

Examining Vermont State Spending on the Dairy Industry from 2010 to 2019

A report from the Vermont State Auditor's Office



*Photo courtesy of Diane St Clair,
Animal Farm, Orwell, Vermont*

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Investigative Report 21-02

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Investigative Report: An investigative report is a tool used to inform citizens and management of issues that may need attention. It is not an audit and is not conducted under generally accepted government auditing standards. An investigative report has a substantially smaller scope of work than an audit. Therefore, its conclusions are more limited, and it does not contain recommendations. Instead, the report includes information and possible risk-mitigation strategies relevant to the entity that is the object of the inquiry.

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Executive Summary

For the last century, dairy farming has shaped Vermont's agricultural economy and landscape. In 2017, milk sales accounted for 65% of Vermont's agricultural sales, and dairy farms operated on 52% of Vermont's farmland. For many, dairy is an important part of Vermont's identity. For decades, however, Vermont dairy farms have struggled to remain profitable, and many have closed or consolidated. The number of dairy farms in Vermont decreased from 4,017 farms in 1969 to 636 farms in 2020. In addition to economic challenges, some dairy farming practices are linked to harmful environmental impacts. Notably, phosphorus pollution from dairy farms contributes to water quality degradation to the detriment of human health, wildlife, and Vermont's economy.

In response to these challenges, a complex web of State and Federal policies and programs has been put in place to regulate and support the dairy industry. This report describes and quantifies Vermont State spending on programs that 1) offer direct benefits to dairy farmers and/or 2) aim to mitigate the environmental impacts of some dairy farming practices. The report is intended to serve as a resource for State policymakers, program managers, and the public as they consider the future of dairy in Vermont and what role public funds should play.

From State fiscal year (FY) 2010 to 2019, we estimate that Vermont spent more than \$285 million on programs and policies that support the dairy industry and/or address detrimental environmental impacts of dairy farming. In FY19, the most recent year of our analysis, spending totaled \$35 million:



Agricultural Tax Expenditures: Dairy farms received an estimated \$13.4 million benefit from State agricultural tax expenditures (e.g. credits, exemptions, and exclusions) in FY19. The largest benefit came from the Sales and Use Tax exemption for Agricultural Inputs, which includes items such as feed, livestock, and fertilizer.



Farmland Conservation Incentives: In FY19, dairy farmers received \$13 million in State tax savings and grants to keep their land in agricultural use. Most of that benefit came from the Current Use Program, administered by the Department of Taxes, followed by the Farmland Conservation Program, administered by the Vermont Housing and Conservation Board (VHCB).



Grants and Service Offerings to Support Dairy Farm Businesses: The State spent \$983,000 to provide business grants and technical assistance to dairy farms in FY19. Technical assistance grants provided by the VHCB and the Agency of Agriculture, Food and Markets (Agency of Agriculture) make up the largest portion of State spending.



Discounted Fees: Farms benefit from a number of permit and fee reductions and exemptions. Calculating foregone revenue from these policies can be challenging. Nonetheless, **we estimate \$274,000 of foregone revenue from reduced fees for dairy farm truck registrations and anaerobic digester registrations in FY19.**



Grants and Service Offerings to Address the Environmental Impacts of Dairy Farming: In FY19, the State spent \$7.4 million to provide grants and technical assistance to address detrimental environmental impacts of some dairy farming practices. The largest program was the Best Management Practices Program, administered by the Water Quality Division at the Agency of Agriculture.

Introduction

This report provides an overview of Vermont State spending from 2010 to 2019 used to 1) support and subsidize dairy farming and 2) mitigate detrimental environmental impacts of dairy farming. The State Auditor's Office (SAO) initiated this inquiry to contextualize aggregate dairy-related expenditures over time. While Vermont is home to different types of dairy farms (cow, sheep, goat) and produces many value-added dairy products, this report is primarily focused on dairy farms that produce milk from cows. This investigative report makes no judgements about State spending and offers no recommendations.

Background

Dairy farming has shaped Vermont's agricultural economy, landscape, and identity

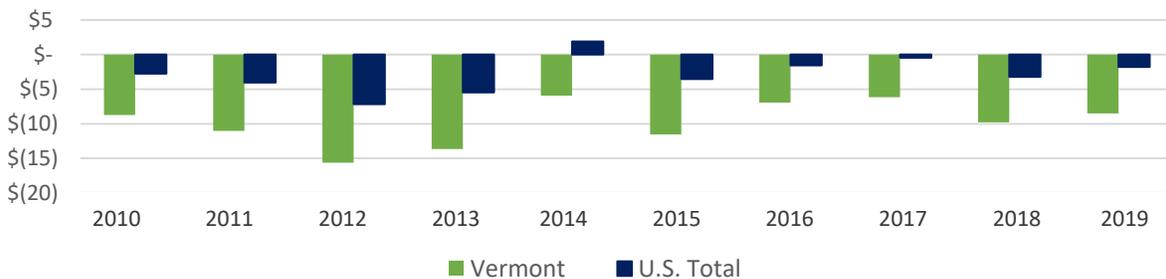
For more than 100 years, dairy farming has been central to Vermont's agricultural economy.¹ In 2017, milk sales (\$505 million) accounted for 65% of Vermont's agricultural sales, and dairy farms used 52% of Vermont farmland.^{2, i} In addition to milk sales, Vermont is well known for its value-added dairy products, ranging from products by large brands like Ben and Jerry's to small-scale artisanal cheeses.³ Historically, dairy farms have played an important role in rural economies, supporting businesses such as feed suppliers, veterinarians, and agricultural equipment dealers.^{4, 5} While agriculture only contributes approximately 2% of Vermont's Gross Domestic Product,⁶ for many Vermonters, agriculture – and specifically dairy – is important to the state's identity.^{7, ii} It is also part of Vermont's appeal beyond the state; Vermont's association with scenic farms, fresh foods, and pastoral beauty helps attract tourists.⁸

Facing challenging market conditions, many Vermont dairies have closed, consolidated, or specialized

For decades, dairy farms across the country and in Vermont have struggled to remain profitable. The price of milk, which is regulated by Federal policy, has been volatile over the last decade, and oversupply has led to low prices (see Appendix A).⁹ The United States Department of Agriculture's (USDA) Economic Research Service estimates that, on average, sales from dairy farms do not cover the total cost of production. This trend is more pronounced in Vermont (see Figure 1).¹⁰

Figure 1. Net returns per hundredweight of milk produced

Gross income less total cost of production



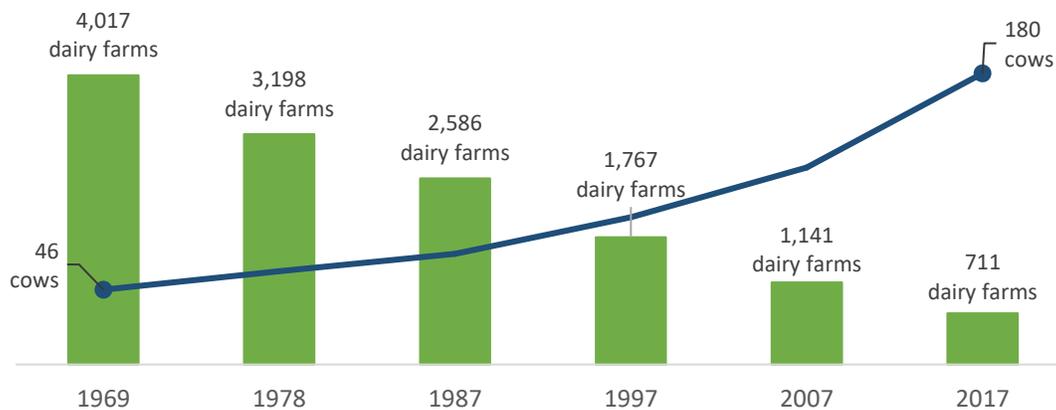
Source: USDA Economic Research Service, Milk Cost of Production Estimates.

ⁱ All sales from Vermont dairy farms, including milk, cattle, and crops, accounted for 74% of Vermont's total agricultural sales in 2017. Woodland was not included in the analysis of Vermont's farmland.

ⁱⁱ In the 2019 Vermont Rural Life Survey conducted by Vermont PBS and Vermont Public Radio, 93% of respondents said that the dairy industry was very or somewhat important to Vermont's sense of self.

Across the country, many dairy farms have gone out of business, especially smaller and mid-sized farms. Many of the remaining farms have consolidated into larger operations to leverage economies of scale.¹¹ Consistent with national trends, the number of dairy farms in Vermont has dropped dramatically from 4,017 farms in 1969 to 636 farms in 2020, an 84% decrease (see Figure 2).^{12, 13} Mirroring this trend, the number of acres used by dairy farms has decreased by 69% from 1969 to 2017 (see Appendix A).^{2, 13}

Figure 2. Number of dairy farms in Vermont, Average number of milk cows per dairy farm



Source: USDA National Agricultural Statistics Service (NASS), 1969 to 2017 Census of Agriculture.

Although dairy farms in Vermont are small compared to many other states, the average Vermont dairy farm grew considerably larger as farms consolidated.^{iv} In 1978, 89% of dairy farms in Vermont had fewer than 100 milk cows.¹⁴ By 2017, that percentage had dropped to 62%, with a notable rise in the number of dairy farms with more than 500 milk cows.² While farms with more than 500 cows make up a small percentage of Vermont’s dairy farms, they account for a significant portion of the state’s milk cows and milk sales. In 2017, the 59 dairy farms with more than 500 cows accounted for almost half of Vermont’s milk cows and milk sales (see Figure 3).¹⁵

ⁱⁱⁱ Consolidation in the dairy industry is happening more rapidly than other agricultural sectors, but it is not unique to dairy.¹¹ The [USDA Economic Research Service](#) found that globally, production of agricultural inputs (such as crop seeds, chemicals, and farm machinery) is dominated by a few large companies. Although Vermont-specific data is limited, a 2013 [Vermont Farm to Plate Report](#) notes that many Vermont farmers purchase supplies that originated out of state. In 2019, the [Vermont Milk Commission](#) reported that several dairy-related businesses (e.g., feed suppliers and equipment repair services) in Vermont have closed in the last ten years, and businesses that remain report high accounts receivable (money owed) from dairy farmers.

^{iv} Both the average herd size and the average number of acres per dairy farm in Vermont have increased (see Figure 2). In 1969, the average dairy farm was 345 acres; in 2017, the average dairy farm was 610 acres.^{2, 13}

Figure 3. Distribution of cows in Vermont by herd size



Source: USDA NASS, 1978 and 2017 Census of Agriculture.

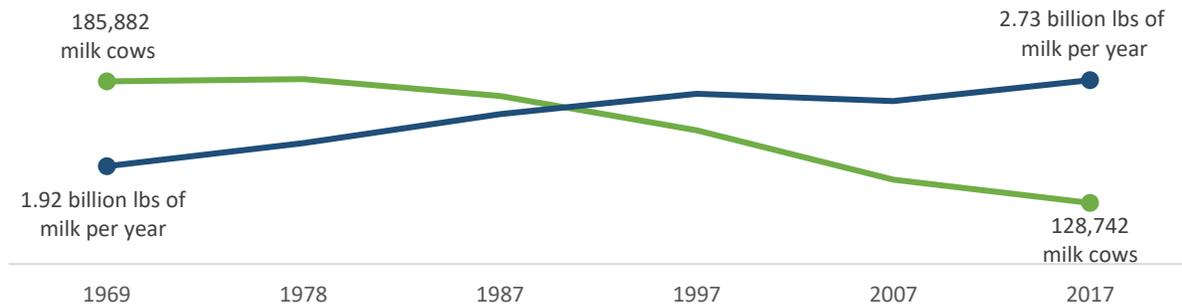
In the last thirty years, organic dairy has emerged as an important sector of Vermont’s dairy industry. The number of certified organic dairy farms in Vermont has grown considerably, from three farms in 1993 to at least 187 farms in 2019.^{16, v} Organic dairy farms tend to be smaller and produce less milk per cow but receive a higher premium for organic milk.¹¹ The average Vermont organic dairy farm had 75 cows in 2016,¹⁷ compared to an average of 215 cows per conventional dairy farm.² Despite making up more than a quarter of Vermont’s dairy farms, organic dairies produced only 9% of Vermont’s milk in 2018,⁴ and organic sales only accounted for 12% of Vermont’s dairy sales in 2017.² Higher prices and supply management systems have helped organic dairies to be more profitable; however, oversupply and reduced prices have challenged the organic market, and the number of organic dairy farms has decreased in recent years.^{4, 12, 18}

Despite the decrease in the number of dairy farms and cows in Vermont, milk production has increased over time.^{19, vi} As farmers adopt new technologies and farming practices, farms have become more efficient, and milk production per cow has more than doubled since 1969 (see Figure 4).¹⁸ Larger conventional farms tend to confine their cows in large barns and lots, while organic dairy farms are required to pasture their cows for at least 120 days per year.^{11, 20}

^v This figure reflects organic dairies certified by the Northeast Organic Farming Association (NOFA) of Vermont. The number of organic dairies certified by NOFA peaked at 203 farms in 2016.

^{vi} While there has been an increase in milk production over time, milk production has decreased in some years, notably from 2018 to 2020.

**Figure 4. Number of milk cows in Vermont,
Pounds of milk produced per year in Vermont**



Sources: USDA NASS, 1969 to 2017 Milk Production Survey; USDA NASS, 1969 to 2017 Census of Agriculture.

The dairy workforce is also changing. With shortages of domestic workers willing to work on dairy farms, Vermont dairy farms have increasingly hired lower-wage migrant workers.^{21, 22} A farmworker advocacy group, Migrant Justice, was formed to advocate for improved working conditions for migrant dairy workers, notably signing an agreement with Ben and Jerry’s in 2017.²³ While migrant workers tend to be younger,²¹ almost half of dairy farm producers were 55 or older in 2017, raising questions about what will happen to the farms when they retire.^{2, vii}

Pollution from dairy farms has contributed to environmental and public health problems in the state

Farming practices not only impact milk production but also the level and type of impact that dairy farming has on the environment. When farmers confine their cows and increase their herd sizes, it concentrates manure production, which can create manure management and storage challenges. Farmers can utilize some manure to fertilize their fields and, in some cases, generate electricity. However, excess manure runoff leads to water pollution.²⁴ In addition, the majority of dairy farmers use fertilizers and chemicals in crop production. Excess nitrogen and phosphorus from manure and fertilizer runoff can cause harmful cyanobacteria blooms and create dead zones in bodies of water, as well as release air pollutants such as ammonia and nitrogen oxide. This has harmful impacts for both wildlife and human health.²⁵ In 2017, Vermont dairy farms accounted for 78% of Vermont cropland treated with manure, 73% of cropland treated with fertilizer, and 78% of cropland treated for weed control.²

Agricultural pollution is a significant source of non-point source phosphorus in Vermont. According to a 2016 report from the Environmental Protection Agency (EPA), agriculture was the largest source of phosphorus in Lake Champlain, accounting for 41% of the phosphorus load from Vermont from 2001 to 2010.²⁶ Agriculture is also the most common source of pollution in Vermont’s rivers and streams; in 2018, agricultural activities impaired or altered 139 miles of Vermont rivers and streams.²⁷ Each year, State employees and trained volunteers report hazardous amounts of cyanobacteria (“high alert”) during routine water inspections, leading to beach closures.^{28, viii} In addition to the environmental and public health impacts, water pollution has other economic impacts, such as reductions in income from tourism and negative impacts to property values.²⁹

vii The USDA Census defines a producer as a person who is involved in making decisions for the farm operation.

viii Of the 1,855 inspections conducted in 2018, 159 were considered “high alert,” meaning that shorelines had cyanobacteria in dense scums and that the water was not safe for recreational use.

The Federal Policy Context

The Federal Government has implemented a series of complex policies and programs designed to regulate and support the dairy industry.³⁰ Some programs are specific to dairy, while others support agriculture more broadly. While these policies have evolved over time, some of the key programs in place today include:

Milk Pricing: The Federal Government controls the price that farmers receive from dairy processors through a complex pricing system known as the Federal Milk Marketing Order. In recent years, low prices and price volatility have made it difficult for Vermont farmers to meet the costs of production.⁴

Risk-Management and Insurance Programs: Dairy farmers can enroll in several voluntary risk-management programs offered by the Federal Government. The Federal Crop Insurance program provides subsidized insurance to protect farmers from losses.³¹ Milk and corn are two of the largest commodities enrolled in Vermont and accounted for 79% of premium subsidies and 85% of indemnity payments in 2019.³² The Dairy Margin Coverage Program also offers protection to dairy farmers if the margin between the price of milk and the cost of feed falls below a certain threshold (see Table 1).^{ix, 33}

Table 1. Select Federal Funds for Vermont Farms in 2019

Federal Program	2019 Federal Expenditures in Vermont
Federal Crop Insurance, Corn and Milk	\$1.4 million in premium subsidies & \$2.8 million in indemnities
Dairy Margin Coverage Program	\$7.2 million
Environmental Quality Incentives Program	\$13.5 million
Agricultural Land Easement Program	\$3.3 million

Environmental Grants: Administered by the USDA's Natural Resources Conservation Service (NRCS) the Environmental Quality Incentives Program provides financial incentives and technical assistance to farmers to address natural resource concerns (see Table 1). In addition to this and other agriculture-specific Federal programs, Vermont receives Federal support from the Environmental Protection Agency (EPA) to address water quality issues across sectors.³⁴

Farmland Conservation: The Agricultural Land Easement Program, administered through NRCS, provides funding to purchase land easements to preserve working agricultural lands and limit non-agricultural uses of the land (see Table 1).³⁴

Technical Assistance and Promotion: Vermont received funding from the USDA to create the Vermont-based Northeast Dairy Business Innovation Center, one of three Federally funded centers, to provide technical assistance and grants to dairy farmers and value-added processors in the Northeast. The program launched in February 2020, with \$6.59 million in funding available for projects through 2023.³⁵

Purchasing Dairy Products for Nutrition Programs: The Federal Government purchases surplus dairy products, which are distributed to institutions such as schools and food banks. In Federal fiscal year 2019, \$499 million of dairy products were purchased across the country.³⁶

^{ix} Dairy Margin Coverage payments to Vermont are estimated to be \$2 million for Program Year 2020. As of May 3, 2021, the USDA estimates that Vermont has received more than \$8 million in Program Year 2021.

Vermont State Spending on the Dairy Industry

The State of Vermont funds policies and programs to support and regulate the dairy industry, many of which work in tandem with their Federal counterparts. This report describes and quantifies State expenditures across agencies to identify State-funded programs that offer direct benefits to dairy farmers (Part I) and/or mitigate the environmental impacts of some dairy farming practices (Part II). We defined State expenditures as the use of State funds collected through State taxes or State issued bonds, or the loss of revenue due to an exemption or reduction in State taxes or fees. Details about the report's scope and methods can be found in Appendix B. **From State fiscal year (FY) 2010 to 2019, we estimate that Vermont spent over \$285 million on dairy-related programs and policies. In FY19, we estimate that State expenditures related to the dairy industry totaled over \$35 million.**

Table 2. Estimated Dairy-related State Spending, FY10-19

Figures rounded to the nearest \$1,000

	State Expenditure	Agency, Department, or Division	Dairy-related Expenditures, FY10-19	Dairy-related Expenditures, FY19
Part I: State Spending on Programs and Policies that Support and Subsidize Vermont's Dairy Industry	Sales and Use Tax Exemptions	Department of Taxes	\$152,078,000	\$13,397,000
	Current Use Program	Department of Taxes	\$81,077,000	\$9,733,000
	Farmland Conservation Program	Vermont Housing and Conservation Board	\$17,707,000	\$3,288,000
	Milk Margin Protection Program Premium Payments	Agency of Agriculture	\$450,000 <i>One-time allocation</i>	\$450,000
	Working Lands Enterprise Initiative & Local Food Market Development Grants	Development Division, Agency of Agriculture	\$1,564,000	\$292,000
	Farm and Forest Viability Program	Vermont Housing and Conservation Board	\$1,716,000	\$241,000
	Reduced Registration Fee for Farm Trucks	Department of Motor Vehicles	\$239,000	\$239,000
	Reduced Fee for Anaerobic Digesters	Department of Environmental Conservation	\$70,000	\$35,000
	Income Tax Credits and Exemptions	Department of Taxes	\$171,000	\$17,000
		Subtotal		\$255,072,000
Part II: State Spending to Reduce or Mitigate the Environmental Impact of Dairy Farming	Water Quality Grants, Inspections, and Enforcement	Water Quality Division, Agency of Agriculture	\$29,727,000	\$7,181,000
	Farm and Forest Viability Program	Vermont Housing and Conservation Board	\$602,000	\$175,000
		Subtotal	\$30,329,000	\$7,356,000
	Total		\$285,401,000	\$35,048,000

Note: This table reflects State expenditures that we were able to quantify. There are instances in which data availability or reliability limited our ability to quantify other dairy-related State expenditures or tax expenditures such as corporate income taxes, capital gains, and diesel fuel tax. In some instances, data was only available for a limited number of years. More detail is provided in the sections below.

Part I: State Spending on Programs and Policies that Support and Subsidize Vermont's Dairy Industry

This section details State-funded programs and policies that provide a direct monetary benefit to dairy farmers and/or fund services that are provided to dairy farmers.^x These programs and policies fall into four categories: 1) agricultural tax expenditures, 2) farmland conservation incentives, 3) grants and service offerings, and 4) discounted fees for farms.

Agricultural Tax Expenditures

State policymakers use taxes to both generate revenue and advance policy. Tax policies, whether imposing a tax or offering tax credits or exemptions, can be used to incentivize or discourage certain activities, industries, and behaviors. The foregone revenue from tax credits and exemptions, called “tax expenditures,” provides a financial benefit to specific groups of taxpayers and has the same fiscal effect on the State’s budget as direct appropriations.³⁷ Vermont has several tax expenditures that promote and subsidize agriculture and, therefore, dairy farming.

Table 3. Estimated Dairy-related Tax Expenditures, FY10 to FY19^{xi}

Figures rounded to nearest \$1,000

Vermont State Tax	Agriculture-related Tax Expenditure	Dairy-related Expenditures, FY10-FY19	Dairy-related Expenditures, FY19
Sales and Use Tax	Agricultural Inputs Exemption, 32 V.S.A. § 9741(3)	\$126,134,000	\$10,885,000
	Energy Purchases for Farmers Exemption, 32 V.S.A. § 9741(27)	\$15,087,000	\$1,190,000
	Agricultural Machinery and Equipment Exemption, 32 V.S.A. § 9741(25)	\$10,857,000	\$1,322,000
Income Tax	Farm Income Averaging Credit, 32 V.S.A. § 5822(c)(2)	\$171,000	\$17,000
	Corporate Income Tax Minimum for Small Farm Corporations, 32 V.S.A. § 5832 (2)(A)	<i>Unknown</i>	<i>Unknown</i>
	Capital Gains Exclusion for Farms, 32 V.S.A. §5811(21)	<i>Unknown</i>	<i>Unknown</i>
Diesel Tax	Diesel Tax Exemption for Agricultural Purposes and Registered Farm Trucks, 23 V.S.A. § 3003	<i>Unknown</i>	<i>Unknown</i>
Property Tax	Current Use, 32 V.S.A. § Chapter 124	<i>See Farmland Conservation Incentives</i>	
Total		\$152,249,000	\$13,414,000

Note: Data availability and/or reliability limited our ability to calculate expenditures related to the corporate income tax, capital gains exclusion for farms, and diesel fuel tax exemption for agricultural purposes.

^x Programs or portions of programs that are funded through Special Fees or Federal funds are not included in the scope of this report. See Appendix B for more details.

^{xi} There are several other agriculture-related tax exemptions, including Property used in Commercial, Industrial or Agricultural Research; Whey Processing Fixtures; and Property Owned by Agricultural Societies. While these exemptions are related to agriculture, they do not apply to dairy milk production and are therefore outside of the scope of this report. See Appendix B for more details.

Sales and Use Tax Exemptions

In Vermont, retail sales of tangible personal property are subject to a 6% Sales and Use Tax unless exempted by law. While agriculture is not the only industry that benefits from Sales Tax exemptions, there are a number of tax exemptions specifically designed to support Vermont's agricultural economy. The largest agriculture-related Sales Tax exemption is for Agricultural Inputs. Vermont law 32 V.S.A. § 9741(3) defines a specific list of items covered by this exemption, including feeds, seeds, plants, baler twine, silage bags, breeding and other livestock, agricultural chemicals, bedding, and fertilizer.

Calculating lost revenue due to Sales Tax exemptions is challenging because sellers are not required to report sales for which Sales Tax was not collected. However, the USDA conducts the Census of Agriculture every five years, which collects information from farmers about farm production, land use, demographics, sales, and expenses, among other information. While the Census does not collect information about every item covered under Vermont's Agricultural Inputs exemption, it does collect data on five key exempt expenses: animal feed, seeds and plants, livestock, chemicals and pesticides, and fertilizer. Using Vermont-specific data from the 2007, 2012, and 2017 Census, we estimate that dairy farms spent more than \$2.1 billion dollars on these expenses from FY10 to FY19.^{2, 38, 39} **Had the Vermont Sales Tax been applied to these purchases, the State would have generated more than \$126.1 million in revenue from FY10 to FY19.**

As described in 32 V.S.A. § 9741(27), Vermont farms are also exempted from paying Sales Tax on their energy purchases, which include electricity, oil, gas, and other fuels. As above, we used Vermont-specific data from the 2007, 2012, and 2017 Census to estimate that dairy farms spent approximately \$251 million on fuels from FY10 to FY19.^{2, 38, 39} The Census collects data about utility costs, but it is not broken down by type of utility (e.g. electricity vs. phone vs. water) so we are unable to estimate electricity expenses specifically. **Had the Vermont Sales Tax been applied to dairy farm fuel purchases, the State would have generated \$15.1 million in revenue over ten years.**

Vermont also has a Sales Tax exemption for purchases of Agricultural Machinery and Equipment [32 V.S.A. § 9741(25)]. The State's biennial [Tax Expenditure Reports](#)³⁷ estimate that this exemption results in a \$2 to \$3 million loss in revenue annually.⁸ The Census does not collect data from dairy farms about machinery and equipment purchases. However, the Census reports that Vermont dairy farms hold approximately 42% of the value of agricultural machinery and equipment in the state.^{2, 38, 39} Applying this approximation to the figures in the Tax Expenditure Reports, **we estimate that from FY10 to FY19, the**

Sales Tax Exemption for Veterinary Supplies

This report focuses on exemptions that are specific to Vermont's agriculture industry. However, dairy farms benefit from a range of other tax policies that are not specific to agriculture. One notable example is the State's Sales Tax exemption for Veterinary Supplies [32 V.S.A. § 9741(53)], which applies to both large and small animal veterinary supplies. Per the 2017 USDA Census of Agriculture, dairy farms account for 85% of agricultural medical and veterinary costs in Vermont. The State's [2019 Tax Expenditure Reviews Report](#) estimated that in FY18, the agricultural Veterinary Supplies exemption totaled \$2.3 million. Assuming that dairy farms account for 85% of agricultural veterinary supplies, **the State would have generated \$1.95 million in revenue in FY18 had they collected Sales Tax on veterinary supplies for dairy farms.**

State would have generated \$10.9 million in Sales Tax revenue had it taxed dairy farm purchases of machinery and equipment.

Income Tax Credits and Exemptions

Similar to the Federal Farm Income Averaging Credit, Vermont’s Farm Income Averaging Credit is designed to help farmers “mitigate the adverse tax consequences of fluctuating farm incomes” [32 V.S.A. § 5813 (f)]. Using data provided by the Department of Taxes, we estimate that the Vermont Farm Income Averaging Credit reduced the tax liability of dairy farmers by approximately \$17,000 annually.^{xii} **Extrapolating over ten years, this amounts to a benefit of \$171,000 for dairy farmers from 2010 to 2019.**

Per 32 V.S.A. § 5832 (2)(A), Small Farm Corporations^{xiii} benefit from a reduced Minimum Annual Tax (\$75 compared to \$300 for other businesses). In recent years, anywhere from 10 to 22 exemptions have been granted annually; however, we are unable to determine what percentage of these taxpayers are dairy farmers.

The Vermont Capital Gains exclusion allows taxpayers to exclude a portion of their realized capital gains each year from taxation [32 V.S.A. §5811(21)]. Taxpayers can choose to exclude the first \$5,000 of adjusted net capital gain income or 40% of adjusted net capital gain income. For filers that opt for the 40% exclusion, there are restrictions on the types of gains that taxpayers can claim; realized gains on real estate for primary or secondary residences, depreciable personal property, publicly traded stocks and bonds, and other publicly traded financial instruments are not allowed. However, realized gains from selling farms and personal property used for farming (e.g., agricultural equipment or livestock) are allowable.⁴⁰ While we do not have sufficient data to quantify the tax expenditure from farm-related gains, this is a notable tax benefit for dairy farmers, and the foregone revenue is likely to have increased given the large number of dairy farms that have sold in recent years.

Diesel Fuel Tax Exemption

Diesel fuel used for off road purposes (agricultural or other) or used by registered farm trucks, State or municipal entities, and non-profit public transit agencies is exempt from Vermont’s \$0.32 per gallon tax on the sale of diesel fuel [23 V.S.A. § 3003(d)(1)]. The State’s biennial Tax Expenditure Reports estimate the total annual expenditure at approximately \$164,000 in FY18 and \$131,000 in FY19.³⁷ Data for farm-specific diesel expenditures was not available.

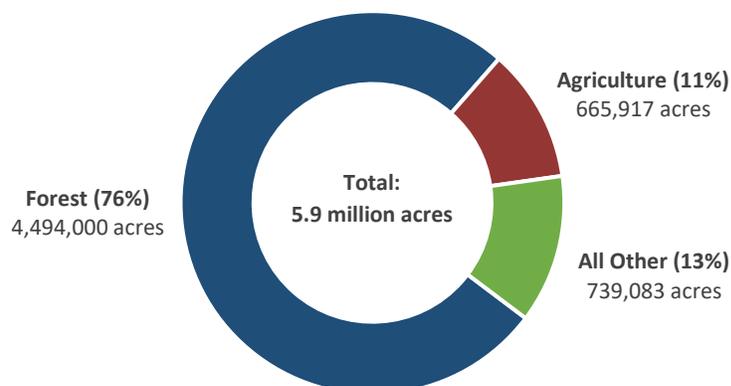
^{xii} The Vermont Department of Taxes provided aggregated data about Farm Income Averaging Credits among taxpayers who also filed a Federal Schedule F with the Dairy Cattle and Milk Production NAICS code. Three years of data were available: 2016, 2018, and 2019. Annual amounts ranged from \$12,300 to \$21,700.

^{xiii} “Small farm corporation” means any corporation organized for the purpose of farming which during the taxable year is owned solely by active participants in that farm business and receives less than \$100,000.00 Vermont gross receipts from that farm operation, exclusive of any income from forest crops [32 V.S.A. § 5832 (2)(A)].

Farmland Conservation Incentives

How land is used and developed has wide ranging impacts on Vermont’s environment, economy, and way of life. The majority of Vermont is forested, with agriculture as the second largest category of land use (see Figure 5).⁴¹

Figure 5. Major Land Uses in Vermont ^{xiv}



Sources: USDA NASS, 2017 Census of Agriculture; USDA Forest Service, 2017 Forests of Vermont; USDA Economic Research Service, Major Uses of Land in the United States 2012, Vermont.

Dairy farms account for a considerable portion of Vermont’s farmland. In 2017, dairy farms operated on 343,688 acres, or 52%, of Vermont’s farmland.^{2, xv} Two major State programs are in place that incentivize farmers to preserve farmland: the Current Use Program, which is administered by the Department of Taxes, and the Farmland Conservation Program at the Vermont Housing and Conservation Board (VHCB). These programs offer many benefits to Vermonters, including conservation of soils and ecosystems and the preservation of open lands. They also offer direct monetary benefits to farmers.

Table 4. Estimated Farmland Conservation Benefits for Dairy Farmers, FY10 to FY19

Figures rounded to nearest \$1,000

Program	Agency or Department	Dairy-related benefits, FY10-FY19	Dairy-related benefits, FY19
Current Use, 32 V.S.A. § Chapter 124	Department of Taxes	\$81,077,000	\$9,733,000
Farmland Conservation Program	Vermont Housing and Conservation Board	\$17,707,000	\$3,288,000
Total		\$ 98,784,000	\$ 13,021,000

^{xiv} “Agriculture” does not include woodland on farms. Acreage for “All Other” land uses has not been published for 2017 and is estimated. “All Other” land uses include urban areas, parks, transportation, national defense, industrial and commercial sites, swamps, and more.

^{xv} These figures exclude woodland held by farms. Including woodlands, dairy farms operated on 433,587 acres, which is 36% of total land in farms in Vermont.

Current Use

The [Current Use](#) Program, which was established in 1978, allows the “valuation and taxation of farm and forest land based on its remaining in agricultural or forest use instead of its value in the marketplace.”⁴² In other words, Current Use reduces the taxable value of the property, and a lien is placed on the land to discourage future development.^{xvi} In addition, eligible farm buildings enrolled in Current Use are not subject to the property tax.⁴² In 2019, 2.5 million acres were enrolled in the program, approximately 42% of Vermont’s land.

Using dairy farm addresses provided by the Agency of Agriculture, we identified between 229,000 to 282,000 acres of land operated by dairy farms that were enrolled in Current Use in 2019.^{xvii} Lowering the property taxes for these parcels shifts the tax burden to other taxpayers and funding sources to make up revenue for the State’s Education Fund. The State also draws on the General Fund to reimburse municipalities through a “Hold Harmless” payment to make up for reductions in local property tax revenue. **We estimate that dairy farmers enrolled in Current Use received between \$71.3 million to \$83.5 million in tax benefits from 2010 to 2019. In addition, we estimate that dairy-related program administration at the Department of Taxes cost \$741,000 from FY10 to FY19.**

VHCB’s Farmland Conservation Program

VHCB’s [Farmland Conservation Program](#) focuses on retaining the state’s quality agricultural soils and land by establishing permanent conservation easements. VHCB uses State funding from the Property Transfer Tax and the Capital Fund (matched by Federal funding from the Natural Resources Conservation Service) to purchase development rights on farms to permanently prevent non-agricultural development. Since 1987, 166,400 acres of agricultural land on over 761 farms have been conserved with VHCB funding. The proceeds from the sale of the development rights go to the farm owner, and in almost half of the projects, assist in the transfer of land. Similar to the Current Use Program, the primary purpose of this program is to conserve land and soil. In doing so, it provides financial benefits to dairy farmers using State funds.

From FY10 to FY19, VHCB conserved 121 dairy farms^{xviii} in Vermont, totaling 17,290 acres of farmland. To purchase these development rights, VHCB used \$14.4 million of State funding from FY10 to FY19.^{xix} VHCB estimates that the program administration costs associated with conserving these dairy farms totaled \$3.3 million of State funds, **bringing the total State spending on dairy farm conservation to \$17.7 million from FY10 to FY19.** Program administration costs include staff salaries and benefits, direct costs (such as travel costs, appraisal costs, and surveys), as well as payments to partner organizations, such as the Vermont Land Trust, that work directly with farmers interested in conserving their land.

^{xvi} The Agency of Agriculture has the authority to direct the Department of Taxes to remove farmland or buildings from Current Use if they are not in compliance with water quality regulations.

^{xvii} The Census of Agriculture reports that dairy farms operated on 433,587 acres of land in 2017 (including woodland), with dairy farmers owning 304,180 acres and leasing 131,201 acres.² We assume that our analysis primarily captures land that is owned by dairy farms. There may be other dairy-related parcels enrolled in Current Use that are leased to dairy farmers and/or grow feed but are not owned by dairy farms.

^{xviii} These farms were identified by VHCB as dairy farms at the time of conservation. At least five of the 121 farms converted to another type of farming (beef or goat) following conservation.

^{xix} VHCB leveraged an additional \$16.9 million of Federal funding to conserve these dairy farms.

Grants and Service Offerings for Dairy Farms

The Agency of Agriculture and VHCBC offer a number of grant programs that support dairy farm businesses directly or fund third parties to provide services to dairy farms, such as technical assistance.

Table 5. Estimated Spending on Dairy-related Grants and Service Offering, FY10 to FY19

Figures rounded to nearest \$1,000

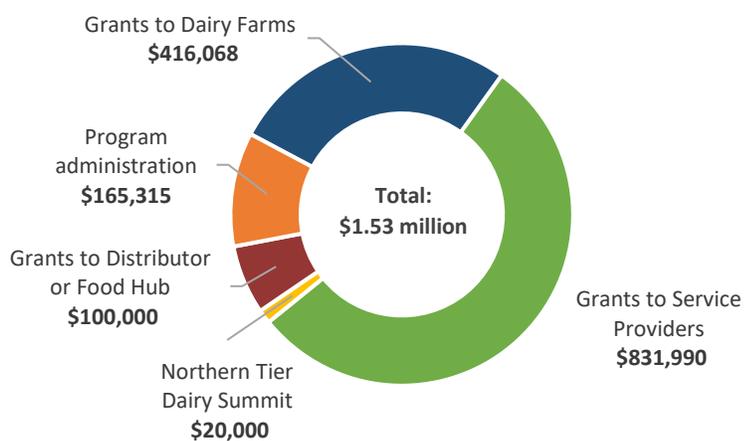
Program	Department or Agency	Dairy-related expenditures, FY10-FY19	Dairy-related expenditures, FY19
Working Lands Enterprise Initiative	Development Division, Agency of Agriculture	\$1,533,000	\$285,000
Local Food Market Development Grants	Development Division, Agency of Agriculture	\$31,000	\$7,000
Farm and Forest Viability Program	Vermont Housing and Conservation Board	\$1,716,000	\$241,000
Milk Margin Protection Program Premium Payments	Agency of Agriculture	\$450,000 (one-time payment)	\$450,000
Total		\$3,730,000	\$983,000

The Development Division at the Agency of Agriculture

The Development Division administers two programs that provide State-funded grants and services to dairy farms: the [Working Lands Enterprise Initiative \(WLEI\)](#) and the [Local Food Market Development Grants](#). These programs are funded through the General Fund.

Signed into law in 2012, WLEI provides grants to Vermont farm and forest businesses and to service providers that offer technical assistance and other forms of support. **From FY13 to FY19, WLEI spent \$1.53 million on dairy-related grants (see Figure 6 and Appendix B for more details).** Notably, many of the dairy-related awards promote diversification, production of value-added products, development of local food markets, and transitions to organic milk production.

Figure 6. WLEI dairy-related program costs, FY13-FY19



Examples of Awards

Grant to a Dairy Farm

- \$20,000 to transition to organic dairy

Service Provider Grant

- \$50,000 for farmer led technical service effort empowering dairy farmers

Food Distributor Grant

- \$50,000 for regional market development

Source: Data provided by the Development Division at the Agency of Agriculture.

The Local Food Market Development Grants provide funding to Vermont producers to access wholesale markets and increase the quantity of local food available in Vermont institutions and wholesale markets. For example, one farm received a \$5,000 grant to make enhancements to their milk handling system to increase production efficiency. Between FY12 and FY19, \$19,000 were awarded to dairy farms. Program administration costs related to these dairy awards totaled approximately \$12,000, **for a total of \$31,000 of State spending on dairy-related Local Food Market Development Grants from FY12 to FY19.**^{xx}

Farm and Forest Viability Program at VHC

Similar to WLEI, the [Farm and Forest Viability Program](#) funds technical assistance and grants to support Vermont's farm and forestry businesses. VHC matches businesses with advisors to provide in-depth, one-on-one business advice on topics such as business planning, cash flow analysis, and transition planning. From FY10 to FY19, VHC funded 602 enrollments in their business advisory program, 36% of which were provided to dairy farmers (183 dairy farms over 217 enrollments). Contracts for services provided to dairy farms cost \$1.15 million of State spending (funded through the Property Transfer Tax); during that time, VHC used \$487,000 of State funds for program operations related to administering the dairy portion of the business assistance program.^{xxi}

In addition to technical assistance, the Farm and Forest Viability Program also offers Implementation Grants and Dairy Improvement Grants to support capital improvements. A large portion of these grants are funded through private funding (notably from Commonwealth Dairy). However, some of these grants are funded with State dollars. Between FY10 and FY19, VHC used \$75,000 of State funding for twelve projects on dairy farms.^{xxii} In total, **dairy-related technical assistance and capital improvement grants offered through the Farm and Forest Viability Program cost the State \$1.72 million from FY10 to FY19.**

Milk Margin Protection Program Premium Payments from the Agency of Agriculture

In FY19, the Agency of Agriculture disbursed \$450,000 from the General Fund to reimburse Vermont dairy farmers for premiums for enrollment in the Federal Milk Margin Protection Program. This was a one-time payment in response to years of reduced milk prices.

Discounted Fees for Farms

Farms benefit from a number of permit or fee reductions and exemptions. Calculating foregone revenue from these policies can be challenging, particularly if no permit or fee is required and there is no record of the event. We estimated \$274,000 of foregone revenue from reduced fees for dairy farm truck registrations and anaerobic digester permits in FY19.

^{xx} The Local Food Market Development Grants are generally small awards; in FY20, the maximum award amount was \$5,000. While small, administering numerous awards still requires staff time and oversight, which leads to the high ratio of program administration costs to award amounts.

^{xxi} VHC also leveraged \$654,000 of Federal funding for dairy-related contracts and program administration costs.

^{xxii} VHC also offers Water Quality grants through the Farm and Forest Viability program (covered in Part II). Program administration costs for all grants administered by the Viability program, including the Implementation Grants and Dairy Improvement Grants, are covered in Part II of this report.

Table 6. Estimated Dairy-related Fee Expenditures, FY19

Figures rounded to nearest \$1,000

Fee or Permit	Department	FY19 Dairy-related Expenditures
Farm Truck Registrations, 23 V.S.A. § 367	Department of Motor Vehicles	\$239,000
Anaerobic Digester Registrations, 3 V.S.A. § 2822 (j)	Department of Environmental Conservation	\$35,000
Total		\$274,000

Vehicle registration requirements are different for farm vehicles. Farm vehicles that are used exclusively on farms or for farm-to-farm transportation are not required to register. For farm vehicles that do drive on the road, annual registration fees are reduced. According to the USDA Census, dairy farms account for approximately 26% of agricultural trucks in the State.^{2, 38, 39} Using data from the [2020 Executive Branch Fee Report](#), **we estimate the State would have collected between \$239,000 and \$509,000 in FY19 had dairy farm trucks been required to pay standard registration fees.** We did not have sufficient data to estimate this expenditure over the ten-year timeframe.

In addition, dairy farms benefit from reduced fees for anaerobic digesters. In 2017, Act 77 reduced the Air Permit fee and annual registration fees for anaerobic digesters. **This reduced registration fee revenue from dairy farm-based anaerobic digester facilities by approximately \$70,000 from FY18 to FY19 (\$35,000 annually).**

Farms are exempt from several other permit and fees requirements, including Stormwater Discharge Permits, Groundwater Withdrawal Permits, Wetland Permits,^{xxiii} Hazardous Substance Fees, Fire Code Fees, Plumbing and Electrical Permits, Commercial Driver’s Licenses for farm vehicles, and Act 250 Permits. Since no permit or fee is required, there is no record of when or how often these activities take place on farms, making it difficult to estimate foregone revenue for these exemptions.

Fee Discounts for Milk Haulers

Trucks that carry excess weight above the standard axel load provisions and maximum gross loads are required to pay for a special excess weight permit. Milk haulers (that transport fluid milk) pay a reduced permit fee [23 V.S.A. § 1392 (16)]. Typically, the permit fee to increase from 80,000 to 90,000 pounds is \$415. Milk haulers can get a permit to carry up to 90,000 pounds for \$382 if they are registered for 80,000 pounds, or \$10 if they are registered for 90,000 pounds. **Without these reductions, we estimate that the State would have collected an additional \$67,000 in revenue in FY19.**

^{xxiii} For additional details regarding the Wetland Permit exemption, see subchapter 30-3.1(a) of the Vermont Wetlands Rules.

Part II: State Spending on Programs and Policies Designed to Reduce or Mitigate the Environmental Impact of Dairy Farming

This section details State-funded programs and policies designed to reduce or mitigate pollution from some agricultural practices used in dairy farming. Although farming practices can have a range of environmental impacts, water quality is a major focus in Vermont. The Agency of Agriculture and the Agency of Natural Resources share responsibility for farm-related water quality programs and enforcement, with the Agency of Agriculture taking the lead on non-point source pollution and the Agency of Natural Resources taking the lead on point source pollution.⁴³ VHCBC also plays a role by offering grants to farms to make water quality improvements. The launch of the Vermont Clean Water Initiative [Vermont Clean Water Act (2015 Act 64)] increased interagency coordination and funding for water quality initiatives,^{xxiv} with a focus on sediments and nutrients (phosphorus and nitrogen).^{44, xxv}

Table 7. Estimated State Spending to Mitigate Environmental Impacts of Dairy Farming, FY10 to FY19
Figures rounded to nearest \$1,000

Agency or Department	State Expenditure	Dairy-related expenditures, FY10-FY19	Dairy-related Expenditures, FY19
Water Quality Division, Agency of Agriculture	Best Management Practices	\$13,641,000	\$2,205,000
	Capital Equipment Assistance Program	\$2,460,000	\$1,121,000
	Farm Agronomics Program	\$2,358,000	\$237,000
	Nutrient Management Program	\$859,000	N/A
	Conservation Reserve Enhancement Program	\$177,000	\$0
	Agricultural Clean Water Initiative Program	\$2,534,000	\$2,057,000
	Vermont Phosphorus Innovation Challenge	\$132,000	\$132,000
	Program Administration for the Water Quality Division	\$7,566,000	\$1,429,000
VHCBC	Farm and Forest Viability Program	\$602,000	\$175,000
Totals		\$30.3 million	\$7.4 million

Notes: State funding for the NMP ended in FY15. Due to changes in the Federal rules, no land was enrolled in the CREP program in FY19. With a new waiver process in place, the program began enrolling in CREP in FY20 and FY21. For more details, see the [Annual Report on Financial and Technical Assistance for Water Quality](#).

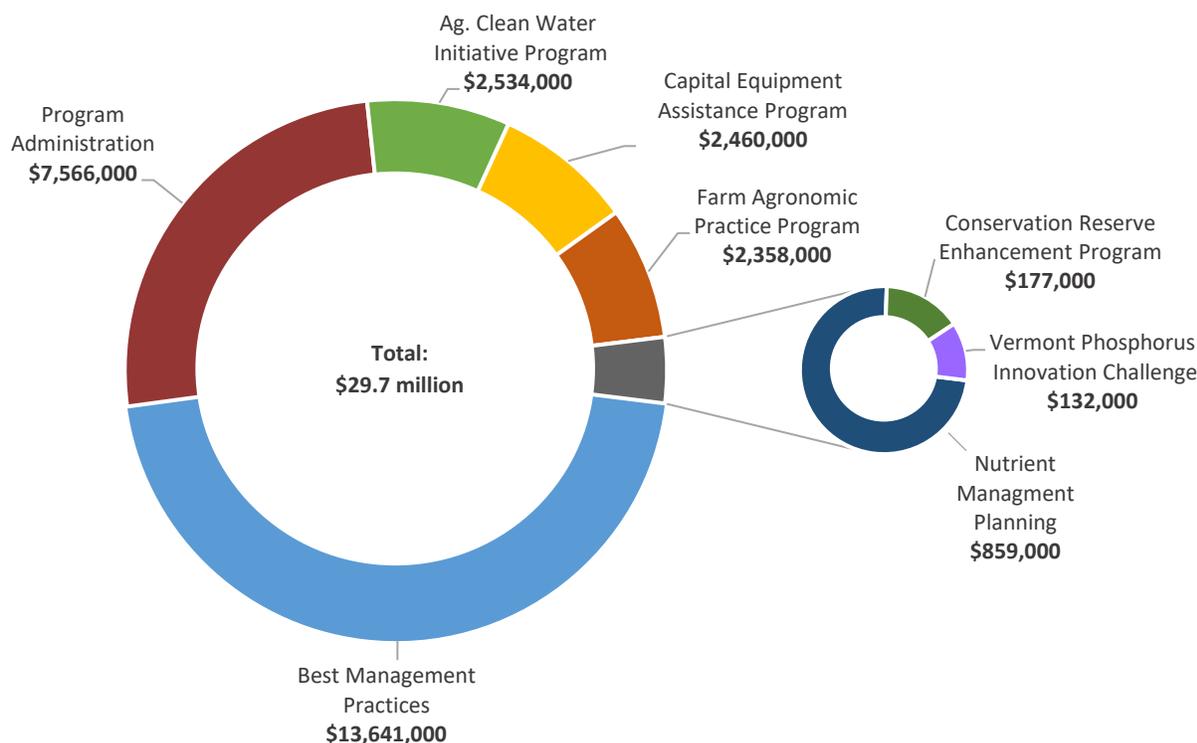
^{xxiv} The Clean Water Initiative is an interagency partnership between the Agencies of Administration; Agriculture, Food and Markets; Commerce and Community Development; Natural Resources; and Transportation. Funding is overseen by the Vermont Clean Water Fund Board. Funding comes from the Capital Fund and the Clean Water Fund (revenues from the Meals and Rooms Tax Allocation, Property Transfer Tax Surcharge, and unclaimed bottle deposits).

^{xxv} The State Auditor's Office published an investigative report on the [Cost Effectiveness of Lake Champlain Clean Water Efforts](#) in 2019.

The Water Quality Division at the Agency of Agriculture

The [Water Quality Division](#)^{xxvi} is responsible for administering the Vermont Agricultural Non-point Source Pollution Control program, which includes technical and financial assistance, education and outreach to the agricultural community, and farm inspections and enforcement activities. While these programs are not specific to dairy farming, dairy farms make up a significant portion of the Division’s portfolio. Funding for these programs comes from the Capital Fund, the Clean Water Fund, and the General Fund.

Figure 7. Agency of Agriculture, Water Quality Division Dairy Expenditures, FY10-FY19



Source: Data provided by the Water Quality Division at the Agency of Agriculture.

The largest program within the Water Quality Division is the [Best Management Practices \(BMP\)](#) program, which provides technical and financial assistance for on-farm improvements and structural conservation practices to improve water quality.^{xxvii} BMP is primarily funded through the Capital Fund. Examples of BMP conservation projects include manure storage, barnyard runoff collection, and milk house waste collection and treatment. The BMP program also includes two subprograms, the [Grassed Waterway and Filter Strip \(GWFS\) Program](#) and the [Pasture and Surface Water Fencing \(PSWF\)](#)

^{xxvi} The Water Quality Division was formed in 2017. Prior to 2017, these programs were overseen by other divisions within the Agency of Agriculture.

^{xxvii} The State Auditor’s Office conducted an audit of the [Agency of Agriculture’s Best Management Practices Program](#) in 2018.

[Program](#).^{xxviii} To support these activities, the Agency hires external engineering expertise to provide farmers with project planning and design services. **From FY10 to FY19, approximately \$13.64 million of State funds were used for BMP projects on dairy farms.**^{xxix}

The [Capital Equipment Assistance Program \(CEAP\)](#) provides funding to purchase agricultural equipment to reduce surface runoff of agricultural waste, improve water quality of state waters, reduce odors from manure application, separate phosphorus from manure, decrease greenhouse gas emissions, and reduce costs to farmers when they apply manure. Examples of eligible equipment include conservation tillage equipment and manure injectors. **From FY10 to FY19, approximately \$2.46 million of State funds were awarded to dairy farms for equipment purchases.**

The [Farm Agronomic Practices \(FAP\)](#) program provides financial incentives to Vermont farms to implement soil-based agronomic practices that improve soil quality, increase crop production, and reduce erosion and agricultural waste discharges. Examples of eligible practices include cover cropping, conservation crop rotation, and rotational grazing, as well as educational and instructional activities to inform farmers about the impacts of agricultural practices on water quality. **From FY10 to FY19, dairy farms received approximately \$2.36 million of State funds to implement eligible practices.**

The [Conservation Reserve Enhancement Program \(CREP\)](#) compensates landowners to remove land from agricultural production and establish vegetative buffers adjacent to perennial streams and rivers. Buffers filter sediment, phosphorus, nitrogen, pesticides, and other pollutants from agricultural runoff.⁴⁵ Landowners receive an upfront incentive payment and annual rental payments based on the total acreage dedicated to vegetated filter strips, forested buffers, or grassed waterways. **From FY10 to FY19, approximately \$177,000 of State funds were used to compensate dairy farms for land enrolled in CREP.**

Through 2015, the Agency of Agriculture provided financial assistance to Vermont farms to develop Nutrient Management Plans (NMP).^{xxx} These plans manage the amount, source, placement, and timing of plant nutrient and soil amendments; all certified farms in Vermont are required to have a nutrient management plan.⁴⁶ **From FY10 to FY15, approximately \$859,000 of State funds were awarded to dairy farms to develop NMPs.**

The Water Quality Division also oversees the [Agricultural Clean Water Initiative Program \(Ag-CWIP\)](#), which primarily funds partner organizations to provide education and outreach programming. Educational programming includes topics such as conservation, regulatory compliance, and nutrient

^{xxviii} The GWFS program provides technical and financial assistance to Vermont farmers for in-field agronomic best practices to address critical source areas, erosion, and surface runoff. The PSWF program provides pasture management technical assistance and financial assistance to Vermont farmers to improve on-farm livestock exclusion from surface waters.

^{xxix} These dairy projects also leveraged \$12.78 million of Federal funding. Dairy farm owners contributed \$7.31 million. Additional funding provided by VHCB is captured in the Water Quality Grants section below.

^{xxx} Financial assistance is still available to Vermont farmers through the USDA Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program or through the Conservation Districts via an NRCS Regional Conservation agreement.

management planning. Funded primarily through the Clean Water Fund, **approximately \$2.53 million of State funding was spent on partner agreements that offered dairy-related programming from FY17 to FY19.**^{xxx1}

The Water Quality Division also oversees the [Vermont Phosphorus Innovation Challenge \(VPIC\)](#). Launched in 2018, VPIC is a competitive funding opportunity for entrepreneurs to develop solutions that reduce phosphorus loading. For example, one awardee received funding to construct a mobile manure screening and ultrafiltration system to be used on dairy farms. **Approximately \$132,000 was awarded to dairy-related projects in FY19.** VPIC is ongoing, and final results have not been published at this time.

Across these seven programs, from FY10 to FY19, the Water Quality Division administered \$22.16 million in grants and service contracts to reduce or mitigate the environmental impact of dairy farming. In addition, the Water Quality Division regulates farms across the state to ensure that farms comply with the Required Agricultural Practices. In FY19, they conducted approximately 457 water quality investigations on dairy farms.⁴⁷ The program administration costs for dairy-related grants, inspection, and enforcement activities totaled \$7.57 million from FY10 to FY19, **for a total of \$29.73 million of State spending on dairy-related environmental regulation and mitigation programs from FY10 to FY19.**

Water Quality Grants at VHC B

VHC B offers [Water Quality Grants](#) as part of their Farm and Forest Viability Program. These grants fund infrastructure and equipment projects that protect

Department of Environmental Conservation (DEC)

While many of the agriculture-related Clean Water Initiative programs are administered by the Agency of Agriculture, DEC administers a number of grants related to agricultural pollution prevention, including technical assistance, research, and equipment and implementation projects on farms. From FY16 to FY19, DEC awarded 12 State-funded grants related to agricultural pollution, for a total of \$814,000.^{xxxii} Approximately 50% of one staff person's time was dedicated to these agriculture-related grants from FY16 to FY19. DEC did not have data readily available to break down the portion of these awards and staff time devoted specifically to dairy.

The Enforcement Section of the Environmental Compliance Division at DEC is responsible for investigating and documenting alleged violations of Vermont's environmental permits, rules, regulations, and statutes under the jurisdiction of DEC, including point source violations on farms. From 2015 to 2020, the Enforcement Section investigated 896 farm-related complaints (average 150 per year).^{xxxiii} The Enforcement Section estimates that complaints regarding dairy farms make up 95% or more of all farm complaints. Farm-related activities required 50% of one FTE each year from FY15 to FY19.

^{xxx1} The Agency of Agriculture estimates that 80% of partner agreements under the Agricultural Clean Water Initiative Program are related to dairy farms.

^{xxxii} Data on farm-related grants administered by DEC prior to FY16 were not readily available (see Appendix B). One grant is ongoing; \$155,000 of the \$200,000 had been expended as of March 9, 2021.

^{xxxiii} No violation was found in approximately 54% of complaints. Most cases are closed as minor violations with voluntary compliance achieved. When necessary, formal enforcement is handled by the Agency of Natural Resources' Enforcement and Litigation Section. Between 2015 and 2020, 20 farms were penalized for violations and a total of \$146,000 was assessed. An additional 13 cases were referred to the Attorney General's Office. Data on staff time required for these cases was not available. Data on farm complaints and formal enforcement activities was not readily available prior to 2015.

and improve water quality. VHCB funds often help farmers pay for projects that are not covered by other State or Federal grants or help farmers to meet the matching requirement for other State or Federal grants. Examples include funds to purchase a manure injection system and barn modifications to improve waste management. **VHCB awarded 19 Water Quality Grants to dairy farms for a total of \$493,000 of State funds between FY18 to FY19. From FY10 to FY19, VHCB used \$110,000 of State funds to administer their Farm and Forest Viability grant programs.**^{xxxiv}

Conclusion

From FY10 to FY19, Vermont's dairy industry received at least \$285 million from State policies and programs designed to both support dairy farmers and mitigate the environmental impacts of dairy farming practices. The largest financial benefits to dairy farmers came from tax policies and benefits, specifically exemptions to the Sales Tax and reductions in Property Taxes through Current Use, which lowered the cost of production for farmers. While spread across many programs, grants related to mitigating the environmental impact of dairy farming are also sizable and have grown in recent years, particularly with the implementation of Vermont's Clean Water Initiative. This report is intended to serve as a resource for State policymakers, program managers, and the public as they consider the future of dairy in Vermont and what role public funds should play.

^{xxxiv} VHCB provided program administration costs for all Farm and Forest Viability grants in aggregate. Because the majority of program administration costs are associated with the Water Quality grants, we chose to include all grant-related program administration costs in Part II of this report.

Appendix A

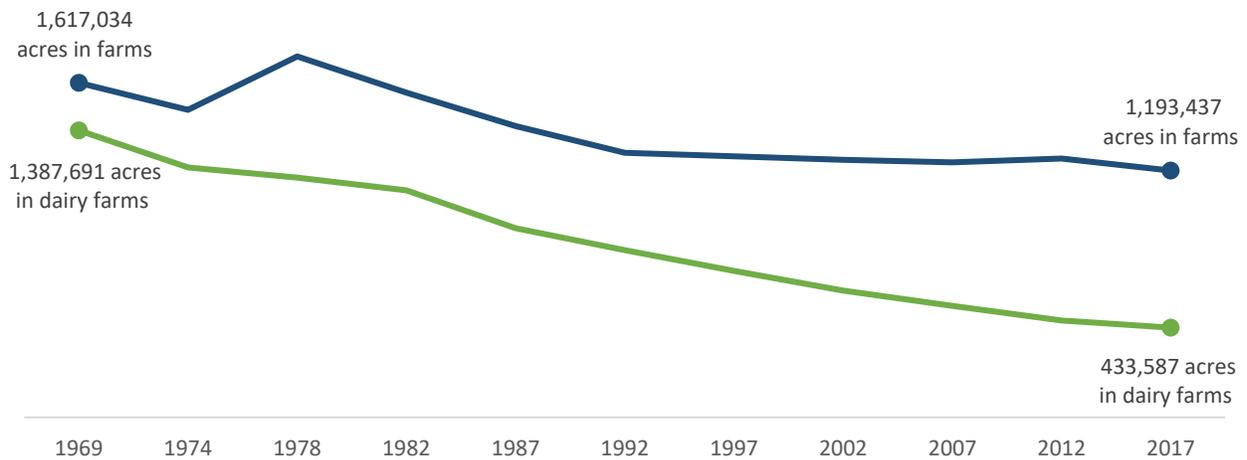
Table 8. New England mailbox price received per hundredweight of milk

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
\$17.48	\$21.39	\$19.59	\$21.51	\$25.42	\$18.55	\$17.27	\$18.65	\$16.97	\$19.01

Notes: Mailbox price refers to the price that dairy farmers receive for their milk or the price that is in their “mailbox.”

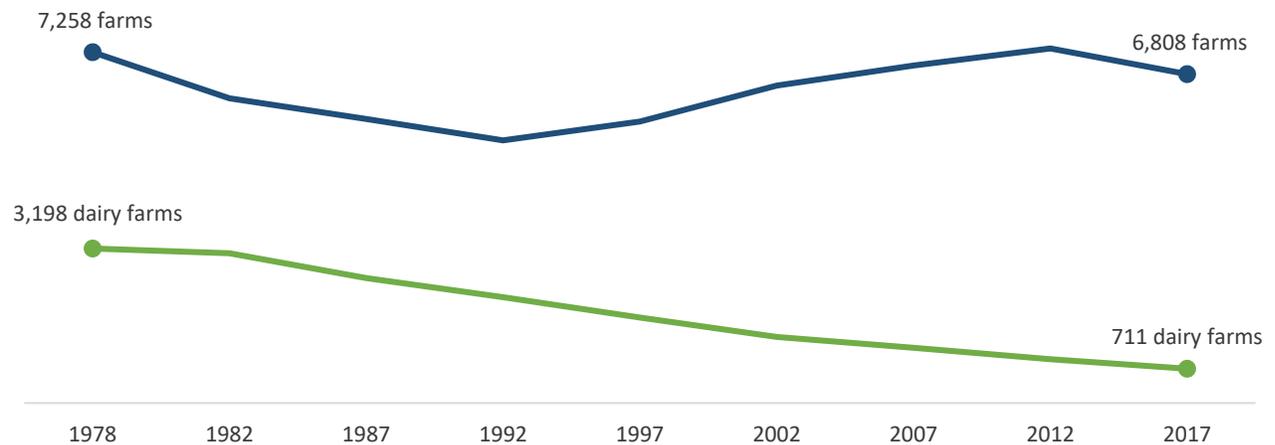
Source: USDA Mailbox Milk Price Report. Retrieved from the Department of Financial Regulation’s 2021 report, [Vermont Dairy Industry Price Regulation: Assessment and Recommendations](#).

Figure 8. Trends in agricultural land use in Vermont



Note: Figures include all land in farms, including woodland.
Source: USDA NASS, 1969 to 2017 Census of Agriculture.

Figure 9. Trends in number of farms in Vermont



Source: USDA NASS, 1978 to 2017 Census of Agriculture.

Scope

The goal of this report is to provide a contextualized view of Vermont State expenditures related to dairy farming to inform policymakers, program managers, and the public as they consider the future of Vermont's dairy industry. For the purposes of this report, dairy has been restricted to milk production from cows. The report examines expenditures across State agencies and departments from 2010 to 2019.

- Objective 1: Describe and quantify State expenditures on policies and programs that subsidize and support dairy farms.
- Objective 2: Describe and quantify State expenditures on policies and programs designed to reduce or mitigate the environmental impact of dairy farming.

Programs and policies are included in this analysis if they meet the following criteria:

1. Programs and policies are specific to agriculture or have an agriculture-specific component and provide a direct monetary benefit to dairy farmers or fund a service that is provided directly to dairy farmers,

---OR---

2. Programs and policies are designed to reduce or mitigate detrimental impacts of agricultural practices used in dairy farming,

---AND---

3. Expenditures are from the use of State funds collected through State taxes or State issued bonds, or loss of revenue due to an exemption or reduction in State taxes or fees.

Where possible, we included State funding used to administer dairy-related programs (or portions of programs), including staffing and relevant overhead costs. Staff costs include salaries and benefits. Overhead costs generally include direct and indirect operating costs.^{xxxv}

Policies and programs that benefit agriculture broadly but don't have a direct monetary or resource benefit to dairy farms were not included. For example, the Agency of Agriculture regulates food safety, including milk safety; however, this program doesn't provide direct monetary benefits or services to dairy farmers and was therefore excluded. We did not include programs or operational costs that are funded through Federal funds, private donations, or Special Funds or fees from a narrow tax base. For example, the Agency of Agriculture collects a \$0.10 fee per one hundred pounds of raw milk sold by a farmer. These funds, which are used to promote dairy products, are not included in this analysis since they are not collected from a broad tax base.

^{xxxv} The VHCB operations amount for the Farmland Conservation program includes salaries and benefits as well as direct operating costs (e.g. travel, appraisals), but does not include the relative portion of indirect overhead operating expenses (e.g. rent, computers).

Table 9. Applying scoping criteria

Agency or Department	Program or Policy	Monetary benefit or service provided to dairy farms	Program to mitigate environmental impacts of dairy farming	Funding from State taxes or bonds* or an exemption or reduction to State taxes or fees
Department of Taxes	Sales Tax Exemption for Agricultural Inputs	X		Sales and Use Tax exemption
	Sales Tax Exemption for Energy Purchases for Farming	X		Sales and Use Tax exemption
	Sales Tax Exemption for Agricultural Machinery and Equipment	X		Sales and Use Tax exemption
	Farm Income Averaging Credit	X		Income Tax credit
	Corporate Income Tax Minimum for Small Farm Corporations	X		Income Tax reduction
	Capital Gains Exclusion for Farms	X		Capital Gains Tax reduction
	Current Use Program	X		Property Tax reduction
Vermont Housing and Conservation Board	Farmland Conservation Program	X		Funded through the Property Transfer Tax and the Capital Fund
	Farm and Forest Viability Business Advising Program	X		Funded through the Property Transfer Tax
	Implementation and Dairy Improvement Grants	X		Funded through the Property Transfer Tax
	Water Quality Grants	X	X	Funded through the Capital Fund
Agency of Agriculture, Food and Markets	Working Lands Enterprise	X		Funded through the General Fund
	Local Food Markets Grants	X		Funded through the General Fund
	Payments for federal Milk Margin Protection Program	X		Funded through the General Fund
	Agricultural Water Quality Division Grants	X	X	Funded through the Capital Fund, General Fund, and Clean Water Fund
Department of Motor Vehicles	Farm Truck Registrations	X		Fee reduction
	Diesel Fuel Tax Exemption for farms	X		Diesel Fuel Tax exemption
Department of Environmental Conservation	Clean Water Initiative, Agricultural Pollution Prevention Grants	X	X	Funded through the Clean Water Fund and Capital Fund
	Enforcement Section of the Environmental Compliance Division		X	Funded through the General Fund
	Farm digester fees	X		Fee reduction
	Other permit exemptions (e.g. wetland permits)	X		Fee exemption

**Note: Many of these programs have additional sources of funding. This column only includes funding sources that are in scope for this report.*

Methods

The SAO drew from a broad range of data sources to perform the analyses that comprise this report. We worked closely with relevant agencies and departments to identify which programs and policies met the scoping criteria and develop strategies to compile relevant data. This section provides an overview of the sources and methods used throughout this investigation.

Agricultural Tax Expenditure Analysis

Vermont's Sales and Use Tax exemption for Agricultural Inputs [32 V.S.A. § 9741(3)] defines a specific list of items that are tax exempt, including feeds, seeds, plants, baler twine, silage bags, breeding and other livestock, agricultural chemicals, bedding, and fertilizer. We used data from the USDA's Census of Agriculture, which is conducted every five years, to estimate how much dairy farmers spent on agricultural inputs from 2010 to 2019. While not every item listed in the Vermont Agricultural Inputs exemption is detailed in the Census data, the Census does provide details on five key expenses: animal feed, seeds and plants, livestock, chemicals and pesticides, and fertilizer. The Census collects data about farm expenses by type of farm as defined by the North American Industry Classification System (NAICS) code. NAICS codes are assigned based on whichever activity the farm is primarily engaged in. Using Vermont data for the Dairy Cattle and Milk Production NAICS code (112120) in 2007, 2012, and 2017, we calculated the compound annual growth rate to estimate annual dairy farm spending on these items from 2010 to 2019. We then multiplied the annual estimates by the Sales and Use Tax rate (6%) to estimate dairy-related expenditures for Agricultural Inputs each year.

We used a similar method to calculate the expenditure for the Sales Tax exemption for Energy Purchases for Farming. Per 32 V.S.A. § 9741(27), Vermont farms are exempted from paying Sales Tax on their energy purchases, which include electricity, oil, gas, and other fuels. The Census collects data from farmers about their gasoline, fuel, and oil purchases, as well as their utilities costs. However, the utilities cost data is aggregated and includes electricity, telephone, water, and other utility costs. Since only electricity is covered by the Vermont Energy Purchases for Farming exemption, we did not use the Census utility costs when calculating dairy farmers' energy expenses and only relied on the gasoline, fuel, and oil expenses. As such, our analysis underestimates the expenditure for Energy Purchases for Farming. As above, we used data from Vermont dairy farms in the 2007, 2012, and 2017 Census and calculated the compound annual growth rate to estimate annual spending on gasoline, fuel, and oil expenses. We then multiplied the annual estimates by the Sales and Use Tax rate (6%) to estimate dairy-related expenditures for Energy Purchases for Farming each year.

Agricultural Machinery and Equipment is also exempt from the Sales and Use Tax [32 V.S.A. § 9741(25)]. While the Census does not report on purchases of machinery and equipment by state and type of farm, it does provide data on the value of machinery and equipment by state and farm type. We used 2007, 2012, and 2017 Census data to estimate what percentage of Vermont's agricultural machinery and equipment was held by dairy farms. We then used the State's biennial [Tax Expenditure Reports](#) to estimate annual expenditures for the Agricultural Machinery and Equipment exemption. Since the Tax Expenditure Report estimates are not specific to dairy, we used the percentage of machinery and equipment held by dairy farms as a proxy to estimate what percentage of the total expenditure for Agricultural Machinery and Equipment was related to dairy.

We also relied on the [2019 Tax Expenditure Reviews](#) to estimate the dairy-related expenditure for Veterinary Supplies [32 V.S.A. § 9741(53)]. This report estimates the Veterinary Supplies expenditure for agriculture in FY18. In 2017, the Census reported data on veterinary and medical costs for the first time. We used the Census data to estimate what percentage of the agricultural Veterinary Supplies expenditure was related to dairy farms.

To understand how many dairy farmers benefitted from the Vermont Farm Income Averaging Credit, the Department of Taxes provided aggregated data for taxpayers who claimed the Vermont Farm Income Averaging Credit *and* filed a Federal Schedule F (Form 1040) with the Dairy Cattle and Milk Production NAICS code. Data was available for three years. The number of filers who met these criteria ranged from 23 to 26 filers per year. We averaged the tax expenditure over those three years to estimate an annual tax expenditure. The Department of Taxes conducted a similar analysis for filers who claimed the Small Farm Corporation Minimum Tax exemption and included the Dairy Cattle and Milk Production NAICS code on their form. However, the number of filers was too small to satisfy the disclosure minimum. In addition, NAICS codes are self-reported and unverified.

Data was not available to calculate dairy-related expenditures for the Vermont Capital Gains exclusion for farms or the Diesel Fuel Tax exemption for agricultural use.

Farmland Conservation Incentives

The Agency of Agriculture provided a list of 611 Vermont dairy farms and addresses on December 18, 2020. The Department of Taxes provided the Current Use Enrollment files from 2010 to 2019. We cross referenced the list of dairy farm names and addresses to identify parcels enrolled in the Current Use program in 2019. We identified dairy farm parcels in three ways:

1. **Address match:** Parcels were included if 1) the address provided by the Agency of Agriculture matched the address listed in the Current Use Enrollment file or 2) the address provided by the Agency of Agriculture was on a parcel that was enrolled in Current Use. We used Google Maps and [Vermont Parcel Viewer](#) to identify the dairy farm location and parcel. All parcels associated with the owner address were included.
2. **Name match within 5 miles:** This category includes parcels that didn't have an address match but 1) shared a last name or farm name with the name provided by the Agency of Agriculture, 2) were within approximately 5 miles of the address provided by the Agency of Agriculture, *and* 3) some or all of the land was used for agricultural purposes (identified using Google Maps).
3. **Name match within 6 to 15 miles:** Same as the previous category however, these parcels were within approximately 6 to 15 miles of the address provided by the Agency of Agriculture.

Using these methods in the 2019 Current Use file, we identified 1,323 parcels with an address match, 270 parcels with a name match within 5 miles, and 99 parcels with a name match within 6 to 15 miles of the original address. These 1,692 parcels were associated with 532 (87%) of the dairy farms on the list provided by the Agency of Agriculture. To calculate reductions in property taxes for dairy farmers enrolled in Current Use, we multiplied the amount the property value was lowered as a result of Current Use (calculated by the Department of Taxes) by the relevant State and municipal property tax rates for each parcel from 2010 to 2019. We calculated property tax reductions for parcels included in each of the

three categories outlined above. Tables 2 and 4 reflect property tax reduction estimates for parcels with an address match and parcels with a name match within 5 miles. The address data from the Agency of Agriculture only included farms that were operating as of December 2020, which means that this analysis does not include any dairy farms that went out of business prior to December 2020. Given what we know about recent dairy farm closures, it is likely our analysis underestimates the total benefit from Current Use that dairy farmers received between 2010 and 2019. Program administration costs for Current Use were estimated using data from a 2017 analysis conducted by the Department of Taxes.

For the Farmland Conservation Program, VHCB provided a list of dairy farms that were conserved from FY10 to FY19. These were dairy farms at the time of conservation but VHCB staff noted that some farms transitioned to another type of farming following conservation. VHCB used the percentage of their dairy-related Farmland Conservation awards to estimate the relative proportion of staff salaries and benefits, direct overhead costs, and partner organization costs that were used for dairy-related projects.

Grants and Service Offerings for Dairy Farms

The Development Division at the Agency of Agriculture provided the SAO with a list of all Working Lands Enterprise Initiative and Local Food Market Development grants related to dairy from FY12 to FY19. Their list included grants to dairy farms, service providers, and distributors or food hubs. All awards to dairy farms were included regardless of whether the farms used their award to improve their milking operation or to diversify their business. All of the service provider awards have some connection to dairy (as identified by the Development Division); however, the entire award amount may not have been used exclusively by dairy farmers. For example, one service provider received a grant to offer coaching services for beginning farmers. Different types of farms, including dairy and non-dairy farms, may have participated in this service. For both programs, the Development Division used the percentage of their grants related to dairy as a proxy to estimate the relative percentage of their staff and overhead costs dedicated to dairy-related work. In some years, the Development Division awarded funds to VHCB; the dairy-related portion of those grants are captured in the VHCB Farm and Forest Viability Grant programs.

VHCB provided a list of dairy farms that participated in the Farm and Forest Viability Business Advising Program and the associated contracting costs. They also identified dairy farms that received Implementation Grants, Dairy Improvement Grants, and Water Quality Grants through the Farm and Forest Viability Program. VHCB used the percentage of dairy-related contracting costs and grants as a proxy to estimate the relative percentage of their staff and overhead costs. Staff and overhead costs were reported separately for the Business Advising and Grants programs. Because the majority of the staff and overhead costs for Grants were associated with the Water Quality Grants, all program staff and overhead costs for the Viability Program Grants are included in Part II of this report.

Reduction in Fees for Dairy Farms

Using data from the [2020 Executive Branch Fee Report](#), we calculated the number of farm truck registrations issued by weight class in FY19. We then compared the revenue collected from farm truck registrations to what would have been collected had they paid the standard truck registration fees. Because the weight classes for farm trucks and other trucks are not perfectly aligned, we created high and low ranges for each weight class. We used data from the USDA Census (2007, 2012, and 2017) to

estimate what percentage of Vermont farm trucks are located on dairy farms. Because farm vehicles that are used exclusively on farms or for farm-to-farm transportation are not required to register, we have no record of how many farm vehicles paid no registration fees.

The Department of Motor Vehicles provided details on the number of special excess weight permits for milk haulers issued between FY10 to FY19 as well as the fee rates. We used this data to estimate the amount of revenue that was lost due to discounted fees for milk haulers.

DEC provided an overview of anaerobic digester permit and registration fees. Two permits were issued to anaerobic digester projects on dairy farms between 2010 and 2019, but they were owned and operated by a third, non-dairy farm entity and therefore outside of the scope of this report. From 2018 to 2020 (following Act 77), DEC estimated that approximately \$35,000 was lost in revenue each year from reductions to annual registration fees for anaerobic digesters on dairy farms.

Water Quality Division at the Agency of Agriculture

The Water Quality Division identified awards to dairy farms for the Best Management Practices Program, the Capital Equipment Assistance Program, the Farm Agronomic Practices Program, the Conservation Reserve Enhancement Program, and the Nutrient Management Plan Program from FY10 to FY19. They also estimated that 80% of awards for the Agricultural Clean Water Initiative Program and the Vermont Phosphorus Innovation Challenge were related to dairy farming. The Division estimated that across all of their programs, including grants, inspections, and enforcement, dairy-related work accounted for 80% of their staff and overhead costs between FY10 and FY19.

Department of Environmental Conservation (DEC)

Using the Clean Water Reporting Framework (CWRP), DEC provided a list of all State-funded projects related to agriculture from FY16 to FY19. Because the CWRP was developed with the introduction of the Clean Water Initiative, data was centralized and readily available starting in FY16. The CWRP includes projects administered across multiple departments and agencies. Since we worked directly with other relevant agencies to understand their dairy-related spending, we only used the CWRP data for DEC administered grants. The CWRP database includes the award amount, which is updated to reflect actual expenditures after the grant is closed. All but one of the DEC administered agriculture grants awarded through FY19 had closed at the time this report was developed, and therefore reflected the final spending. For the remaining grant, \$155,000 of the \$200,000 award had been expended as of March 9, 2021. From FY16 to FY19, approximately half of one state-funded position was dedicated to agriculture-related work at DEC. DEC did not have data readily available to identify what percentage of the DEC-administered agriculture grants were related to dairy.

The Enforcement Section of the Environmental Compliance Division at DEC provided data on the number of farm-related complaints they received from FY15 to FY20. Data prior to 2015 was not readily available. The Enforcement Section estimated that farm-related complaints required approximately 0.5 FTE each year. They estimated that 95% of farm complaints were related to dairy farms. They also provided data on the number of penalties that were assessed between FY15 and FY20. The Litigation Section did not have accessible data regarding how much staff time was required to investigate these cases.

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