy build a close relationship with Rep. Dave Camp — who later became chair of the House Ways and Means Committee — and with Sen. Debbie Stabenow who became chair of the Senate Agriculture Committee. Both became champions who played a pivotal role in moving the conservation tax incentives through Congress.

The Alliance organized an annual Advocacy Day which, over the years, resulted in over 700 meetings with members of Congress. It hired a media consultant to place editorials and op-eds in targeted congressional districts, carefully crafting a message to bridge the values gap between Democrats and Republicans. Throughout the country, land trusts invited members of Congress to speak at press conferences and ribbon cuttings for conservation. The Alliance hired Republican staff and lobbyists and won endorsements from the Western Governors Association, the Farm Bureau, and the National Cattlemen and Beef Association. Thanks to this conservative coalition, the land trust community convinced President George W. Bush to include making the tax incentives permanent in his 2008 Budget and it persuaded Congress to pass the incentives on a temporary basis.

As a result of this aggressive campaign, in 2013, land trusts recruited an impressive 311 co-sponsors for the bill to make the incentives permanent – a majority of both Democrats and Republicans in the House. This level of bipartisan support is rare, and unheard of for an environmental bill. After 15 years of bridging the partisan divide and building strong public support, on December 18, 2015 the land trust community convinced Congress to make the enhanced tax incentive a permanent part of the tax code.

The Joint Committee on Taxation estimates that every decade this legislation would leverage over $4.2 billion in conservation land every decade or $420 million per year – much more than the annual appropriations for LWCF.

Although the Republican leadership is now calling for massive tax reform, changing the tax code will be difficult given all of the special interests that will pressure Congress. Because the conservation tax incentive passed with large majorities of both Republicans and Democrats, it is in a better position to survive any attempt at tax reform.

Looking Ahead:
I believe that the most powerful way to expand conservation in New England is to increase the number of ballot measures for conservation. TPL's *LandVote* documents that voters have approved $75 billion in state and local funding over the past 25 years – dwarfing the federal conservation funding. Once a measure is on the ballot, voters will usually approve it. The next challenge and opportunity is to increase the number of measures that actually get on the ballot. This requires reaching out to people who are different than most land trusts, cultivating partners and building relationships with elected officials several years prior to the time when elected officials will discuss of putting a measure.

Some ballot measures have authorized state tax credits to encourage the donation of conservation easements. Colorado offers the most generous tax credit covering 75% for the first $100,000 and 50% of the remaining value. In contrast, Virginia's provides a tax credit of 40% of value and the Massachusetts credit is capped at $75,000. New York does not provide a tax credit but it reimburses 25% of the annual property tax on land covered by a conservation easement**.** In all of these cases, the federal tax incentives are important to provide a deduction for the portion of the gift not covered by the tax credit.

Lessons for New England

1. Use the tax policy to encourage conservation: federal incentives, state tax credits and reductions in property tax.
2. Build a coalition with hunting, fishing and agriculture groups that will attract bi-partisan support.
3. Encourage land trusts to build relationships with elected officials before they are needed.
4. Cultivate champions who have the power to drive legislation.
5. Create a targeted media campaign with a message that bridges the values gap.

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Conservation organizations in Massachusetts, including The Trustees, are investigating new initiatives for state conservation funding. Massachusetts has strong state bond funding, a land protection state tax credit, and the Community Preservation Act in almost half of Massachusetts cities and towns. However, funding for state parks is low, as is funding for cultural facilities; pressures on state bond funds are increasing; and new needs, such as climate change resilience projects, are being identified. One of the initiatives being explored is the concept of the Minnesota Legacy Amendment. Minnesota voters approved the Clean Water, Land and Legacy Amendment in 2008, which increased the state sales tax by 3/8th of one percent over a period of 25 years to protect drinking water sources; to protect, enhance, and restore wetlands, prairies, forests, and fish, game, and wildlife habitat; to preserve arts and cultural heritage; to support parks and trails; and to protect, enhance, and restore lakes, rivers, streams, and groundwater. Minnesota distributed the additional sales tax revenue into four funds: 33 percent to the clean water fund; 33 percent to the outdoor heritage fund; 19.75 percent to the arts and cultural heritage fund; and 14.25 percent to the parks and trails fund.

Roughly $5.5 billion, or $220 million, annual revenues are estimated in MN. Preliminary analysis by the Highstead Institute estimates that if adopted, $110M annually for land conservation could be generated in MA. In Massachusetts, the constitutional amendment process requires votes by two consecutive legislatures before the question can be placed on the ballot. In 2018, the "Fair Share Amendment" will likely go before voters, which would increase the income tax rate for those earning over $1M. A Massachusetts Legacy Amendment could potentially go before voters in 2024, as Massachusetts has two year legislative sessions.

Editor Note:

Also see the *Sales Taxes* chapter of the Highstead Pathways report by Ben North and Spencer Meyer for additional information about this idea for New England states.

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USDA's Natural Resources Conservation Service Integrating Private Capital into the Regional Conservation Partnership Program

Overview

The Regional Conservation Partnership Program (RCPP), administered by USDA's Natural Resources Conservation Service, was authorized in the 2014 Farm Bill. RCPP was designed to offer new opportunities for NRCS, conservation partners and agricultural producers to work together to harness innovation, expand the conservation mission and demonstrate the value and efficacy of voluntary, private lands conservation. Given its programmatic flexibilities and partnership focus, RCPP is increasingly viewed as a vehicle for implementing innovative environmental markets, conservation finance and corporate supply chain sustainability approaches. Eight of the 88 2017 RCPP awards incorporate at least one of these innovative approaches. Innovative approaches to RCPP projects, including efforts engaging municipalities and water utilities, were also approved in the 2015 and 2016 project cohorts.

How It Works

RCPP is partner driven—conservation partners propose projects that address at natural resource concerns in a given geographic area. RCPP projects can combine technical and financial assistance funding from up to five NRCS programs—the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), the Agricultural Conservation Easement Program (ACEP) and the Healthy Forests Reserve Program (HFRP), and the Watershed Protection and Flood Prevention Program (PL-566). The maximum RCPP project award for 2017 is $10 million.

Applicants may submit proposals in one of three funding pools—State, National, and Critical Conservation Areas (CCAs). The New England States are not a part of any CCA, so projects in New England are only eligible for the State and National funding pools.

Flexibilities

The RCPP Farm Bill statute provided a number of flexibilities that make the program attractive to conservation partners:

- Adjustment of program terms--This flexibility applies only to the non-statutory regulatory terms or provisions of a covered program. Would allow, for example, partners to pursue conservation solutions beyond the NRCS conservation practices required by programs for payment.
- Adjusted Gross Income (AGI) limitation waivers--RCPP allows waiver of the AGI limitations for participating producers if the NRCS Chief determines that the waiver is necessary to fulfill the objectives of the project. This allows the inclusion in RCPP projects lands that would normally not be eligible for NRCS assistance.

- Partner technical assistance—Project partners can apply to provide (and be paid for) technical assistance to landowners involved in a RCPP project.
- Alternative funding arrangements--NRCS may enter into alternative funding arrangements with multistate water resource agencies or authorities to deliver RCPP technical and financial assistance funding. These alternative arrangements allow partners to administer a RCPP project outside of the traditional NRCS-landowner contract arrangement.

In addition, NRCS policy states that the agency renounces any interest in environmental credits generated using conservation practices implemented with NRCS funding. In general, voluntary and regulatory carbon programs and registries allow the generation of greenhouse gas credits from projects underwritten in whole or in part by Federal funding. The Pinchot Institute took advantage of these flexibilities to pursue a carbon credit project on small, privately owned plots of forest land in the Pacific Northwest (2015 RCPP project).

(the following language appears in the RCPP funding announcement)

Environmental Markets and Conservation Finance: NRCS encourages RCPP applications that support environmental markets and conservation finance projects. For over a decade, NRCS has been a Federal leader in supporting the development of environmental markets, primarily water quality trading and greenhouse gas markets. In addition, recent years have seen a growing interest in leveraging private capital markets to foster impact investments in conservation, sustainable agriculture, and forestry. Potential applicants are advised that RCPP funding could serve to leverage opportunities associated with environmental market projects and conservation finance transactions.

Examples of RCPP projects with municipal/utility partners:

- **The City of Cedar Rapids, Iowa**, serves as leading partner for the Middle Cedar Partnership Project that focuses on working with local conservation partners, farmers and landowners to install best management practices such as cover crops, nutrient management, wetlands, and saturated buffers to help improve water quality, water quantity and soil health in the Cedar River Watershed.
- **The Madison (WI) Metropolitan Sewage District**, a key partner for the Yahara Watershed Pilot project led by the Dane County Land and Water Resources Department, is the first in the nation to test the Watershed Adaptive Management Program -- an innovative regulatory compliance option for addressing phosphorus.
- **The City of Columbus, OH**, is a participating partner in a watershed project in the Upper Big Walnut Creek watershed, which supplies drinking water to the city.

2017 RCPP Awards
Conservation Innovations Team Briefing Paper

RCPP, given its programmatic flexibilities and partnership focus, is increasingly viewed as a vehicle for implementing innovative environmental markets, conservation finance and corporate supply chain sustainability approaches. Eight of the 88 2017 RCPP awards incorporate at least one of these innovative approaches.

Building Resiliency and Sustainability in the San Juan/Rio Chama Watershed in New Mexico—East Rio Arriba Soil and Water Conservation District ($3,250,000)
Completed by the Bureau of Reclamation in 1976, the San Juan-Rio Chama Diversion is a series of diversion structures and tunnels that together carry runoff 26 miles across the Continental Divide from the Colorado River watershed to the Rio Chama, in the Rio Grande watershed. This diversion, along with the Rio Chama, provides approximately one third of New Mexico's water supply for irrigators, agriculture, industry, communities and fish and wildlife. The Building Resiliency in the San Juan-Rio Chama Region project, managed by East Rio Arriba Soil and Water Conservation District and twenty partners, will complement recent diversion structures with additional forest health and watershed treatments to increase the resiliency of the landscape to withstand stressors such as drought, wildfire and climate change in southern Colorado and northern New Mexico. Between 2017 and 2021, partners in the San Juan–Rio Chama region of southern Colorado and northern New Mexico will complete 1,000 – 1,500 acres of watershed resiliency treatments per year utilizing $6.4 million of Environmental Quality Incentives Program, Conservation Stewardship Program and the Agricultural Easement Program.
The project is integrated into the Rio Grande Water Fund, an innovative financing strategy led by The Nature Conservancy that uses a payment for ecosystem services program to incentivize downstream water users to invest in upstream forest health.

Climate Resiliency in FL, AL and GA—Flint River Soil and Water Conservation District ($3,000,000)
The Apalachicola-Chattahoochee-Flint River Basin stretches from the base of the Appalachian Mountains in North Georgia to the Gulf of Mexico in the Florida Panhandle. The vibrant ecological Apalachicola-Chattahoochee-Flint River Basin and adjacent Ochlockonee River Basin provide habitat for a rich biodiversity of aquatic and terrestrial species, including many designated as endangered or threatened. Growers in this region provide food, fuel, forest products and fiber to global markets, and they depend upon the areas natural resources to sustain their livelihoods. Over the last few decades, fluctuations in climate patterns have presented challenges to sustainable management of the region's natural resources. The Flint River Soil and Water Conservation District and over 30 multi-state partners will develop and implement practical solutions for climate change adaptation in the river basins. Coca-Cola and MillerCoors are project partners, committing matching financial assistance.

Colorado River Headwaters Project—Trout Unlimited ($7,758,830)
The Colorado River Headwaters Projects will address the consequences of trans-mountain diversions that supply agricultural and municipal water to Northern Colorado and the Denver Metro Area, which have had a significant impact on agriculture and aquatic resources in the headwaters of the Colorado River. Led by an array of partners representing local agriculture, local government, water providers, state agencies, conservation groups and landowners, the project will create a bypass channel to reconnect the Colorado River, make channel and habitat improvement downstream of the bypass to support healthy habitat, and improve irrigation, soil quality and water quality. When fully implemented, the Headwaters Project will directly benefit over 30 miles of the Colorado River and 4,500 acres of irrigated lands that provide sage grouse habitat and make up to 11,000 acre-feet of water available to improve the river during low flow conditions. Denver Water and the Northern Colorado Water Municipal Sub-district are both committing matching funds to the project.

Gulf of Mexico Forest to Sea Project—The Conservation Fund ($3,000,000)
The Gulf of Mexico – Forest to Sea project will conserve Florida's pristine "Big Bend" area along the northeastern Gulf by implementing innovative conservation/restoration solutions with private working forest owners. Using an impact investment approach, The Conservation Fund and 12 partners will implement an HFRP easement/restoration plan on large forested tracts to address the natural resource concerns of water quantity, water quality, inadequate habitat, air quality and climate change. The area faces a significant threat due to the conversion of upstream forests to more intensive uses and the resultant reduction in freshwater flows. This project will prevent conversion while allowing sustainable timber harvesting and maintaining local jobs. It will accelerate the pace of conservation and serve as a model for further conservation and impact investing in the region and beyond. The project includes a partnership with the Lyme Timber Company, a private timberland investment management organization.

Innovative Financing for Watershed Protection—US Endowment for Forestry and Communities ($2,555,000)
By developing two case studies, the Innovative Financing for Watershed Protection project will encourage water utilities to fund land conservation and restoration that simultaneously protects water supplies and benefits at-risk species and other natural resources. An existing, premiere case study focused on a Natural Resources Conservation Service/Endowment partnership led Raleigh, N.C., to establish a watershed protection fee that generates $2.25 million annually for watershed projects. For this project, the U.S. Endowment for Forestry and Communities and partners will examine the protection of a large, underserved landowner-owned farm important for water quality and that connects a matrix of other lands protected for wildlife in Savannah River Basin. The partners also will field test a potential break-through, market-based approach that could help landowners generate income from selling water by restoring more natural forests that benefit at-risk species and longleaf ecosystems.

Teton Valley Soil, Water, and Wildlife Initiative—Friends of the Teton River ($825,490)
A new partnership in the Teton Basin seeks to address growing concerns related to the loss of agriculture in Teton Valley, as well as the related loss of wildlife habitat. The partners will implement market-based solutions to address water quality and quantity issues that are impacting farmers and wildlife populations. The partners propose to implement a groundwater banking program, explore new conservation funding streams and develop new markets for agricultural products.

Yellowstone Region Agricultural Sustainability Project--MillerCoors ($1,210,000)
The Yellowstone Region Agricultural Sustainability Project, led by MillerCoors, will bring together multiple private and public agricultural partners in a three-county project based around defining a path towards agricultural sustainability through progressive conservation practices and sound conservation planning. This project seeks to define best management practices for irrigated agricultural producers in Southern Montana that would lower natural resource consumption and degradation. Over the five year timeline, the project teams will work to lower the consumption of natural resources through the use of added incentives that would allow producers to mitigate financial risks while transitioning to adopt the practices.

Mid-South Graduated Water Stewardship Program—USA Rice Federation ($7,000,000)
The economically-distressed Lower Mississippi River Valley region of the United States has long been fighting an uphill battle to retain groundwater levels, improve water quality and provide a suitable habitat for the diverse array of wildlife that inhabit the region. The Mississippi River Alluvial Aquifer serves as a vital and valuable irrigation source for rice growers throughout the region. Decades of annual withdrawals in excess of the aquifer's recharge capabilities have resulted in severely declining water levels that threaten the entire region's viability and could result in regulation for farmers. To address this, USA Rice has partnered with Ducks Unlimited and more than 20 other partners to increase conservation efforts at all levels of producers – from those who are just beginning their conservation efforts to those who are on the cutting edge of conservation innovation. In addition to offering appropriate practices/enhancements for producers, the Mid-south Graduated Stewardship project will include an innovative option for producers to enter the carbon market by adopting advanced Alternate Wetting Drying through Environmental Quality Incentives Program/EQIP 449 Irrigation Water Management practice. The project will include 25 Strike Force counties and parishes and use an innovative outreach plan devised to reach a new and diverse set of farmers that may not often participate in USDA or conservation programs.

WILLAMETTE PARTNERSHIP

Can Medicaid Pay For Trees—
The Investment Needed to Make that Opportunity Real

Presented by:
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Robert Wood Johnson Foundation Culture of Health Leader
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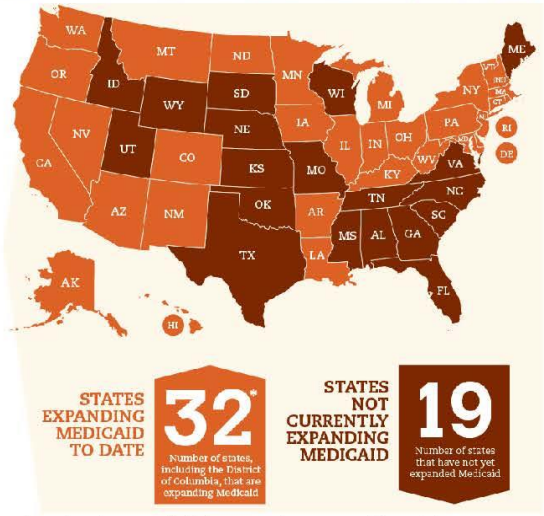
Medicaid expansion background

Under the Affordable Care Act (ACA), the federal government agreed to fund 100% of Medicaid expansion for people at or below 138% of the federal poverty level through 2016, and 90% of that expansion afterward. This resulted in a significant increase in coverage (e.g., 630,000 people in New York and 35,000 people in New Hampshire)[1]. Medicaid expansion has also reduced hospital expenditures on charity care (e.g., uninsured people show up in the ER and can't afford to pay) by about 30%--essentially creating a shift in how healthcare revenues accumulate[2].



Investing in social determinants

The ACA also provided additional pathways to investing in the social determinants of health- a recognition that for most people, our zip code determines more of our health than our genetic code[3]. States can access a federal waiver (called a Section 1115 demonstration waiver) that provides them flexibility in how they deliver Medicaid. Oregon received a waiver and put a provision in their Medicaid program that allows investment in social determinants *if* there is proven health return on investment. MassHealth applied for a waiver that includes $1.8 that could

[1] http://familiesusa.org/product/50-state-look-medicaid-expansion
[2] http://willamettepartnership.org/partnership-analyzes-hospital-charity-care-nature/
[3] http://www.rwjf.org/en/library/research/2014/01/recommendations-from-the-rwjf-commission-to-build-a-healthier-am.html

be used for social determinants[4]. In short, the ACA created pathways for Medicaid to pay for trees—if we can demonstrate a health return on investment.

Nature can create a health return on investment

Better science, expanded social networks, and the realities of having to do more with less are driving the conservation and health communities to look for integrated evidence-based, outcome-driven solutions. That search is bringing the health and conservation communities closer together. A growing base of research demonstrates that nature and access to nature can improve human health[5]:

Closer, safer, cleaner greenspace increases physical activity

Time outdoors improves mental health

Planting trees strengthens social cohesion

Trees clean air

In Oregon, we have launched the Health and Outdoors Initiative, which has:

- Begun pilot programs with African American, Latino, Native American, Rural, and Oregonians with disabilities to improve health through time in nature;
- Started conducting evaluations via Providence Health to quantify physical activity, mental health, and social cohesion outcomes, and is setting up to track changes in healthcare utilization; and
- Begun compiling research and policy needs to build a stronger base of evidence.

These and other efforts across the country are starting to spin out data that can be used to make a stronger business case for healthcare investment in conservation.

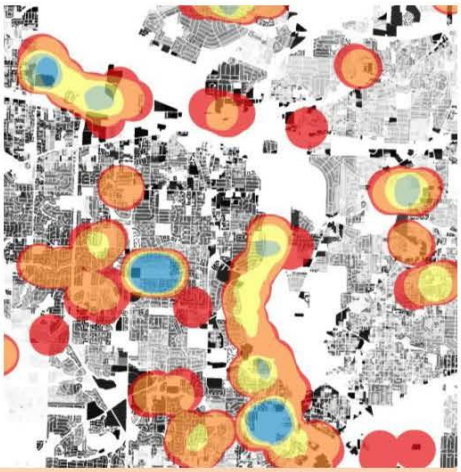
[4] http://www.mass.gov/eohhs/gov/commissions-and-initiatives/healthcare-reform/masshealth-innovations/1115-waiver-proposal-information.html

[5] Hartig, T., Mitchell, R., de Vries, J., & Frumkin, H. (2013). Nature and Health. *Annual Review of Public Health*, 35, 21.1-21.22. doi: 10.1146/annurev-publhealth-032013-182443.

We need to build the tools to assess the health/nature investment opportunity

There are several potential investors interested in conservation for health outcomes:

- Accountable Care Organizations and the State Medicaid programs they are tied to;
- Water utilities and other municipal infrastructure providers interested in how to improve health and equity outcomes with their investments;
- Hospitals and their community benefit investments; and
- Traditional conservation funders who are interested in communicating the health outcomes of their work as further evidence of the public benefit they provide.



Clean Water Services' $6 million investment in trees for fish ~ 10% reduce in NO2 exposure

In conversations in Oregon with healthcare providers, public health officials, and community health advocates, we need four things to make the case for health investment in conservation:

- A real commitment to equity and community leadership in shaping investment;
- Predictive models and decisionmaking tools that A) estimate the potential health improvement from more accessible greenspace, and B) help prioritize investments in various types of greenspace in different locations;
- Better coordination across efforts nationally, so we build a more cohesive body of knowledge; and
- National confirmation on what we know and don't know, and investment in filling key research gaps (e.g., differential mental health response for time in a forest for different populations).

We can act now

For Willamette Partnership, we feel there is a strong business case to be made for why investing in nature and access to nature (more parks, greener trails, programs to get kids outdoors, and planting trees at schools and along roadways) is an important part of providing community benefits. Our hope is that this pitch can help state Medicaid programs, hospitals, and people providing nature and access to nature open new conversations about improving both nature and health. Contact us if you want to discuss more.

Forest Protection as Compensatory Mitigation for Volkswagen Emission Violations

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[1]Harvard Forest, Harvard University and Science Policy Exchange
[2]Department of Biology, Boston University

DRAFT – DO NOT DISTRIBUTE

Abstract: From 2009 to 2015 over a half million Volkswagen (VW) vehicles sold in the US emitted nitrogen oxides (NO_x) above the rate allowed under U.S. federal law. This analysis determines the quantity of forestland protection required to provide compensatory mitigation for these excess NO_x emissions and associated air quality deterioration. The results show that 127,918 hectares of U.S. forestland can remove as much NO_x as emitted by the VW violations over 10 years, and 42,639 hectares can remove that amount over 30 years. The estimated cost for this forest protection ranges from $115 to $695 million U.S. dollars (USD), depending on the area and type of protection. These findings demonstrate that forestland protection offers a viable tool for compensatory mitigation that provides quantifiable air quality benefits to the general public in this and other air pollution cases.

Main Text:

The United States Environmental Protection Agency (USEPA) issued two Notices of Violation in 2015 to Volkswagen (VW) for selling vehicles in the US that exceeded federal standards for tailpipe nitrogen oxide (NO_x) emissions *(1, 2)*. The USEPA allows for mitigation actions in enforcement cases involving emissions violations to "remedy, reduce or offset past (and in some cases ongoing) harm caused by the alleged violations in a particular case….such harm is generally found where excess emissions or discharges harmed human health, wildlife or the environment" *(3)*. This study demonstrates the amount of forestland and associated financial costs required to offset, or mitigate, past excess NO_x emissions from VW automobiles sold in the U.S.

NO_x is a pollutant regulated by the USEPA largely due to its role in the formation of acid deposition and as a precursor to tropospheric, ground-level, ozone (O_3). Ground-level O_3 is a secondary pollutant formed by a chemical reaction between NO_x and volatile organic compounds (VOCs) in the presence of sunlight. It is a short-lived greenhouse gas relative to carbon dioxide, nitrous oxide and methane, but currently accounts for 22% of global warming attributed to human activities *(4)*. Ground-level O_3 is also a photo-oxidant that harms people when it occurs at elevated levels in the atmosphere by causing damage to lungs and exacerbating chronic respiratory diseases such as asthma *(5-7)*. High ground-level ozone also damages plants by diffusing through stomata on leaf surfaces and degrading plant chlorophyll, leading to reductions in natural ecosystem and agricultural productivity *(8)*.

Nitrogen dioxide (the most common form of NO_x in the U.S.) and ground-level O_3 are two of six pollutants identified as criteria pollutants (i.e., common pollutants) under the U.S. Clean Air Act based on established human health criteria. Air quality standards in the US are set for criteria pollutants under the National Ambient Air Quality Standards (NAAQS). In 2015, the O_3 standard was lowered from 75 to 70 parts per billion (ppb) and are calculated using the annual fourth-highest daily maximum eight-hour average concentration, averaged over three

consecutive years *(9)*. As of June 2016, USEPA estimates that two hundred sixteen U.S. counties with approximately 121.7 million residents, or 40 % of the U.S. population, exceeded National Ambient Air Quality Standards for O_3, due in part to vehicle emissions *(10)*.

Forests can serve as a natural air filter by removing NO_x, O_3, and other pollutants from the atmosphere via gas exchange through plant stomata *(11)*. Previous chamber, field, and modeling studies measured the rate of pollutant removal for a variety of tree species under a range of environmental conditions and evaluated the extent to which forest protection programs could help attain ambient O_3 concentration standards in areas that are in exceedance of allowable thresholds *(12-14)*. Model studies estimate that trees and forests in U.S. forests remove approximately 17.4 million metric tons of air pollutants each year with annual health benefits of $6.86 billion USD *(15)*.

Here we explore the use of forest conservation projects for a more flexible application than attainment of air quality standards --specifically, funding for actions to mitigate excess emissions and associated air quality impacts that occurred in the past. Approximately 482,000 two-liter cars and 85,000 three-liter VW cars were sold in the U.S. between 2009 and 2015 with estimated tailpipe emissions above the federal NO_x emission standards of 0.043 grams per kilometer (0.07 grams per mile, gpm) *(16, 27)*. On-road testing results show that the 2.0-liter cars emitted 15 to 35 times more NO_x than the emissions limit and the 3.0-liter cars emitted NO_x at a rate of five to 20 times the emissions limit *(18)*. Based on estimated year-over-year increases in sales from 2009 to 2014 and an average of 19,312 kilometers driven per car per year, the cars logged approximately 30.3 billion kilometers during that time *(19)*. Using these emission and mileage estimates, the non-compliant cars in the U.S. emitted approximately 33,770 metric tons of excess NO_x between 2009 and 2015.

The amount of air pollution removed by forest canopies depends on the leaf area of the forest canopy, ambient air pollution concentrations, and weather *(20)*. NO_x emissions are regulated by the USEPA for their effects on ground-level O_3 formation, therefore we calculated the area of forest needed to remove 33,770 metric tons of NO_x directly, as well as the equivalent amount of NO_x attributable to O_3 removal by trees (hereafter referred to as NO_x-equivalent). Given that the area calculation for compensatory mitigation is not spatially explicit, we used published values for the estimated removal of NO_x and NO_x-equivalents due to trees for the conterminous U.S. *(21)*. For this analysis, forest protection for mitigation is assumed to occur in areas of the U.S. where ground-level ozone formation is known to be NO_x-limited *(22)*.

Given a NO_x removal rate for forests of the conterminous U.S. of 0.55 grams of NO_x per square meter per year, one hectare of forest can remove approximately 0.0264 metric tons of NO_x and NO_x-equivalent per year *(23)*. Under these assumptions, the estimated amount of protected U.S. forestland needed to ensure the uptake of 33,770 metric tons ranges from 127,918 hectares in 10 years to 63,959 hectares in 20 years and 42,639 hectares in 30 years.

The cost to purchase or place a conservation easement on a hectare of forestland in the U.S. ranges widely due to the variability in real estate values and forest conditions such value of standing timber. For the purpose of this calculation we use a national average of $4942 (USD) per hectare for fee acquisition from Kroeger et al. 2014 and half that value ($2471

USD per hectare) for a conservation easement. In addition to the direct costs of land protection, there are real estate transaction and stewardship costs. We use a value for administrative costs of 10% consistent with the allowable expenditures in a draft partial consent decree by the U.S. Department of Justice for the VW case *(24)*. This brings the per-acre cost of forest mitigation to $5436 USD (acquisition) and $2718 USD (easement) per hectare.

This analysis shows that total funding needs for a compensatory mitigation forest protection program to offset the excess NO_x emitted from Volkswagen automobiles ranges from $115 to $347 million USD for easements to $231 to $695 million USD for acquisition, depending on period of time used for achieving the NO_x removal target and the associated hectares of land required. In addition to the direct benefits of NOx and NOx-equivalent removal, forest protection provides additional supplemental ecosystem services, or co-benefits, to the public including carbon sequestration and storage, water purification and storm water retention, recreation, and habitat supporting biological diversity *(25)*.

The purpose of mitigation is to provide redress for harm caused by emission violations to degrade air quality and harm human and environmental health. This analysis shows that the protection of forests offers a robust compensation measure for emissions violations that not only preserves air quality benefits, but also ensures human health, ongoing carbon storage, wildlife habitat, and outdoor recreational opportunities for the American public. The findings demonstrate that a mechanistic understanding of key ecological functions of forests developed through decades of research can be used to establish forest protection as an eligible mitigation action and to estimate mitigation payments for ecosystem services associated with violations of environmental regulations in the U.S. and around the globe.

Numbered references available upon request.

Corporate Supply Chain Sustainability and Forest Conservation

In a precedent-setting initiative to protect U.S. working forests, Apple is working to protect—and create—as much sustainable working forest as is needed to produce the paper in its product packaging.[4] In 2015, Apple partnered with The Conservation Fund to permanently protect more than 36,000 acres of working forest in the eastern United States, including the Reed Forest in Maine. This initiative prevents forest fragmentation, addresses climate change, filters water for communities downstream and provides a steady supply of sustainably harvested timber to paper and pulp mills.

In Maine, Reed Forest protects more than 32,400 acres of forest, which includes wetlands and upland forest that are important for numerous wildlife species in Maine's iconic North Woods. This project adds to more than a million acres of conserved lands and interconnected forest habitat that stretch into Canada. In November 2016, with support from Apple, The Conservation Fund donated a conservation easement at Reed to Forest Society of Maine (FSM). Through an easement stewardship endowment made possible by Apple, FSM will ensure that the forest and its many contributions to Maine's environment and economy remain intact. Some of the special features identified on the property include habitat for two species of mussel, wood turtle, and the elusive Canada lynx along with the important riparian areas associated with the Mattawamkeag River.

Changes in the forestry industry have left millions of acres of forestland across the country up for sale with an uncertain fate. But by forging innovative partnerships and finding creative solutions, this partnership is an unprecedented opportunity for landscape-level conservation.

To ensure sustainability of the Reed Forest, the conservation easement contains precedent-setting language that requires TCF, and the future owners, to allow the forest to regain a minimum and sustainable level of stocking after decades of reductions. As significant, the community of Reed Plantation, Maine has embraced conservation of this property and these specific forestry provisions. The Reed Forest represents ownership of over 90% in a township that has lost its school and significant population over the past few years. A sustainable forest translates to future opportunities as a recreation destination and supply of local forest employment.

Jacob Israelow, Dirt Capital Partners jacob@dirtcapital.com

MISSION

Dirt Capital Partners invests in farmland in partnership with farmers throughout the Northeast United States, promoting sustainable farmers' land access and security.

Farming is risky. For farmers who are building the quality of their soil every year, insecure land tenure critically inhibits multi-year business planning. Many talented farmers with profitable operations do not qualify for a conventional loan and/or do not have enough capital saved to make a large down payment. The primary alternative is leased land, which is often short-term, insecure and requires permission from landowners to erect basic farm infrastructure. Dirt Capital fills these gaps by facilitating farmland transitions, crafting long-term leases that allow businesses to expand securely, and providing defined pathways to ownership.

COMMON LAND PARTNERSHIP SCENARIOS

Relocate an existing farm to a larger property, or to a farm with more secure land tenure
Expand a successful operation by acquiring nearby land
Transfer a farm to non-family or family successors
Conserve when land trusts look to partner with a like-minded organization, or keep already conserved land in active agricultural production
Transform a farm with infrastructure updates for the next generation's efficiency
Reorganize, or ***refinance*** a farm in the event of a change in the partnership or business

APPROACH

Upon receiving an application from a qualified farmer, we work closely with the applicant to review operating history and create multi-year business plans and budgets. We then discuss what lease terms best fits a farmer's personal goals and financial capabilities. We provide support, as needed, on the land search, due diligence, legal work and negotiating terms.

We also work closely with existing resources – University Extension programs, farm viability programs, land trusts, experienced farmer-mentors, etc. – to support our due diligence and ensure the farmer's business plans are realistic and achievable, and to provide ongoing support and assistance to the farmer.

FARMER-INVESTOR LEGAL AGREEMENTS

All leases between farmers and Dirt Capital are binding contractual arrangements that provide the farmer with land security, autonomy and an option to purchase. Each agreement is tailored to the specific farm operation and parcel of land. Additional investment for on-farm infrastructure is considered case-by-case.

While each is customized, the following summarizes a standard farmer-investor lease:

- Nine-year lease term
- Purchase option at year 5 or year 6 and again at lease expiry
- Opportunity to make payments towards purchase throughout the lease term

FARMER PARTNER CRITERIA

These are general guidelines. Farmers are encouraged to contact us even if they may not meet one of the guidelines, as every project is evaluated on its individual merits.

1. More than two years of sales history, or prior farm management experience and purchasing an established business
2. Over $100,000 in annual gross revenue or projected gross revenue
3. Anticipated land purchase price between $200,000 – 1,000,000
4. Utilizing organic practices or in transition to organic, certification not required
5. Located in New England, New York or New Jersey

MANAGEMENT TEAM BIOS

JACOB ISRAELOW, FOUNDER AND MANAGING DIRECTOR

Jacob founded Dirt Capital Partners in 2013 as a platform to channel private investment in support of farmland access, conservation and long-term land security for sustainable farmers in the Northeast.

Previously, Jacob was a Vice President at Goldman Sachs in Asia, where he spent five years acquiring and developing real estate and infrastructure on behalf of the firm. He is also a co-founder of Empire Cider Company and a Board Director at The Farm Bridge, a for-profit food hub in Kingston, NY.

Jacob presently serves as Board Treasurer of the National Young Farmers Coalition and on the New York Advisory Council of the American Farmland Trust. He has an MBA from Columbia Business School, an MA from Johns Hopkins School of Advanced International Studies, and a BA from Williams College, where as an alumnus he helped initiate the College's sustainable food and agriculture program on campus.

BENNETH PHELPS, DIRECTOR OF FARMER SERVICES

Benneth joined Dirt Capital Partners in 2016 as the Director of Farmer Services to further develop and refine the company's approach to investing in land in partnership with farmers, and the company's organizational culture and infrastructure.

Previously, Benneth was Loan and Business Assistance Manager at The Carrot Project, where she spent five years evaluating loan applications and working with farm and food enterprises to plan for business growth. Prior to this she farmed vegetables and small fruit in the Connecticut River Valley of Western Massachusetts, working on organic farms with 4-80 acres in production.

Benneth has served as a member of the Fund Advisory Committee of PVGrows, currently serves on the Loan Review Committee of The Carrot Project and as a Board Member of the Vermont Grass Farmers Association. She holds an MRP in community and regional planning from the University of Massachusetts, and a BA from Smith College where she studied American Studies and Economics.

Case Study: East Forty Farm and Dairy, Waldoboro, ME

Project Highlights

- ***Dirt Capital, Maine Farmland Trust and CEI all partner to support new farmer land access and creamery expansion***
- ***East Forty Farm and Dairy will include a creamery, expanded cheese production, mixed livestock, draft horse-powered forest management, and on-farm agritourism activities***
- ***A conservation easement will protect the farm and its coastal frontage in perpetuity, while making the property affordable for agricultural use***

When Allison Lakin and Neal Foley approached Dirt Capital about a 40-acre coastal property in Waldoboro, they knew it was the right one. The couple had seen fifty Maine properties in their search for a place relocate and expand their cheese-making and sawmill businesses. The mix of woodlands and pasture, existing infrastructure from its historical use as a dairy farm, and the coastal Maine location made this one ideal for their multiple uses.

However, the asking price was higher than their budget allowed. With Dirt's negotiation and acquisition help, and an easement purchase by Maine Farmland Trust, the acquisition price was reduced from $450,000 to $300,000 – well within Allison and Neal's budget. The motivating factor in the farm search was to find a location for the expansion of Allison's business, Lakin's Gorges Cheese. Since starting the business in 2011, she has experienced substantial sales growth every year, while leasing creamery space from the State of Maine Cheese Company in nearby Rockport, ME. Allison makes both fresh and aged cheeses, including ricotta, blue, and many proprietary creations. She is known for colorful promotion of wonderfully diverse and consistent cheese products, which are currently sold in Maine, Boston and New York.

Facing space constraints, Allison wanted to relocate the creamery permanently on a farm, expand to meet unmet demand for her products, and reach a sustainable business size that would allow her to save for retirement. She also wanted increased collaboration with her partner Neal, who would produce hay, and raise meat animals that would be raised on pasture and fed whey, a byproduct of by the cheese.

The farm's name, East Forty Farm and Dairy, originates from the farm's size, 40 acres, and the farm's location on the east shore of the Medomak River. Allison and Neal express their vision "to create a sustainable farm that will contribute to the community by preserving the natural heritage of the area; through offering experiential education programs; and participating in the local economy, and to pursue organic certification."

The project will require substantial renovation. The couple will transform the farm's existing garage into a creamery where the cheese will be made. The existing aging caves will be relocated to the farm, making sure to transport the unique biology of Lakin's cheese, and new aging spaces will be constructed to allow for expansion. They will now offer on-farm retail sales of cheese and cutting boards made from farm lumber.

The farm is close to well-known tourist areas on Maine's mid-coast and offers abundant possibility for Allison and Neal to collaborate in ways that bring customers to the seaside farmstead for a combination of farm tourism, cheese culture and woodworking. Eventually, farmstay opportunities will be available through seasonal yurts or farmhouse rooms.

One of the on-farm activities being planned for visitors: a recurring "Cheese Board Workshop" where Allison will present how to store and serve each style of Lakin's Gorges Cheese, while Neal makes cheese boards from farm lumber and offers a hands-on experience putting the finishing touches on a pre-shaped board to take home.

The site has been a farm since the 1700s, but has not been fully occupied by a farmer in the last 6 years. Referencing historic photos of the farm revealed that large areas that are now young forest had previously been pasture. Neal plans to clear pockets of this to increase the potential pasture to 20 acres, leaving dedicated areas of silvaculture and stewarding a 20 acre stand of productive forest.

The useful timber realized from this activity will be processed by Neal's sawmill for use as timbers for the farm and the production of custom milled specialty woods. In order to make this process as low impact and site sensitive as possible, Neal will use his team of draft horses to twitch the logs from the forest, maintaining the quality of the remaining trees and the sensitive soils.

The entire 40-acre property was conserved through sale of an agricultural conservation easement to the Maine Farmland Trust, which took place as simultaneous transaction alongside the property transfer from the seller to Dirt Capital on October 14, 2016. The easement sale enabled Dirt Capital to transact at an affordable agricultural value of the property.

The conservation easement permits ongoing agricultural and forestry activities on the property, but no future development, and was endorsed by Medomak Valley Land Trust, a local land trust working to conserve the riverine corridor and shore of the Medomak River and estuary. This protects 900 feet of river frontage from development, and extends an approximately 7-acre buffer on the fragile ecosystem of the Medomak River.

The farm is also one of the access points for local clammers. Clamming is the second largest seafood industry in Maine, after lobstering, and, Waldoboro is often the top harvesting community in the state. At the same time, the river experiences frequent closures during heavy rainfall due to microbial contamination. From a broader perspective of securing Maine's food systems, protecting the river biology with sustainably managed forest buffer at East Forty Farm helps contribute to Maine's sustainable fisheries.

East Forty Farm received business planning assistance through CEI and MaineStream Finance. Financing support from CEI and the Agricultural Marketing Loan Fund will provide capital for large equipment purchases necessary for the expanded production of the cheese

and for the renovation and construction of a dedicated space for that production. Additionally a commercial kitchen for the production of value added products and educational programs.

Allison and Neal have a nine-year lease with a purchase option at the end of the lease term, as well as an early a purchase option after five years, each at a pre-agreed price. This arrangement, which is one of Dirt Capital's typical project structures, provides the farmers ample time to develop the property and generate revenue from their businesses prior to exercising a purchase option.

Dirt Capital invests in farmland in partnership with experienced, profitable, sustainable farmers throughout the Northeast United States: enabling land access and security for successful farmers while keeping farmland in productive and environmentally responsible use.

Nick Richardson, Vermont Land Trust nick@vlt.org

Vermont Forest Carbon
Feasibility and Demonstration Project Summary

Overview

In the face of a changing climate and increased pressures on Vermont's overall environmental and economic resiliency, we seek new strategies to accelerate the pace of forestland conservation in Vermont. Beyond the direct land protection outcomes, we believe it's critical to begin shifting the ways in which landowners understand and manage the multiple values that forests provide to our state as a whole. Forest carbon projects have the potential to accomplish both goals. The Vermont Land Trust is partnering with the University of Vermont's Carbon Dynamics Lab and the Spatial Informatics Group (SIG) to conduct a statewide feasibility assessment of forest carbon project viability, including in-depth research on the potential to aggregate parcels under both the voluntary and compliance market protocols.

The results of this statewide feasibility assessment will be shared as a stand-alone 'roadmap' for partner organizations, policymakers, and private landowners interested in developing carbon projects. It will also serve as the foundation for a larger project the partners plan to develop comprising two to four demonstration forest carbon projects over the next two years that will test the feasibility of building out a robust Vermont forest carbon program.

Project Vision

Our vision is that someday soon a much larger proportion of the families and individuals that own most of the forestland in Vermont will have a real option to be compensated for the carbon that is being sequestered in their forests. Yet, the barriers to carbon project development in Vermont persist. Carbon markets are varied, complex, and evolving. Approaches that are clearly viable for larger parcels in other states are less easily applied to the smaller parcels that are characteristic of Vermont's forested landscape. In addition, gathering the information to test viability on a parcel by parcel basis has proven to be not worth the investment.

It's been at least four years since a rigorous review of the state of carbon markets in the northeast has been undertaken, and there has never been a state-specific assessment like the one we propose to complete for Vermont.[1] We think the statewide focus is a critical feature of the project: it is often uneconomical to assess viability on any one smaller parcel- the economics of a project wouldn't support it. But by looking across the landscape we can achieve a rigorously researched assessment of the carbon opportunity in Vermont today. Given the evolution of carbon markets, the specific characteristics of forest ownership in Vermont, and the development of widely shared

[1] The most recent published assessment is *Selling Forest Carbon: A Practical Guide...,* Julie Beane, 2012. The guide was a collaborative project of the Manomet Center, the Northern Forest Center, the US Endowment for Forestry and Communities, and USDA Rural Development.

statewide forestland conservation priorities, the time is right for a close look at the question of feasibility for carbon project development in Vermont. Regardless of the outcome, this feasibility study will be a valuable resource for landowners and the community of conservation organizations working in Vermont, providing us with a much more sophisticated understanding of how this complex and important market intersects with Vermont's forest landscape.

If the results of the study suggest that carbon projects can be economically feasible, align well with statewide conservation priorities, and offer a compelling value to landowners, our work would then shift toward initial planning for a first set of demonstration projects. These projects, contemplated as a "phase two", and outside the scope of this feasibility assessment, would be designed to show that relatively small scale and/or aggregated projects can 1) be financially viable, 2) integrated with non-carbon objectives such as timber management and recreation.

This project has four main objectives:

1) Synthesize information on forest carbon market opportunities in Vermont, including factors for economic viability, approaches to project development, and analysis of non-economic barriers to participation.
2) Overlay existing statewide conservation prioritization systems, such as the Vermont Conservation Design, which incorporate the latest science for climate resiliency and other forms of ecological integrity.
3) Identify a set of candidate properties that meet criteria for project feasibility for carbon and are a high priority for conservation.
4) Lay the groundwork for demonstration projects and the marketing of offsets, including a thorough exploration of the possibilities for aggregating parcels under both 'compliance' and voluntary market protocols.

Project Rationale

- Vermont's economic and ecological resilience to climate change in an environment of increasing frequency of severe weather events and other disruptions, will depend to a large degree on maintaining the health, function, and integrity of our forested landscape.
- Privately owned forests are a critical resource class within this larger context.
    - More than 75% or 4.5 Million acres of Vermont (estimates vary) is in forest cover, approximately 80% of which is privately owned.
    - Despite great progress, much of Vermont's forestland remains only lightly protected if at all (roughly 1 Million acres in state ownership; 1.8 Million acres enrolled in current use, and of that total only 19% conserved.) Many critical privately owned forest parcels remain outside the framework of protection created by state ownership, conservation, and current use.

  - Privately owned forests in Vermont face increasing fragmentation and parcelization (subdivision) from exurban sprawl, leading to the diminishment of a range of ecosystem services.[2]

- Constrained funding for forestland conservation limits the pace of protection (7,600 acres per year on average of new forestland conservation in Vermont over the last decade) and cannot keep pace with demand, nor address all the critical properties from a climate resilience perspective.
- Carbon storage works well as an indicator for other forms of resilience such as upland water system protection and ecological integrity. This is because carbon sequestration and storage are closely linked both to healthy, well-managed or protected forests and to ecosystem services associated with high levels of carbon stocking in the form of living and dead vegetation biomass. Ensuring that a significant proportion of Vermont's forests have high levels of carbon storage – the emphasis of most carbon market protocols – also means that our landscapes will have a better chance of providing a range of environmental and economic co-benefits.
- If feasible, a robust Vermont program of carbon projects could leverage increased conservation of important natural systems and offer a new revenue source to landowners, making environmentally sustainable management also more economically viable.
- There are also owners who, regardless of funding, will be resistant to traditional conservation easements for a variety of reasons. Carbon projects would give us another tool to incentivize land conservation, provide climate change mitigation and enhance flood resilience.
- Carbon markets have matured as an opportunity to the point of financial viability. We estimate the total potential forest carbon market in Vermont to be between $45 Million and $90 Million per year, although a much smaller portion of this market is likely to ever be monetized.
  - Regulated (also called "compliance" or "cap-and-trade") markets are maturing rapidly and now offer attractive price points for forest land owners interested in selling emissions offsets and integrating these with other revenue streams and management objectives.
  - Voluntary markets (also called "over-the-counter") are using standardized protocols and doing significant turnover each year. North American participation in a variety of voluntary market systems, both domestic and international, is growing.[3] Total value of transactions on the voluntary market has grown considerably over the last five years and is projected to continue to increase for the next decade at least. Several

[2] Fidel, J. and Vermont Natural Resources Council. 2007. Roundtable on Parcelization and Forest Fragmentation, Final Report. VNRC, Montpelier, Vt. 23 pp.
[3] *Carbon Market Monitor*, Thompson Reuters, 2015

large forest carbon projects in the Northeast have enrolled in and sold carbon credits under the Voluntary Market.

- Given these recent changes in the carbon market, it appears that revenues from sequestered carbon may be achievable for a wider range of forest parcels in Vermont than ever before. Yet the absence of carbon project activity to date suggests that real barriers remain.

OPM (OTHER PEOPLE'S MONEY): CAPTURING NATURAL RESOURCE DAMAGE PAYMENTS AND OTHER ENVIRONMENTAL FINES/PAYMENTS

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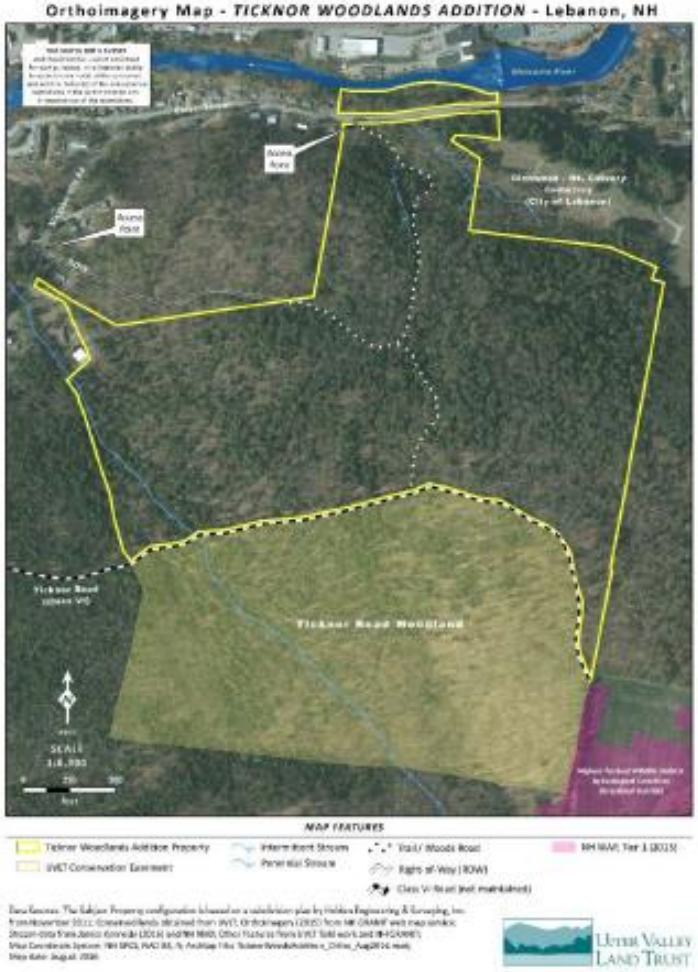
Compensatory mitigation, natural resources damage assessments, mitigation payments and responsible party payments or fines are all potential sources of capital to pay for land conservation and land restoration. At the Federal level, the following legislative initiatives drive the creation of these payments: Comprehensive Environmental Response, Compensation and Liability Act (SuperFund), Clean Water Act, Oil Pollution Act of 1990, Park System Resources Protection Act, and the National Marine Sanctuaries Act, plus from time to time the Federal Energy Regulatory Commission (FERC). Sometimes these are contested and adversarial and at other times, the government and the responsible parties reach pre-settlement agreements. Many states have similar statutes. Massachusetts has a separate state agency to accumulate and distribute environmental fines -- The Massachusetts Environmental Trust. (It also utilizes the proceeds from special DMV license plate sales).

Wetland mitigation via mitigation banking, permittee responsible mitigation and state specific 'in-lieu-fee' programs are the major source of 'regular' environmental damage payments. Specifically, the in-lieu-fee programs have the greatest potential for supporting land conservation and natural resource restoration projects that might be undertaken by land trusts and local/state natural resource agencies. Land development and other human activities that require dredging, filling, and construction in wetland and surface water resources can result in significant impacts on the environment. These impacts affect the functions and values of wetlands and surface waters, such as wildlife habitat, water quality renovation and/or flood storage. For example, in New Hampshire a number of and trusts, including The Society for the Protection of New Hampshire Forests and the Upper Valley Land Trust, have accessed the Aquatic Resource Mitigation funds secured via enforcement actions by the NH Department of Environmental Services. For a state not well known for robust government agency activities, this program is almost 20 years old and has generated millions of dollars in support for land conservation and land restoration.

As an illustration, The Upper Valley Land Trust (UVLT) and the City of Lebanon, New Hampshire coveted the permanent protection of 110 acres adjacent to the existing Ticknor Field Road Woodland, a public open space area owned and managed by the City of Lebanon.

Appendix 2

Orthoimagery Map - *TICKNOR WOODLANDS ADDITION* - Lebanon, NH



A critical element in the successful effort by UVLT to secure funding from the NH Department of Environmental Services (NHDES) was well documented "alignment" between the environmental damages that required mitigation and specific ecological features and restoration activities contained in their proposed project. Below is a portion of UVLT's application to NHDES's Aquatic Resources Mitigation Program.

> ***Replacement of mitigated functions and values:*** *Mitigation funding this round in the Lower Connecticut River service area accounts for 37,917 sq. feet of wetland loss and 32 feet of stream-bank loss. Functions and values lost include: losses to wildlife habitat, flood storage, alteration of wetlands, nutrient removal, and production export (conversion of PFO to PEM).*
>
> *This project will protect 18.7 acres of wetlands (814,572 sq. ft.), 1300 linear feet of perennial stream, 855 feet of Mascoma River frontage, as well as an additional 2400 linear feet of intermittent stream, protecting lost wetland values 21 fold and lost perennial stream-bank values 67 fold. Please see the Wetlands Report and Assessment (Appendices 4 & 5) for greater detail pertaining to functions and values for the project's wetlands. As detailed in the Wetlands Report,*

this project encompasses a number of different wetland types including: a 5-15% gradient Tier II perennial stream with associated riparian wetlands, a 3-5% gradient intermittent stream, frontage on the Mascoma River, a NH Designated River, palustrine forested wetlands, a vernal pool, as well as a number of sloping ephemeral drainages with rich mesic forest on deep glacial till soils with seasonally high water tables.

The property's wetland resources will be enhanced by creating permanent, natural area buffers with no commercial harvesting of trees in these buffers, as well as through a proposed vernal pool enhancement outlined further in Answer 2, below. New and existing trails will still be permitted within the buffers, but relocated wherever they have direct detrimental effects on wetlands. Details of buffer locations and possibly small-scale forest management for wildlife will be developed after more ecological inventory work is done on the property. Please see the Stewardship Management Plan (Appendix 9) for further details about the proposed long-term management of the property.

Beyond New Hampshire, there are numerous examples from Maine, Rhode Island, Massachusetts, Connecticut and Vermont regarding access by land trusts of various environmental penalty payments, compensatory mitigation payments and other non-traditional sources of capital from the enforcement of various environmental laws or permitting procedures. The technical competency to access these funding sources is not universally understood or imbedded in the staff or Board of most land trusts in New England. It may be efficient for a subject matter expert to be supported that can offer such expertise on a state-by-state or New England-wide basis. Legal intricacies, plus the need to credibly demonstrate ecological alignment, timing issues and the episodic nature of these efforts suggest that some form of 'shared' but centralized expertise that could also leverage the knowledge of environmental litigation NGOs such at Conservation Law Foundation, Natural Resources Defense Council and Connecticut Fund for the Environment be created. While this would need philanthropic support to be launched, it potentially could be supported in the long term by a modest % of the awards/payments secured by land trusts.

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(Supplied by Peg Merrens, UVLT Vice President, Conservation)
http://www.uvlt.org/