CLEAN WATER REPORT

REQUIRED BY ACT 64 OF 2015

STATE OF VERMONT

OFFICE OF THE STATE TREASURER

January 15, 2017

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TO: House Committee on Appropriations
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Senate Committee on Appropriations
Senate Committee on Finance
Senate Committee on Natural Resources and Energy
Senate Committee on Agriculture

FROM: Beth Pearce, Vermont State Treasurer

RE: Treasurer's Report on Clean Water, pursuant to Act 64 of 2015

DATE: January 15, 2017

It is my pleasure to present to you the Treasurer's Office report, pursuant to Act 64 of 2015 (An act relating to improving the quality of State waters) on funding and financing recommendations to the General Assembly to continue to fund the Clean Water Fund and support clean water initiatives across Vermont. While this report is submitted by the Treasurer's Office it has been completed though a collaborative effort with the Agency of Natural Resources, particularly the Department of Environmental Conservation (DEC), the Agency of Administration, the Department of Taxes, the Agency of Transportation, Agency of Commerce and Economic Development, and the Agency of Agriculture. It also incorporates ideas and dialogue with approximately 1,000 participants from more than 23 stakeholder meetings and public outreach events that took place from March to November 2016.

Over $2.5 billion is spent annually in the State of Vermont by visitors and vacation homeowners in tourism, much of that linked to the lakes and rivers throughout the state. Per a University of Vermont (UVM) study,[1] visitor spending contributed $318 million in tax and fee revenues in

[1]Jones, Kenneth – Vermont Agency of Commerce and Community Development, "Benchmark Study of the Impact of Visitor Spending on the Vermont Economy: 2013: Tourism is Vital to Vermont.";
Vermont Department of Tourism & Marketing, "The Vermont Travel & Tourism Industry – 2013."

2013 and supported an estimated 30,000 jobs for Vermonters. That $318 million contributed $115 million to the general fund, $188 million to the education fund and $15 million to the transportation fund. Data from several communities demonstrate the positive impact our natural resources have on Vermont's appeal and on the lives of its citizens. Our lakes and rivers are part of the state's assets. Not only must these assets be protected, but clean water should also be viewed as an investment in a healthier, more prosperous state for all Vermonters.

Like any investment, early, proactive and disciplined practices are the key to success. While progress has been made in the past, a comprehensive approach and funding plan is needed to create a sustainable track toward our clean water goals. Moreover, this is a shared responsibility between the private sector, municipalities, state and federal governments. It is also a shared gain. This report will outline funding and financing mechanisms to put Vermont on a track to reach its clean water goals. In making these recommendations, the Treasurer's Office noted that some of the technology and organizational structures needed to reach our clean water goals are not fully developed across the state. Thus, this report describes a two-phase approach, providing a two-year glide path to a long-term funding plan.

This does not mean deferring decisions and the resulting actions down the road for another two years. On the contrary, the attached report will recommend significant capital investment by the State over the next two years of $50 million or more. At the same time, we believe that this can be achieved without raising taxes or fees over the next two years while we develop a model that maximizes cost efficiency and incentivizes local and regional decision making and implementation, while providing adequate resources in the interim.

Extensive hours have been put into this effort by many agencies, departments, municipal officials and staff, and interested parties. I am grateful for all their technical expertise and shared commitment. I do want to specifically acknowledge a few key individuals. Special thanks to former DEC Commissioner Alyssa Schuren. Over the last several months she has been a full partner, educating me on environmental issues and vetting various funding and financing proposals. Special thanks to Rebecca Ellis and Kari Dolan, also from DEC. Thanks also to Andrew Stein, our senior economist from the Department of Taxes who spent many hours modeling the various revenue recommendations. Treasury staff, including Director of Financial Reporting Scott Baker and Policy Director Tim Lueders-Dumont, were also key contributors to this effort.

I look forward to working with the General Assembly and the Administration in reviewing bonding options in the interim plan, and in assisting and analyzing capital expenditures by departments. I also look forward to a continued dialogue as we work together to address our clean water needs across the state.

This is a very complex topic. I urge you to give due consideration to the issues, challenges and recommendations made in this report. My staff and I are available at your convenience to discuss this and answer any questions you may have.

Thank you for your consideration,

Beth Pearce
State Treasurer

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Executive Summary

Clean water is a shared resource, belonging to all Vermonters. We swim, fish, boat, drink and appreciate the beauty of our rivers, streams, lakes, ponds and wetlands. Clean waters are intrinsically linked to Vermont's economic future.[2] Vermont's exceptional natural features—open landscapes, plentiful waters, and rural, agrarian communities—have made the state a popular destination for travelers, new businesses, and Vermonters alike.

Act 64 of 2015[3] (referred to as the Vermont Clean Water Act or "the Act") strengthened statutory authorities aimed at reducing water pollution with a focus on reducing sediment and nutrient pollution. It also established a Clean Water Fund to help municipalities, farmers and others implement actions to reduce pollution washing into waterways and comply with clean water regulations. The Act provided initial funding (using a surcharge on the Property Transfer Tax) to support the Clean Water Fund for three years.

The Act directs the Office of the State Treasurer, in consultation with the Secretary of Administration, the Commissioner of Environmental Conservation, the Commissioner of Taxes as well as other agencies of jurisdiction, to prepare this legislative report. The intent of report is to make financing and funding recommendations to the General Assembly to continue to fund the Clean Water Fund and support clean water initiatives across the State. The Act directed the Treasurer's Office to include the following in the report:

(1) Proposed revenue sources;
(2) Recommendations for incentivizing Best Management Practices;
(3) The estimated amount of revenue to be generated by source;
(4) A summary of how each source will be administered, collected and enforced;
(5) An assessment of whether the State should use bonds to finance water quality improvements; and,
(6) Legislative proposals to implement each of the proposed revenue sources.

This report builds on two prior legislative reports on clean water improvement plans – the Water Quality Remediation, Implementation and Funding Report[4] (referred to as the Act 138 Report) and the Vermont's Clean Water Initiative (referred to as the Act 97 Report).[5]

[2] Voigt, Brian, et. al., "An Assessment of the Economic Value of Clean Water in Lake Champlain."; Schiff, R., et. al., "Evaluating the Costs and Benefits of Floodplain Protection Activities in Waterbury, Vermont and Willsboro, New York, Lake Champlain Basin, U.S.A."
[3] Vermont General Assembly, "No. 64. An act relating to improving the quality of State waters."
[4] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Water Quality Remediation, Implementation and Funding Report: Part I: Clean Water Needs, Financial Tools, and Administration: Part II: Lake Shoreland Protection and Restoration Management Options."
[5] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Vermont's Clean Water Initiative."

The clean water funding and financing strategy contained in this report incorporates the following concepts:

(1) Reduce overlapping fee structures to minimize entities paying twice for the same service activity;
(2) Incentivize local and regional decision making and implementation;
(3) Incentivize public and private entities to make water quality improvements; and,
(4) Maximize on-going funding opportunities in the form of utility programs and revolving fund sources.

The proposed long-term model would incorporate the following elements:

(1) Incentivize the creation of additional local and regional stormwater utilities or similar models;
(2) Assist in expanding the capacity of existing local and regional stormwater utilities;
(3) Advance cost-effective policies and programs, such as integrated planning and permitting, a consistent application of current use, and/or a restructuring of State grant programs;
(4) Utilize the existing Clean Water State Revolving Loan Fund (CWSRF) to increase the amount of subsidized capital available to wastewater and stormwater utilities and other authorized borrowers;
(5) Support efforts to partner with utilities, municipalities and third party entities to fund and utilize new technologies, such as biodigesters (this could include use of private activity bond allocations);
(6) Allow the purchase of easements of high value properties to reduce non-point source pollution; and,
(7) Provide funding and loan forgiveness for agricultural entities to encourage improved agricultural practices.

As will be discussed in further detail later in the report, the long-term recommendations are dependent upon the timing of the development of local and regional stormwater utilities, which has a significant impact on both the interim (short-term) and long-term recommendations included in this report. The Treasurer's Office recommends that a similar report to this one be authored by the Agency of Administration with input from the Agency of Natural Resources, Department of Environmental Conservation, Agency of Transportation, Department of Taxes, Agency of Commerce and Community Development, and Agency of Agriculture and reviewed by the Treasurer's Office every five years during the 20-year clean water investment period to consider the evolving costs, revenues, accomplishments to date, and best management practices. After examination of models utilized in other states and structures already existing in some Vermont communities, there is a consensus among the clean water financing stakeholders that local decision making within the context of areas of concern identified through the tactical basin planning process[6] provides for the greatest efficiency in use of dollars in a cost-effective manner.

[6] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Tactical Basin Planning."

One such model is a stormwater utility. As noted in a previous legislative report, "A stormwater utility is an organization that uses available revenue sources to better address and maintain stormwater runoff from existing development, and plan for mitigation of stormwater runoff from future development."[7] Stormwater management programs may be funded using a variety of methods including taxes, service charges, fees, exactions, and assessments."[8] While water quality improvements, including stormwater management programs, have been funded from sales tax, property taxes, general fund dollars and others, "the user fee method has emerged as a new, major method."[9] Fee versus tax is an important consideration; a tax-exempt organization may contest the requirement to pay if designed as a tax. Furthermore, properties such as parking lots do not pay wastewater charges, thus there is an opportunity to expand the base to include more properties that affect water quality.

For these reasons, we recommend that stormwater fees, to the extent fees[10] are required to be used, be tied to a "usage" concept that has a significant nexus to the problem. Some parcel fees get closer this nexus. Proposed parcel fee models have included flat fees based on a per parcel or acreage fee and can be tiered based on land use category and size. Other models are linked to the amount of impervious surface. It is the Treasurer's Office's opinion that impervious surface fees have a more direct linkage to nonpoint pollution, provide a strong nexus to the problem and are useful in promoting mitigation. On the other hand, impervious surface fee structures are more difficult to manage.

A parcel-based user fee provides several advantages:

(1) A reasonable nexus to stormwater runoff;
(2) Properties can be assessed in a manner proportional to the property's contribution to stormwater runoff;
(3) All properties contribute (including tax-exempt properties);
(4) Billing can often be included on existing utility bills;
(5) A dedicated funding source that is used for the purpose for which it is assessed; and,
(6) Reduced reliance on the local general fund.

Several communities in the Lake Champlain region currently use stormwater utilities or in the process of developing them (Burlington, Colchester (under consideration), South Burlington, Shelburne (as part of South Burlington's utility), Williston), although the current emphasis is on operation and maintenance and further development of an expanded utility model to support construction of new stormwater treatment projects would be needed.

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[7] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Water Quality Remediation, Implementation and Funding Report: Part I: Clean Water Needs, Financial Tools, and Administration: Part II: Lake Shoreland Protection and Restoration Management Options," p. 39.
[8] Kea, Kandace Monique, "An Analysis of Trends in U.S. Stormwater Utility & Fee Systems," p. 5.
[9] Ibid.
[10] The Treasurer's Office, while recognizing that stormwater usage fees may be needed, also strongly encourages using continued efforts to identify reallocations within the existing appropriation and capital budgets.

Our review of utilities in other states indicate that it takes about one to two years to set up these utilities, if mapping has been done. While mapping has been completed in the communities within the Lake Champlain Basin, additional data, such digitized parcel mapping and impervious cover information, is needed across the state and is currently underway. For this reason, we believe that a utility model, applied locally and regionally, will take approximately two years to fully develop. This time frame can be condensed with additional financial investment.

Our discussions with existing local stormwater utility administrators point to a greater level of complexity with fees based on impervious surface. Multiple utility models may be needed, as well as potential other models (such as a block grant program or state aid/formula program). These are discussed in later sections of the report. These administration models vary in the amount of time and resources needed to be established. However, immediate action is also required.

In preparing this report, the Treasurer's Office recommends the following structure:

(1) Establish a long-term funding plan;
(2) Establish a two-year interim funding plan for high priority projects to facilitate water quality implementation efforts and allow for the long-term plan to be built; and,
(3) To the extent possible, use existing resources.

The 20-year total clean water compliance costs, as defined in the cost chapter of this report, are $2.3 billion. Revenues during that time period are projected at $1.06 billion, leaving a 20-year total gap of $1.25 billion. Annual compliance costs are estimated at $115.6 million, revenues at $53.2 million, leaving a gap of $62.4 million per year. Estimates encapsulate all public and private costs, including municipalities, farms, private residences and businesses, and the State. For a detailed breakdown of costs please see the chapter on the "Cost of Clean Water" and Appendix A.

Cost, revenue and gap projections have been broken into tiers. Tier 1 costs represent the regulatory cost of compliance with federal and state-required clean water plans, known as total maximum daily loads, or TMDLs,[11] compliance with Act 64 of 2015, and the 2016 Combined Sewer Overflow Policy.[12] Tier 1 costs are $82.2 million annually. After subtracting annual Tier 1 revenues ($33.7 million), a gap of $48.5 million remains. Tier 2 costs are not required for compliance with the new legal obligations facing Vermont, and represent the costs that support, enhance, catalyze and accelerate compliance, such as capital equipment assistance for agricultural and municipal stormwater runoff controls. Annual Tier 2 costs are $33.43 million.

[11] United States Environmental Protection Agency, "Implementing Clean Water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs)."
[12] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Environmental Protection Rule: Chapter 34: Combined Sewer Overflow Rule."

After subtracting annual Tier 2 revenues ($19.57 million), an annual "gap" of $13.86 million remains.

The restoration of our surface waters requires all pollutant source sectors – wastewater treatment, agricultural, developed lands and natural resources – increase implementation of pollution controls. Building on the "all-in" approach, the State has an opportunity to help the sectors with their implementation costs. If the State chooses not to subsidize any of these costs, the costs will be fully absorbed by municipalities and businesses. The State could prioritize its support by targeting its funding to help sectors reduce the cost burden related to the Tier 1 activities. There are substantial public benefits, such as economic, environmental and health benefits, in doing so.

The funding and financing plan laid out in this report strives to provide more than $25 million of additional funds in the first few years of a 20-year planning time frame with the opportunity to expand as needed and as the proposed long-term options and programs take effect.

The interim plan (years one and two of the 20-year plan) is to generate a minimum of $25 million per year of additional funding). During this period, the larger utility-based program is to be developed and implemented. The Treasurer's Office has undertaken a series of reviews and expects that this interim plan can be funded through existing resources. These include the following:

(1) Reallocate/Secure/Prioritize State capital money from general obligation bond program consistent with Capital Debt Affordability Advisory Committee (CDAAC) recommendations— $15 million annually;
(2) Reallocate transportation infrastructure bond fund capital money, either in the form of pay-go capital or future issue bond fund—$5 million annually;
(3) Extend property transfer tax collected for the Clean Water Fund to through State fiscal year 2019—$5 million annually; and
(4) Potentially use some dollars in the Municipal Equipment Loan Fund (limited).

Enactment of these proposals would provide for a number of authorized uses beneficial to the cleanup of our lakes and rivers:

Sources	**Authorized Uses**	**Examples of Projects Eligible for Funding**
State G.O. Bonds	Capital projects	Developed Land/Stormwater Treatment • Grants to municipalities or local and regional stormwater utilities • Additional contributions to CWSRF Agricultural • Purchase of water quality-based easements • Grants for livestock exclusion fencing and manure management systems (taxable) Natural Resources • Capital projects and grants for wetlands and floodplain restoration [13] Wastewater Treatment Facilities • Additional contributions to CWSRF • Grants to municipalities
TIBs Pay-go or Bonds	Limited by TIB Statute to: rehabilitation, reconstruction, or replacement of State and municipal bridges, culverts, roads highways.[14] Project must have a minimum remaining useful life of 10 years.	Developed Land/Stormwater Treatment • Grants to municipalities for qualified highway costs related to stormwater management • VTrans roads and highway related stormwater management efforts
Clean Water Surcharge	Most flexible use of funds: Planning, design costs, restoration, training, technical assistance, operating programs, capital projects, partner support	Funds available for costs authorized by Act 64, including training, technical assistance, operating programs, private financial assistance for non-capital items, partner support, etc. that would not available from other interim sources.

[13] Traditional tax-exempt financing may not be available for all projects due to private use issues. Taxable financing could be used or private activity financing may be available to be used based on specific project review.

[14] The statutory term "highway" includes rights-of-way, bridges, drainage structures, signs, guardrails, areas to accommodate utilities authorized by law to locate within highway limits, areas used to mitigate the environmental impacts of highway construction, vegetation, scenic enhancements, and structures. The term "highway" does not include State Forest highways, management roads, easements, or rights-of-way owned by or under the control of the Agency of Natural Resources, the Department of Forests, Parks and Recreation, the Department of Fish and Wildlife, or the Department of Environmental Conservation.

There exists a temporary window for the use of significant bonded dollars within the existing general obligation bond program, as detailed later in the report in the section on "Bonding Options & Recommendations," due to a high level of authorized but unissued debt. As a result, there is a lag in the current spend-down of these capital dollars that would permit a "shifting" of projects for some existing capital authorizations to later years making capital dollars available in the next two years and beyond. In addition, the Treasurer's Office and its financial advisors believe that the current Transportation Infrastructure Bond program has, in its current authorization, the ability to extend this program to culvert, drainage, and related environmental work at the municipal level that would provide relief to municipalities. Finally, while the current property transfer tax is due to sunset in State fiscal year (SFY) 2018, we recommend a one-year extension until the other resources associated with stormwater utilities are ready to be implemented.

In conclusion, the State of Vermont has an opportunity to jumpstart clean water compliance with $50 million or more over a two-year period, creating a glide path for local and regional utility systems to be created, in combination with other funding options, as discussed later in the report. Such a system could be developed to create flexibility to drive costs downward by prioritizing investments in sectors and projects that would have greater phosphorus and nutrient reductions per dollar than other activities. It would also foster effective local decision-making, with the benefit of the tactical basin plans.

The Treasurer's Office, in providing revenue options for the long-term portion of the report recognizes that it has neither revenue generation nor appropriation authority. In the end, the decisions will be up to the Administration and the General Assembly. We have, however, attempted to distill the 60 plus revenue suggestions generated during the more than 23 stakeholder and public meetings into a more manageable set of options and have provided some discussion of their relative advantages and disadvantages for your review.

The later sections of this report will detail the cost analysis and more fully develop the long-term funding and financing options. In addition, the report also includes sections on incentivizing best practices and a review of policy initiatives completed by our State partners that could positively impact the effectiveness, including cost-effectiveness, of these initiatives, and addresses the administrative capacity issues associated with implementation.

Introduction: The Value of Clean Water

Clean water is a shared resource, belonging to all Vermonters. We swim, fish, boat, drink and appreciate the beauty of our rivers, streams, lakes, ponds and wetlands. Clean waters are intrinsically linked to Vermont's economic future.[15] Vermont's exceptional natural features—open landscapes, plentiful waters, and rural, agrarian communities—have made the state a popular destination for travelers, new businesses, and Vermonters alike.

Over $2.5 billion is spent annually by visitors and vacation homeowners in tourism, with much of that linked to the lakes and rivers throughout the state.[16] A University of Vermont (UVM) study notes that visitor spending contributed $318 million in tax and fee revenues in 2013 and supported an estimated 30,000 jobs for Vermonters.[17] That $318 million contributed $115 million to the general fund, $188 million to the education fund and $15 million to the transportation fund. Data from several communities demonstrate that our natural resources are also part of Vermont's fabric and the lives of its citizens.

Vermont's Clean Water Challenges

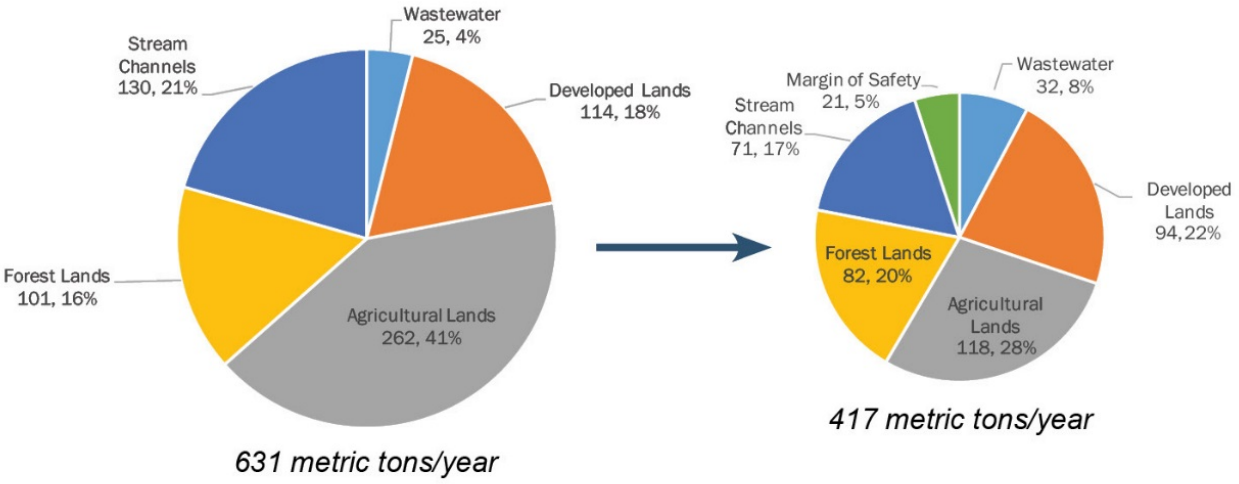
Vermont is a rural state. Every time it rains, water runs across our roads, parking lots and farms, collecting nutrients, sediment, and other harmful substances. Stormwater runoff also picks up and delivers bacteria, pesticides and fertilizers, oils, and heavy metals. Polluted water then pours into our streams, rivers and lakes, and is released from wastewater treatment facilities. These pollution sources combine and impair Vermont's surface waters, evidenced by harmful algae blooms, closed beaches, and public health threats.

Impaired waters have negative economic impacts. In 2015, the grand list in Georgia, Vermont dropped by $1.8M due to reassessments of 37 lakeside properties with declining water quality.[18] In addition, the UVM Study projected that a one-meter increase in water clarity would result in a 37 percent increase in seasonal home prices. [19] Today 94% of the state is covered under a Federal

[15] Voigt, Brian, et. al., "An Assessment of the Economic Value of Clean Water in Lake Champlain."; Schiff, R., et. al., "Evaluating the Costs and Benefits of Floodplain Protection Activities in Waterbury, Vermont and Willsboro, New York, Lake Champlain Basin, U.S.A."
[16] Vermont Agency of Commerce and Community Development. "Analysis on the Economic Value of Lake Champlain."
[17] Voigt, Brian, et. al., "An Assessment of the Economic Value of Clean Water in Lake Champlain."; Schiff, R., et. al., "Evaluating the Costs and Benefits of Floodplain Protection Activities in Waterbury, Vermont and Willsboro, New York, Lake Champlain Basin, U.S.A.," p. 25.
[18] Vermont Public Radio. "In Georgia, Water Pollution Has Devalued Lakeside Properties by $1.8M."
[19] Lake Champlain Basin Program. "News Release: Research puts price tag on clean water: Algae blooms, cloudy water can hurt home prices, tourism and jobs."

or State cleanup plan, or Total Maximum Daily Load (TMDL), including Lake Champlain, Lake Carmi, Lake Memphremagog and other waters of the state.

Phosphorus pollution sources in the Vermont portion of the Lake Champlain Basin (left) and the Lake Champlain TMDL target (right).



Source: U.S. EPA, Phosphorus TMDLs for Vermont Segments of Lake Champlain, 2016

Water pollution sources fall into two overall categories and four primary sectors. Discharges from pipes or other discrete conveyances are known as "point sources," [20] and all other sources are referred to as "nonpoint sources" and are often diffuse pollution sources caused by rainfall or snowmelt or erosion. [21] The four primary sectors of pollution are: developed lands, agriculture, natural resources and wastewater treatment.

Developed Lands

Developed lands involve the construction of buildings, roads, parking areas, driveways, sidewalks, and other impervious surfaces. Impervious surfaces are of concern for water quality because they cause rainwater and snowmelt to quickly flow into surface waters, rather than infiltrate into the ground or be absorbed by plants. The quantity and velocity of stormwater runoff can increase flooding, damage infrastructure, and contribute to stream instability.

[20] Point sources are, "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture." 33 U.S.C. § 1362(14).

[21] Nonpoint sources of pollution are sources that do not meet the Clean Water Act's legal definition of point source. Nationally, nonpoint source pollution is the leading causes of water quality degradation.
United States Environmental Protection Agency. "Polluted Runoff: Nonpoint Source Pollution."

A major category of developed lands are state and local highways and roads, many of which are unpaved gravel or unimproved roads. If these roads are not property constructed and maintained, they can contribute significant amounts of phosphorus laden runoff to surface waters.

Agriculture

Farms can be managed to help capture nutrients and stormwater runoff. If water is not infiltrated into the ground on farms, runoff can pull manure, fertilizers, pesticides, and other harmful nutrients into surface waters. As estimated by the previously discussed modeling efforts for Lake Champlain, agricultural nonpoint sources of phosphorus account for over 40% of the overall phosphorus load delivered to Lake Champlain from Vermont. The agricultural nonpoint sources and agricultural production areas will need to reduce its phosphorus load into Lake Champlain by 54% and 80%, respectively.[22] The need for similar agricultural water quality improvements exist statewide.[23]

Natural Resources

Healthy and well-functioning ecosystems – rivers and their floodplains, wetlands, and forests – provide people and communities a suite of economic, social, and ecological benefits. The benefits of restoring and protecting our "natural infrastructure" include providing resilience to the impacts from future flooding as well as delivering clean water. Unstable streams, that can no longer access their floodplains to store sediment and nutrient pollution during flooding, transport that pollution downstream and contribute to water quality problems in receiving waters such as inland lakes, larger rivers and Lake Champlain.

Wetlands protect water quality and abate soil loss and flood damages from flooding in a watershed. Wetlands remove as much as 80-90% of sediments in water moving through them. The economic benefits that natural wetlands offer can be significant to Vermont communities. The Gund Institute at UVM estimated that the Otter Creek wetlands complex upstream of Middlebury helped that town avoid five million dollars of flood damages related to Tropical Storm Irene.[24]

Healthy forests bind phosphorus and water, preventing additional runoff. However, timber harvesting and stream crossings, used during harvesting, can cause water quality impacts. Exposed soil can be carried into nearby streams by rainwater after timber harvesting equipment and trees dragged or carried over the ground loosen and expose the soil and result in degraded water quality.

[22] Ibid.
[23] There are over 500 shipping dairy farms in Lake Champlain Basin, and nearly 400 shipping dairy farms outside of the Basin. Vermont Agency of Agriculture, Food and Markets.
[24] Watson, Keri B., et. al., "Quantifying flood mitigation services: The economic value of Otter Creek wetlands and floodplains to Middlebury, VT."

Wastewater Treatment Facilities

The state and the federal governments have invested over $600 million since the 1970s to safeguard public health by providing support for wastewater treatment improvements. Over 120 municipally and privately owned wastewater collection and treatment facilities exist in Vermont, serving a population of over 370,000. Those investments continue to pay substantial dividends to public health and safety, local economies, and the environment.

Many municipal wastewater facilities are facing nutrient removal treatment requirements to meet TMDL plans for Lake Champlain (phosphorus), Lake Memphremagog (phosphorus) and the Connecticut River (nitrogen). Investments in these facilities must also be maintained. Inadequate and deteriorating wastewater treatment systems pose threats to human health, the environment, and future economic opportunities. Aging systems drive up the operation and maintenance costs, compromise service, and force municipalities to continually seek ways to defer maintenance or avoid upgrades.

Regulatory Requirements to Achieve Clean Water

The federal Clean Water Act requires the State to increase efforts to curtail both point and nonpoint source pollution to our surface waters. The Environmental Protection Agency (EPA) released the final Vermont Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) in June, 2016.[25] This new TMDL requires further reductions from a broad spectrum of stakeholders including municipalities, farmers, businesses and other property owners to meet new pollution reduction targets. It requires Vermont to establish programs and permits necessary to implement the TMDL.

In response to these new directives and in recognition that investing in clean water pays dividends to public health and safety, the economy and environment, the General Assembly signed into law Act 64 of 2015 (referred to as the Vermont Clean Water Act or "the Act"). [26]

[25] A TMDL is typically described as a pollutant "budget" that calculates a numeric target or maximum allowable amount (or load) of the pollutant the water body can assimilate while still meeting water quality standards. United States Environmental Protection Agency, "Implementing Clean Water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs)."

[26] Vermont General Assembly. "No. 64. An act relating to improving the quality of State waters."

Act 64 of 2015 (An act relating to improving the quality of State waters)

Act 64 of 2015 ("the Act") strengthened statutory authorities aimed at reducing water pollution with a focus on reducing sediment and nutrient pollution. It also established the Clean Water Fund to help each sector implement actions to comply with clean water regulations by providing initial funding via a surcharge on the Property Transfer Tax to support the Clean Water Fund for three years (State fiscal years 2016 – 2018).

The Act directs the Office of the State Treasurer, in consultation with the Agency of Administration; the Department of Environmental Conservation; the Department of Taxes, the Agency of Agriculture, Food & Markets; the Agency of Commerce and Community Development; the Agency of Transportation; and the Department of Forests, Parks & Recreation prepare this legislative report. [27] The intent of this report is to recommend funding sources that replace the existing Property Transfer Tax when it sunsets on July 1, 2018. The report includes:

(1) Proposed revenue sources;
(2) Recommendations for incentivizing Best Management Practices;
(3) The estimated amount of revenue to be generated by source;
(4) A summary of how each source will be administered, collected and enforced;
(5) An assessment of whether the State should use bonds to finance water quality improvements; and,
(6) Legislative proposals to implement each of the proposed revenue sources.

This report builds on two prior legislative reports on clean water legislative reports -- the Water Quality Remediation, Implementation and Funding Report[28] (referred to as the Act 138 Report) and the Vermont's Clean Water Initiative.[29]

[27] Vermont General Assembly, "No. 64. An act relating to improving the quality of State waters: Section 40: State Treasurer Report on Long-term Financing of Statewide Water Quality Improvement."
[28] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Water Quality Remediation, Implementation and Funding Report: Part I: Clean Water Needs, Financial Tools, and Administration: Part II: Lake Shoreland Protection and Restoration Management Options."
[29] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Vermont's Clean Water Initiative."

Cost of Clean Water

Vermont faces new legal obligations to restore degraded surface waters. Those obligations include:

(1) Compliance with federally-required clean water restoration plans, known as total maximum daily loads, or TMDLs, [30] such as the Environmental Protection Agency's (EPA) Lake Champlain Phosphorus TMDL,[31] the State's Lake Memphremagog Phosphorus and the Connecticut River Nitrogen TMDLs;[32]
(2) Compliance with Act 64 of 2015,[33] which provides new legislative authority and resources to support implementation of TMDLs and statewide clean water requirements. Specifically, the Act strengthens regulatory requirements to limit runoff and erosion from agricultural lands, municipal roads and developed lands, as well as state highways and existing impervious surfaces totaling three acres or more;[34] and
(3) Compliance with the State's 2016 Combined Sewer Overflow (CSO) Rule, which is designed to correct untreated or partially treated discharges that pose public human health threats.[35]

Meeting the legal obligations under the federal Clean Water Act, Act 64 of 2015, and other State water quality laws, requires greater investments from the four major pollution source sectors – municipal wastewater treatment facilities, agriculture, developed lands and natural resources, such as forestry and other lands management. New incremental compliance costs will be absorbed by each sector where existing state or federal subsidies do not exist, unless additional revenues are provided.

Costs Estimated Through Intensive Stakeholder Engagement

Costs were originally estimated by State Agencies: Natural Resources, Agriculture and Transportation, and then heavily vetted with stakeholders. Stakeholders included municipalities, agricultural interests, large and small businesses, regional planning commissions, as well as federal agencies and non-governmental organizations. In total, at least 23 meetings were held

[30] 33 U.S.C. § 1251 et seq., Section 303(d).
[31] United States Environmental Protection Agency, "Lake Champlain Phosphorus TMDL: A Commitment to Clean Water."
[32] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Restoring Lake Champlain.";
Vermont Agency of Natural Resources: Department of Environmental Conservation, "Lake Memphremagog TMDL Proposal Summary Water Quality Challenge.";
New England Interstate Water Pollution Control Commission, "Long Island Sound Total Maximum Daily Load."
[33] 10 VSA § 1386.
[34] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Restoring Lake Champlain."
[35] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Environmental Protection Rule: Chapter 34: Combined Sewer Overflow Rule."

with approximately 1,000 stakeholders to review and revise those estimates. A survey was also conducted to evaluate accuracy of cost information for municipal wastewater treatment. Each sector's new compliance costs over a 20-year planning horizon, a similar period being used for TMDL compliance, were itemized. Known revenues and financing options available to address those costs were also assessed. The differences determined the "gap" or shortfall in funding resources needed to support the additional compliance costs.

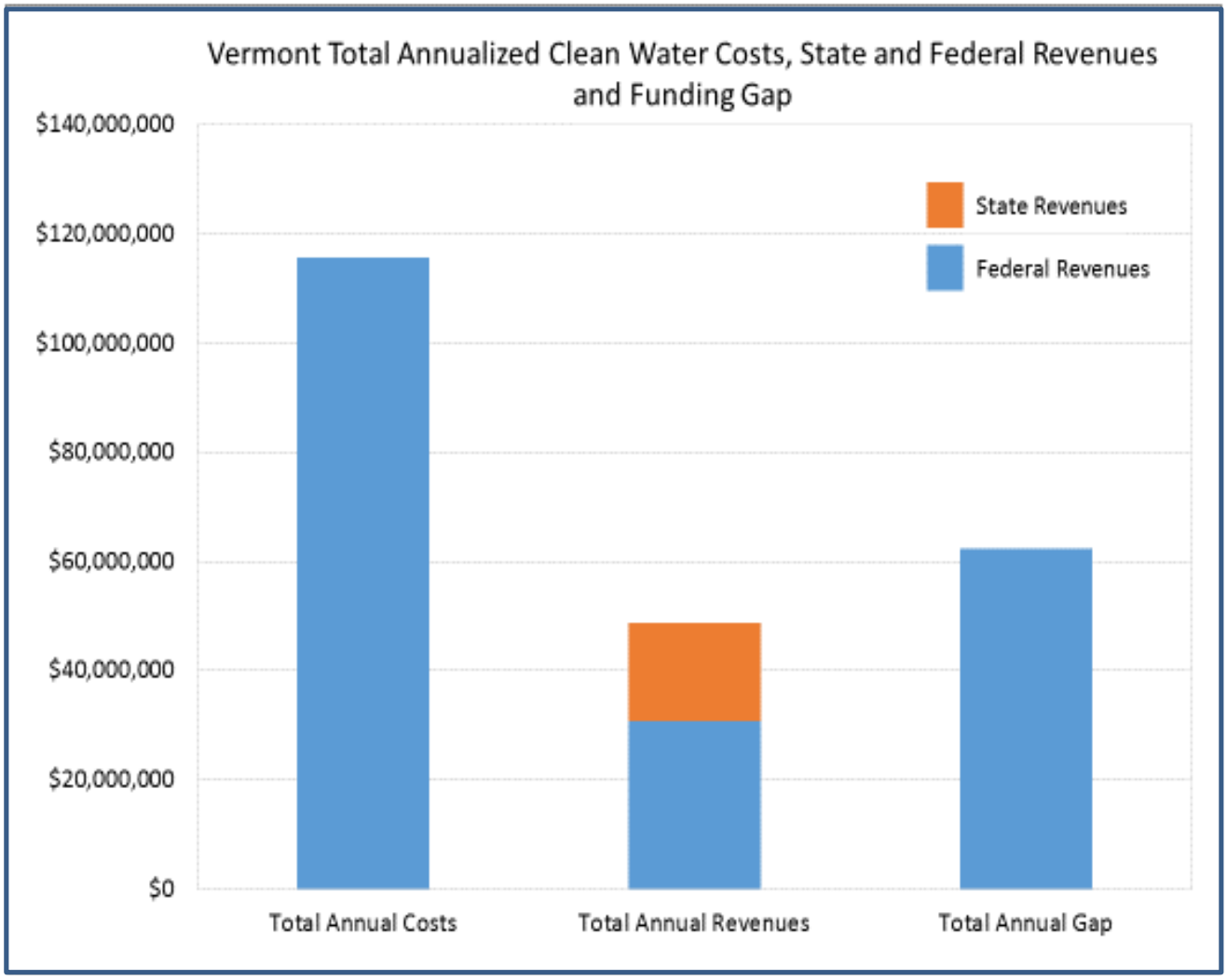
Costs were then broken into two tiers by sector. Tier I represents the additional cost of regulatory compliance to meet Vermont's total statewide obligations associated with TMDLs, Act 64 of 2015, and the 2016 Combined Sewer Overflow Policy, as defined above. Tier 2 costs are projected to enhance, catalyze, and accelerate regulatory compliance, such as capital equipment assistance for agricultural and municipal stormwater runoff controls.

Costs include capital and technical assistance needs, planning, and partner support for public (municipal) and private (farmers, business parking lots, etc.) entities. Costs do not include operation and maintenance over time, with one exception. When modeling capital investment costs, labor costs were included. For example, the capital costs for a wastewater treatment facility upgrade would include all planning, engineering, labor and material costs associated with the capital improvement. No other operations, maintenance, and labor costs were included. Administration costs that would be accrued to disperse the funds were also not included.

Total & Annualized 20-Year Cost Estimates

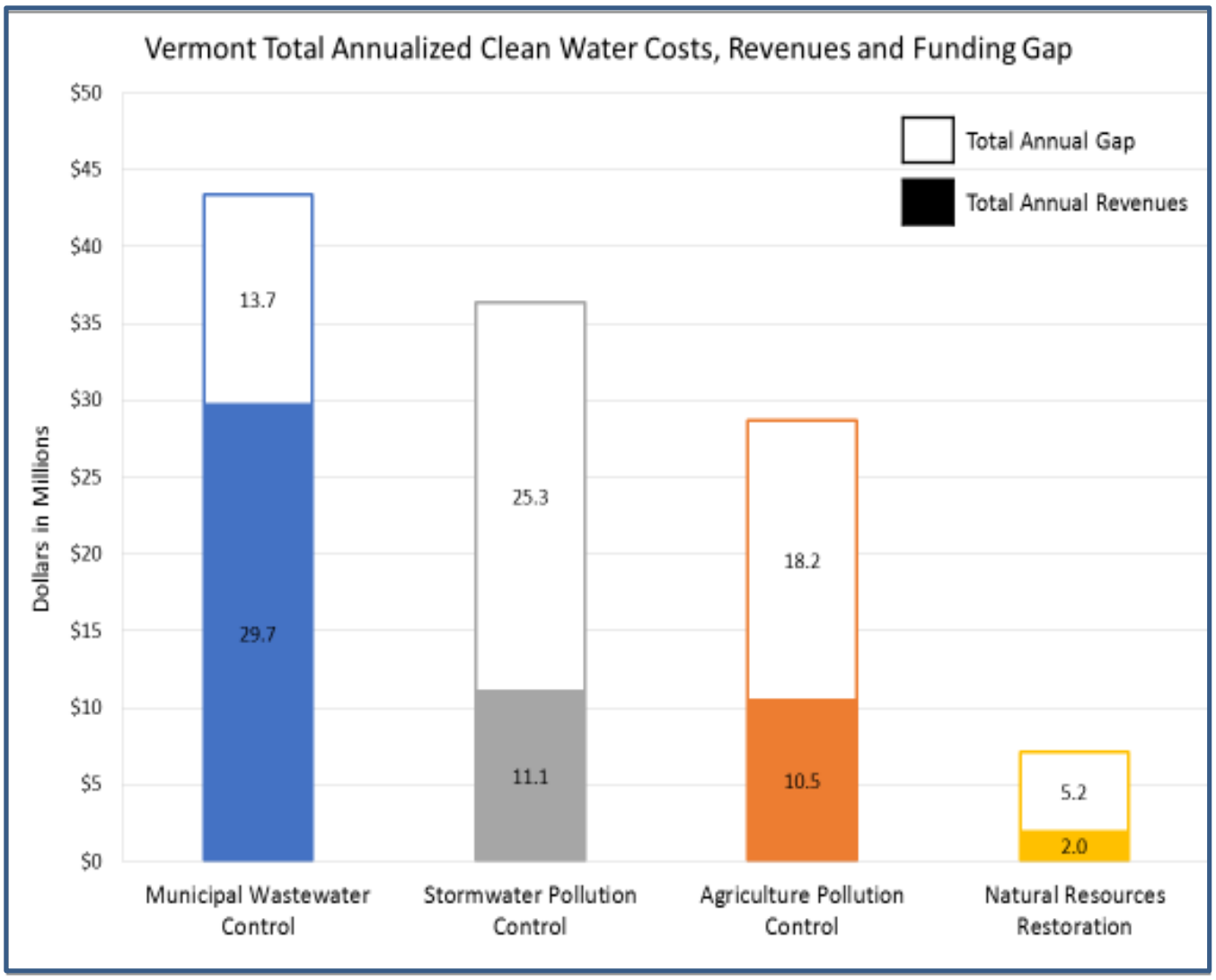
The total new 20-year total clean water compliance costs are projected to be $2.3 billion. Revenues during that time are projected to be approximately $1.06 billion, leaving a 20-year total gap of $1.3 billion. Annual compliance costs are estimated at $115.6 million, revenues at $53.2 million, leaving a gap of $62.4 million per year. Estimates encapsulate all public and private costs, including municipalities, farms, private residences and businesses, and State costs.

Cost, revenue and gap projections have been broken into tiers. Tier 1 costs represent the regulatory cost of compliance with federal and state-required clean water plans, or TMDLs, compliance with Act 64 of 2015, and the 2016 Combined Sewer Overflow Policy. Tier 1 costs are $82.2 million annually. After subtracting annual Tier 1 revenues ($33.7 million), a gap of $48.5 million remains. Tier 2 costs are not required for compliance with the new legal obligations facing Vermont, and represent the costs that support, enhance, catalyze and accelerate compliance, such as capital equipment assistance for agricultural and municipal stormwater runoff controls. Annual Tier 2 costs are $33.43 million. After subtracting annual Tier 2 revenues ($19.57 million) an annual "gap" of $13.86 million remains.



Summary:

- Total Annual Costs: $115.6 million
- Total Annual Revenues: $53.2 million
- Total Annual Gap: $62.4 million per year



Annual costs and gaps by sector are outlined below:

(1) Municipal wastewater treatment facilities: $43.4 million in costs, $29.7 million in revenues, $13.7 million gap (tier 1 gap: $6.1 million; tier two gap: $7.6 million);
(2) Agriculture: $28.7 million in costs, $10.5 million in revenues, $18.2 million gap (tier 1 gap: $15.9 million; tier 2 gap: $2.3 million);
(3) Developed Lands (stormwater treatment): $36.4 million in costs, $11.1 million in revenues, $25.3 million gap (tier one gap: $23.9 million; tier 2 gap: $1.3 million);
(4) Natural resources restoration: $7.14 million in costs, $1.97 million in revenues, $5.17 million gap (tier 1 gap: $2.55 million; tier 2 gap: $2.62 million).

Cost-Effective Clean Water Implementation

The Environmental Protection Agency's (EPA's) Lake Champlain Total Maximum Daily Load (TMDL), the phosphorus cleanup targets for the Lake, and Act 64 of 2015 (commonly referred to as the Vermont Clean Water Act or "the Act"), encourage cost-effective and flexible compliance strategies. These strategies and approaches can help to drive down overall compliance costs. Options are outlined below.

Integrated Planning and Permitting

Integrated planning is a process that allows a municipality to address its Clean Water Act (CWA) obligations and requirements in a comprehensive manner, while prioritizing those obligations with the greatest human health and environmental impacts, and while taking into account the municipality's financial capability and limitations. Municipalities use the planning process to seek out efficiencies in their respective implementation requirements, and determine how to best prioritize capital investments. Integrated planning does not lower existing regulatory standards or requirements that protect public health and water quality; rather it is a means of balancing a municipality's regulatory obligations with its financial capability to create and justify a reasonable long-term compliance schedule that reflects and incorporates both factors.

An important component of integrated planning is incorporating a reasonable and effective compliance schedule into the plan, which will allow the municipality to comply with its CWA obligations in the face of budget constraints. EPA has developed a framework for assessing a municipality's financial capabilities, including the potential impact of infrastructure improvements on residential ratepayers. The financial capability assessment takes into account a community's unique circumstances, and how those circumstances would affect the implementation of CWA requirements. When preparing a financial capability assessment, a municipality may consider the investment necessary to manage both stormwater and wastewater discharges as well as other surface water impairments. The assessment may also potentially consider the financial burden of needed upgrades to drinking water infrastructure.

The Department of Environmental Conservation (DEC) has had preliminary conversations with several communities to discuss whether integrating planning and permitting could reduce the cost of compliance with the Lake Champlain TMDL. This approach could potentially allow for sequenced implementation of wastewater and stormwater phosphorus reduction efforts in accordance with municipal-specific compliance schedules. DEC is also promoting integrated planning and permitting through asset management grants that encourage municipalities to plan for and schedule clean water infrastructure improvements in the most cost-effective way possible. Increased investment in asset management planning could reduce overall costs of compliance with stormwater management and wastewater treatment mandates.

In addition, Vermont's stormwater permitting programs allow for developers and municipalities to prioritize the order of projects. Specifically, the developed lands general permit and roads permit allow developers and municipalities the flexibility to prioritize projects, within the framework of the Tactical Basin Plan.[36] This flexibility allows the most important projects to a community to move forward first.

Stormwater Utilities and Public—Private Partnerships

A stormwater utility is a private or public entity that generates revenue by charging fees for stormwater-related services, including the costs of regulatory compliance, planning, maintenance, capital improvements, and repair or replacement of infrastructure. Using a collective approach, a utility can prioritize the most cost-effective activities for addressing water quality issues. The utility can target high priority stormwater problems on large scales, often using proven technology but sometimes demonstrating new approaches.

Stormwater utilities can be created at the municipal level, as quasi-municipal public-private partnerships, or at a regional or statewide basis. In Vermont, municipal stormwater utilities exist in Burlington, South Burlington, Shelburne (as part of South Burlington), and Williston. [37] These municipalities have stormwater ordinances to support the maintenance, repair and replacement of stormwater infrastructure to ensure regulatory compliance and improved water quality. The municipal programs support their work by collecting stormwater user fees from property owners in their jurisdictions. There are nearly 2,000 stormwater utilities in 39 states, including 15 in New England.[38] Utilities vary in size, servicing populations ranging from 88 residents to greater than three million residents. The average community size is approximately 70,000 residents and the median is 18,000.[39] Private entities in Vermont can also form these utilities.

A quasi-municipal public-private partnerships of note is the Long Creek Restoration Project, a watershed-based collaborative involving the municipalities of South Portland, Portland, Westbrook and Scarborough in Maine.[40] It was established in 2007 as an initiative, led by the municipality of South Portland and involving businesses, nonprofit organizations and state agencies. New developments or redevelopments that are an acre or more in size can either join the project's general stormwater permit or obtain an individual permit.

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[36] Vermont Agency of Natural Resources: Department of Environmental Conservation, "Tactical Basin Planning."
[37] For more information, see: South Burlington Utility: http://sburlstormwater.com/wp-content/uploads/resources/flyer.pdf; Burlington: https://www.burlingtonvt.gov/DPW/Stormwater-Management; Williston Stormwater Program: http://www.town.williston.vt.us/index.asp?Type=B_BASIC&SEC=%7BACC6B21E-0FDB-497F-8A5A-62CDFF871272%7D.
[38] The three stormwater utilities in Vermont are in South Burlington, Burlington and Williston. Shelburne contracts with the South Burlington utility to provide some stormwater management services.
[39] Campbell, C. Warren, et. al., "Western Kentucky University Stormwater Utility Survey."
[40] For more information, refer to: http://www.restorelongcreek.org/pages/general/overview

The Philadelphia Greened Acre Program is another example.[41] In 2014, the Philadelphia Water Department created a grant program to encourage private property owners to install new and innovative stormwater practices referred to as "green stormwater infrastructure."[42] Across the country, utilities are typically organized at the municipal or regional (county-wide) basis. Although no state has adopted a statewide utility to date, there are several utilities with larger populations that the state of Vermont.[43]

By providing services across a range of properties, stormwater utilities are typically able to prioritize projects that will yield the greatest phosphorus and flow reductions. By providing centralized services, they are also able to achieve greater efficiencies in administration and capital investment than individual entities could achieve working independently.

Market Based Solutions to Address Stormwater Runoff

In mandating a general permit for existing impervious surfaces greater than three acres, the Legislature directed the Agency of Natural Resources, Department of Environmental Conservation (DEC) to allow for the use of offsets, impact fees, and phosphorus credit trading.[44] DEC will be developing a new stormwater rule in 2017. As part of this process, the Department plans to include the use of impact fees, trading, and offsets.

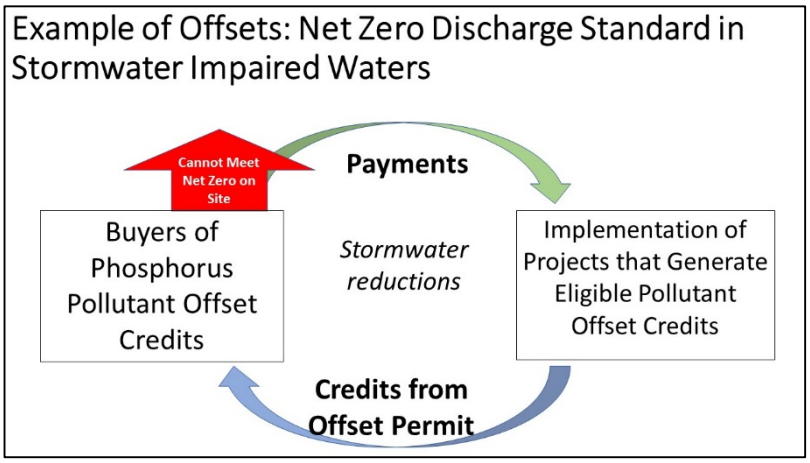
These approaches can incentivize the implementation of cost-effective management practices through public and private trading systems. Market based solutions to consider include offsets, impact fees, mitigation banking and phosphorus credit trading. Vermont has already adopted the 1987 Wasteload Allocation Rule to allocate discharges across wastewater treatment facilities within the same watershed.[45] As stated in the policy, the benefits in allowing for this flexibility among wastewater dischargers in a particular watershed segment include providing maximum protection of the water resource and maximizing the benefit/cost ratio of the allocation.

> Stormwater Offsets
> Stormwater offsets have been used in Vermont in the context of meeting regulatory "net zero" requirements for discharges to impaired waters without a TMDL. Offsets are a State-permitted or approved action or project within non-TMDL watersheds that a discharger or a third party may complete. The purpose of the offset project is to mitigate

[41] Refer to: http://www.phillywatersheds.org/category/blog-tags/green-acres
[42] Green Stormwater Infrastructure are a set of practices including urban trees, rain gardens, constructed wetlands, pervious pavement and other techniques that are designed to infiltrate or capture and reuse stormwater, thereby keeping polluted runoff out of wastewater systems and surface waters. For information about Vermont's Green Stormwater Collaborative, visit: http://dec.vermont.gov/watershed/cwi/green-infrastructure.
[43] Ali, Kamran, et. al., "Assessing the Feasibility of a Vermont Statewide Stormwater Utility: A Comparative Case Study Approach to Stormwater Utilities," p. 3.
[44] 10 V.S.A. § 1264(g)(3)(D).
[45] Vermont Agency of Natural Resources, "Administrative 87-46: Waste load Allocation Process

the water quality impacts to surface waters caused by stormwater runoff that is being discharged from the regulated site. Developers of projects that require an offset typically either develop their own offset project, or pay an impact fee. The fee allows the developer to use stormwater "credits" created by another "stand-alone" offset project.

DEC has implemented a stormwater offset program in the stormwater-impaired waters for over 12 years.[46] In 2003 the Vermont Legislature provided $1.2 million dollars to initiate construction of offset "banks" in 10 municipalities. These funds, in conjunction with three federal earmarks, provided over $6 million dollars for the construction of 24 municipal offset banks in nine stormwater impaired watersheds. The projects created over 100,000 pounds of available Total Suspended Solid offset for new development. Twenty-nine new development projects utilized these "banks" and generated almost $300,000 in offset fees. Advantages include allowing development projects to move forward while meeting the "no net increase in pollution" standard, during the period that the TMDLs and the associated implementation plan are developed. Additionally, similar to Vermont's current offset program, offsets can result in the mitigation of significant sources of stormwater pollution. The disadvantages are that they often do not reduce pollution but prevent pollution increases and are only useful in high growth areas where there are buyers for offset projects. They also require substantial investments of technical and financial resources to implement and maintain.

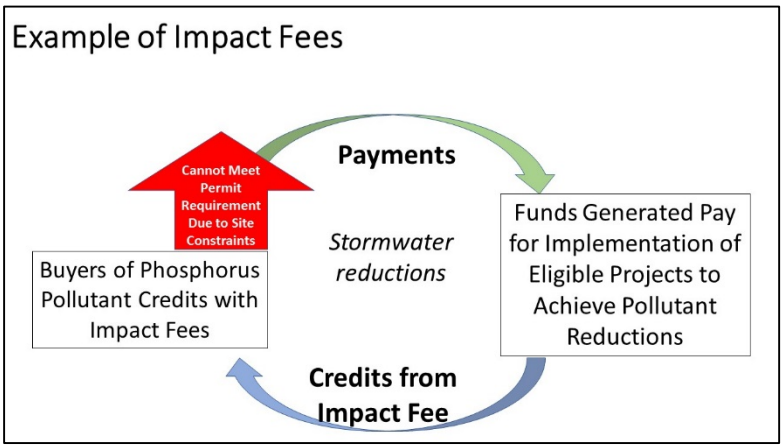


Impact Fees

Impact fees have broader applicability than offsets. This approach would allow landowners or developers that are unable to meet full permit requirements due to site constraints to pay a stormwater impact fee. Revenues collected from impact fees are then used to construct a "mitigation project" – stormwater treatment projects that are designed to meet mitigation treatment requirements.

[46] This program is governed by the Ch. 22 Stormwater Management Rule for Stormwater-Impaired Waters. Refer to: http://dec.vermont.gov/sites/dec/files/documents/wsmd-sw-rule-unimpaired-2011-03-15.pdf

There are a range of options, including a relatively simple impact fee system, where dischargers are assessed fees based on the level of pollutant reduction achieved, and those fees are directed to other stormwater-related pollutant reduction efforts in the watershed.[47] Standard provisions of an impact fee-based system address landowner eligibility to participate,[48] impact fee structures that considers both construction and maintenance costs, and conditions for eligible mitigation projects, such as long-term maintenance responsibilities, siting requirements and completion timelines. The advantage to an impact fee system is that property owners or developers who are unable to meet full permit requirements due to site constraints have a means to equitably contribute to overall pollution reduction solutions. This system does require some administration to find eligible mitigation projects. Those should be sited as close to the permitted site as possible to minimize impacts to receiving waters and help achieve pollutant reduction targets in the watershed in which the permitted project is situated.



Phosphorus Credit Trading

Trading is based on the fact that sectors in a watershed can face very different costs to control the same pollutant. Trading programs allow facilities facing higher pollution control costs to meet their regulatory obligations by purchasing environmentally equivalent (or superior) pollution reductions (or permit requirements) from another source at lower cost, thus achieving the same water quality improvement at lower overall cost. Credits are generated from actions that exceed the minimum threshold baseline implementation requirements of credit suppliers.[49] For phosphorus credit trading to move

[47] Funds raised via impact fees should remain within the developed lands/stormwater sector in order to meet required pollutant reduction targets within that sector. This condition is intended to avoid having the same property owners pay additional impact fees at some future time, should the developed lands sector in that watershed fail to meet required pollutant reduction targets.

[48] Property owners interested in paying an impact fee would need to demonstrate that payment of the fee is the only viable option because of site constraints, such as no available means to infiltrate or convey stormwater and soil contamination.

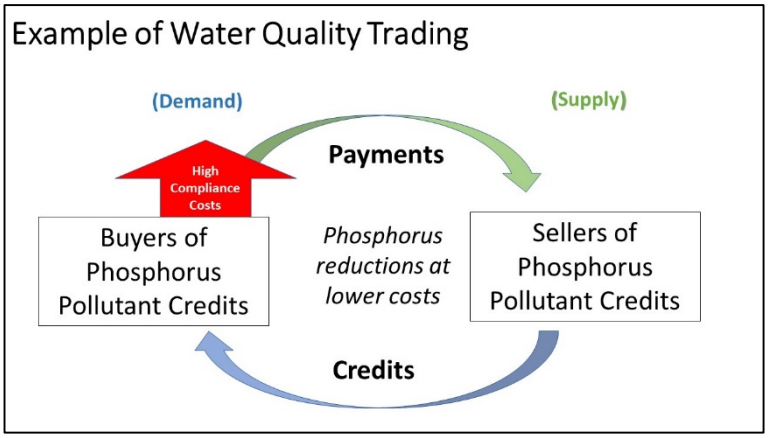
[49] National Network on Water Quality Trading, "Building a Water Quality Trading Program: Options and Considerations: Version 1.0: June 2015: Point-Nonpoint Trades."

forward, a legal, policy, technical and administrative trading framework would need to be developed. In order to ensure that there is a net benefit to water quality, verification, accountability and enforceability measures must be put in place to ensure that phosphorus reductions take place over time, there is transparency in the policy, and assurances to prevent further water quality degradation, particularly at the local level. North Carolina has several different types of water quality banking programs; information about these banking programs is available on North Carolina's website.[50]

Vermont established a pilot phosphorus trading program that relied on pollution reductions from unregulated nonpoint sources twenty years ago, pursuant to Act 51 (1997; Section 5). However, the lack of a trading framework prevented this pilot project from achieving its pollution reduction objectives. The pilot project lacked accountability, a pollutant reduction verification system, enforceability, a tracking system and transparency. The experience has helped to inform the State about the importance of having a trading framework in place before future trading that involve unregulated nonpoint sources can occur.

Conditions to support trading include: (a) a regulatory "driver" such as a TMDL or new permit discharge limits that drives pollutant reduction needs; (b) some sources can achieve pollutant reductions more cost-effectively than other sources; and (c) credits can be generated. An advantage of a trading program is the potential to achieve equivalent or greater environmental outcomes at a lower cost. A disadvantage is that the pollutant sources interested in selling credits in any of the watersheds face substantial pollutant reduction requirements themselves to achieve pollutant reduction targets. Additionally, those pollutant sources that could purchase credits will want to avoid having to pay twice at some future time, should the developed lands and wastewater treatment sectors in those watersheds fail to meet the sectors' own required pollutant reduction targets under state and federal law.[51] Additional costs would be necessary to develop a transparent credit exchange system, including the rules of eligibility, procedures to review and approve trades, delineating trading areas, verifying outcomes, tracking performance for the tradable credits and verifying compliance and enforcement.

[50] North Carolina Department of Environmental Quality, "Stream & Wetland Mitigation Program."
[51] See discussion on trading: http://www.envtn.org/uploads/ELR_trading_article.PDF



Protection for Undisturbed Buffers; Wetland Restoration

The Agency of Natural Resources adopted the Riparian Area Management Policy and Guidelines for Agency of Natural Resources Lands in December 2015. The policy and management guidelines provide direction and recommendations for a greater level of protection of stream and lakeshore buffers. The State could offer greater incentives to encourage the restoration of native plant-vegetated, undisturbed buffers on private lands.

Wetlands provide benefits for water quality protection, flood storage, wildlife habitat and erosion control. They are natural flood regulators which temporarily store floodwaters and then slowly release waters downstream. While floodwaters are being stored in wetlands, sediments and nutrients, including phosphorus, settle and are retained. The state could consider the following policies to promote wetlands restoration and maximize water quality, flood storage and ecological functions:

(1) Require restoration of wetland areas on properties being conserved with public funds;
(2) Offer incentives to farmers to implement wetlands restoration as a best management practices; and
(3) For those lands currently enrolled in Vermont's Use Value Appraisal Program, conduct greater outreach to increase the establishment of "Ecologically Significant Treatment Areas" – areas that offer significant ecological functions (including riparian areas, forested wetlands and vernal pools).

A riparian buffer is a vegetated area near a body of surface water, often forested, which helps partially protect the watershed from the impact of adjacent land uses. It plays a key role in increasing water quality in streams, rivers, and lakes including decreasing erosion and nutrient runoff.

Expand Current Use to Incentivize Best Management Practices on Farms

Vermont's Use Value Appraisal Program ("current use") was enacted in 1978 to encourage and assist in the conservation, maintenance and preservation of Vermont's productive agricultural and forest land. Property enrolled in current use is assessed for its value for agricultural or forest use instead of its higher development value, reducing the amount of taxes due on the property. In return, the landowner commits to keeping the land undeveloped. Land can be removed from the program, but triggers a land use change tax if the land is developed.

There are two main ways that agricultural land can qualify for enrollment in current use.

(1) A parcel can: (a) be 25 acres or more in size and (b) be actively used to grow hay; produce an annual maple product; or cultivate crops, pasture, livestock, or trees bearing edible fruit; or
(2) A parcel can: (a) be owned by a "farmer," (b) be leased to a "farmer" for a term of at least three years, or (c) generate a certain amount of earnings from the sale of farm crops.[52] A "farmer" is defined in statute as a person who earns at least one-half of their gross income from the business of farming.[53]

The first avenue for current use qualification is concerned with whether a parcel is actively used to conduct the agricultural activities that are listed above in (1)(b). The Department of Taxes interprets the term "active use" in a way that disallows from current use any part of the land that is unused for the activities listed above. That means vegetative buffer along waterways is not actively used for the listed agricultural purposes and therefore cannot be enrolled using this method.

A riparian buffer can, however, be enrolled if it meets one of the requirements of the second method for enrolling agricultural land. The Department of Taxes and the Agency of Agriculture Food and Markets are proposing a change that will allow many participants who qualify for current use under the first method to also enroll riparian buffer in the program.

Put another way, if an owner or lessee is not a "farmer" (earns less than 50 percent of gross income from the business of farming), a vegetative buffer cannot usually be enrolled in current use. That is because this buffer fails to meet the requirements of both methods for enrollment: (1) the vegetative buffer is not actively used, and (2) it is not owned or leased by a farmer.

This proposal, therefore, does not benefit those landowners who already earn more than one-half of gross income from farming. It would only benefit some landowners who earn less than 50% of their gross income from farming and who want to enroll riparian buffer in current use. Currently,

[52] This amount varies depending on conditions. See: 32 VSA § 3752(c)(i-iii).
[53] The definition differs slightly for purposes of farm crops used in production facilities on a farm.

the state has 7,220 parcels of agricultural land enrolled in current use. Of these parcels, 4,629 are not owned by a "farmer," so they are not eligible to enroll riparian buffer in current use.

The current use forestry program, where woody buffers are allowed and encouraged, requires that this land be managed under an approved forest management plan. The forestry program also includes a special provision for significant ecological sites (e.g. natural communities, rare, threatened or endangered species, or vernal pools) where the land does not need to be managed for timber according to the forest management plan, in order to allow for special protection of these special areas, known as Ecologically Significant Treatment Areas (ESTA).

No such provisions exist in the agricultural current use program. However, encouraging woody buffers provide significant economic and environmental value. The increased root depth and strength provided by woody vegetation protects and maintains the integrity of the streambank from erosion, preserving the valuable agricultural lands that the current use program was created to protect. A woody buffer that provides protection in riparian corridors, improves water quality by decreasing erosion and nutrient runoff, and provides shading for cold water fisheries and aquatic habitat should legitimately be considered an ecologically significant area due to the multiple ecosystem benefits of the buffer. These values, most notably water quality protection, that benefits Vermont's economy, safeguards public health and supports recreational uses of the state's waterways. Securing these benefits will further justify the use of public funds for land conservation and protection.

Incentivizing Best Management Practices on Farms through Debt Buy Down

The Best Management Practice (BMP) program is an Agency of Agriculture program designed to assist farmers with on-farm improvements to abate non-point source agricultural waste discharges into Vermont's waters. In addition to technical assistance, financial assistance is available to help assist farmers with construction costs of the designed practice(s). The State BMP program provides up to 90% cost share (up to $50,000 for one practice or $75,000 for multiple practices) on Natural Resources Conservation Service-approved BMPs for production areas and 50% cost share for non-production area practices, with the remainder to be financed by the farmer, including loans.

The Vermont Agricultural Credit Corporation (VACC), a program of the Vermont Economic Development Authority (VEDA), is a nonprofit corporation which provides credit to Vermont farmers, agricultural facilities, forestry and forest product-based businesses. Farm loans are available to strengthen existing farm operations, including promoting soil and water conservation and protection.

Incentivizing best management practices by farmers could be accomplished through a program that provides capital to buy down the interest payments on loans for BMP implementations.

Farmers would be responsible for their share of the project cost, after federal and state grant funding, through an interest reduced or interest free loan. The farmer's debt would be amortized over five years and begin after the payment of all grant funding. The capital required for such a program will vary based on negotiations with VAAC on origination costs, servicing, and loan loss reserve requirements.

Farm Bill Presents Water Quality Opportunities

Thanks in part to the Vermont congressional delegation, the 2014 Farm Bill (Agricultural Act of 2014) contained many provisions to support Vermont farmers, ranging from organic promotion, farm to school programs, and dairy support, to crop insurance for small farms, maple research and forest product promotion. The bill also incentivized water quality protections by ensuring conservation was linked to crop insurance premium assistance. As a new Farm Bill is considered, there will be additional opportunities to incentivize programs to promote water quality. The current Farm Bill expires on September 30, 2018. A new bill is expected to be adopted before that time. Hearings will be held over the coming months.

Sub-Contract Nutrient Management Audits

Nutrient Management Plans (NMPs) are a critical tool to achieve water quality goals. The NMP lays out every nutrient application, buffer location and erosion control practices. The Agency of Agriculture performed the audit function for large farms in 2016 and it took nearly four months to complete the review. This represents 27 dairy farms as opposed to the roughly 800 dairies in Vermont. A private company, Tetra Tech, has reached out to the Agency to explain services they offer, including NMP auditing. Contracting out this type of work would allow more time for the Agency to perform more implementation field checks and also provide added oversight on the development of NMPs beyond the current capacity of the Agency.[54]

Anaerobic & Biodigesters

Anaerobic digestion is a series of biological processes in which bacteria break down biodegradable material in the absence of oxygen. Biodigesters are airtight, closed systems in which manure, food waste, and other organic wastes (feedstock) are inputs for this process that produces biogas, animal bedding, fertilizer and other end products. Biogas, which includes methane, can then be combusted to generate electricity and heat, or can be processed into renewable natural gas and transportation fuels. Digester systems can reduce odors, greenhouse gas emissions and pathogens associated with their feedstocks. They can also benefit water

[54] Note that additional resources will be required.

quality by utilizing phosphorus-rich manure from farms as feedstock and then exporting the phosphorus-rich byproduct out of the impaired watershed.

According to the Agency of Agriculture, there are 16 operating manure methane digesters generating electricity and heat in Vermont. Most take part in the Feed in Tariff form the Public Service Board by sending power to the grid with some that are Net Metered operating the farm and a dairy processing facility. One methane digester produces primarily heat.[55]
Green Mountain Power (GMP) is in the process of applying for a certificate of public good for a multi-farm digester, with nutrient recovery systems, in Saint Albans Bay. The project would combine the manure from three farms (approximately 1,900 cows) and would generate enough power for 700 homes. The project plan also includes a diffuse air filtration unit to remove phosphorus from separated manure effluent. GMP estimates that a substantial amount of phosphorus could be removed and has been working to determine a potential market for the product, outside of the impaired watershed.

Often projects utilize co-digestion as a method of improving the process of generating energy. Co-digestion involves the combination of animal manure with other organic feedstocks including food wastes, some types of biomass crops or agricultural residues, fats, oils, and grease (FOG) to the digestion process. By increasing energy output, there is an increase in the cost-effectiveness and return on the digester capital outlay. [56] It can also result in increased revenue through tipping fees. Reuse of food waste and organics diverted from landfills will also be beneficial to the State's initiatives pursuant to Act 148 of 2012, Vermont's Universal Recycling Law.[57]

While traditional digester systems have significant environmental benefits, removing phosphorous from the watershed is an important additive step. One way to address this is to treat water in a co-digester system using a core anaerobic digestion technology, and adding a nutrient recovery process to the backend of the process.[58] While this will add additional capital and operating costs, it has the benefit of significant reduction of phosphorous and other nutrients into Vermont's waterways. Phosphorus has the potential to become a marketable commodity in other markets outside of impaired watersheds. Development of markets, pricing structures and issues around storage and transportation need to be addressed.

While improvements in technologies have occurred, the length of a loan offered through traditional funding can place additional strains on the cash flow of a farm. Alternative financing structures may be needed. These include, third party ownership that transfers risk from a farm to a third party, leasing arrangements, power purchase agreements, partnerships with substrate providers,[59] "community digesters," and others.

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[55] Bothfeld, Diane – Vermont Agency of Agriculture. Personal communication entitled, "Manure Methane Digesters and Phosphorus Removal," p. 4.
[56] Brenan, John, et. al., "Dairy Co-Digestion Using an Anaerobic Digester," p. 4; 13.
[57] Forcier, John, "Anaerobic Digester Facilities for Small to Medium VT Farms," p. 1.
[58] Frear, Craig, "Nutrient Recovery and Anaerobic Digestion: NW Bioenergy Research Symposium," p. 6.
[59] Many of these are cited in and adapted from New York State Energy Research and Development Authority:

Several projects have utilized private activity bonds, tax-exempt financing for private use,[60] as a means of reducing the cost of the debt financing portion of a project. The California Debt Limit Allocation Committee and other authorities have approved several such cogeneration digester projects.[61] The State of Washington reports that its bond cap allocation has recently financed four dairy manure digesters,[62] examples exist in other states.[63] The Treasurer's Office is available to work with the Agency of Agriculture, the Agency of Natural Resources and the Department of Environmental Conservation to further assess and develop these finance opportunities in Vermont.

Clean Water Innovation Hub

The concept behind a "clean water innovation hub" is to create a new, third-party, independent and transparent institutional structure or "hub" to support innovation in achieving the State's clean water goals. Efficiency Vermont is a model for the hub. [64] A hub focused on clean water improvements could support a variety of innovative activities that could include: new pollution reduction technologies and markets for those technologies; incentives to implement innovative practices such as biodigesters and green infrastructure; and technical assistance networks and other educational programs for farmers, municipalities, landowners, foresters and businesses in pollution reduction activities. In addition, public-private partnerships, market-driven solutions, stormwater utilities, and information sharing conventions could be part of this hub. Resources would be required to develop such a hub.

Light Detection and Ranging (LiDAR)

Using money from the Clean Water Fund as match in grant applications to complete Statewide LiDAR coverage will pay dividends for the State. LiDAR is a remote sensing technology that

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New York State Energy Research and Development Authority, "Anaerobic Digester Business Model and Financing Options for Dairy Farms in New York State: Final Report."

[60] See the section on bonding options for description of this bonding alternative.

[61] The California Debt Limit Allocation Committee, "Agenda item No. 6.1: Application No. 08-178: Staff Report: Request for a Qualified Private Activity Bond Allocation for an Exempt Facility Project."

[62] State of Washington Department of Commerce. "Bond Cap Allocation Program: The 2016 Biennial Policy Report and Activity Summary."

[63] United States Environmental Protection Agency, "Technology Market Summit: Case Study Primer for Participant Discussion: Biodigesters and Biogas," p. 23

[64] Efficiency Vermont is administered by the Vermont Energy Investment corporation (VEIC) and is dedicated to providing technical assistance, financial rebates, and other incentives to improve energy efficiency in households and businesses across the state. Efficiency Vermont was established by the PSB pursuant to 30 V.S.A. § 209 (d) & (e), and is administered by VEIC under an order of appointment by the PSB. The Efficiency Vermont model was first introduced in the Act 138 Report:
Vermont Agency of Natural Resources: Department of Environmental Conservation. "Water Quality Remediation, Implementation and Funding Report: Part I: Clean Water Needs, Financial Tools, and Administration: Part II: Lake Shoreland Protection and Restoration Management Options."

produces elevation models of sufficient resolution to generate state-of-the-art mapping data. LiDAR mapping supports many water quality-related uses such as identifying erosion areas and other sources of water pollution, prioritizing projects to maximize the cost-effectiveness of our investments. LiDAR mapping is also used to update the Federal Emergency Management Authority (FEMA) National Flood Insurance Rate Maps, identify landslide hazards and improve the management of state and municipal road networks.

State Grant Program Incentives to Promote Water Quality

State grant programs could be modified to encourage enhanced natural resources restoration and protection. State Agencies could design their respective grant programs to offer additional incentives (such as more weight in awarding grants or greater cost-share funds) for clean water improvement projects that are in communities with River Corridor bylaws in place. This concept builds on current state policy, outlined in 10 V.S.A. Chapter 49, to incentivize municipal adoption and implementation of zoning bylaws to protect river corridors. It is also described as an opportunity in the Lake Champlain Phosphorus TMDL Phase 1 Implementation Plan.

Smart Growth and Redevelopment Incentives

A variety of “smartgrowth” strategies for infill development are described and recommended in the Vermont Stormwater Manual and the Agency of Commerce and Community Development Planning Manual. Collectively, these represent a strategic approach to avoiding net increases in impervious surface by focusing new construction in already developed downtowns and village centers. In conjunction with incentives for those strategies, the State could also consider new Clean Water Fund incentives to implement coordinated stormwater retrofits in our downtowns and village centers and municipal road networks.

Bonding Options & Recommendations

In considering clean compliance needs, a distinction is made between financing and funding. Financing involves the use of strategies, including bonding, that leverage the value of a stream of current and future revenues and then paying over time for the current use of those future revenues. In cases where there are significant inflationary costs, this can also result in increased net resources, but as a rule they add little or no new resources to the funding gap. Pure financing mechanisms include general obligation debt and revenue bonds, pledging existing revenue sources. Generally, they do not provide additional resources to pay for the projects, except the savings on the inflationary trends.

Funding refers to the generation of revenue through various means such as taxes, fees and contributions. A strategy such as revenue bonds with increased resources with or without the double-barreled bonding configuration cited below, captures both elements – acceleration of resources by leveraging future increased or new revenue flows.

EPA's Lake Champlain Total Maximum Daily Load (TMDL) sets forth clean water targets for the State of Vermont. If those targets are not met, EPA can step in and use the tools at their disposal to drive compliance, primarily focused on less cost-effective strategies, such as wastewater treatment facility upgrades. Lack of progress also increases the threat of litigation. Substantial savings can be found in avoiding direct federal implementation engagement and costly litigation.

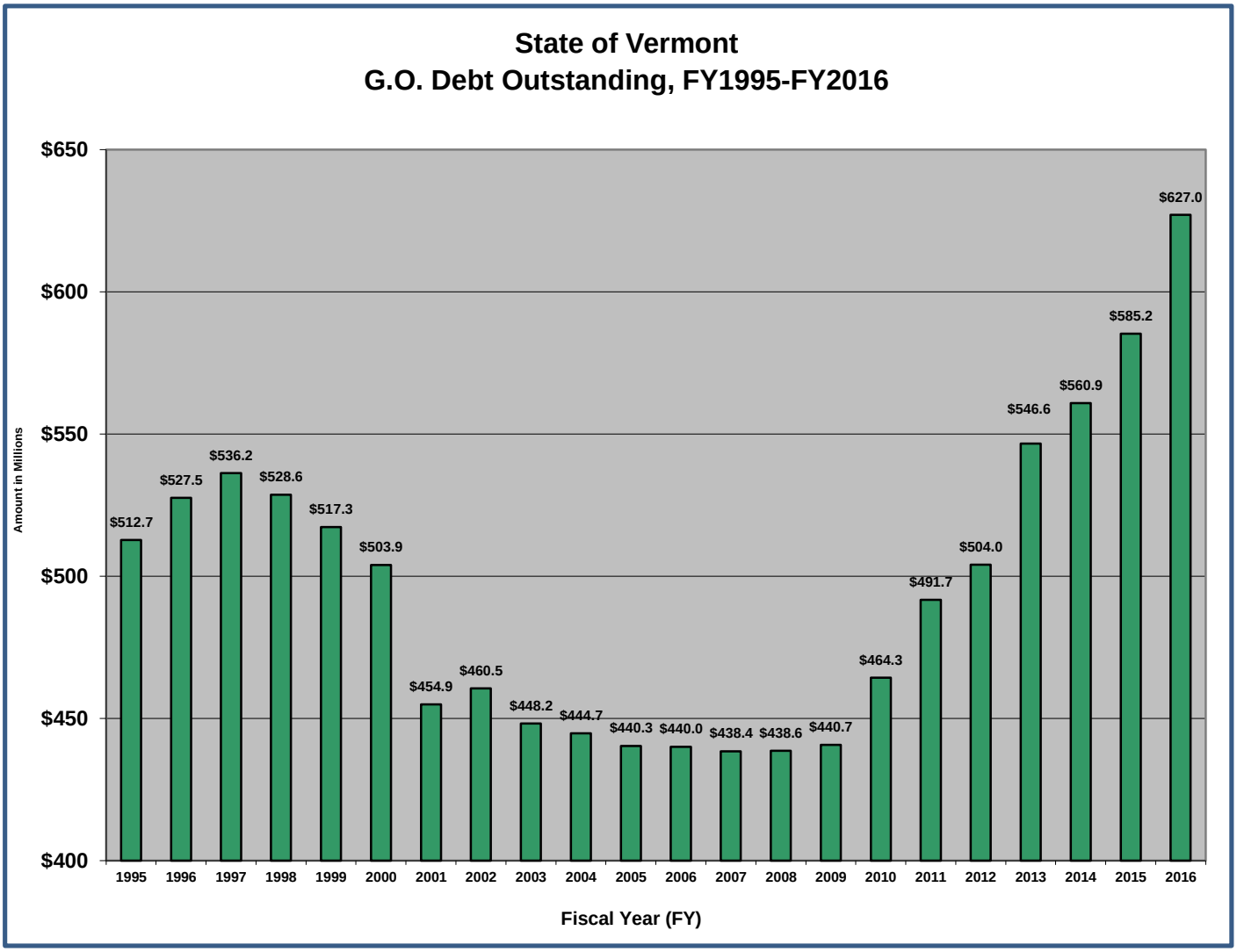
The following information outlines the application of financing and funding methods to the Vermont water quality compliance needs.

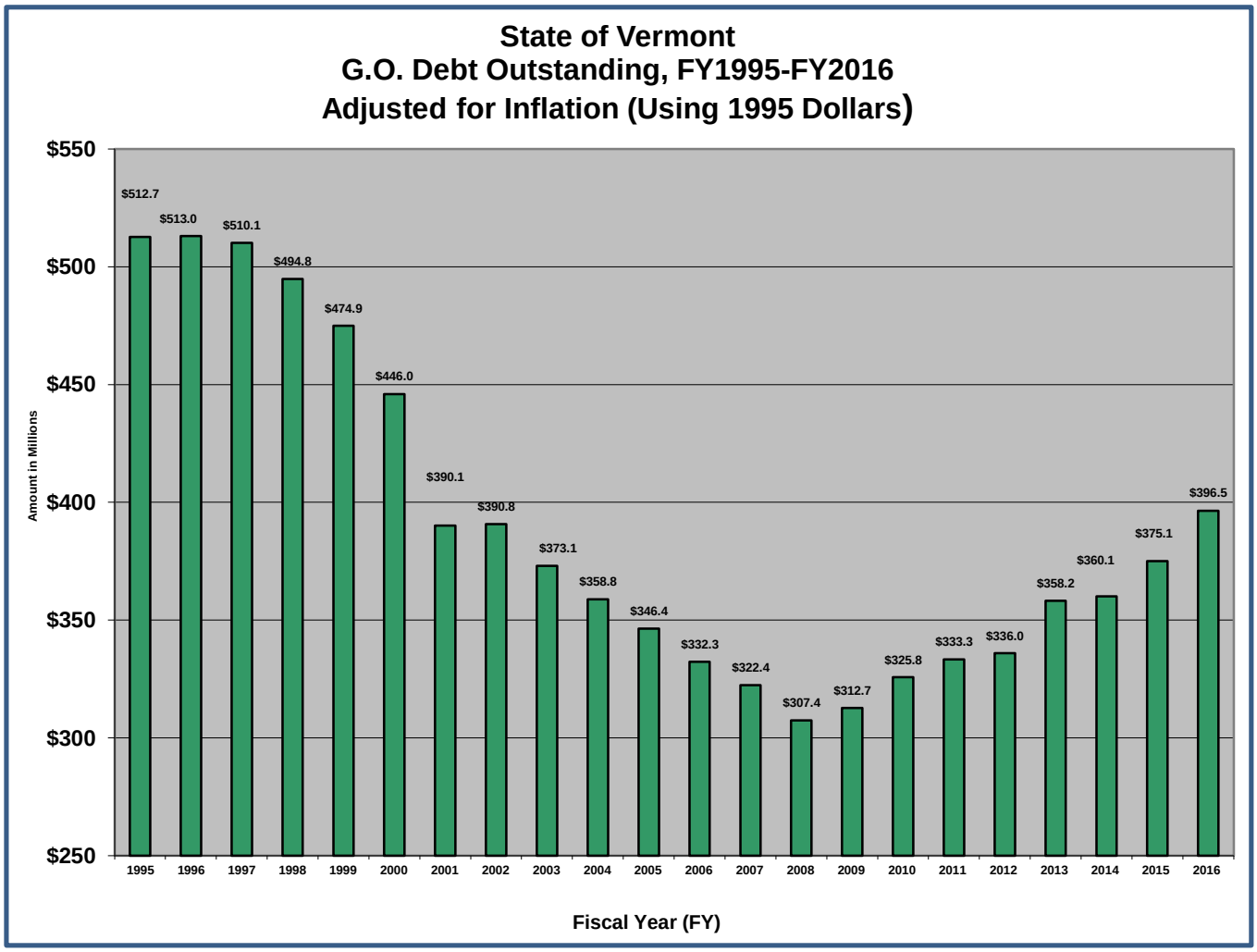
General Obligation Bonds

The State uses General Obligation (G.O.) bonds as its primary mechanism for raising state capital funding for general governmental needs, including water quality. Because the State's "full faith and credit" is pledged, G.O. bonds are generally rated better than other alternatives, such as revenue bonds, reducing the cost of capital. If used on a continual long-term annual basis to finance additional clean water projects, this would require significant increase in the current level of general obligation debt and/or reprioritizing capital projects within the current and planned levels of authorization.

Significant increases in bonding authorization would have an impact on the State's bond ratings. Any change in the authorization levels should only be contemplated as part of the annual debt affordability review completed by the Capital Debt Affordability Advisory Committee. As noted

above and in the charts below, the State has already had a significant increase in G.O. debt outstanding, substantially on a nominal basis and recently adjusting for inflation:





The balance between bond issuance and the maintenance of high credit ratings, which have the effect of reducing interest rates for borrowed funds, is an important consideration for the State. In the early 1970s, Vermont lost its Triple-A bond ratings, largely because of a significant accumulation of bonded indebtedness. There were three principal causes for the increase in outstanding debt: interstate highway construction, extensive school construction and renovation, and sewage treatment plant construction. Another factor that may have concerned analysts at that time was the extension of moral obligation support for industrial mortgage guarantees, the Bond Bank, and Vermont Housing Finance Agency (VHFA) (C. Cohen 9/13/89).

In 1975, Vermont enacted in statute the so-called "90% rule" as a policy device to reduce its large amount of accumulated tax-supported debt. New general obligation debt authorization was restricted to 90% of the debt being retired in the same fiscal year and the State stopped issuing other general obligations—certificates of participation. The policy was successful. The ratio of debt as a percent of personal income, a key benchmark for rating analysts, was reduced from about 11% in the mid-1970s to about 3% in 1989. Clearly though, the "90% rule" policy was not sustainable, and policymakers recognized it would eventually lead to unrealistically small

amounts of allowable new debt.

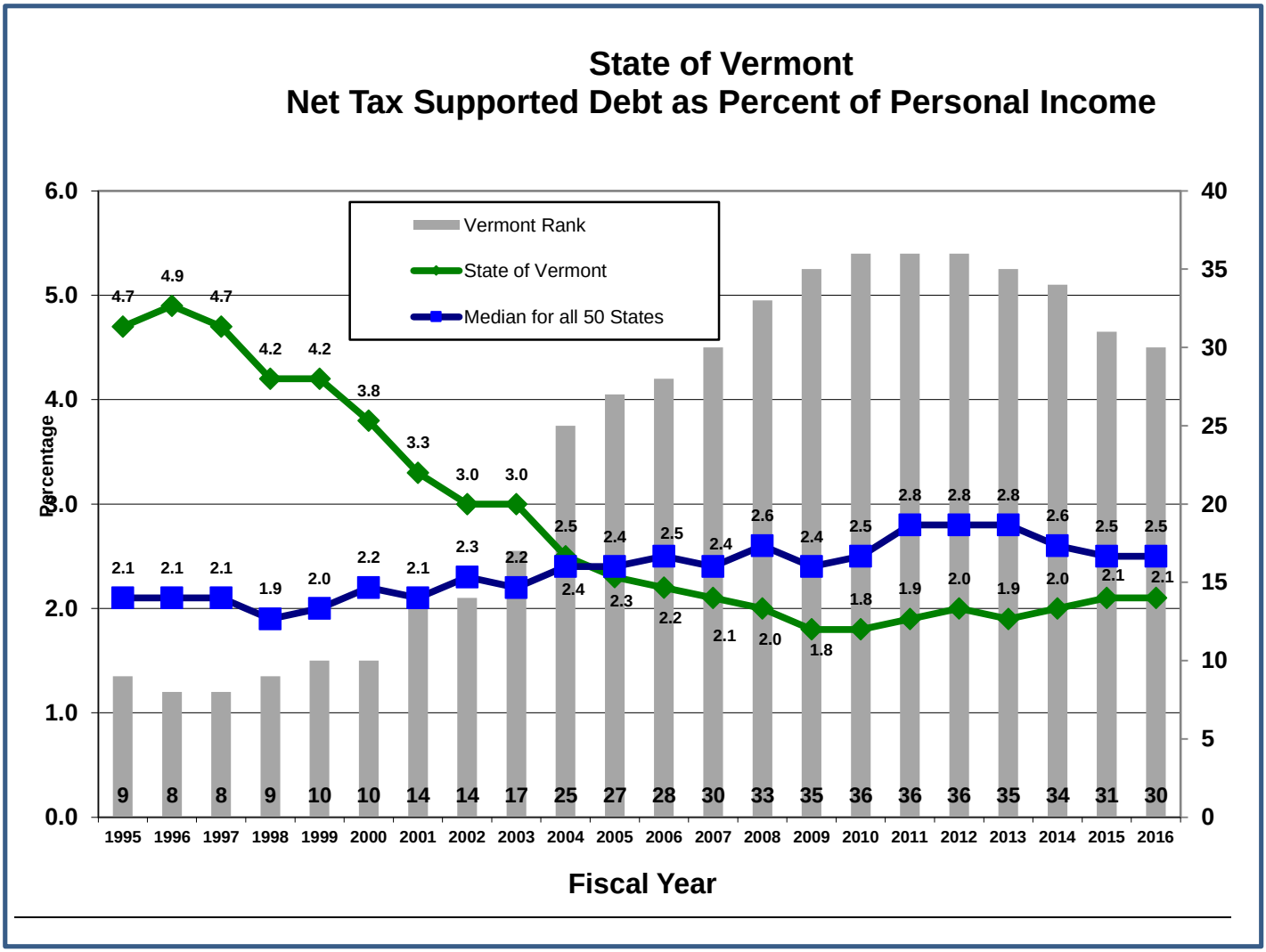
In 1990, the "90% rule" was repealed and the Capital Debt Affordability Advisory Committee (CDAAC) was created to provide a new framework for determining the appropriate level of new debt issuance for the State. Interestingly, in 1991 the CDAAC recommended issuance of $100 million of one-time new debt based on pent-up demand for infrastructure funding, the need to stimulate the economy with job creation, and attractive interest rates. Vermont's bond rating was reduced from AA to AA- by Standard & Poor's in 1991. Since that time CDAAC and Vermont policymakers have faithfully worked to improve the State's debt profile by being conservative in new debt issuance, utilizing cash from one-time surplus funds to supplement bonding for infrastructure financing, and expanding the State's economic base. In 2004 the CDAAC adopted new debt guidelines reflecting the State's current and prospective performance in terms of debt load measures compared to Triple-A rated states.

It has been 25 years since the CDAAC was created. To illustrate the progress made by the State, in 1996, Vermont's debt as percentage of personal income was twice the national median and we ranked 8th highest in the country. In 2016, the State is under the national median for that ratio and ranked 30th in the country (the higher the number, the better the rank). Vermont rejoined the ranks of Triple-A rated states when Moody's raised its rating for the State to Aaa from Aa1 in 2007. Fitch has also raised the State to AAA in 2010, while S&P rates the State one notch below AAA at AA+. Our improved bond ratings positively impact the State in many ways. First, they provide access to markets during tough economic times. In addition, the ratings assist in obtaining financing at lower interest rates, saving the State millions over the years. In addition, various state authorities that provide needed assistance to Vermonters rely on the State's bond rating to lower the cost of their financing. This includes affordable housing through the Vermont Housing Finance Agency, economic deployment and jobs though the Vermont Economic Development Authority, the cost of post-secondary education through the Vermont Student Assistance Corporation, and the bricks and mortar for Vermont communities through the Vermont Municipal Bond Bank.

The improvement in the bond rating and a reduction in bonds outstanding has had the impact of providing additional capacity for debt, which has been reflected in the recent increases in the CDAAC recommendations. This provided for some expansion beginning in 2005 and more significantly during 2011, when the State was also working to build new mental health facilities and a new state office building after the impacts of Tropical Strom Irene. But this has also put pressures on our debt authorization levels. While ranking 30th in debt as a percent of personal income is certainly a big improvement, we had previously reached a rank of 36 in 2010 through 2012. For the past, several years, the Treasurer's Office, in concert with CDAAC, has recommended a reduction in debt authorizations. The recommendation for the biennium ending in June 2017 was a 9.9% reduction over the previous period and the CDAAC recommendation for the biennium beginning in FY2018 is another 8% reduction. Simply put, we need to lower

our overall reliance on debt. Keep in mind that debt needs to be repaid, with interest. In 2018, general obligation annual debt service will be approximately $78.3 million.

As mentioned above, net tax supported debt as a percent of personal income is an indicator of affordability for the taxpayer. While we are lower than the long-term 3% target prescribed by CDAAC guidelines, and we are still below the 50-state median, our position vis-à-vis other states is trending upward, while the median has been trending downward.



The Treasurer's Office therefore does not recommend increasing debt level authorizations beyond those recommended by CDAAC. The Treasurer's office does, however, see a window for incorporating significant dollars to jump-start the clean-up of our waterways through prioritization of this initiative in the current bond authorization cycle as a temporary window exists. Furthermore, the Governor and the Legislature may consider including on-gong water capital projects in the long-term capital plan, which is discussed below.

Bonds Leveraging Existing Revenues

Revenue bonds leveraging a portion of a state's *existing* water related taxes and/or fees are not recommended. Since environmental related taxes and/or fees are considered part of the total general governmental revenues used by rating agencies to calculate net tax supported debt ratios, use of such identified revenues in bonding is not additive to the State's debt capacity. Furthermore, since revenue bonds do not carry the State of Vermont's general obligation pledge, they generally are rated slightly below general obligation debt and therefore generally have higher costs of capital.

Bonding in Combination with Increased Revenues

Bonding makes more sense when backed by either increasing an existing or identifying a new and available revenue source to pay for the bonds. Raising an existing fee or tax can provide the incremental revenue stream to leverage dollars through bonding. When using revenue bonds, issuers typically must pay slightly higher interest rates and, as noted above, revenue bonds have higher coverage ratios to cover increased investor risk if revenues do not materialize as expected. While in past years, these were not always added to rating agencies calculation of net tax supported debt and various debt metrics, there has been an increasing trend to include these in the calculations, again adding stress to the State's indebtedness calculations. Also since revenue bonds are generally more expensive, this does not appear to be an option to explore. The only advantage would be the "fencing off" of these revenue sources to a specific use, reducing the need for the revenue specific projects to "compete" for general obligation capacity.

A new source of revenue, not already on the State's books, certainly provides an improved opportunity for the bonds not to be treated as net tax supported debt but this case has been harder to make in recent years. Whether such a configuration is feasible would need to be made after identification of potential revenue sources. Like other revenue bonds, these would carry the advantage of "fencing off" these resources for only specific purposes. New revenues do carry a disadvantage in the market based on the lack of a predictable track record. An investor purchasing the bond would likely want to see an economic analysis that would demonstrate that the source of funds was predictable, reliable and sufficient under differing economic scenarios and would likely demand higher interest rates to cover their risk. The use of so called double barrel bonds mitigates some of this risk. Double-barreled bonds are a hybrid mechanism that reduces both investor risk and the cost of capital. In this debt structure, the project's revenues provide the initial security and the secondary guarantee is provided by the general obligation taxing powers of the issuer. For instance, a revenue bond would be double-barreled if that bond is secured by new environmental revenues and if the State also secures the bonds with its full faith and credit. If the environmental revenues are insufficient to cover the debt service, investors can rely on the full faith and credit pledge of the State.

Any consideration of revenue bonds would carry significant research into the characteristics of the revenue stream and could only be accomplished within the context of the State's total indebtedness, as reviewed by CDAAC. Additionally, at least two of the national rating agencies give double-barreled bonds a three-year "look back." The debt is considered tax-supported debt for the first three years and, if the non-tax revenue is fully supporting the debt during that period, the debt is then considered "self-supporting" and no longer net tax supported debt of the state.

Private Activity Bonds

Private activity bonds (PABs) are bonds that are issued to finance purposes of, or facilities owned and/or used by, private entities in a private trade or business. Unless a private activity bond qualifies under one of the Internal Revenue Service (IRS) Code exceptions, interest on such bonds is not tax-exempt. Several qualified private activities are granted special status and are entitled to the beneficial "tax-exempt" treatment. These activities are called "qualified private activities." PABs can provide low-cost financing option for various types of public-benefit infrastructure projects, such as water and sewer and solid waste disposal projects. Congress provides to states an annual allocation of the federal tax-exempt bonds (bond volume cap), based upon section 146 of the Internal Revenue Code. The federal government has limited the amount of private activity bonds that states can issue to a subset of the twenty-one activities. Some of these are subject to the State's bond volume cap, while others are not. The state or local government does not generally pledge its credit for payment of the bonded debt. Private activity bonds are normally payable solely from payments made by the private user of the property financed. They bear numerous restrictions imposed by federal and state regulations.

An advantage of PABs is the private-use of a government or government authority tax exempt name as a conduit or means to tax-exempt interest rates. This type of a bond results in reduced financing costs because of the exception of federal tax. The local government issuer incurs no legal responsibility to repay private activity bonds; rather, the private business's credit quality provides the security for the debt financing and ultimately all repayment responsibilities. There are also disadvantages. First, the application process can be expensive and time consuming as are reporting requirements needed to maintain the bonds' tax-exempt status.

Among eligible uses are several applicable to clean water:[65]

(1) Water Furnishing Facilities. Facilities for the furnishing of water, such as artesian wells, reservoirs, dams and pipelines, which are available to the public (including electric utility, industrial, agricultural or commercial users). These facilities must be (i) operated by a governmental unit or (ii) the rates for furnishing or selling the water must be set or

[65] Martini, Toni, Personal Communication entitled, "Brief Overview of Tax-Exempt Financing for "Exempt Facilities" and Manufacturing Facilities."

approved by a governmental unit or by a public service or public utility commission or other similar body.

(2) Sewage Facilities. Facilities for the transportation and treatment of what is traditionally characterized as "municipal sewage" (based on an expected waste load concentration of biochemical oxygen demand), principally in facilities that are so-called "secondary treatment" facilities. Certain primary and tertiary sewage treatment facilities, together with related assets such as sewer mains and pumps, also qualify as sewage facilities.

(3) Solid Waste Disposal Facilities. Facilities for the processing or disposal of solid waste material. These facilities can range from relatively conventional landfills and transfer stations to recycling facilities to complex waste-to-energy or gasification facilities, including biogas digesters.[66]

Bonding Recommendations

Bonding recommendations are listed below and additional detail provided:

(1) Reprioritize existing general obligation debt issuance to incorporate additional water quality dollars, including those directed to municipalities;
(2) Use a portion of transportation infrastructure bond revenue to support local transportation needs and related clean water requirements;
(3) Consider allocating a portion of future transportation and general capital appropriations, including general obligation bonds (G.O. bonds), to long-term clean water compliance needs;
(4) Possible use of the Municipal Equipment Loan Fund (MELF) to support clean water compliance;
(5) Work with private sector businesses to explore use of private activity bond financing;
(6) Reallocate loan rate structure for the Clean Water State Revolving Fund (CWSRF) to use 1% to incentivize clean water projects;
(7) Consider "pairing" projects using a portion of the 1% interest charge or reducing the interest rate for specific projects;
(8) Consider incentives for expanded use of CWSRF funds; and
(9) Consider future leveraging (bonding) of the CWSRF, depending on cash flow analysis and after demonstrated increased use of CWSRF funds.

[66] Note that an allocation of volume cap is not required for an issue of bonds that finances governmentally-owned solid waste disposal facilities.

Recommendation #1: Reprioritize Existing General Obligation Debt Issuance to Incorporate Additional Water Quality Dollars (including those directed to municipalities)

There exists a temporary window for the use of significant bonded dollars within the existing general obligation bond program due to a high level of authorized but unissued debt. A lag in the current spenddown of these dollars has permitted a "shifting" of cash expenditures for some existing capital authorizations to later years, freeing up capacity for authorizing water quality capital project dollars available in the next two years.

For the biennium ending June 30, 2017, the following bonding plan was adopted:

Total Fiscal Year Year 2016-17 Bonds	
Source	Amount
Authorized Unissued Amount at 6/30/14	$ 16,698,051.00
Bond Principal Authorized for FY 2016-17, pursuant to Section 22(a)	144,000,000.00
Bond Premium from 2014 Issue, pursuant to Section 22(b)	11,559,096.05
Bond Premium from 2015 Issue, pursuant to Section 22(b)	9,398,753.35
Total Bonds Authorized	181,655,900.40
Bonds Issued in FY 2016 (2015 Series A & B) - Act 26 of 2015 projects	(82,426,970.00)
Bonds Issued in FY 2016 (2015 Series A & B) - Act 51 of 2013 projects	(16,698,051.00)
Section 19 Project allocation change	109,189.36
Authorized Unissued Amount for FY 2017	82,640,068.76
Net Bonds Available in 2017 (Rounded to $5,000 bond increment)	$ 82,640,000.00
Residual amount	68.76

In accordance with this plan, the Treasurer's Office issued $99,125,021 in bonds against this authorization in October 2015, leaving $82,640,000 in bonds anticipated in November 2016. In anticipation of that planned issue, the Treasurer's Office noted that a substantial amount of bonded projects had not been completed and that substantial amounts of the 2015 issue had not been used by departments with capital projects. Due to this lag in spending, the Treasurer's Office has elected to delay the issuance of additional bonds, likely in the Spring of 2017. In fact, as of late December 2016, approximately $37.9 million of the 2015 bond had not been expended, over a year after issuance. Of the projects expected to be bonded in FY2017, approximately $10.9 million has been expended roughly half way through the fiscal year, with $72.9 million or 87% unexpended.

A further review indicated that a substantial amount of the surplus existed in certain departments, and while the projects are needed, projected cash flows indicate that it will be some time before

the corresponding bond funds relating to already issued bonds and planned bond issuance can be expended. Further detail is included in Appendix B.

As a result, the Treasurer's Office suggests that an opportunity exists to push out capital authorizations for these departments while current capital projects are completed, leaving a two-year "window" to utilize dollars for clean water projects. This will avoid large amounts of authorized but unissued debt (a poor indicator to the rating agencies), while pent up project needs exist (including clean water) and authorized projects are not "shovel ready" – projected deemed to be ready for implementation.

The Treasurer's Office recommends that the Administration and General Assembly reallocate, secure and/or prioritize State capital money from the general obligation bond program consistent with CDAAC recommendations of $15 million annually for two years. This recommendation provides significant dollars, in combination with other recommendations, to jumpstart the funding of clean water initiatives *without raising taxes, by using existing bond authorization.*

The above should be in addition to the maintenance of effort to cover existing capital expenditures for Agency of Natural Resources', Department of Environmental Conservation (DEC) projects as detailed below:

ANR Appropriations - DEC Projects	FY15	FY16	FY17		3-Year total
Clean Water SRF* state match to federal grant	1,114,000	1,300,000	1,300,000		3,714,000
Clean Water Chapter 120 (Staff Engineering)	300,000	300,000	300,000		900,000
Drinking Water SRF state match to federal grant	1,000,000	1,750,834	2,738,000	*	5,488,834
Drinking Water Chapter 120 (Staff Engineering)	300,000	300,000	300,000		900,000
Ecosystem Restoration Program	2,573,732	3,750,000	3,750,000		10,073,732
Dam Safety	400,000	538,580	750,000		1,688,580
Municipal Pollution Control - Pownal	30,000	530,000	-		560,000
Municipal Pollution Control - Waterbury	300,000	379,929	-		679,929
Municipal Pollution Control - Springfield	78,000	-	-		78,000
Municipal Pollution Control - Statewide Grants	-	392,258	2,276,494		2,668,752
Bristol Landfill Closure	-	-	145,000		145,000
* See below	6,095,732	9,241,601	11,559,494		26,896,827

* Act 160 of 2016 appropriates $2,738,000; however, $200K of that amount is reallocated federal $s. funds
Note: The amounts shown do not account for reductions due to bond costs of ~ 0.5%.
SRF= state revolving funds

DEC has identified over $80 million in potential capital projects that would be ready for construction in State fiscal years (SFY) 2018 and 2019 across the following categories:

Sector #1	Municipal Wastewater Treatment Facilities & CSOs	$61,527,539
Sector #2	Agriculture Projects	$9,000,000
Sectors #3 & 4	Developed Lands (Non-Wastewater) & Natural Resources Restoration	$9,744,898
	Total:	**$80,272,898**

Additional projects are also available and the ability to use dollars for other innovative programs, such as biodigesters, is discussed later in the report. The $30 million, over two years, that would be generated by this recommendation could clearly be put to immediate use.

Recommendation #2: Use Portion of Transportation Infrastructure Bond Revenue to Support Local Transportation Needs and Related Clean Water Requirements

The Treasurer's Office is also recommending that $5 million for each of the next two years derived from the motor fuel transportation infrastructure Transportation Infrastructure Bond (TIB) program be used to support environmental related capital outlay for municipalities. Currently bonded authorizations under the TIB are not significant and substantial dollars raised from the assessment are used to support "pay-go" projects in the Agency of Transportation (Vtrans).

The TIB enabling statute states:

"…any remaining balance in the transportation infrastructure bond fund may be used to pay for:

(1) the rehabilitation, reconstruction, or replacement of state bridges, culverts, roads, railroads, airports, and necessary buildings which, after such work, have an estimated minimum remaining useful life of 10 years;

(2) the rehabilitation, reconstruction, or replacement of municipal bridges, culverts, and highways which, after such work, have an estimated minimum remaining useful life of 10 years; and,

(3) up to $100,000.00 per year for operating costs associated with administering the capital expenditures."

Per statute, the definition of "highway" is (1) a road laid out as prescribed by statute; (2) roads conveyed to and accepted by a municipality or the State for public use; (3) roads dedicated to public use and accepted by a city or town; or (4) roads laid out by VTrans or a town. 19 V.S.A. § 1(12).

As used in the statutes, the term “highway” or “road” also includes bridges and the approach to bridges. 1 V.S.A. § 119. The legal definition of a highway includes “rights-of-way, bridges, drainage structures, signs, guardrails, areas to accommodate utilities authorized by law to locate within highway limits, areas used to mitigate the environmental impacts of highway construction, vegetation, scenic enhancements and structures.” 19 V.S.A. § 1(12).

The current statutory definition provides an option to utilize these revenues to assist municipalities in addressing their water quality infrastructure needs. The Treasurer’s Office recommends that $5 million annually of these dollars be used to such support municipal transportation projects. The use of existing revenues in this program are essential to generating sufficient revenues, without raising taxes or fees in the short-term.

Funding from the TIB program could be in the form of $5 million of annual pay-go or $10 million of TIBs bond proceeds for the first two years. Money from the TIBs would be used to make grants to municipalities and VTrans consistent with Vermont statutes (outlined above).

Authorized uses for Recommendations #1 and #2, in concert with the existing surcharge on property transfers, would include:

Sources	Authorized Uses	Examples of Projects Eligible for Funding
State G.O. Bonds	Capital projects	Developed Land/Stormwater Treatment • Grants to municipalities or local and regional stormwater utilities • Additional contributions to CWSRF Agricultural • Purchase of easements • Grants for stream restoration (taxable)[67] • Grants for livestock exclusion fencing and manure management systems (taxable) Natural Resources • Capital projects and grants for wetlands and floodplain restoration Wastewater Treatment Facilities • Additional contributions to CWSRF • Grants to municipalities
TIBs Pay-go or Bonds	Limited by TIB Statute to: rehabilitation, reconstruction, or replacement of State and municipal bridges, culverts, roads highways[68]. Project must have a minimum remaining useful life of 10 years.	Developed Land/Stormwater Treatment • Grants to municipalities for qualified highway costs related to stormwater management • VTrans roads and highway related stormwater management efforts
Clean Water Surcharge	Most flexible use of funds: Planning, design costs, restoration, training, technical assistance, operating programs, capital projects, partner support	Funds available for costs authorized by Act 64, including training, technical assistance, operating programs, private financial assistance for non-capital items, partner support, etc. that would not available from other interim sources.

[67] Traditional tax-exempt financing may not be available for these projects due to private use issues. Taxable financing could be used or private activity financing may be available to be used based on specific project review.

[68] The statutory term "highway" includes rights-of-way, bridges, drainage structures, signs, guardrails, areas to accommodate utilities authorized by law to locate within highway limits, areas used to mitigate the environmental impacts of highway construction, vegetation, scenic enhancements, and structures. The term "highway" does not include State Forest highways, management roads, easements, or rights-of-way owned by or under the control of the Agency of Natural Resources, the Department of Forests, Parks and Recreation, the Department of Fish and Wildlife, or the Department of Environmental Conservation.

Recommendation #3: Consider Allocating a Portion of Transportation and General Capital Appropriations, including General Obligation Bonds (G.O. bonds), to Long-Term Clean Water Compliance Needs

With the passage of 32 V.S.A. § 310, the Administration will need to annually prepare and revise a 10-year State capital program plan on an annual basis, submitting it for approval to the Vermont General Assembly. The plan will include a list of all recommended projects in the current fiscal year, as well as the five fiscal years thereafter. These recommendations will include an assessment, projection of capital need, and a comprehensive financial assessment.
The Treasurer's Office would further note that bonding is just one way to pay for these capital investments. They can also be paid for with "pay-go" dollars, reducing borrowing costs to the taxpayer.

The State's clean water initiatives should be considered as an integral part of the long-term capital planning and should be viewed as an investment in maintaining our infrastructure.

Recommendation #4: Possible Use of Municipal Equipment Loan Fund (MELF) to Support Clean Water Compliance

The Municipal Equipment Loan Fund (MELF) is governed by Vermont Statute Title 29, Chapter 61. MELF was created for the purpose of providing loans on favorable terms to municipalities for the purchase of construction, fire, emergency or heavy equipment or vehicles. The amount loaned shall be no more than 75% of the purchase price of the equipment, up to the maximum of $110,000, and shall be repaid in no more than five years. For loans to a single municipality the interest rate is 2%. For loans to two or more municipalities jointly purchasing equipment, there shall be no interest assessed. A committee, consisting of the State Treasurer, Secretary of Transportation, Commissioner of Public Safety and Commissioner of Motor Vehicles, reviews and approves applications.

Some municipal equipment beneficial to road cleanup, such as vacuum sewage cleaning trucks, could be financed through this mechanism. The Treasurer's Office will incorporate messaging on this alternative in the MELF application materials. Use of the MELF is a potential financial tool, and not a revenue source.

Recommendation #5: Work with Private Sector Businesses to Explore Use of Private Activity Bond Financing

Historically, private activity bond cap was largely used by the Vermont Student Assistance Corporation (VSAC) and the Vermont Housing Finance Agency (VHFA) to support student loans and affordable housing. While both programs still utilize private activity bonds, the federal

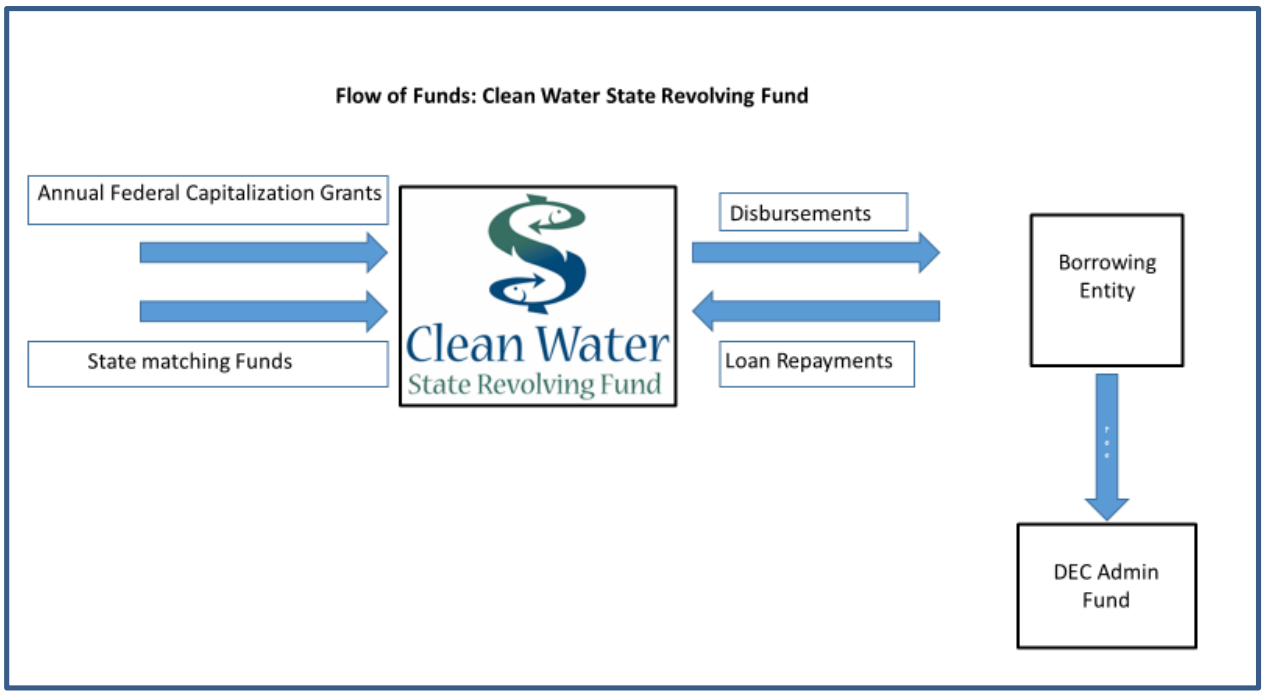
absorption of the Federal Family Education Loan Program (FELP) program and the current interest rate environment have resulted in lower uses of the State's allocation, providing an opportunity to use a portion of these allocations elsewhere. To date, the State has had limited success in using this bond allocation to spur economic activity, given the low-interest environment in place since 2008, combined with the administrative requirements. The spread between taxable and tax-exempt bonds has not compensated the issuer for the added administrative requirements. As interest rates have begun to rise, more interest in this financing vehicle may result. The Treasurer's Office believes that this would add a useful tool for private sector financing of projects including sewer and wastewater systems at private developments and potentially in the financing of innovative technologies such as biodigesters. More on innovative technologies can be found in the Chapter on Cost Effective Clean Water Implementation.

Recommendation #6: Reallocate Loan Rate Structure for Clean Water State Revolving Fund (CWSRF) to use 1% to Incentivize Clean Water Projects

The 1987 amendments to the federal Clean Water Act created the Clean Water State Revolving Fund ("CWSRF") program. Each state plus Puerto Rico have a CWSRF program funded by federal and state funds. The funds are used to make loans to eligible projects/recipients, including municipal wastewater facilities, control of nonpoint sources of pollution, estuary protection, stormwater and other water quality projects. The program and loans are managed by each state, subject to federal regulations. All CWSRF programs around the country are in the process of implementing the provisions contained in the Water Resources Reform and Development Act of 2014 ("WRRDA"). These low interest loans provide critical infrastructure and at the same time are an economic generator. Per a 2016 report, $34.7 billion in federal investment in state revolving funds has generated $102.7 billion in total economic input and created more than 500,000 jobs.[69] A summary of Vermont specific projects is included in the Appendix.

[69] WateReuse, "Position Paper on Funding Clean Water State Revolving Fund."

The flow of funds is as follows:



Vermont's CWSRF provides low interest construction loans for clean water projects to municipalities with terms of 20 to 30 years, a 0% loan rate, and a 2% administrative fee. Vermont's Clean Water & Drinking Water State Revolving Loan Programs are co-managed by the Department of Environmental Conservation (DEC), Facilities Engineering Division (FED) and the Vermont Municipal Bond Bank (VMBB). The CWSRF program is funded with appropriations from the Environmental Protection Agency (EPA), State of Vermont and revolving loan repayments.

FED's responsibilities include: applying for annual federal capitalization grants and carrying out federal and state programmatic requirements, development of annual intended use plans and project priority lists, providing project development assistance, engineering support for design, construction oversight, and loan awards, disbursements, and general program financial management. FED is involved with all phases of a project from the early conceptual stage through the post-construction/warranty period and financial audit and closeout. The projects financed through the State Revolving Fund Programs (SRF) consist of municipal wastewater and stormwater, municipal drinking water and certain privately-owned public water systems. The federal laws that govern these two major financing programs are the Clean Water and Safe Drinking Water Acts. Both programs have operating agreements with EPA Region I, which describe the respective roles and responsibilities of the State and EPA in the implementation of the SRFs. Both federal acts require that the State use accounting, audit, and fiscal procedures conforming to generally accepted accounting standards, and that the state require recipients to maintain project accounts in accordance with generally accepted accounting standards.

Additionally, a memorandum of understanding on Special Federal Grants requires review and approval of facilities plan and final design plans and specifications, environmental review documents, administrative reviews (bid, procurement, environmental documents), interim and final project inspections, change order reviews, and payment request review. The VMBB manages the SRF cash accounts, the SRF accounting and underwrites loans (performs borrower credit reviews). A trustee is used to manage project payment requisitions and loan repayments.[70]

This program has been capitalized by federal capitalization grants and 20% State matching funds from capital appropriations. In State fiscal year 2016, $1,300,000 of state match was appropriated toward leveraging $6,500,000 federal capitalization grant allotment (see chart above). As of the beginning of State fiscal year 2017, the current balance in the fund is $61,273,760. Additional revenue will be received during the course of the current fiscal year which includes loan repayments, federal capitalization grant payments and state match. Both the existing balance and the additional revenue will be used to meet loan awards for this fiscal year and beyond. While grants are the obvious preferred method of providing relief to municipalities, the CWSRF is a useful financing tool. While a below market interest rate is important to make it attractive to borrowers, the State needs to earn revenue by making loans and earning interest on those loans, to sustain the fund into the future. Without sufficient interest earnings, the SRF buying power will not keep up with inflation. The State's current 0% interest rate structure does not provide for growing the fund, which is not consistent with the practice in most states. Per a Government Accountability Office (GAO) report,

> "As of June 2014, EPA data showed that states had $61.9 billion in outstanding loans held by the Clean Water and Drinking Water SRF programs, $47.6 billion for the Clean Water SRFs, and $14.3 billion for the Drinking Water SRFs. Per EPA data, as of the same date, Clean Water SRFs have earned about $16.4 billion in interest payments since the inception of the program in 1987, and Drinking Water SRFs have earned about $2.9 billion in interest payments since their inception in 1997."[71]

Vermont's funds are currently not sustainable in the absence of federal capitalization grants. At the same time municipalities are currently stressed in meeting the TMDL costs and raising the effective loan rate would not be advisable. Instead, it is recommended to split the current 2% administrative fee, so that 1% is deemed interest on loans and is paid into the fund, while reducing the DEC fee to 1%. The municipalities are held harmless and an opportunity to grow the fund is created as the 1% interest earning would be deposited back into the fund. Based on a scenario of lending $10 million per year, with terms of repayment of 20 years, $4,675,000 would be generated for the fund in the first ten years, or $21,000,000 over a 20-year period.

[70] Vermont Municipal Bond Bank, "State Revolving Fund."
[71] United States Government Accountability Office. "Report to the Subcommittee on Interior Environment, and Related Agencies, committee on Appropriations, House of Representatives: State Revolving Funds: Improved Financial Indicators Could Strengthen EPA Oversight."

In reviewing this option, it is important to recognize it will have an impact on the generation of fees to support the CWSRF program. Over time it is the EPA's expectation that the State will be able to generate sufficient fees to administer the program. Any changes to this program should include the flexibility to review the balance between generating dollars for financing programs and capacity for administration. The CWSRF program will have an actuarial study performed to look at the long-term impact of this proposed change.

Recommendation #7: Consider "Pairing" Projects Using Portion of 1% Interest Charge or Reducing Interest Rate for Specific Projects

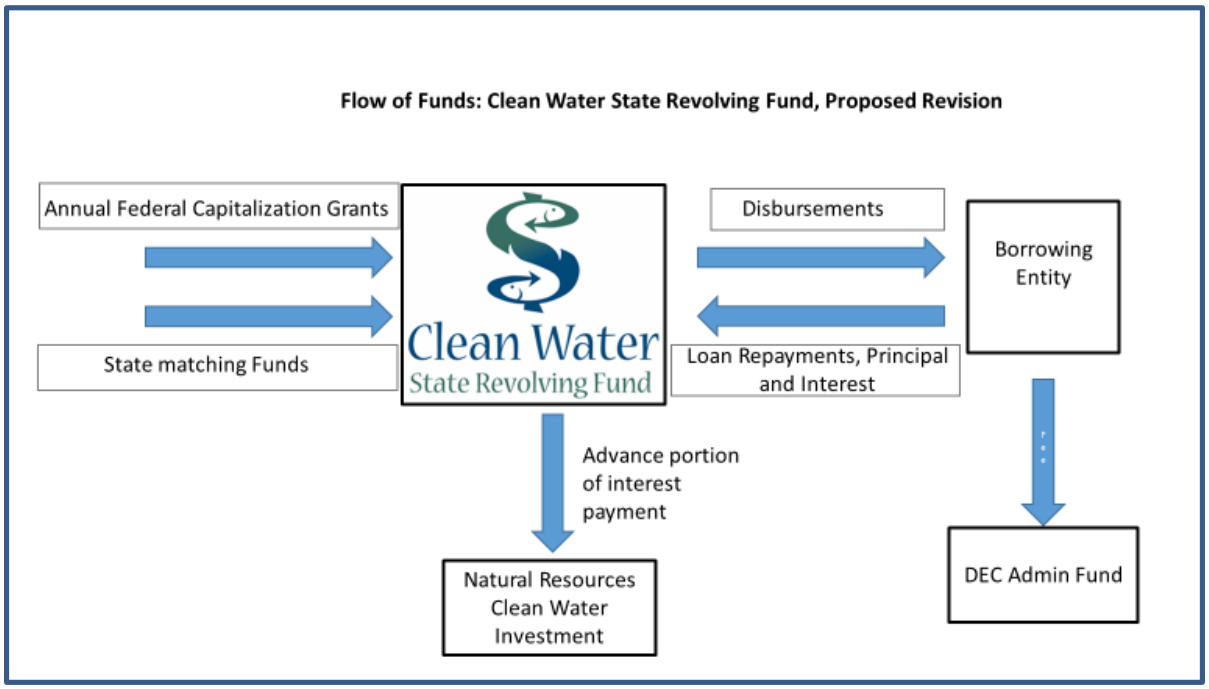
The State of Ohio has developed an innovative model using CWSRF funds to fund stream and wetland restoration projects and, per reports, has generated $162 million as of March 2014.[72] This model may be transferable to the Vermont program. Previously, Ohio's Division of Environmental and Financial Assistance (DEFA) had focused on traditional wastewater infrastructure projects that generate fees that can be used to pay principal and interest on their loans. DEFA has offered direct loans for habitat programs, but their lack of revenue generation resulted in limited interest. The revised model permits an applicant to sponsor a stream or wetland project while the more traditional infrastructure project is approved, pairing both into one project. The borrower agrees to be responsible for the restoration/protection project and the CWSRF fund fully funds the project by "advancing a portion of the interest the borrower will pay on its SRF loan"[73] This can also be combined with other terms to reduce the interest rate slightly so that there is an incentive to combine as the overall cost to the borrower is less than the traditional project as a standalone project. For example, if Vermont restructures the repayment provisions by reducing the administrative fee to 1% and charges a 1% interest, the borrower could receive the sum of the 1% interest charge upfront to complete the stream or wetland project. Since there is essentially no cost to the borrower of completing the restoration project, more projects are likely to be funded.

The amount that could be generated to fund a paired restoration project will vary based on the size of the traditional infrastructure project and the borrowing terms, which could range up to 30 years. For instance, using the 1% pairing support, a $5 million infrastructure project with a 20-year term rate would generate about $408,000 for a "paired project" or, over a 30-year borrowing, at approximately $784,000, depending on terms and amortization method. Since these monies would be advanced, the restoration project could take place immediately rather than waiting to recoup the funds over the course of the loan period. All or part of the interest due for the restoration project could be waived, providing additional incentive.
Using the 1% interest to pair or sponsor these projects will impact the growth of the fund, as noted in the previous recommendation. It is worth noting that the effort would likely lead to

[72] Ohio Environmental Protection Agency: Division of Environmental and Financial Assistance, "Leveraging Ohio's Clean Water SRF Program to Fund Stream and Wetland Restoration and Protection Projects."
[73] Ibid, p. 16

increased loan participation, which, if combined with interest repayment on most loans (non-paired), would accelerate use of loans and the growth of the fund. Moreover, the practice widens the use of these dollars to non-point source, non-revenue generating infrastructure projects. Finding an optimum balance between these two recommendations will be required.

Based on this change, the revised flow of funds would be as follows:



Recommendation #8: Consider Incentives for Expanded Use of Clean Water State Revolving Funds (CWSRF)

In 2014, the federal Water Resources Reform and Development Act (WRRDA) amended the Clean Water State Revolving Fund provisions in the Clean Water Act. Changes included:

(1) Expanding eligibility categories for CWSRF assistance;
(2) Requiring loan recipients to prepare fiscal sustainability plans;
(3) Using additional loan subsidies;
(4) Developing affordability criteria; and
(5) Increasing loan maturities to the lesser of 30 years or design life.[74]

[74] United States Environmental Protection Agency. "CWSRF 101: An Introduction to EPA's Clean Water State Revolving Fund."

The expanded uses in statute include:

(1) Decentralized wastewater treatment systems;
(2) Stormwater and subsurface drainage water projects;
(3) Municipal, inter-municipal, or state agency projects for water conservation, efficiency, or reuse (which may involve loans or grants to individuals or businesses for water meter or plumbing fixture upgrades or replacements or gray water recycling);
(4) Section 122 watershed projects;
(5) Municipal, inter-municipal, interstate or state agency projects to reduce energy consumption at publicly owned treatment works (may take place on public or private properties);
(6) Projects for the reuse or recycling of wastewater, stormwater, or subsurface drainage water;
(7) Measures to increase security of publicly owned treatment works; and,
(8) Qualified nonprofit entity measures (e.g. planning and design costs, development and initial implementation of training activities) to assist owners and operators of small and medium publicly owned treatment works.

It should be noted, however, that project eligibility under Vermont statute at 24 V.S.A §§ 4752(11) & 4753(a)(1) governing use of the CWSRF, is more limited than federal law and may need to be amended to enable funding of certain types of ecosystem restoration projects contemplated above. For example, although state statute includes flood resiliency work, it must be related to a structural facility to be eligible. EPA published a document in in May 2016 entitled *Overview of Clean Water State Revolving Fund Eligibilities* which provides a more comprehensive list of federally eligible project types and is accessible through the following web link: https://www.epa.gov/sites/production/files/2016-07/documents/overview_of_cwsrf_eligibilities_may_2016.pdf

At this time, Vermont has several rounds of federal capitalization grant funds available for these infrastructure projects as well as the current CWSRF fund balance. There has been a recent lull in the number of requests by municipalities while the specifics of the State's TMDL and related permitting changes were put into place. As many of these issues have been resolved, it is expected that Vermont will see an increased use of these CWSRF funds. The pairing of restoration nonpoint projects will also assist in more rapid utilization of these funds.

Borrowed funds, even at considerably below market interest rates are not the preferred method of municipalities and the Treasurer's Office recognizes that a robust state revolving fund must be paired with grants and other resources outlined in this report.

Recommendation #9: Consider Future Leveraging (Bonding) of CWSRF, depending on cash flow analysis

The federal Clean Water Act "allows CWSRF assets to be used for security and repayment of municipal bonds issues, expanding the amount of funding available for projects."[75] Per an EPA study in 2015, 28 states have leveraged their programs, making an additional $34.6 billion available for projects.[76]

Leveraging will immediately increase the available project funding in the year that it starts. Ultimately, leveraging (borrowing) means that interest must be repaid, reducing the fund's balance (assuming interest on cash balances and loan repayments do not exceed borrowing costs). In fact, a loan program without bonding, but with same interest rate and other terms as one involving leverage, will invariably create more funding in the long run. A short-term tradeoff to borrow could be of value under certain circumstances. Borrowing makes sense when:

(1) The costs saved through accelerated construction (inflation, preventative maintenance, avoidance of fines) exceed the interest paid on the funds; and/or
(2) Quantifiable environmental and economic benefits exceed the cost of borrowing; and,
(3) As long as creditworthy loans are made and available to pay the bonds.

The CWSRF fund balance is substantial and could be further leveraged to create more upfront available dollars, *if* efficient utilization of these dollars by borrowing entities could be achieved. On the other hand, borrowing funds and then leaving them idle would not make sense. Assuming an increased need for CWSRF funds, a review indicated that leveraging the fund using a 1% interest rate assumption for future loans to borrowers (use of the pairing above would negatively impact the assumptions although providing a needed service), use of a 4% assumed bond interest rate, and a 20-year level debt service bond, could meet all of the sector #1, municipal stormwater, wastewater and combined sewer projects, Tier 1 funding gap and cover the Tier 2 gap for the same sector though 2037.

The bonding of state revolving loan funds is not considered by the rating agencies as part of the State's net tax-supported debt due to the fact that the debt service is being paid by the loan repayment made by the borrowing utilities.

There are also some important questions that need to be resolved:

1) How will the rates of inflation, loan interest rates, bond interest rates, and the assumed rate of return on investments affect the value of leveraging or bonding?
2) What is the likelihood of continued EPA funding of federal capitalization grants?

[75] United States Environmental Protection Agency, "CWSRF 101: An Introduction to EPA's Clean Water State Revolving Fund," p. 7.
[76] Ibid.

3) What is the demand for additional loans from the program?

Question #1 will have an impact on the value of a leverage program versus a direct loan program. Question #2 is a significant in the current national environment. Question #3 is something that relates more to the State's future management of CWSRF funds. For example, the question remains: even with expanded uses of CWSRF funds, is there a sustained demand for additional loans through the CWSRF program? Currently the answer is "no." It remains to be seen if the expanded eligibility categories create more demand or if "pairing" and other initiatives would impact this. Continued monitoring of this to test future feasibility is recommended.

Review of Potential Revenue Sources

The Treasurer's Office believes that fees or revenues from taxpayers are a finite commodity and all efforts should be taken to use and re-appropriate existing resources wherever possible. The Treasurer's Office also recognizes that statewide investment in our rivers and lakes, is an investment in our future. For this reason, the Treasurer's Office continues to urge the General Assembly to incorporate clean water compliance needs as an ongoing capital investment in its long-range capital planning, utilizing bonded dollars, within the parameters set by Capital Debt Affordability Advisory Committee (CDAAC), or pay-go dollars. The Treasurer's Office also views the various administrative, policy and best management practices identified in other sections of this report as a means to reduce overall expenditures while achieving our clean water goals and providing best value to the taxpayer.

The Review Process below outlines the steps taken to solicit and consider recommendations from various stakeholders and interested parties.

Revenue Review Process

Pursuant to Act 64 of 2015, the State Treasurer, with our partners at the Agency of Natural Resources, particularly the Department of Environmental Conservation, the Department of Taxes, the Agencies of Administration, Agriculture, Commerce and Transportation ("Project Team") undertook review of potential revenue sources to fund the clean water initiatives. This included a review of previous studies submitted to the General Assembly as well as a comprehensive review of studies from other states, academic studies and most importantly, a dialogue with Vermonters through a series of stakeholder and public outreach events. Our working group conducted at least 23 meetings reaching approximately 1,000 people. These include:

- Six (6) stakeholder meetings in the Spring 2016;
- Sixteen (16) stakeholder meetings, including:
    - Three (3) business community meetings;
    - Two (2) Chambers of Commerce meetings;
    - One (1) meeting with the Business Roundtable;
    - Four (4) municipality focused meetings;
    - Two (2) agricultural sector meetings (Randolph and St. Albans);
    - One (1) NGO meeting;
    - Three (3) State agency Secretary meetings; and
- One (1) public hearing on November 16, 2016.

Since the November public hearing, the Treasurer's Office has continued to meet with State Agency staff, municipal staff, and various private sector parties to further refine the financing and funding options.

Clean Water Fund Revenue Source Criteria Criteria used as a general framework to evaluate revenue sources to further clean water compliance	
Revenue Potential	The amount of revenue that a source generates to support the Clean Water Fund or debt service on a bond for clean water improvements.
Predictability	The degree to which a revenue source fluctuates and/or is predictable over time.
Sufficiency	The degree to which a revenue source provides the dollars necessary to finance the desired rate of spending.
Effect on Outside Dollars	The degree of impact and leverage on outside dollars, such as Federal government contributions for a project.
Economic Impact	The entities that revenue sources target and the potential economic consequences of those sources.
Nexus to Water Quality	The degree to which a tax or fee bears a relationship to water quality and sources of pollution.
Promotes Mitigation	The degree to which a tax or fee encourages individuals and businesses to perform on-site mitigation to improve water quality.
Administration and Compliance	The degree to which: 1) revenues can be collected effectively, 2) the provision can be enforced, and 3) payers can easily comply.
Accountability	The degree of transparency/explicitness to payers of a revenue source.
Geographic Distribution	The degree to which a tax or fee applies across Vermont.
Income Equity	The degree to which a tax or fee is based on ability to pay.

As a result of these efforts, 64 different revenue options were submitted for consideration by various stakeholders. In reviewing these potential revenue sources, several criteria were used to guide the process. These are outlined in the chart below. Stakeholders were asked to rate the relative importance of the criteria. Stakeholders indicated that nexus to water quality was an

important consideration, followed by revenue potential, and promotion of mitigation, sufficiency and predictability.

The complete list of 64 potential revenue sources is included in Appendix C. These sources were proposed through the stakeholder process and are not recommendations or endorsements by the Treasurer's Office.

The Project Team undertook a further review of these sources, and the Department of Taxes, with the assistance of other team members, took the lead in developing revenue estimates. Some items were eliminated from further consideration. Reasons included: administrative complexity; a determination of no or net negative revenue generation after factoring in costs; or that they were contradictory with adverse consequences to other State priorities. As a result, the list was reduced to 33 items for review at the public hearing on November 16, 2016. An additional item was also added by a participant at the hearing. The list was then categorized, for the purposes of discussion, into four categories:

(1) Existing revenue source: the clean water surcharge on property transfer;
(2) Revenue options identified in previous reports: Act 138 (2013) and Act 97 (2014) legislative reports;
(3) Revenue options suggested by stakeholders through this project; and
(4) Re-appropriation of existing funds.

Appendix C includes additional summary data on each of the items noted above.
Following the November 16th public hearing, a comment period was held through early December. A detailed listing of all public comment received is also included in the Appendix. In addition to specific correspondence by various stakeholders, a listing of comments received, sorted by potential revenue[77] item (where feasible) is included in the Appendix D.

[77] Potential revenue is not net of admin fees.

Abbreviated List of Sources Considered		
	Revenue Source	**Annual Amount**
Category One: Existing Revenue Source		
1	**Clean Water Surcharge on Property Transfers**	Current 0.2% surcharge on the transfer of certain properties = $4.7M-$5M
Sources Proposed During Stakeholder Process		
Category Two: Act 138 (2013) and Act 97 (2014) Legislative Reports		
2	**$50 Annual Flat Parcel Fee**	$16.7 million
3	**$3 Per Acre Per Parcel Fee**	$15 million
4	**Impervious Surface Tiered Acreage Fee**	$18 million
5	**Impervious Surface Tiered Parcel Fee**	$18 million
6	**Excise Tax on Pesticides**	$70,000-$140,000
7	**Property tax**	$0.01 property tax increase = $8M annually
8	**Personal Income Tax**	$7M: 1% of current revenues; $13.3M: .1% increase applied to the rate of each tax bracket (i.e. 3.55% increased to 3.65%); $5.5M: Bottom tax rate remains at 3.55% and other rates increased by .1%; $2.8M: Bottom two brackets remain at 3.55%
9	**Gas tax**	$0.01 increase / gallon of gas = $3M; $0.01 tax/gallon of diesel = $690,000
10	**Fertilizer tonnage fee**	▪ Doubling the Ag fertilizer tonnage fee from $0.50 to $1 = $19,000 in new revenue ▪ Increasing the Ag fee to $25 = $930,000 in new revenue ▪ Increasing the non-Ag fee by $1 = $6,000 in new revenue
11	**Excise Tax on Flushable Consumer Products**	1% excise tax = $1.35M
12	**Excise Tax on Bottled Water Containers**	$0.01 per container = $1M
13	**Escheating Unclaimed Beverage Container Deposits**	$1.5M-$2M annually.
14	**DEC Fines for non-compliance**	$200,000
15	**Agency of Agriculture Food and Markets Fines for non-compliance**	Agency of Agriculture penalties = $175K-$230K; Vermont Office of Attorney General Water quality violations totaled $24.75K in 2016 and $118K in 2014

Category Three: Stakeholder Suggestions		
16	**Sales Tax on Nail Salons**	$2.23M
17	**Sales Tax on Beauty Salon Services**	$4.3M
18	**End education property tax Exemption on Ski Lifts and Snowmaking Equipment**	$1.5-$2M
19	**Current Use: Apply a 90% discount to all property enrolled in current use.**	$4.5M
20	**Sales Tax on Marinas**	$210,00
21	**Pharmaceutical Medicine Excise Tax**	1% excise tax on prescription drugs = $5.5M; 1% excise tax on non-prescription drugs = $600,000
22	**Sales Tax on Parking (Lots and Garages)**	$280,000
23	**Sales Tax on Limousine Services**	$610,000
24	**Sales Tax on Storage Units**	$940,000
25	**Sales tax on new car dealer labor charges, work under warranty, and value of service contracts**	$4.8M
26	**Sales Tax on General Auto Repair**	$6.2M
27	**Inspection Sticker Fee**	$1 increase = $585K.
28	**Surtax on Rental Cars**	1% surtax on rental vehicles = $480,000.
29	**Surtax/Increase to Sales & Use Tax**	0.1% increase = $6M.
30	**Dollar Surcharge on Rooms**	$1 surcharge on rooms = $3.6M
31	**Surtax/Increase to Meals, Rooms, and Alcoholic Beverages**	25% increase = $4.2M ▪ $2.5M – Meals ▪ $1.2M - Rooms ▪ $500K - Alcohol
32	**Voluntary Contribution Line Item on the Personal Income Tax Form**	$30K-$100K
Category Four: Reappropriation of Existing Source/Other Concepts		
33	**Affinity Card**	Minimal
34	**Reappropriation of Current Expenditures**	Varies

The Treasurer's Office reviewed stakeholder feedback as well as outreach and compliance requirements, based on feedback from the Department of Taxes. The Treasurer's Office recommends further reductions to the list and the elimination of proposals extending the sales tax on various services. Any expansion of the sales tax without lowering the rate would be perceived as regressive. Any new tax types also come with some administrative and implementation issues. This would require an extensive outreach campaign. Many of these businesses (storage units, for example) likely are not registered to collect sales and use tax, so they would need to create an account with the Department of Tax and there would be added public outreach and compliance costs.

The Treasurer's Office also recommends removal for consideration of an excise tax on flushable consumer products. The expected revenue ($1.35M) is insufficient for the administrative and compliance challenges implementation would entail. In addition, an excise tax on bottled water containers should be eliminated. Even applied at the distributor level, there would be significant administrative issues in identifying the appropriate entities, as well outreach and compliance costs. The Treasurer's Office also does not support use of income tax as it is sufficiently removed from the nexus to water quality. A surtax on meals, rooms and alcoholic beverages or sales and use tax would require some outreach and compliance work but more importantly, would place Vermont at a competitive disadvantage with neighboring states. The Treasurer's Office therefore recommends that it also be removed from further consideration.

It is worth noting that the Clean Water Fund can also accept private donations. For example, should TDI New England (TDI-NE), a subsidiary of Blackstone, build its proposed electric transmission line, which would run along the bottom of Lake Champlain, the company would provide resources for water quality investments. Specifically, TDI-NE would deposit: (i) $1 million on the fiscal close of the project; (ii) $6 million on July 1 of the initial year of commercial operations of the project; and (iii) $5 million on the July 1 of each year thereafter for 39 years. These funds will be deposited into the Clean Water Fund and their use is limited to the Lake Champlain watershed. Today these funds cannot be relied on, as there is no guarantee at this time that the project will move forward. That said, the model of private investment is one that should be further considered.

Revenue Recommendations

Below is a list of revenue recommendations, with additional detail summarized in the pages to follow:

(1) Extend clean water surcharge on property transfers for one additional year;
(2) Create an affinity card program to increase awareness and engagement of in-state and out-of-state visitors;
(3) If the General Assembly plans to use existing resources, use of existing resources must be predictable, reliable, and built into base budget; and
(4) If existing resources do not provide the target level of subsidy, the General Assembly should consider adopting a parcel and/or impervious surface fees.
    a. Given the nexus to the water quality and the ability to tie these revenues, and to incentivize best management practices, consideration should be given to incorporating a tiered impervious cover fee as a long-term revenue option.

Recommendation #1: Extend Clean Water Surcharge on Property Transfers One Additional Year

The statutory authority for the existing revenue source, the Clean Water Surcharge on Property Transfer, is scheduled to sunset at the end of June 2018. This source provides approximately $5 million annually to the Clean Water Fund.

Clean Water Surcharge

The Clean Water Surcharge is applied to certain property transfers and is presently the sole revenue source for the Clean Water Fund. It generated $4.65 million in fiscal year 2016, and it is projected to generate $4.9 million in 2017. This .2% surcharge was created as part of legislative Act 64 of 2015, and it is set for repeal on July 1, 2018. To understand how the surcharge is applied, please see the table below.

When to Apply the Property Transfer Tax and the Clean Water Surcharge				
Type of Property	**Value Taxed**	**0.5% Property Transfer Tax**	**1.25% Property Transfer Tax**	**0.2% Clean Water Surcharge**
Not Principal Residence	All		✓	✓
Principal Residence	$0-$100,000	✓		
	Marginal Value > $100,000		✓	✓
Principal Residence purchased w/ VHFA, VCTF, or USDA Assistance	$0-$110,000			
	$110,000 - $200,000		✓	
	Marginal Value > $200,000		✓	✓

Source: Tax Department

As noted earlier, the Treasurer's Office recommends a two-year interim funding and financing plan, utilizing a combination of existing capital budget general obligation bond authorization (recommended at $15 million per year) and Transportation Infrastructure Bond program dollars (using bonded dollars or "pay-go" resources at $5 million per year). This would generate, in year one of the interim plan, in combination with the surcharge, $25 million in resources to the fund. This target would provide direct project assistance and grants for approximately 50% of the total Tier 1 costs. Maintaining the 50% level is important to municipalities, farmers and businesses in the state who are also contributing to this effort. The Treasurer's Office is recommending extending the surcharge for one additional year, through fiscal year 2019 to continue the existing maintenance of effort, while transitioning to the long-term funding and financing plan.

The capital projects paid for with state general obligation bonds will provide a direct benefit to stakeholders in the form of infrastructure and related costs. The surcharge would cover costs that would not be eligible through the State's bonding program such as technical assistance, program design, etc. While the recommendation to the CWSRF funds in the previous chapter on bonding will add loan capacity (and create some capacity for restoration projects in combination with loans), these are largely financing sources that ultimately will need to be repaid by municipal borrowers and other entities. The surcharge, or equivalent dollars from non-capital funds, is an important component as an interim measure as long-term revenue options are considered and adopted.

Recommendation #2: Create an Affinity Card Program to Increase Awareness and Engagement of in-state and out-of-state visitors

While not much in the way of dollars is likely to be generated, a state credit card affinity program will highlight our state waters and potentially develop in-state and out-of-state contributions to the water clean-up efforts.

Per 32 V.S.A. § 584, the Treasurer's Office currently has authority to establish a Vermont State-sponsored Affinity Card Program to support public purpose projects in the areas of sustainable agriculture, renewable energy, state parks and forestland, or any combination of these. The Treasurer's Office anticipates that cardholders will be primarily residents of Vermont, the other New England states and the other states on the east coast of the United States, who enjoy Vermont and support the types of projects and activities in Vermont which this Program is intended to benefit.

Recommendation #3: Use of Existing Resources and Revenues Must be Predictable, Reliable, and Built into Base Budget

Investment in the health of our lakes and rivers must include a consistent, reliable source of revenue to support long-term clean water compliance needs and investments. Fees and other sources that are non-predictable could also create programmatic and consistency issues.

Recommendation #4: If Existing Resources Do Not Provide Target Subsidy, the General Assembly Should Consider Adopting Parcel and/or Impervious Surface Fees

a. **Given the nexus to the water quality and the ability to tie these revenues, and to incentivize best management practices, consideration should be given to incorporating a tiered impervious cover fee as a long-term revenue option.**

A significant number of states, including Vermont, use some form of stormwater user fees (SUF), based on some calculation derived from a parcel fee. For utility fees for drinking water systems and sanitary servers there is a direct link between the rate assessed to the purchaser and the cost of providing the service, including administration. Stormwater utility fees are developed to assess the cost based on "usage".

The major types of fees are:[78]

Method	Description
ERU	User fees that determine usage based upon impervious area. One ERU is equivalent to the average amount of impervious area on residential properties. Typically, a charge is assessed per ERU utilized.
Flat Fee	User fees that charge a flat rate to users of a stormwater conveyance system.
Tier	A system where consumers are categorized based upon a select variable and charged accordingly.
Residential Equivalence Factor (REF) or Similar	User fees that determine usage using the NRCS runoff or Rational method.
Dual (Residential/Commercial)	User fees that assess different rates or use different methods (often Fixed Rate and ERU) for commercial and residential properties.
Per Parcel Square Foot (Sqft).	Use fees that charge a rate per parcel sqft. of imperviousness.
Per Parcel Acre	User fees that charge rate per parcel acre of imperviousness.
Water Meter	User fees that charge based upon the size of a parcel's water meter. (Often exhibited in tier systems).
By Water Usage	User fees that charge according to parcel water usage.

These are general categories and hybrid models also exist. In a 2015 study, impervious surface was the most predominant fee type, followed by tier and flat fee, although these were impacted by location, population and home values. Studies have shown that impervious surface fees (ERU) were found in cities with high population densities, while flat fees were generally found in smaller, less populated towns. While there is no right answer, a municipalities land use composition, the complexity of calculation and other factors will impact the decision-making process in selection of user fees.

[78] Kea, Kandace Monique, "An Analysis of Trends in U.S. Stormwater Utility & Fee Systems," p. 13.; Dritschel, Amanda, "The Impact of Different Stormwater Fee Types: A Case Study of Two Municipalities in Virginia."

The Department of Taxes developed four approaches to collecting revenue based on parcel or impervious surface information and assessed revenue generation, and complexity of administration:

	Revenue Source	Tiered/Not Tiered	Parcel/Impervious	Estimate	Admin
1	$50 Flat Fee Per Parcel	Not Tiered	Parcel	$16.7M	Easiest
2	$3 Per Acre Per Parcel	Not Tiered	Parcel	$15.0M	Easy
3	Impervious Parcel Fee	Tiered	Parcel & Impervious	$18.0M	Fair
4	Impervious Acre Parcel Fee	Tiered	Mostly Impervious	$18.0M	Harder

Source: Department of Taxes

As noted by the Department of Taxes, Approach 1 is the simplest and easiest of all four structures to administer. It is modeled using a $50 annual fee paid on a per-parcel basis by landowners. It is the least fair because a landowner with a 1,000-plus acre plot will pay the same annual amount as a landowner with a 0.25-acre plot. This fee also does not account for impervious surface or land use. Approach 2 is still relatively easy to administer, but would involve calculations to correctly bill the landowner.

Approach 3 and 4 get a bit more complicated to administer, with approach 4 being the most complex. Approach 3 groups all parcels by their grand list category and then assigns them a fee based on likely impervious surface coverage. It requires parcels to be correctly identified on the grand list. Approach 4 is the most complex to administer as it incorporates both a grand list category and the number of acres.

The above revenue estimate used certain baseline fee assumptions to develop the estimate and some incremental increases to assumptions could approximate the $25 million dollar target.

With any of these proposals, incorporating exemptions adds complexity that makes it harder to administer. If the goal is to use the most up-to-date impervious surface information, then the numbers could potentially change every year, making administration more challenging.

Stormwater fees do have a significant nexus to the problem and have been successfully implemented in a number of municipalities, including Vermont, and generate substantial dollars. This provides a useful and reliable source of fees to support programs. Administrative structures and options are examined in the following section.

Assessing & Administering New Revenues

This chapter focuses on the administration of long-term revenues. Should long-term existing resources be unavailable, it is appropriate that the two new long-term revenue sources recommended for consideration, a parcel fee, and impervious cover fee are aligned with the recognition of universal stormwater runoff and assure that everyone contributes to clean water improvements.

Several concepts are essential to determining effective revenue and financing options, and in considering the complexity of their assessment and administration.

(1) Reduce overlapping fee structures to minimize entities paying twice for the same service activity;
(2) Incentivize local and regional decision making and implementation;
(3) Incentivize public and private entities to make water quality improvements; and,
(4) Maximize on-going funding opportunities in the form of utility programs and revolving fund sources.

Parcel Fee and Impervious Cover Fee

The two new long-term revenue sources are recommended for consideration to support clean water compliance: a parcel fee and an impervious cover fee, which would be applied to separate types of property. The parcel fee is a fee that applies to all parcels in a specific property category. Impervious surface fees are based on the amount of impervious cover on each parcel, recognizing that the impacts from stormwater runoff are associated with increases in impervious area.

Both options can be structured using a uniform flat fee, applied to all parcels in a category, or tiered. Tiers allow the fee to vary based on land use category (residential, commercial, industrial, institutional such as universities or hospitals, and agricultural), relative size of the parcel or both. Increase specificity related to the application of the fee structure also incentivizes best management practices and drive water quality investments.

As the data needed to effectively assess both fees are finalized over the next two years, a stepwise approach to their administration should be considered. During State fiscal years 2018-2019, existing State funds can be utilized, as outlined in previous chapters, to advance water quality investments to achieve compliance with clean water requirements. In State fiscal year 2019, a simple statewide parcel fee could begin, including farm homesteads, using general land use categories (residential/nonresidential). By the end of State fiscal year 2019, all data needed to effectively assess a tiered parcel fee and a more complex impervious cover fee is expected to be

available. At that time, the simple flat parcel fee for all residential parcels can be maintained, and a tiered impervious cover fee, using three broad tiers based on size (small, medium, large), for non-residential parcels, added. A credit or permanent reduction in the non-residential user fee for actions taken and maintained to reduce nonpoint source pollution runoff should be granted. The credits would serve as incentives to recognize existing and new Best Management Practices (BMPs) that reduce nonpoint source pollution.

Efficient and Effective Administration

The administration of revenues must comply with eligible uses for the funds generated, as specified in Act 64 of 2015, and promote efficient and effective administration of the Clean Water Fund. Eligible uses are to:

(1) Assist in complying with water quality requirements and implementation of projects or programs;
(2) Fund staff positions when necessary to achieve or maintain compliance when existing revenue sources are inadequate to fund those positions; and
(3) Provide partner organizations support for the implementation of water quality projects or programs.[79]

Four administration options for managing an enhanced level of clean water funding are presented below. Alternate hybrid options could also be considered to help meet local, regional and statewide clean water improvement needs. All options are outcome based, focused on maximizing environmental performance to reduce water pollution. These approaches are designed to foster innovation and drive cost-effective environmental outcomes. A limited amount of funds must be set aside to administer new revenues, scaled to the amount available for distribution, to support project implementation.

As mentioned above, the key concepts essential to determining effective assessment and administration include: reducing overlapping fee structures, incentivizing local and regional decision making and implementation, incentivizing public and private entities to make water quality improvements, and maximizing ongoing funding opportunities in the form of utility programs and revolving funding sources.

To the extent that local utilities exist, it is inappropriate to fully charge the property without providing an offset. For instance, if a parcel fee and/or impervious surface fee were to be assessed at the state level or through a third party statewide utility, a credit for local assessments would be both (1) fair to the property owner and (2) provide an incentive for development of utilities at the local level.

[79] 10 V.S.A. § 1387 (2015 Act 64 § 37).

All administration options are designed to support flexibility in project implementation at the local and regional levels. Flexibility is already built into the two-new municipal stormwater permits – the municipal roads general permit and the developed lands general permit. Under the municipal roads general permit, municipalities will have flexibility in determining the order of road projects they implement. With respect to the developed lands general permit, municipalities will also have flexibility in determining the priority of projects. This flexibility allows municipalities to stage projects to coincide with planned redevelopment, or replacement of existing infrastructure. Additionally, municipalities will have flexibility in determining the non-municipal stormwater systems they include in their implementation plans. Municipalities will also be able to determine which stormwater systems they are responsible for under their State municipal general permit authorization.

Funds must be administered in line with the priorities set forth for clean water investments in the Tactical Basin Planning Process[80] and accounting systems must measure, track and report on the progress.[81] The accounting systems will be used to report to the EPA and General Assembly on progress towards the required regulatory and statutory requirements.

[80] DEC's Watershed Management Division (WSMD) developed tactical basin planning as a coordinated watershed-based technical assessment and planning approach to promote efficient and cost-effective implementation of water pollution controls. The process uses monitoring and assessment results, combined with sector-specific planning processes, to identify and prioritize implementation projects.

[81] The State is responsible for tracking and reporting on the State's progress in achieving and maintaining clean water statewide. The State has developed data management systems to track results and is committed to working across state government to prepare a comprehensive annual report that describes the level of activity, locations of state-funded improvement projects, the extent of technical assistance provided to farmers, municipalities and other property owners and environmental outcomes.

Options for Administering an Expanded Clean Water Fund		
Administration	**Description**	**Funding Source for Administrative Costs**
Option 1: Water Quality Improvement District as a Utility	Establishes a local, regional or state utility to deliver water quality improvement services. Funds raised locally or regionally are retained locally or regionally, to target state-approved priority clean water improvement projects	% of funds for full time equivalent (FTE) at the State that can assist municipalities in the formation of water quality improvement districts (utilities)
Option 2: Clean Water Partnership Block Grant Program	Implementation is outsourced to partner organization via a new clean water block grant program; the grant is structured to achieve specified environmental performance outcomes, such as targeted pollutant reductions	% of funds set aside for program administration
Option 3: A New Municipal Clean Water State Aid Program	Applies a formula-based model, similar the VTrans General State Aid to Town Highways, for distributing funds directly to entities, such as regional partner or even directly to municipalities; example includes distribution of funds directly for implementation that supports compliance with a state permit	% of funds set aside for program administration
Option 4: Current Funding Model: Provide Enhanced Management Using State Agency Funding Programs	State agencies support outcome-based implementation using existing funding programs	% of funds set aside for program administration

Administration Option #1: Water Quality Improvement District Serving as a Utility

This option establishes a district or utility that uses available revenues to furnish a set of water quality improvement services. The district could be structured to deliver services locally (i.e., the municipal level), regionally and even statewide to achieve state permit compliance. Such districts are commonly referred to as utilities in that they provide services similar to other public utilities, such as wastewater, drinking water and electric utilities.

Stormwater utilities are emerging as an effective strategy for controlling stormwater runoff, complying with environmental regulations, reducing flood hazards and maintaining existing

stormwater treatment systems. There are nearly 2,000 stormwater utilities in 39 states, including 15 in New England and three in Vermont.[82] Utilities are typically structured to generate ongoing revenues and provide stormwater management services at the municipal or county level. They vary in size, servicing populations ranging from 88 residents to greater than three million residents. The average community size is approximately 70,000 residents and the median is 18,000.[83]

Funding Sources and Functions

Districts or utilities can collect either parcel or impervious surface fees from residents and businesses within their jurisdictions. Utility functions can range from delivering a limited to a more comprehensive set of services. Services include education and technical assistance, operation and maintenance of existing stormwater systems, capital construction of new water quality improvement systems and natural infrastructure restoration for flood hazard mitigation. Conceivably, districts could also be established to help support the agricultural sector by directing the fees generated from agricultural properties to support agricultural-related pollution controls.

To the extent that the State could identify new resources and/or identify funding opportunities within existing state appropriations, these could be used to supplement local utility operations in either option #1 above, or option #3, outlined below. As noted earlier, there should be no overlap in revenue sources that would create a situation where the same property is provided a credit for the State created fee.

Advantages

(1) Provides a reliable, sustainable and dedicated funding source and an organizational structure to address stormwater pollution sources to comply with regulatory programs.
(2) Uses funds generated locally or regionally to implement local or regional clean water improvement projects.
(3) Can address pollution sources at a watershed-scale to better target the sources of runoff and to provide more flexibility in finding cost-effective pollution control strategies.
(4) Offers an equitable method to generate revenues. Revenues are derived from landowners whose properties generate runoff and cause water quality impacts locally and regionally. Landowners also share in the water quality benefits achieved from the implementation of clean water improvement projects.
(5) Helps promote and potentially accelerate water quality improvement by employing a rate structure that encourages property owners to reduce the amount of stormwater runoff being generated from their properties by implementing stormwater treatment practices. An analysis of the City of Ann Arbor, Michigan's stormwater utility, for example, found that its fee system, tiered into size categories based on impervious cover, was

[82] The three stormwater utilities in Vermont are in South Burlington, Burlington and Williston. Shelburne contracts with the South Burlington utility to provide some stormwater management services.
[83] Campbell, C. Warren, et. al., "Western Kentucky University Stormwater Utility Survey."

incentivizing property owners to install stormwater treatment practices on site to reduce the impervious cover fees they were paying.

(6) Nationally, stormwater fees have been leveraged by local utilities to pay debt service on bond issues, both on standalone basis and combined with wastewater revenues.

(7) Increases public awareness about the district or utility's stormwater management system.

(8) Could remove the requirement that property owners, within the jurisdiction of a utility or district that are subject to an annual stormwater operating permit, hold an individual permit and pay annual stormwater permit fees. Municipalities would need to assume full legal responsibility for the municipal stormwater system under a state permit, take on the responsibility to manage those projects within its jurisdiction and levees fees through a utility to comply with its state stormwater permit requirements. [84]

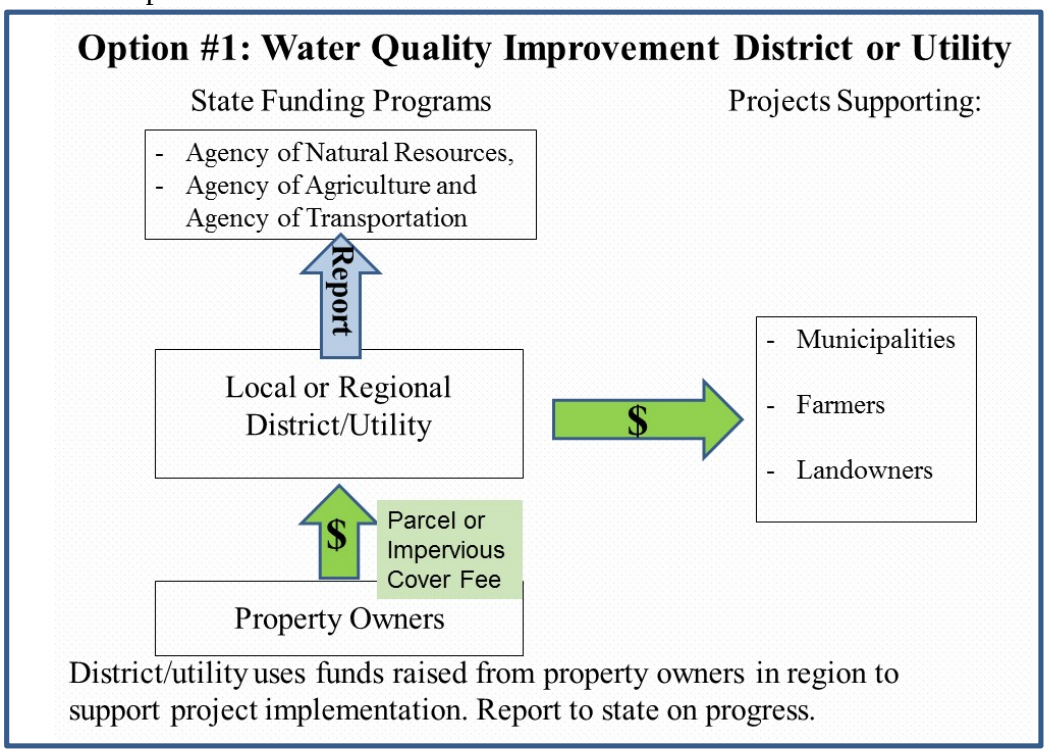
Disadvantages:

(1) It takes time to develop a fee system, conduct outreach to property owners and establish an ordinance.

(2) It is a challenge to establish a fee system with a rate structure that is acceptable to property owners and provide enough revenues to construct, manage and operate stormwater infrastructure. A fee system may provide adequate funds for operations and maintenance, but may not initially generate enough revenues to support construction of new stormwater systems that are necessary to comply with state and federal permits.

(3) Creates a need to establish a differential rate for areas with and without a utility and to establish a certification system to ensure a minimal level in the delivery of services, implementation of practices, and tracking performance.

(4) Requires some administrative costs at the State level to help support, track and report on utilities' performance.



[84] 10 V.S.A. § 1264, Section (d)(2).

Administration Option #2: Clean Water Partnership Block Grant Program

The Clean Water Partnership Block Grant Program uses an outcome-based block grant to outsource implementation to a regional partner, such as regional planning commissions, natural resource conservation districts, extension services or another regional or statewide partner. Similar models include the Department of Environmental Conservation's (DEC's) partnership with the regional planning commissions, as required under the Act 64 of 2015, to deliver education, outreach and planning assistance to municipalities and other partners in the development of tactical basin plans.[85] Another model is the Agency of Agriculture, Food and Markets (AAFM's) partnership with the University of Vermont (UVM) Extension to deliver technical trainings on agronomic practices (e.g., cover crops, no-till practices).
The State Agencies would be responsible for developing the block grant program with criteria for awarding the grant as well as performance measures for the grant implementation.

Funding Sources and Functions

Funds would be collected via either parcel or impervious surface fees from residents and businesses within their jurisdictions or through other revenue sources. The State then uses State grant and contract programs to distribute the block grants. The partner would be responsible for project development, design, and implementation. Other tasks for the grantee include providing project oversight, evaluating the satisfactory completion of deliverables, verifying outcomes and reporting results back to the State for tracking purposes.

Advantages:

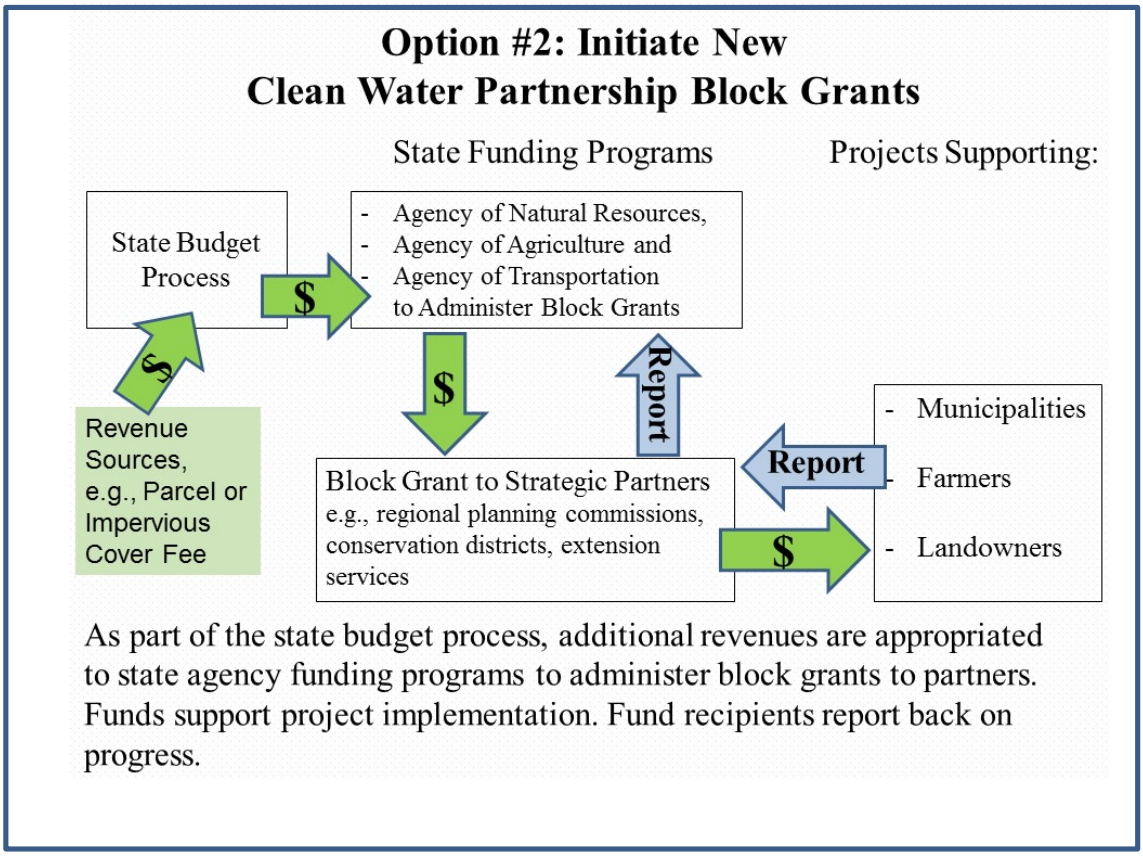
(1) The block grant uses partners outside of state government to achieve results, which enhances relationships with partners and potentially improves delivery of services locally.
(2) Minimizes need for additional state resources.
(3) Local or regional clean water districts or stormwater utilities are eligible for funding.
(4) Allows for the ability to leverage additional federal funds that do not supply any form of administration, such as the U.S. Department of Agriculture's Regional Conservation Performance Partnership (RCPP) program.

Disadvantages:

(1) Creates some duplication with the state agency funding programs. Both the State and partnering organizations will have similar business systems in place to manage grants and contracts.
(2) Produces some administrative and oversight costs to: (a) develop and manage grant agreements, (b) ensure no duplication of effort geographically and substantively and (c) track and outcomes.

[85] Tactical Basin Plans are Vermont's scientific process for identifying priority projects to reduce pollution loads to surface waters across all sectors including developed lands, road-related developed lands, agriculture, natural resources restoration for water quality improvements and flood mitigation, municipal wastewater facility upgrade needs.

(3) Requires coordination with the state agencies to ensure that priorities for funding continue to be based on scientific assessment via the tactical basin planning process and that implementation is being closely tracked for reporting purposes.
(4) Does not incentivize the creation of stormwater utilities, an effective model to managing stormwater runoff.



Administration Option #3: Municipal Clean Water State Aid Program

This option uses the Vermont Transportation Agency's (VTrans) General State Aid to Town Highways as a model for distributing funds directly to municipalities and stormwater utilities (described in Option #1 above) to assist in compliance with the state stormwater permits. VTrans' General State Aid program apportions town highway aid to each municipality using a formula that is based on the miles of class 1, 2 and 3 town highways a municipality manages. A new clean water state aid program could be designed using a formula to determine how to distribute funds to a partner, municipality or utility. For example, the formula could be based on the number of priority road segments and number of municipally-owned developments that will need treatment under new state stormwater management permits.

Funding Sources and Functions

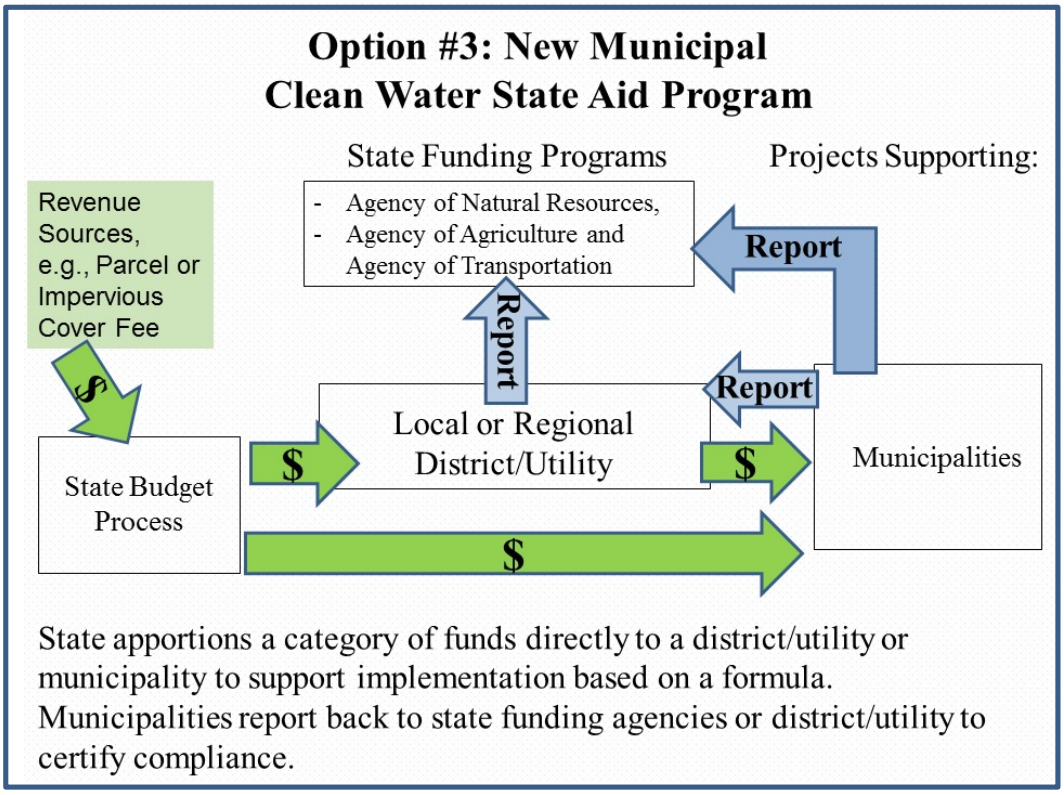
Under a "Municipal Clean Water State Aid Program" funds could be collected via either parcel or impervious surface fees from residents and businesses within their jurisdictions or through other revenue sources. The State then distributes the funds via the new Clean Water State Aid Program. Municipalities would implement the projects and certify on an annual basis that the monies were used solely for the construction, improvement and maintenance of state-approved, priority projects.

Advantages

(1) Municipalities would not need to apply for grants to help them pay for project implementation, thereby avoiding the administrative costs associated with applying for grants.
(2) Local or regional clean water districts or stormwater utilities are eligible for funding.

Disadvantages

(1) Presents some administrative costs to oversee the distribution of the funds, educate municipalities in how to use the funds and ensure adequate reporting for compliance purposes.



Administration Option #4: Enhanced Management Using State Funding Programs

This option builds on the existing structure that relies on current State Agency funding programs to implement outcome-based, priority projects. Current State Agency funding programs are supported by state appropriations and federal grants. The anticipated costs of this model are outlined below.

	ANR	AAFM	VTrans
Current Cost	4 FTEs to manage $6M	4 FTEs to manage $3M	2.5 FTEs to manage $3.7M
Estimated Incremental Cost	1 FTE to manage each additional $2M in funds	1 FTE to manage each additional $500,000 in funds	1 FTE to manage each additional $1.5M in funds

Funding Sources and Functions

Funds are collected via either parcel or impervious surface fees from residents and businesses within their jurisdictions or through other revenue sources. The State uses existing grant and contract programs to distribute the funds. This is the current model for how new revenues are distributed for project implementation.

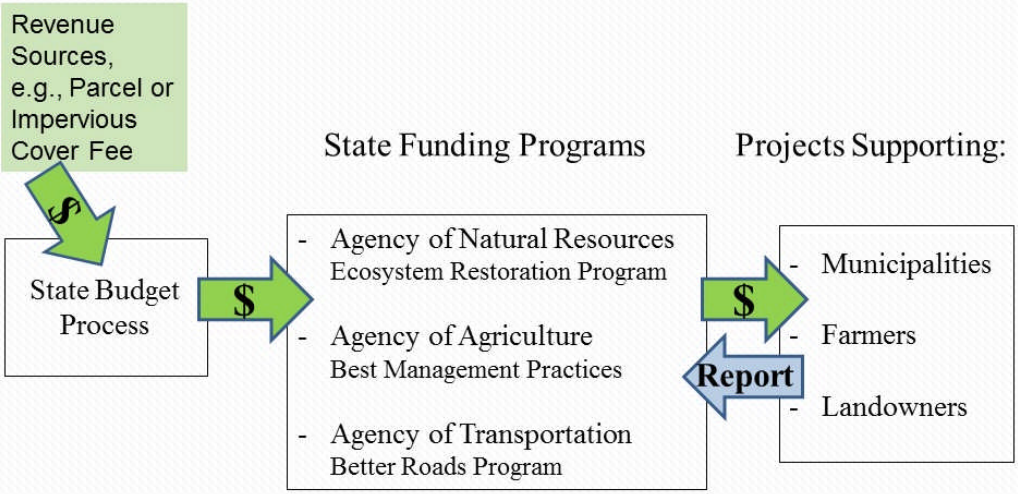
Advantages:

(1) Takes advantage of the current expertise and organizational structure. The three principal agencies involved in supporting implementation of clean water improvement projects already have clean water funding programs in place: DEC's Clean Water Initiative Program manages Ecosystem Restoration Program grants, VTrans manages a number of grant programs, including the Vermont Better Roads Program and AAFM offers agricultural best management practices grants.
(2) Supports continued collaboration among state agencies to establish consistent performance measures for targeting and reporting and use DEC's Tactical Basin Planning process to identify and prioritize investments.
(3) Local or regional clean water districts or stormwater utilities are eligible for funding.
(4) Allows for the ability to leverage additional federal funds that do not supply any form of administration, such as the U.S. Department of Agriculture's Regional Conservation Performance Partnership (RCPP) program.

Disadvantages

(1) An assessment to the Clean Water Fund to cover administrative costs will cause a slight reduction in the overall level of funds available for implementation.
(2) Does not incentivize the creation of stormwater utilities, an effective model to managing stormwater runoff.

Option #4: Use Current Funding Programs to Pass Through Funds for Implementation



As part of the state budget process, additional revenues are appropriated to current state agency funding programs to support implementation of priority clean water projects. Fund recipients report back on progress. Information used for tracking purposes.

Conclusion

Clean water is a shared resource, belonging to all Vermonters. The quality of our waters is directly linked to Vermont's economy, the state of our environment, and a healthy future.

When assessing the financing plan for any State asset, the Treasurer's Office routinely considers what is the best value to the taxpayer. Cleaning our waters now is the best value to the taxpayer. Deferring actions down the road will only further impair this critical asset, requiring increased remediation at a greater cost to the taxpayer.

The 20-year total clean water compliance costs, as defined in the cost chapter of this report, are $2.3 billion. Revenues during that time are projected at $1.06 billion, leaving a 20-year total gap of $1.25 billion. Annual compliance costs are estimated at $115.6 million, revenues at $53.2 million, leaving a gap of $62.4 million per year. Estimates encapsulate all public and private costs, including from municipalities, farms, private residences and businesses, and the State.

An "all-in" approach requires shared responsibility for the costs across all sectors. If the State does not subsidize a portion of these costs, they will be fully absorbed by municipalities and businesses. Given that fact, the State should attempt to address a significant portion of the cost burden related to the regulatory, or Tier 1, costs. As defined in the cost chapter of this report, Tier 1 costs are $82.2 million annually, projected annual Tier 1 revenues are $33.7 million, and a Tier 1 annual gap of $48.5 million remains.

There is substantial public benefit in subsidizing a portion of these costs. The funding and financing plan laid out in this report attempts to provide more than $25 million per year for the next two years of implementation, with the opportunity to expand as needed and as the proposed long-term options and programs take effect.

The clean water funding and financing plan contained in this report incorporates the following concepts:

(1) Reduce overlapping fee structures to minimize entities paying twice for the same service activity;
(2) Incentivize local and regional decision making and implementation;
(3) Incentivize public and private entities to make water quality improvements; and,
(4) Maximize on-going funding opportunities in the form of utility programs and revolving fund sources.

Specifically, the Treasurer's Office recommends the following approach:

(1) Establish a long-term funding plan;
(2) Establish a two-year interim funding plan for high priority projects to facilitate water quality implementation efforts and allow for the long-term plan to be built; and,
(3) To the extent possible, use existing resources.

State Agencies and stakeholders working closely with the Treasurer's Office on this clean water report identified that developing the capacity needed to implement the recommendations contained in this report will take time. Therefore, interim (two-year) and long-term plans were developed.

The proposed long-term model would incorporate the following elements:

(1) Incentivize the creation of additional local and regional stormwater utilities or similar models;
(2) Assist in expanding the capacity of existing local and regional stormwater utilities;
(3) Advance cost-effective policies and programs, such as integrated planning and permitting, a consistent application of current use, and/or a restructuring of State grant programs;
(4) Utilize the existing Clean Water State Revolving Loan Fund (CWSRF) to increase the amount of subsidized capital available to wastewater and stormwater utilities and other authorized borrowers;
(5) Support efforts to partner with utilities, municipalities and third party entities to fund and utilize new technologies, such as biodigesters (this could include use of private activity bond allocations);
(6) Allow the purchase of easements of high value properties to reduce non-point source pollution; and,
(7) Provide funding and loan forgiveness for agricultural entities to encourage improved agricultural practices.

The interim plan (years one and two of the 20-year plan) is to generate a minimum of $25 million per year of additional funding). During this period, the larger utility-based program outlined in the chapter on" Stormwater Utilities and Public – Private Partnerships" is to be developed and implemented. The Treasurer's Office has undertaken a series of reviews and expects that the interim plan can be funded through existing resources. These include the following:

(1) Reprioritize existing general obligation debt issuance to incorporate additional water quality dollars, including those directed to municipalities consistent with Capital Debt Affordability Advisory Committee (CDAAC) recommendations— $15 million annually (for two years) (page 42);
(2) Use portion of Transportation Infrastructure Bond revenue to support local transportation needs and related clean water requirements —$5 million annually (for two years) (page 44);
(3) Possible use of Municipal Equipment Loan Fund (MELF) to support clean water compliance (page 47); and,
(4) Extend the Clean Water Surcharge on property transfers one additional year, through State fiscal year 2019—$5 million annually (page 62).

There are elements of the long-term model broadly defined above that could also be included in the interim plan. These include the following:

(1) Reallocate loan rate structure for the Clean Water State Revolving Fund (CWSRF) to use 1% to incentivize clean water projects (page 48);
(2) Consider "pairing" projects using a portion of the 1% interest change or reducing the interest rate for specific projects (page 51);
(3) Create an affinity card program to increase awareness and engagement of in-state and out-of-state visitors (page 63);
(4) Launch integrated planning and permitting to allow municipalities to address clean water requirements in a prioritized and comprehensive manner (page 21);
(5) Adjust current use to ensure consistent consideration of riparian buffers on forest and agricultural lands (page 28); and
(6) Restructure State grant programs to consider clean water compliance as a factor (page 33).

Additional clean water long-term compliance opportunities include:

(1) Consider allocating a portion of future transportation and general capital appropriations, including general obligation bonds (G.O. bonds), to long-term clean water compliance needs (page 47);
(2) Work with private sector businesses to explore use of Private Activity Bond financing (page 47);
(3) Consider incentives for expanded use of Clean Water State Revolving Funds (CWSRF) (page 52);
(4) Consider future leveraging (Bonding) of CWSRF, depending on cash flow analysis (page 54);
(5) If the General Assembly plans to use existing resources, use of existing resources must be predictable, reliable, and built into base budget (page 64); and,
(6) If existing resources do not provide target subsidy, the General Assembly should consider adopting parcel and/or impervious surface fees (page 64).

The Treasurer's Office does recommend that existing resources continue to be an option, but any resource must be predictable, consistent, and reliable, and must include a legislative commitment to fund over the entire 20-year period. A long-term capital plan for our waterways cannot be funded in an unplanned, undisciplined manner.

It is appropriate that the two new revenue sources recommended for consideration, a parcel and impervious cover fee[86], are aligned with the recognition of universal stormwater runoff and assure that everyone contributes toward clean water improvements. The administration of these

[86] This will need to be determined by the General Assembly. That said, a combination of per-parcel and impervious surface fees are possible, but only one fee for a property. No duplicate or additive fees.

revenues must comply with eligible uses for the funds generated, as specified in Act 64 of 2015, and promote efficient and effective management of the Clean Water Fund. Eligible uses are to:

(1) Assist in complying with water quality requirements and implementation of projects or programs;
(2) Fund staff positions when necessary to achieve or maintain compliance when existing revenue sources are inadequate to fund those positions; and
(3) Provide partner organizations support for the implementation of water quality projects or programs.[87]

Four administration options for managing an enhanced level of clean water funding are presented in the chapter "Assessing & Administering New Revenues" in this report. Alternate hybrid options could also be considered to help meet local, regional and statewide clean water improvement needs. All options are outcome based and focused on maximizing environmental performance to reduce water pollution.

The Environmental Protection Agency's Lake Champlain Total Maximum Daily Load and Act 64 of 2015, encourage cost-effective and flexible compliance strategies. These strategies and approaches can help to drive down overall compliance costs. Additional options are outlined in the "Cost-Effective Clean Water Implementation" chapter.

Like any investment, early, proactive and disciplined practices are the key to success. A comprehensive approach and funding and financing plan is needed to create a sustainable track towards achieving our clean water goals. The Treasurer's Office, in providing these recommendations and options, recognizes that it has neither revenue generation nor appropriation authority. In the end, the decisions will be up to the Administration and the General Assembly. The Treasurer's Office and State Agency partners remain committed to working with all parties to achieve our clean water goals.

[87] 10 V.S.A. § 1387 (2015 Act 64 § 37).

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