VERMONT
DEPARTMENT OF TAXES

Current Use Advisory Board Agenda

Tuesday, September 24, 2024, 9:00 a.m. - Noon
Hybrid, Via Teams and at 133 State Street in Montpelier, VT

Microsoft Teams
Meeting **Join the meeting now**
Meeting ID: 280 293 820 777
Passcode: PJrKh3

Dial-in by phone
+1 802-552-8456, 925254928#
Phone conference ID: 925 254 928#

1. **Welcome and Introductions**
2. **Review and Approval of Minutes from the prior meeting (May 2024)**
3. **Agriculture Use Value Presentation and Discussion (Ryan Patch)**
4. **Act 146 of 2022 Use Values Report Discussion**
5. **Update on Current Use Rules Review**
    a. **Status of Work**
    b. **Membership of Subcommittee**
6. **Adjournment**

Note: Michael Ramsey is the Commissioner of Taxes' designee. Ryan Patch is the Secretary of Agriculture, Food and Markets' designee. Keith Thompson is the Commissioner of Forest, Parks and Recreation designee.

Agriculture Land Use Statistics & UVA

Ryan Patch
Agriculture Climate and Land Use Policy Manager
Vermont Agency of Agriculture, Food and Markets
Presentation to: Current Use Advisory Board
September 23, 2024

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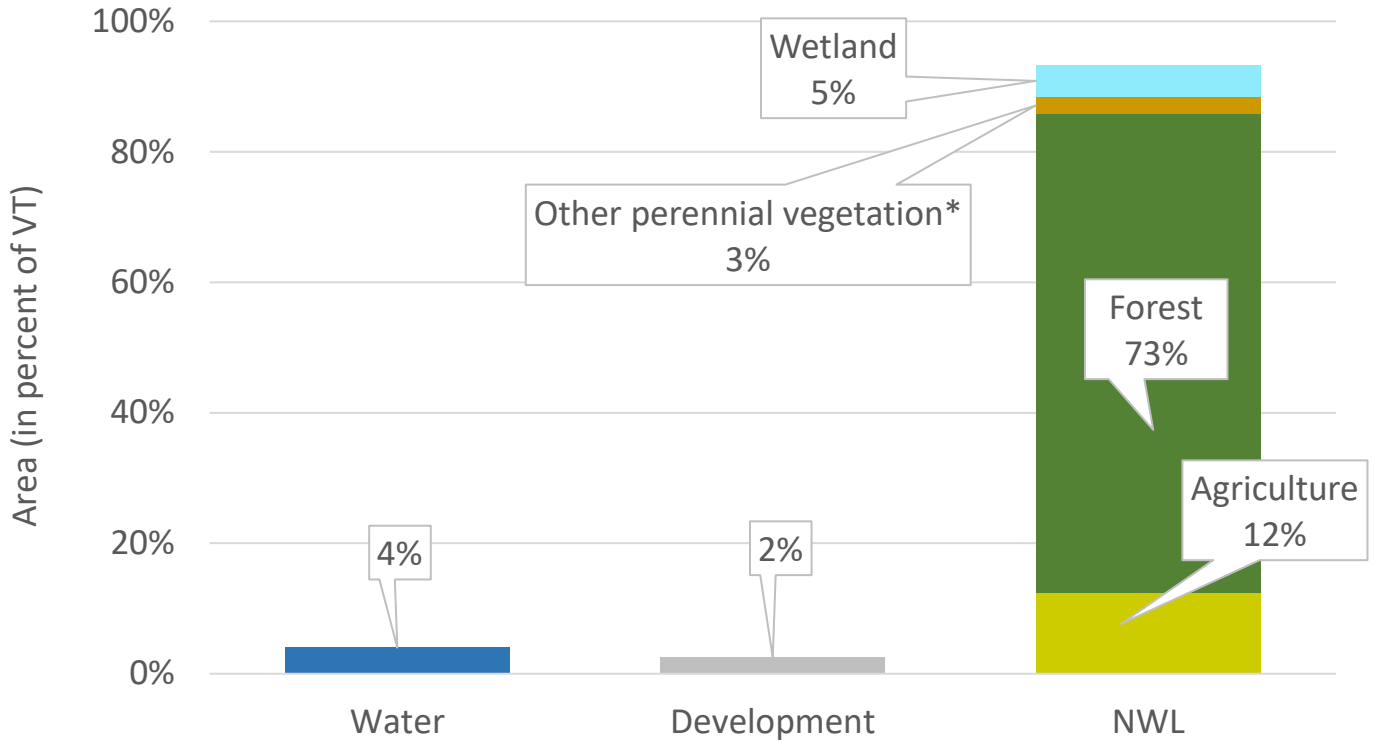
Natural & Working Lands (NWL) cover 94% of Vermont



*Other perennial vegetation includes grasslands, shrub/scrublands, and turf

Data source: 2016 National Land Cover Database; Images courtesy FPR

1. Vermont Farm Historic Land Use Data

The Vermont Statehouse: 1870 – 1880s

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From: State Curator's Office, BGS. Circa 1870 – 1880s Retrieved from:
https://curator.vermont.gov/sites/curator/files/styles/slideshow_image_only/public/images/image_only_slides/historic-state-house-780x450.jpg?itok=lXOLbhmj

Vermont Context

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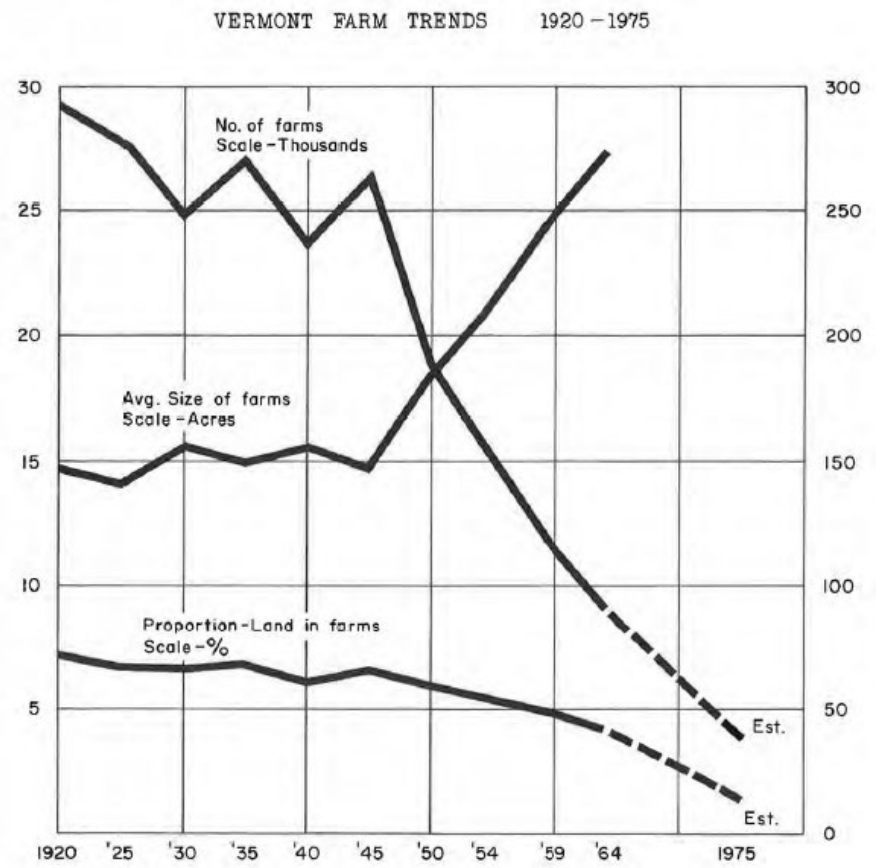
TABLE I TRENDS IN VERMONT FARMING

YEAR	NUMBER	AVERAGE SIZE OF FARMS PER ACRE	PROPORTION OF LAND IN FARMS
1850	29,763	139	71%
1860	31,556	136	73%
1870	33,827	134	78%
1880	35,522	138	84%
1890	32,573	135	75%
1900	33,104	143	81%
1910	32,709	143	80%
1920	29,075	146	72%
1925	27,786	141	67%
1930	24,898	156	67%
1935	27,061	149	69%
1940	23,582	156	62%
1945	26,490	148	66%
1950	19,043	185	59%
1954	15,981	208	56%
1959	12,099	243	50%
1964	9,247	273	43%

Source: Central Planning Office, Montpelier, Vermont

* * * *

Graph 1



1880: 35,000 Farms; 84% of Vermont's Land Area in Farms

% Land in Farms
# of Farms

Size of farms

Source: https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/CD/CPR/Resources-and-Rules/DHCD-Planning-VisionChoice-FutureStateFramework-1968.pdf

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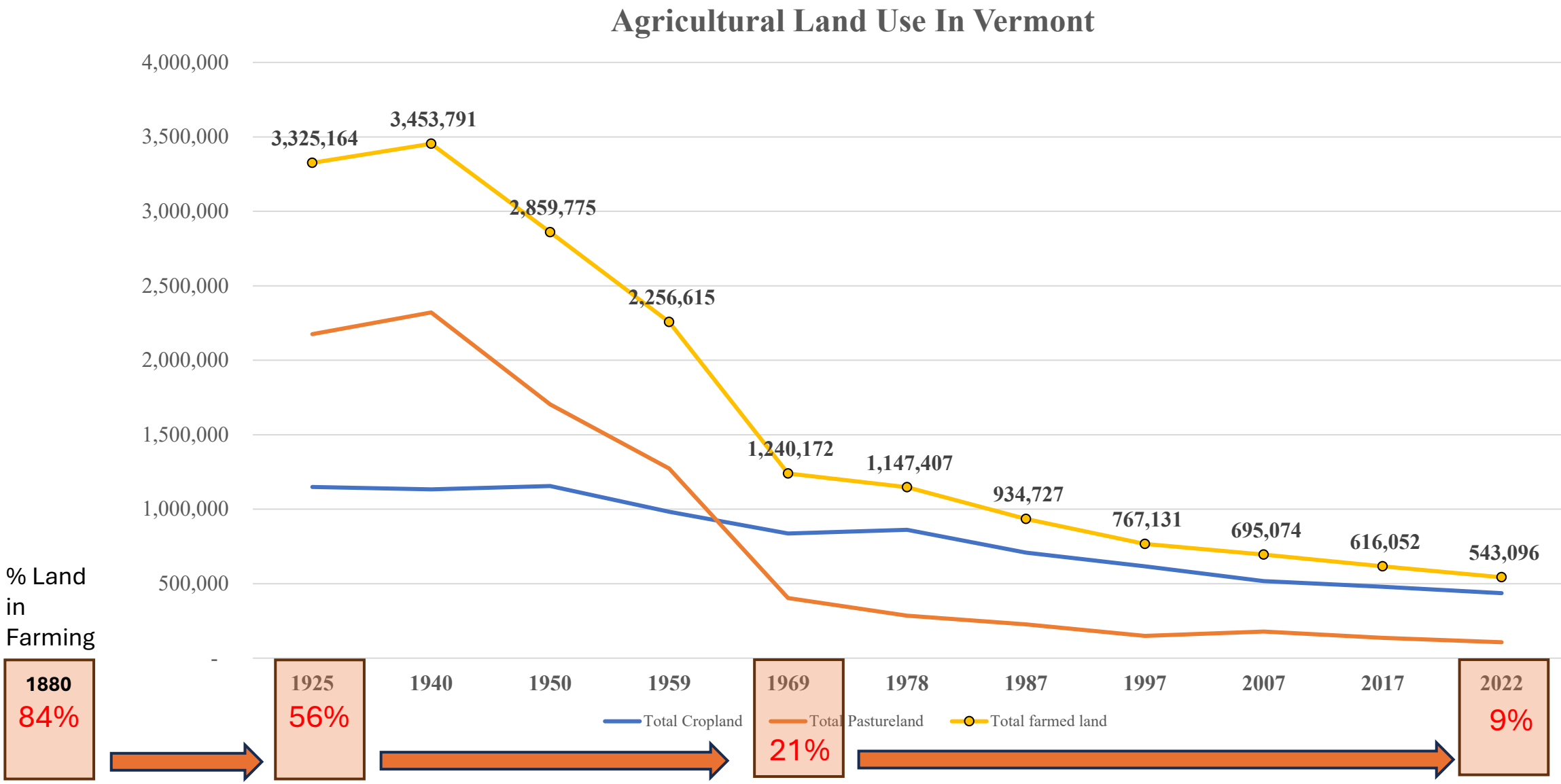

Data source: 1925 - 2022 USDA NASS Ag Census, Vermont
Data source: https://vcgi.vermont.gov/resources/how-and-education-resources/how-reference-vermonts-land-and-water-area (5,899,041 acres of Land in VT)

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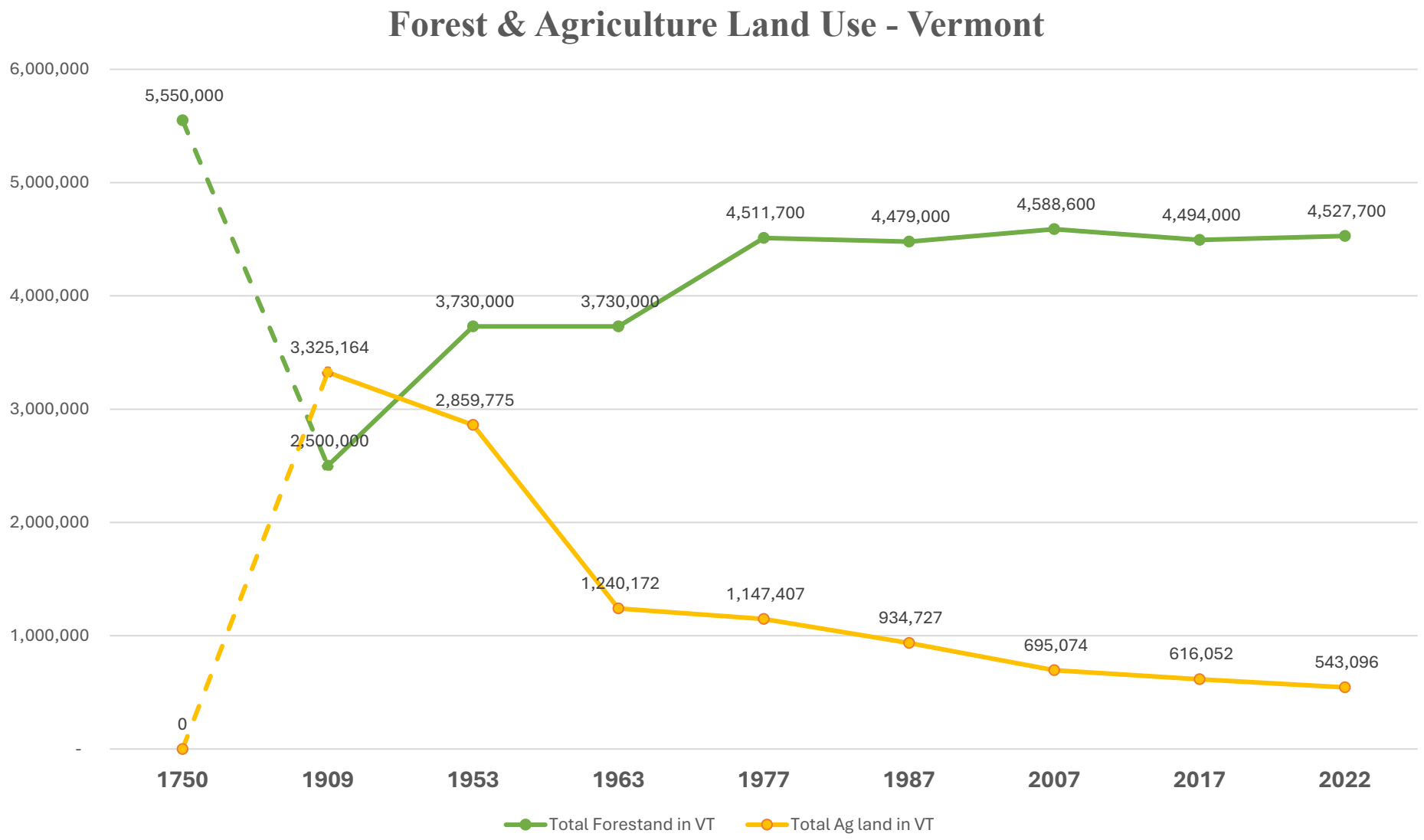

From: USDA NASS Ag Census; USDA Forest Service

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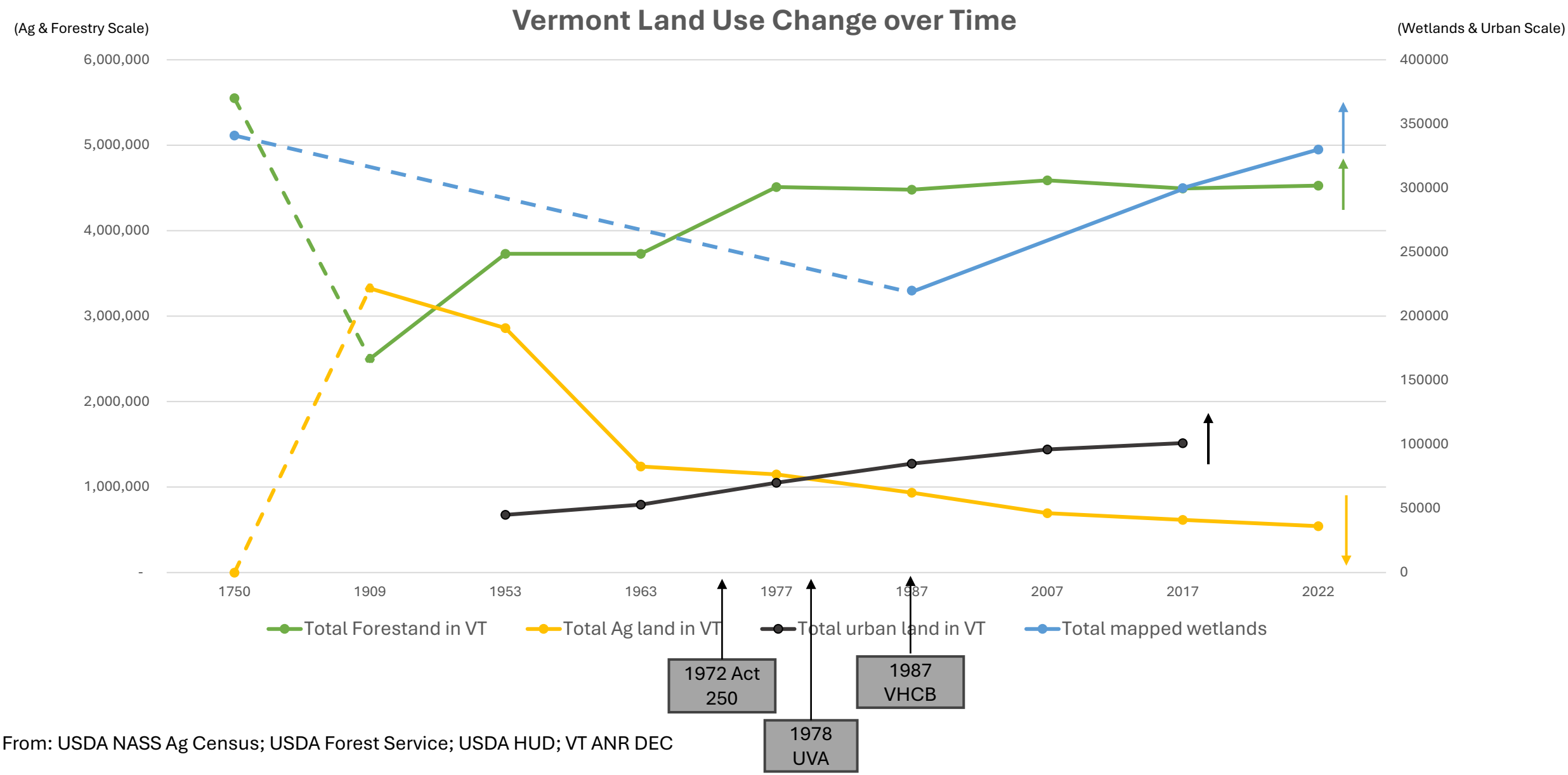

From: USDA NASS Ag Census; USDA Forest Service; USDA HUD; VT ANR DEC

Analysis of Farm Type & Land Use

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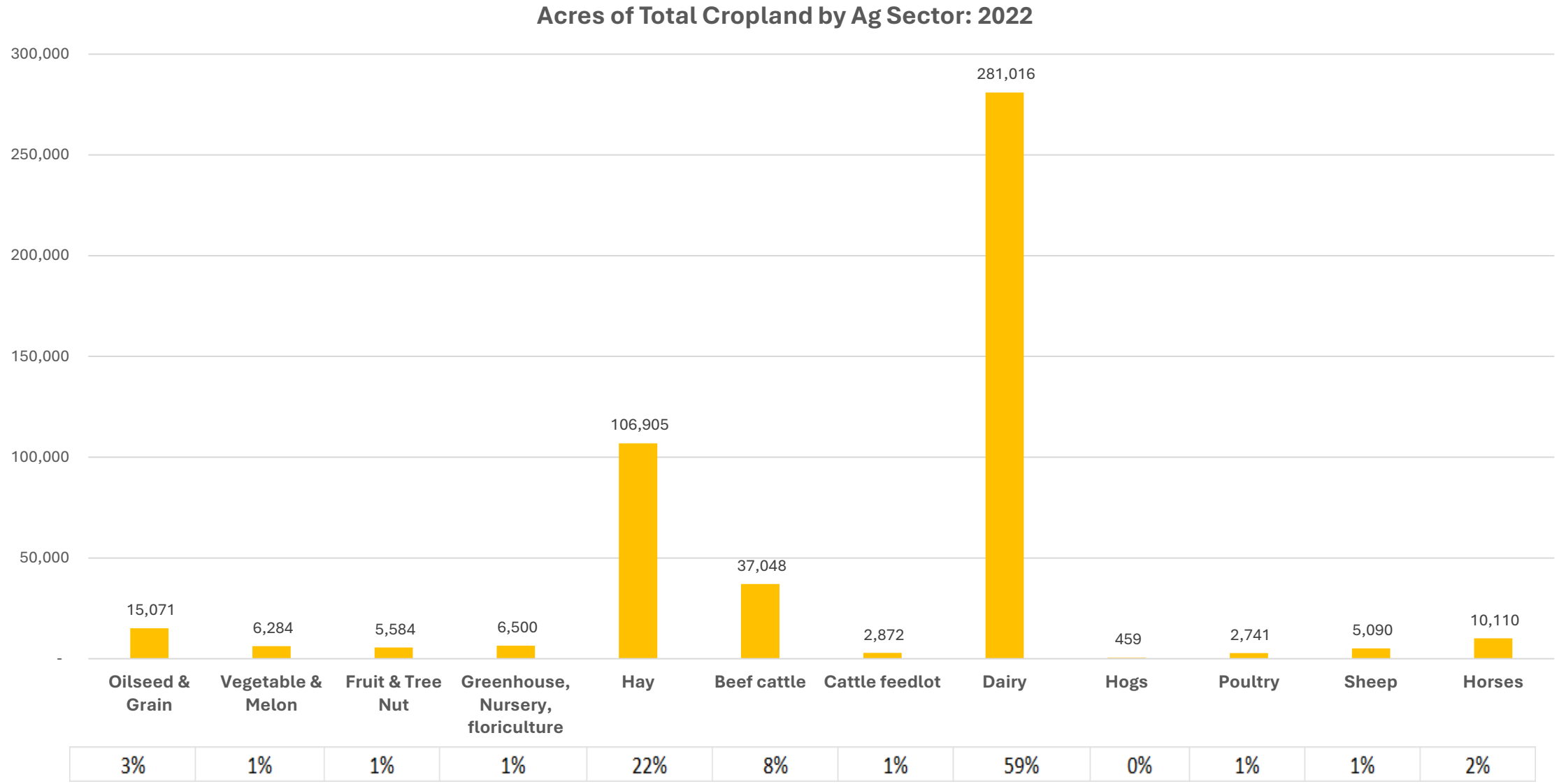
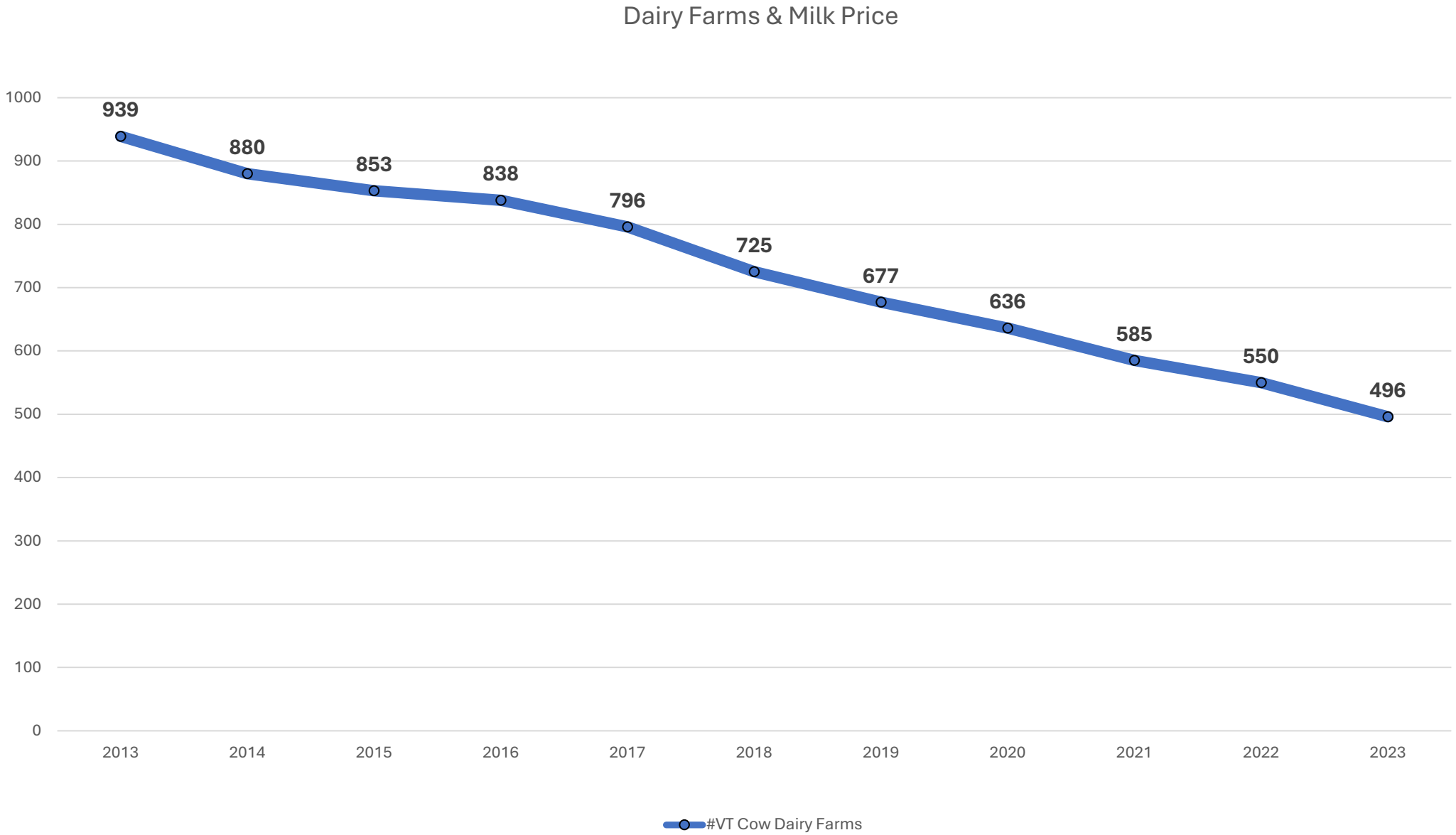
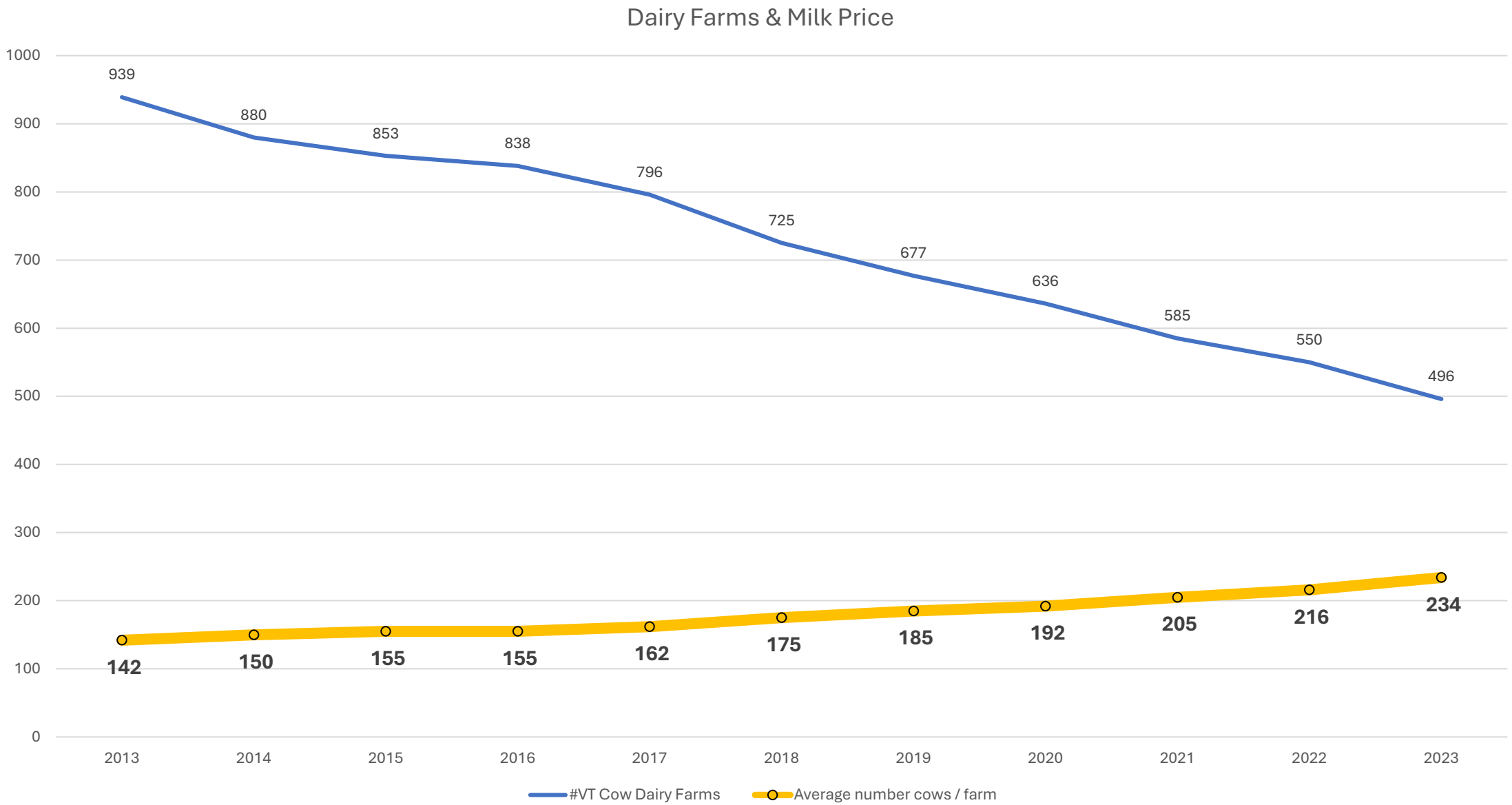


From: USDA NASS Ag Census 2022



From: Vermont Dairy Updates: https://www.uvm.edu/sites/default/files/Agriculture/dairy-update/2024-april-dairy-update.pdf



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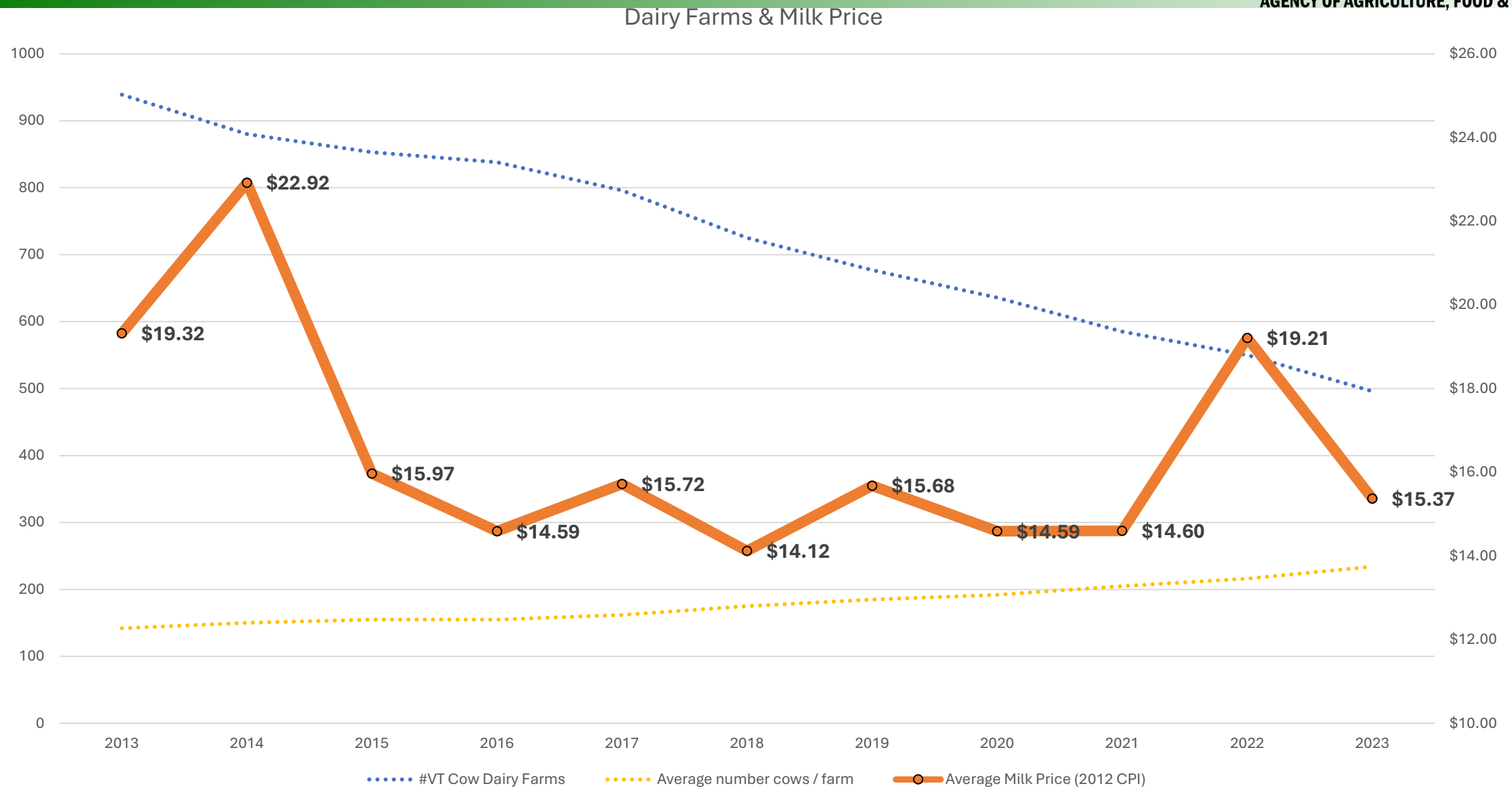
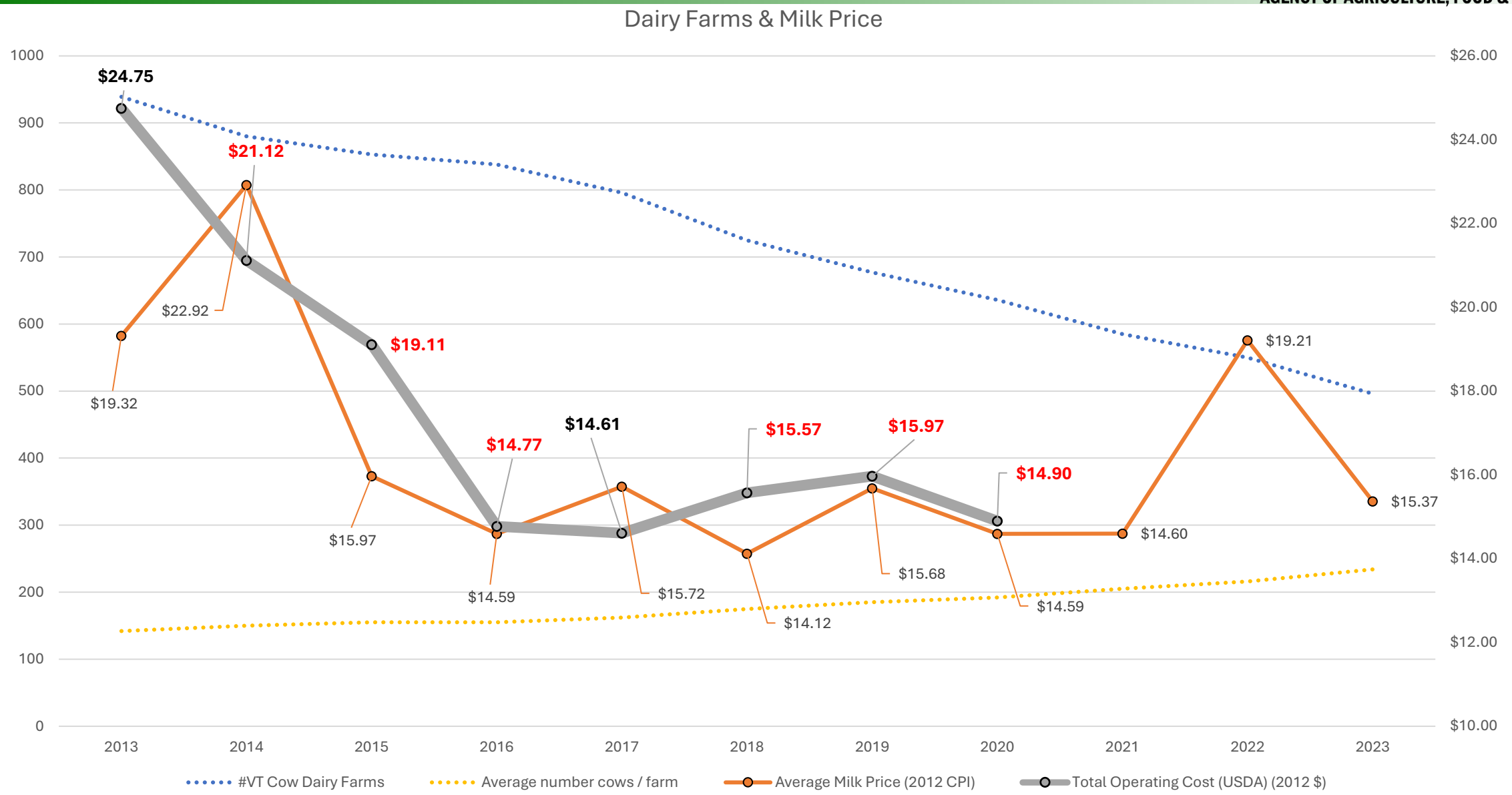


From: Vermont Dairy Updates: https://www.uvm.edu/sites/default/files/Agriculture/dairy-update/2024-april-dairy-update.pdf
From: https://www.ers.usda.gov/data-products/milk-cost-of-production-estimates/



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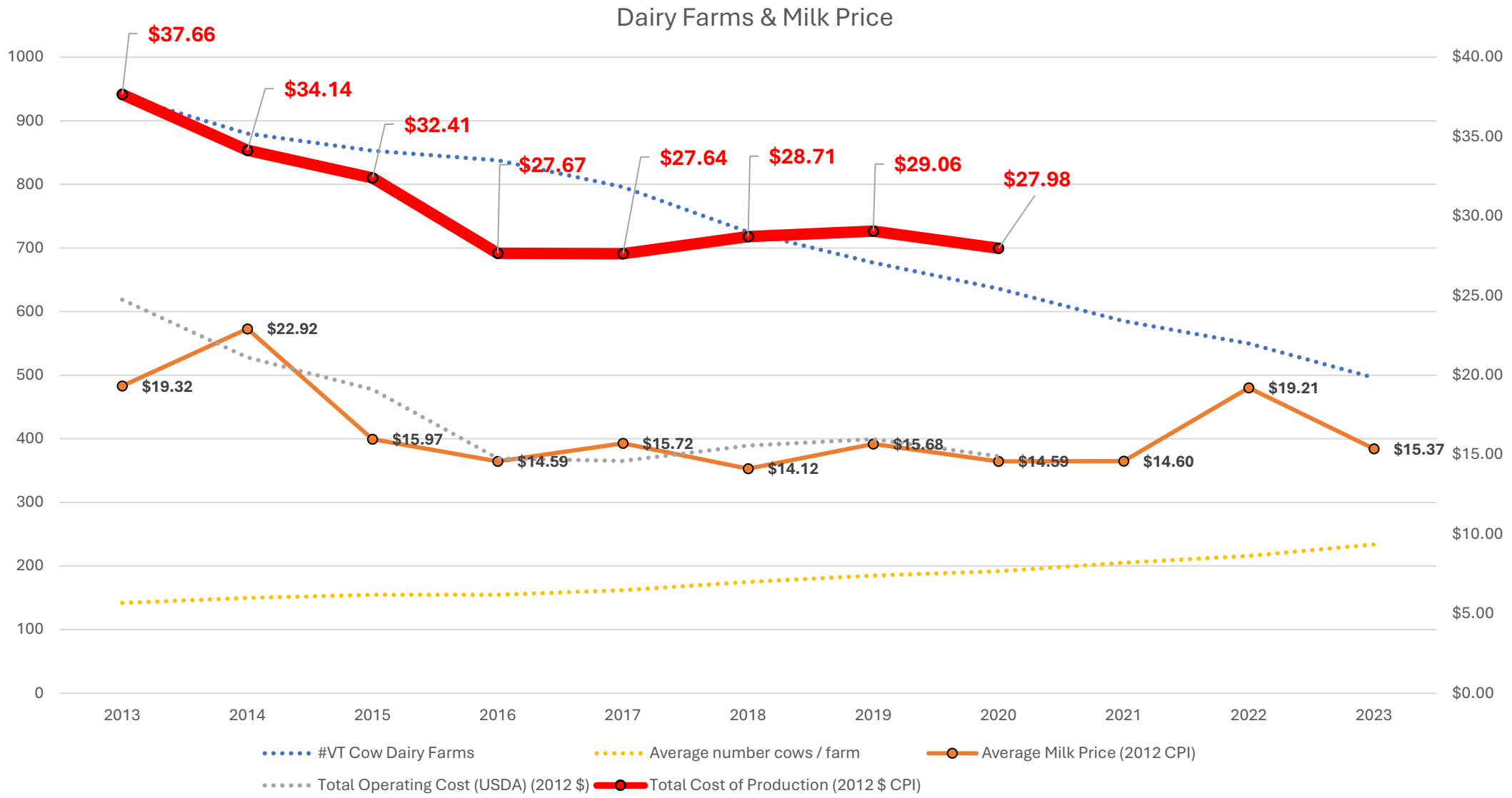

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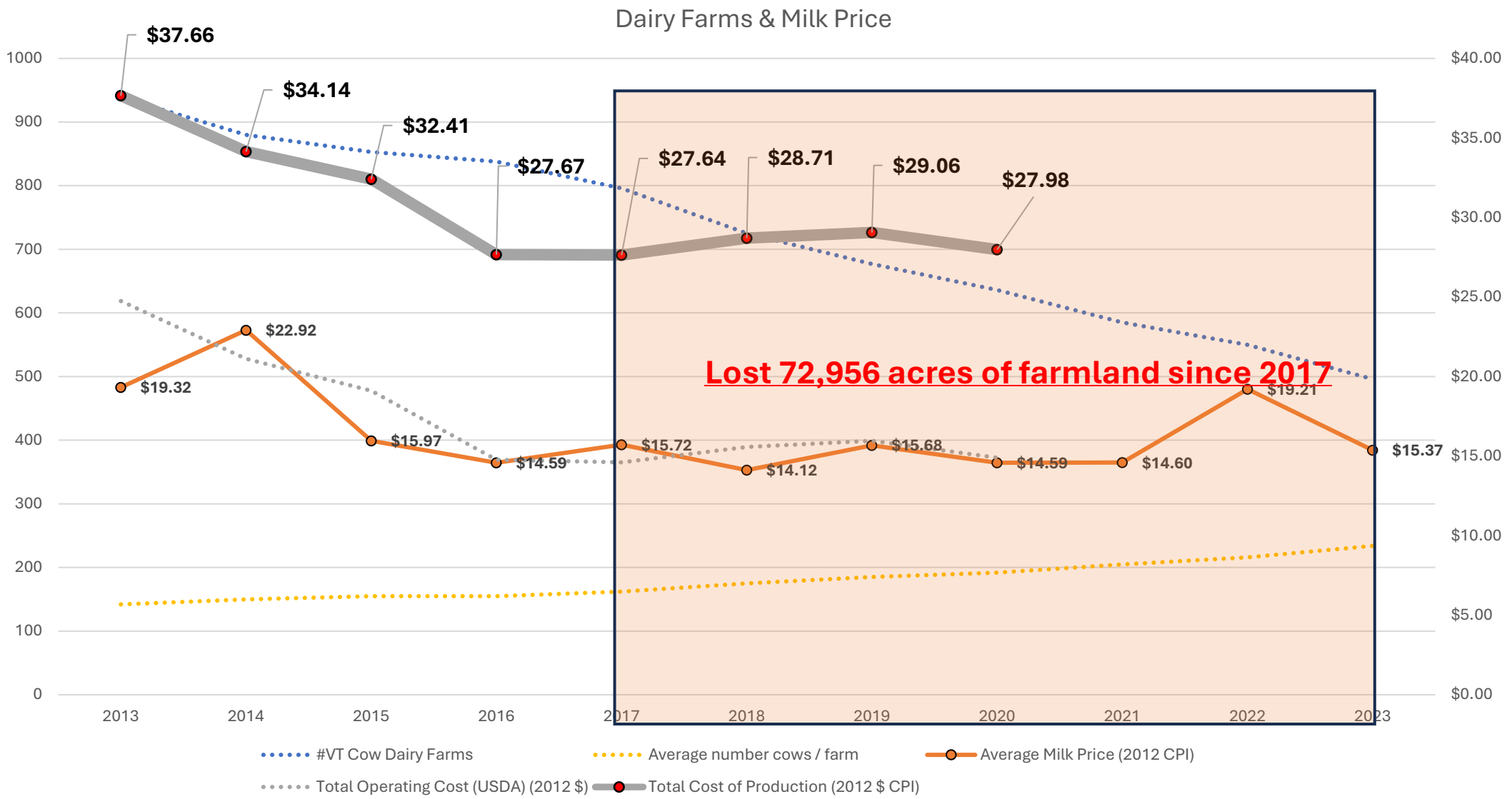

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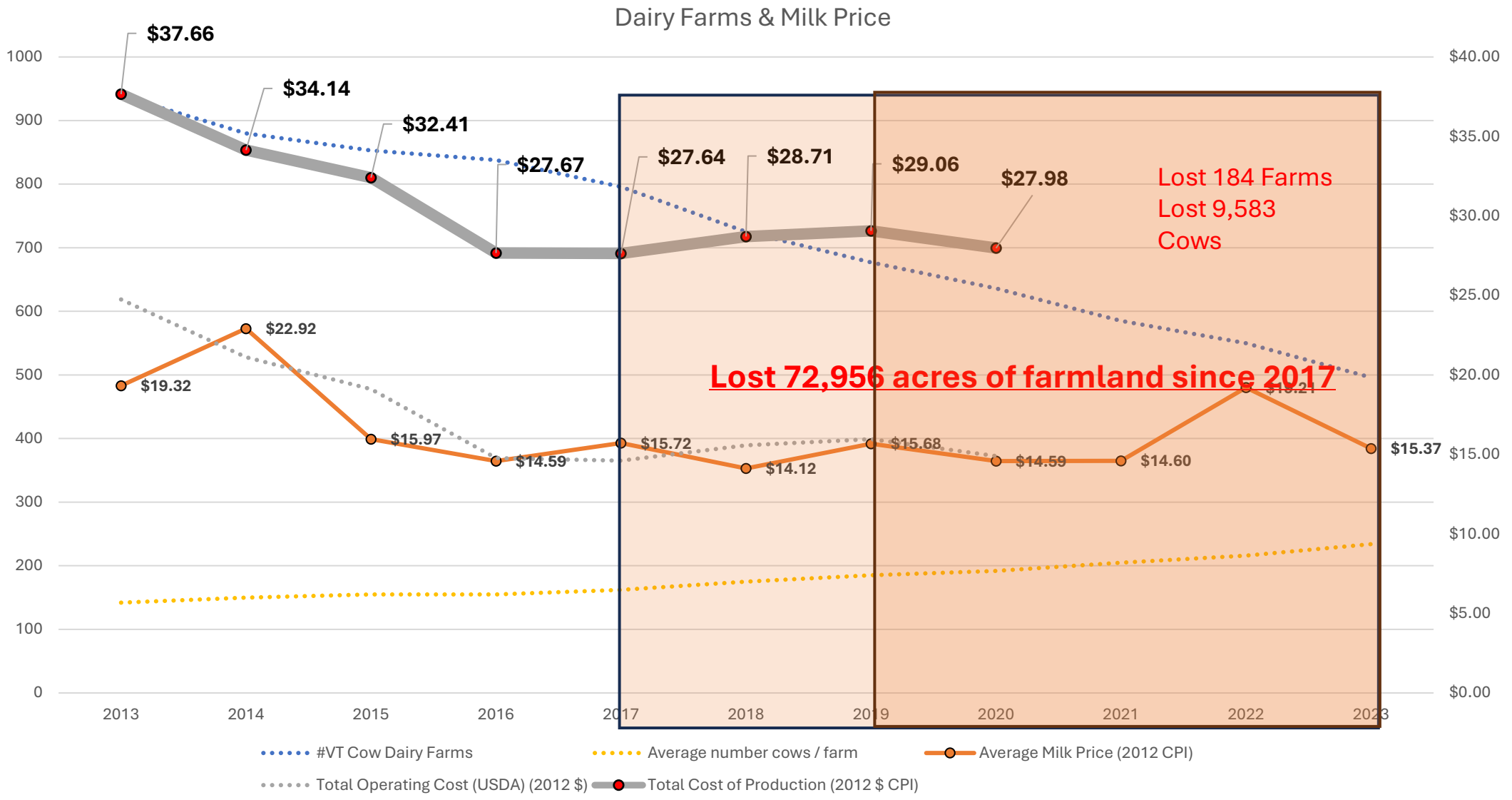

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Timeline

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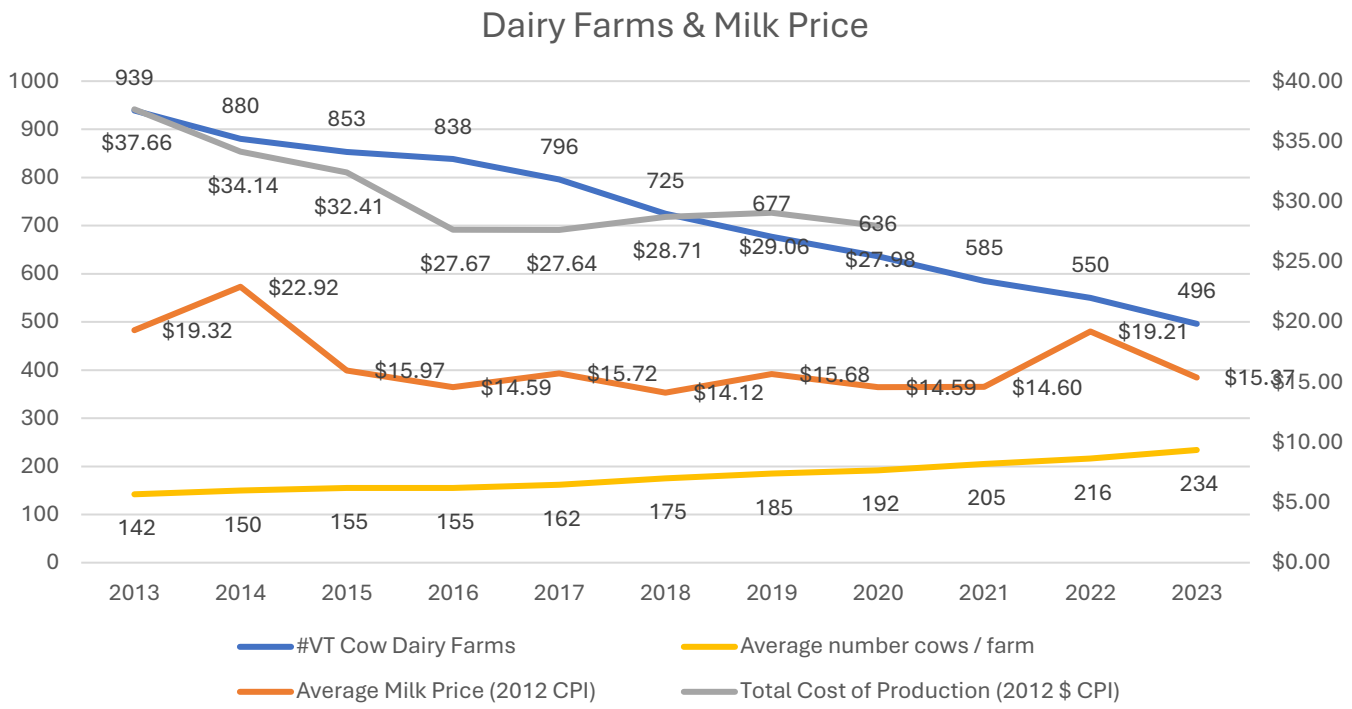

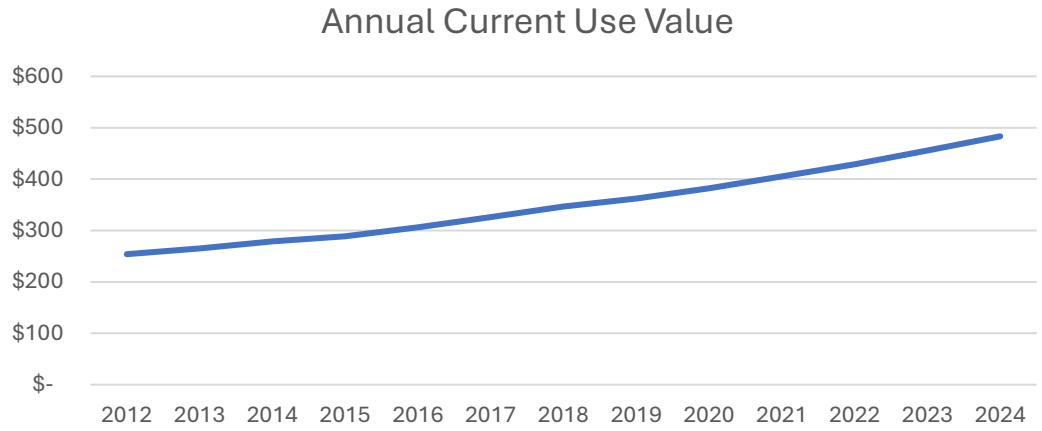

Without CU		474300	
		4743	
	Muni		Edu
		0.4	1.4386
		1897.2	6823.2798
	$	**8,720.48**	

With 2012 CU		474300	
		320500	
		3205	
		0.4	1.4386
		1282	4610.713
	$	**5,892.71**	

With 2024 C		474300	
		$343,400.00	
		$3,434.00	
		0.4	1.4386
		$1,373.60	$4,940.15
		$6,313.75	

Source: USDA NASS & Census Vermont – 1925 to 2022
Source: https://www.ers.usda.gov/data-products/milk-cost-of-production-estimates/
Source: https://tax.vermont.gov/sites/tax/files/documents/RP-1295-2024.pdf

2. Vermont Agriculture & Climate Change

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Vermont is Getting Warmer and Wetter: Climate Change Study

The Green Mountain State has warmed nearly 2°F, with a 21% jump in precipitation

Key findings

Climate change is here – and impacting communities across Vermont.

Vermont is getting warmer. Winters are warming more quickly. Snow season is getting shorter.

Vermont is getting wett Heavy rain events happe more often, contributing more flooding and wate quality problems.

Multiple, complex impacts could lead to surprises.

Climate impacts and risks will increase without action.

Dig in to learn more...

Source: The Vermont Climate Assessment 2021. Burlington, Vermont: Gund Institute for Environment at the University of Vermont. On the web: https://vtclimate.org

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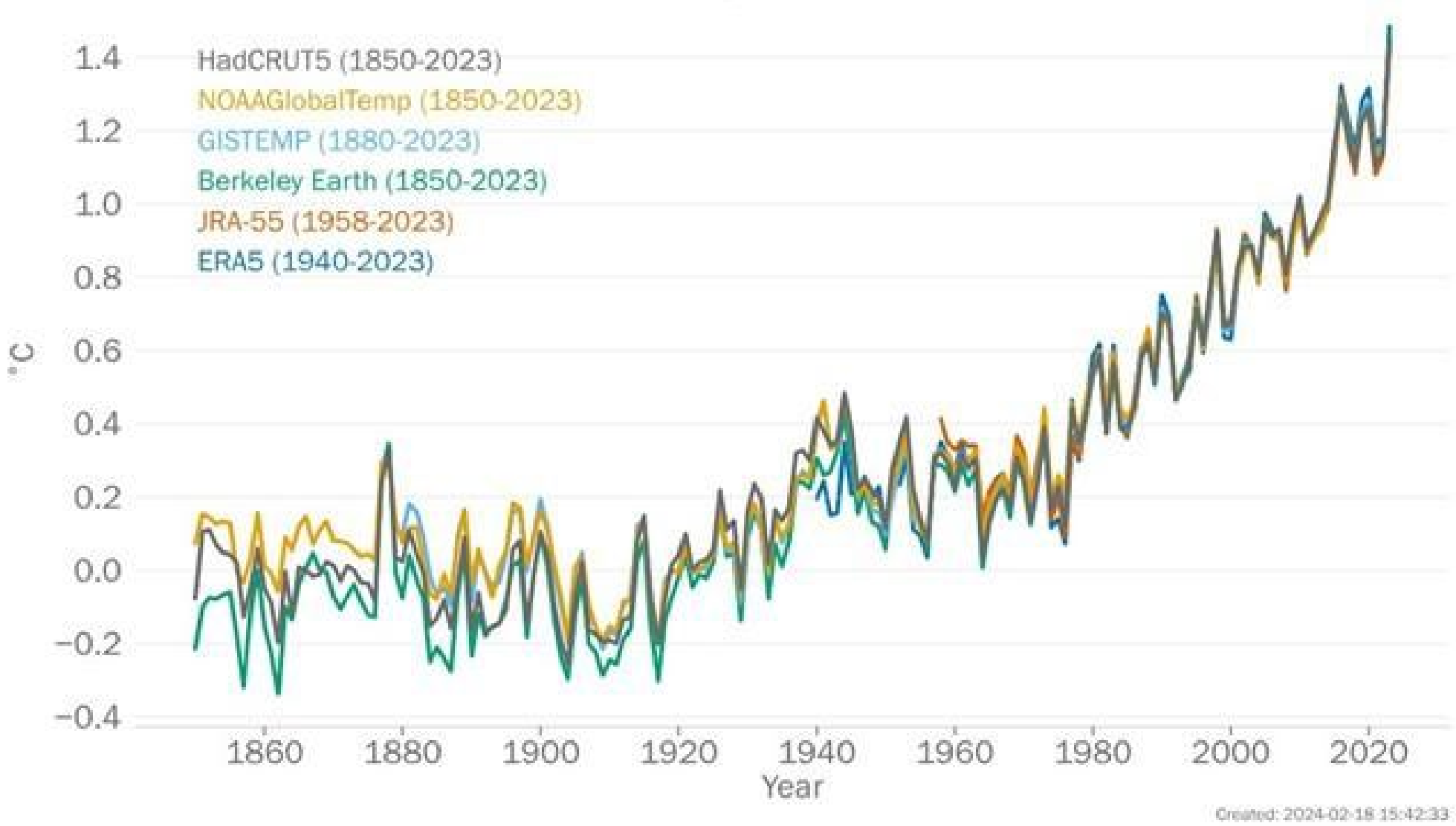
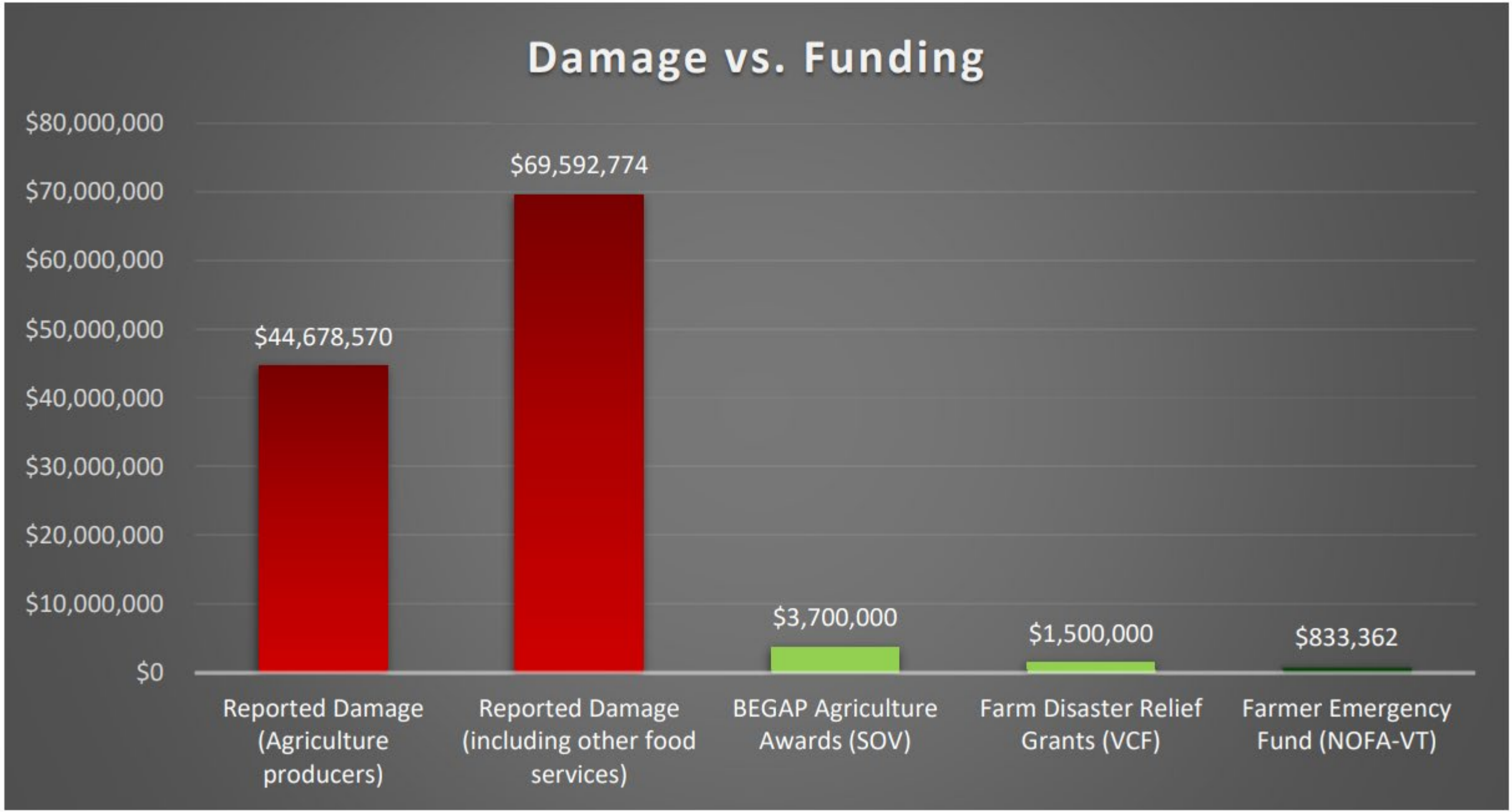
Global Mean Temperature Difference (°C)

Compared to 1850-1900 average



Source: https://wmo.int/news/media-centre/climate-change-indicators-reached-record-levels-2023-wmo



Source: Vermont Agriculture Recovery Task Force Report, 2024.
https://agriculture.vermont.gov/sites/agriculture/files/documents/Ag%20Recovery%20Task%20Force%20Report.pdf

Federal Disaster Declarations: 13 months

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Disaster Declarations	117	5/9/2024					
Common Disaster Name	**Interval Between Disasters (Days)**	**Incident Period Start**	**Incident Period End**	**Major Disaster Declared**	**FEMA Disaster Declaration**	**FEMA Disaster Map**	**USDA Disaster Declaration for Agriculture?**
January Wind Storm (2024)	21	1/9/2024	1/13/2024	4/19/2024	Vermont Severe Winter Storm DR-4770-VT	https://www.fema.gov/disaster/4770/designated-areas	*Need USDA FSA reporting on ECP / EFRP*
December Flooding	135	12/18/2023	12/19/2023	3/2/2024	Vermont Severe Storms and Flooding (DR-4762-VT)	https://www.fema.gov/disaster/4762/designated-areas	*Need USDA FSA reporting on ECP*
Addison Microburst / Flooding	13	8/3/2023	8/5/2023	10/6/2023	Vermont Severe Storms and Flooding DR-4744-VT	https://www.fema.gov/disaster/4744/designated-areas	*Need USDA FSA reporting on ECP / EFRP*
July Flooding Disaster Declaration	50	7/7/2023	7/21/2023	7/14/2023	Vermont Severe Storms, Flooding, Landslides, and Mudslides DR-4720-VT	https://www.fema.gov/disaster/4720/designated-areas	Yes
July Flooding Emergency Declaration	-	*7/9/2023*	*7/17/2023*	*7/10/2023*	Vermont Flooding EM-3595-VT	https://www.fema.gov/disaster/3595/designated-areas	-
May Freeze	52	5/17/2023	5/18/2023	*Not DR*	*Not DR*	*Not DR*	Yes
December Wind Storm (2022)	-	12/22/2022	12/24/2022	3/20/2023	Vermont Severe Storm and Flooding DR-4695-VT	https://www.fema.gov/disaster/4695/designated-areas	*Need USDA FSA reporting on ECP / EFRP*

Source: https://www.fema.gov/locations/vermont

Projected Vermont Climate Risks

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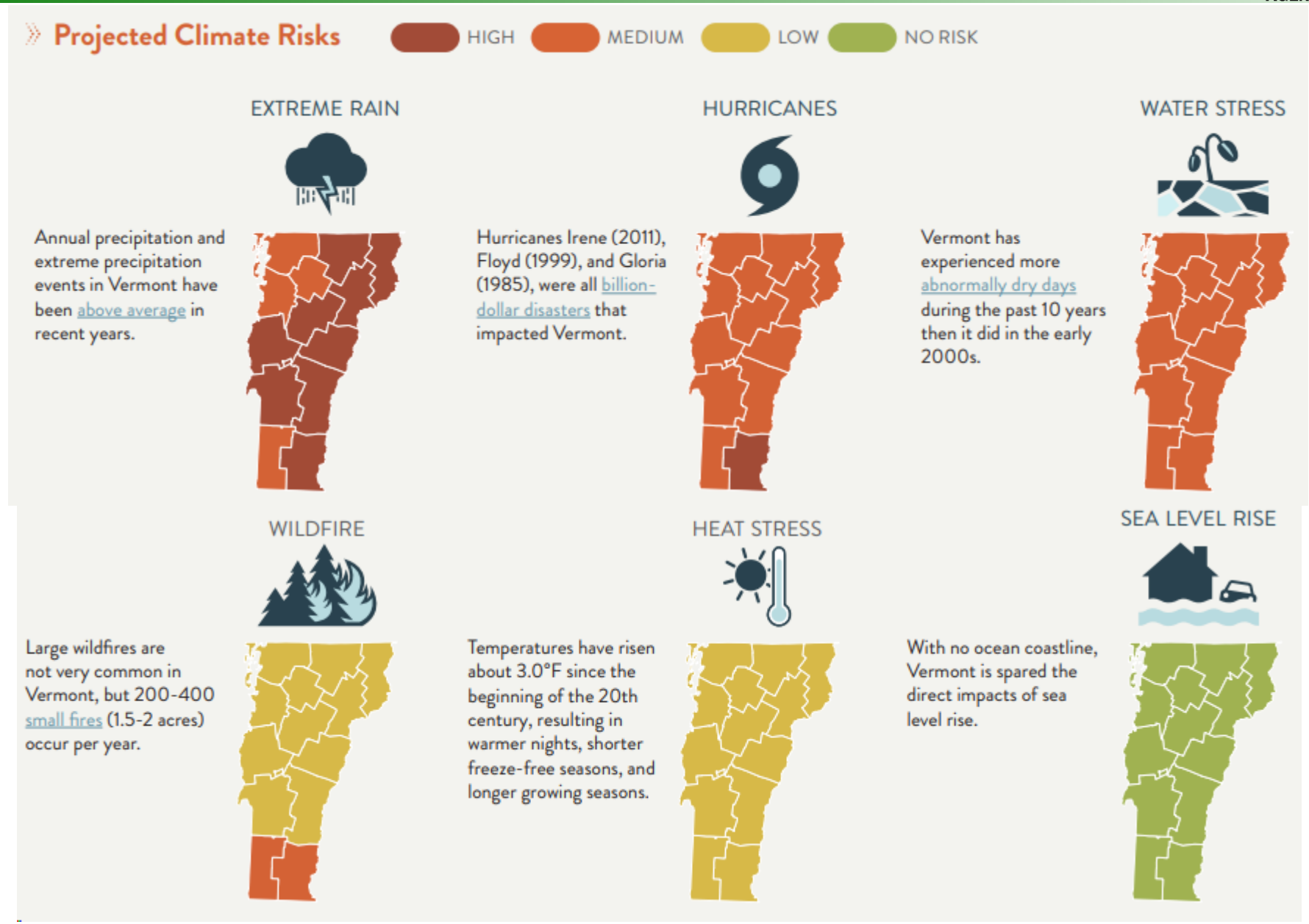

Source: https://nefoodsystemplanners.org/wp-content/uploads/NEFNE-VERMONT-State-Brief.pdf

National and Vermont Climate Impacts

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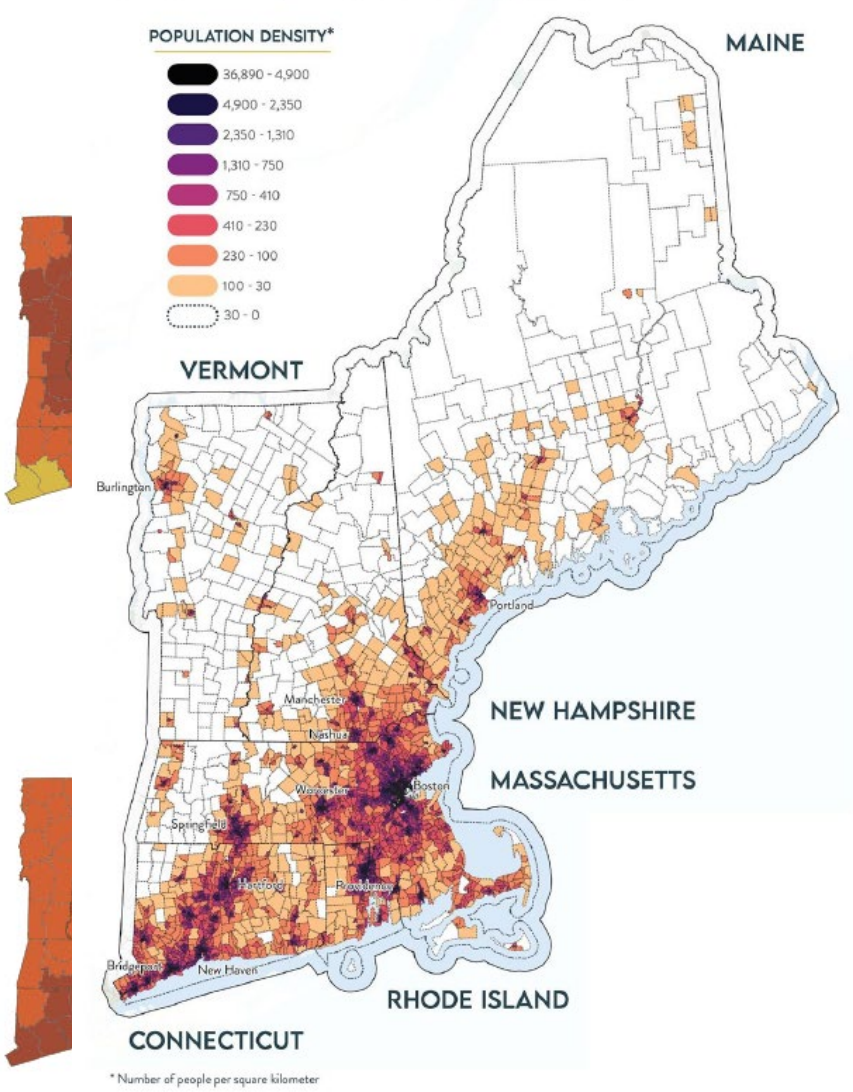
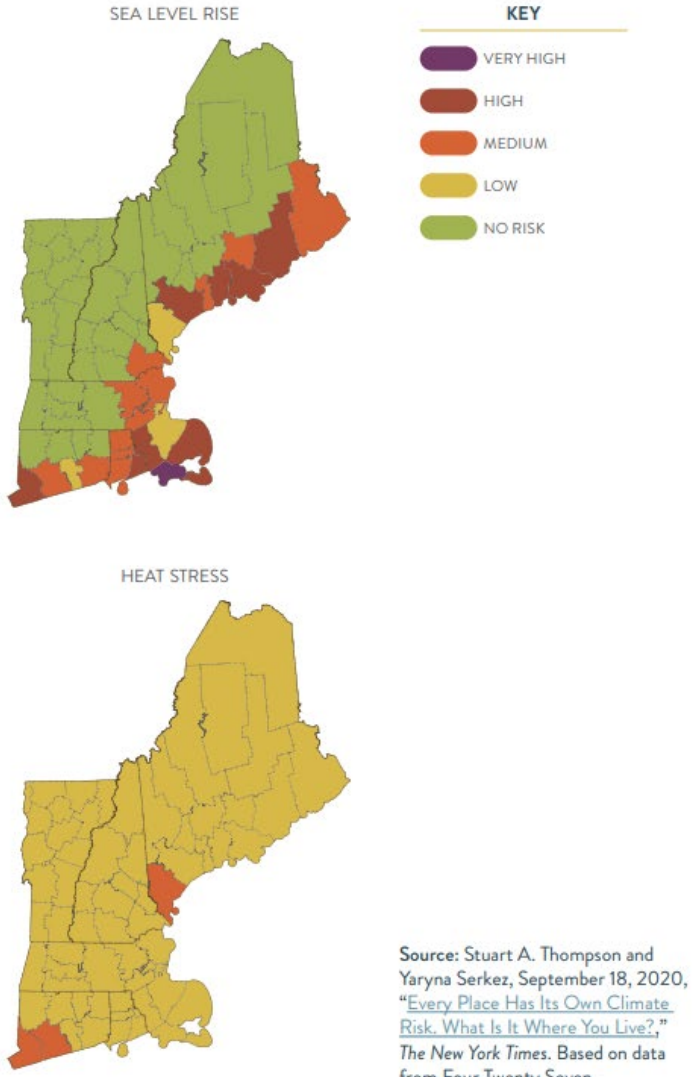
FIGURE

FIGURE 3: New England Population Density by Town/City





Source: Stuart A. Thompson and Yaryna Serkez, September 18, 2020, "Every Place Has Its Own Climate Risk. What Is It Where You Live?," *The New York Times*. Based on data from Four Twenty Seven.

Source: https://nefoodsystemplanners.org/wp-content/uploads/NEFNE_Common-Food-System-Challenges.pdf

National and Vermont Climate Impacts

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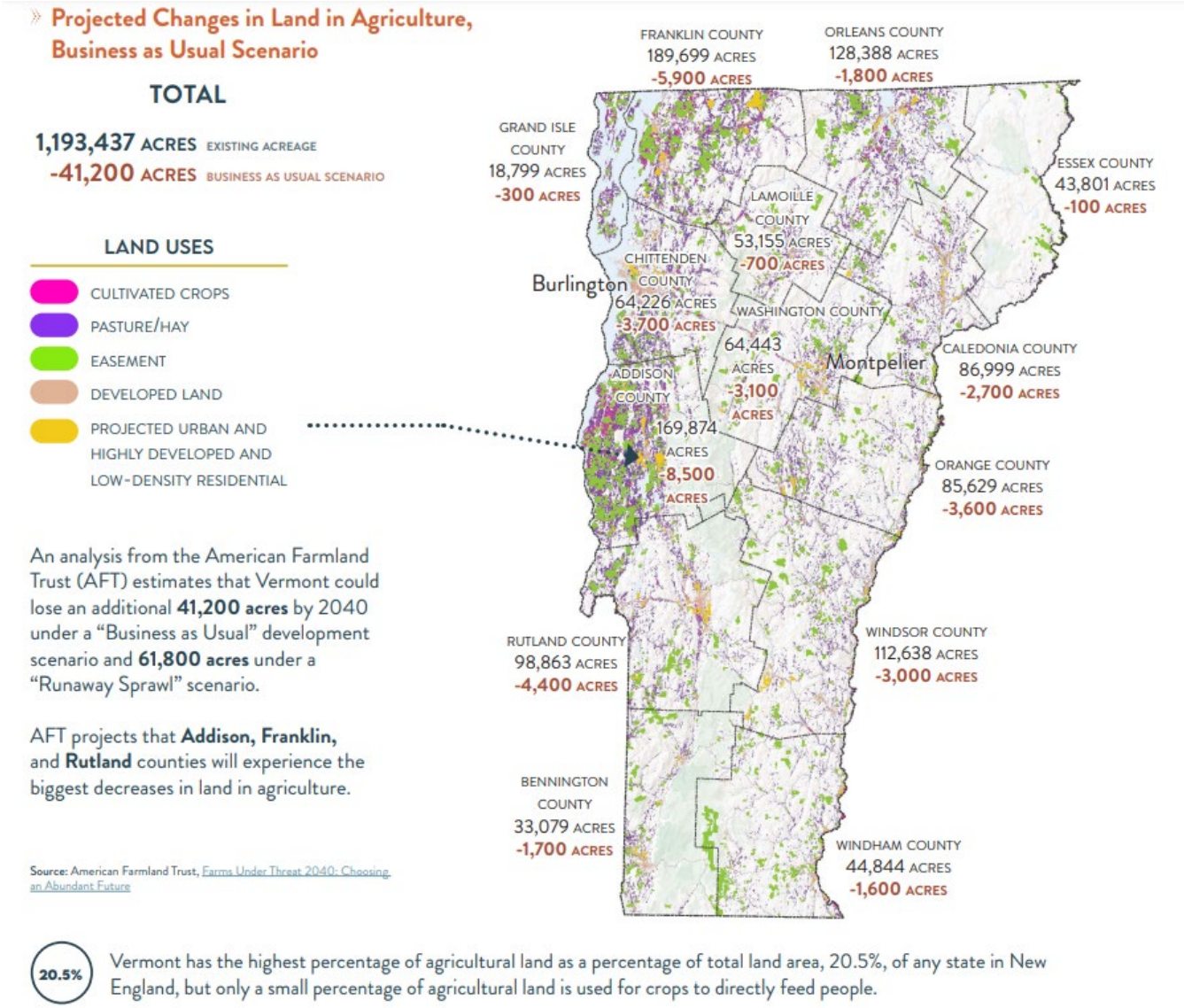

On recent trends, from 2016 to 2040:

Vermonters will pave over, fragment, or compromise

41,200 acres

of farmland.

That's the equivalent of losing

200 farms,

$24 million

in farm output, and

700 jobs

based on county averages.[1]

60% of the conversion will occur on Vermont's best land.[2]

Hardest-hit counties:

- **Addison**
- **Franklin**
- **Rutland**

[1] *Census of Agriculture 2017*
[2] *Freedgood et al. 2020*

Source: https://nefoodsystemplanners.org/wp-content/uploads/NEFNE-VERMONT-State-Brief.pdf
Source: https://farmlandinfo.org/wp-content/uploads/sites/2/2020/10/AFT_NE_FUT-10_14_20_rev.pdf

National and Vermont Climate Impacts

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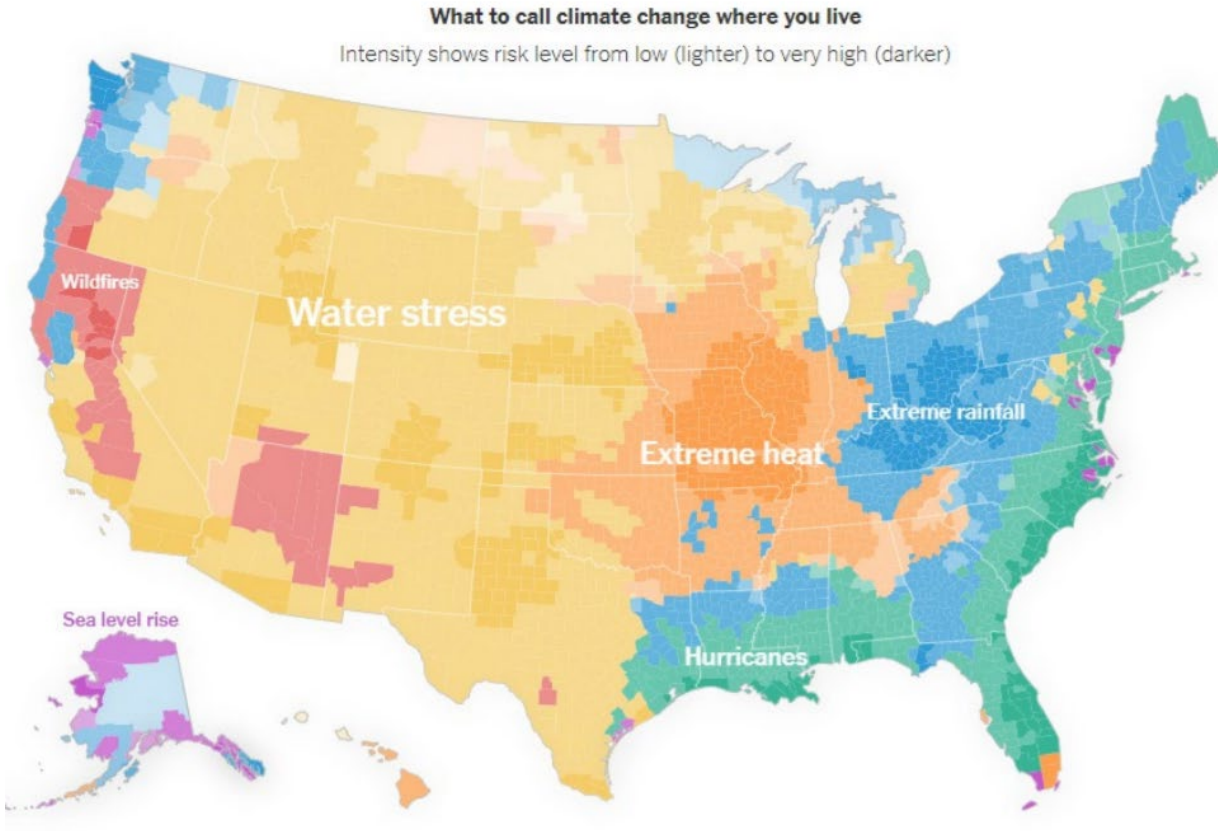
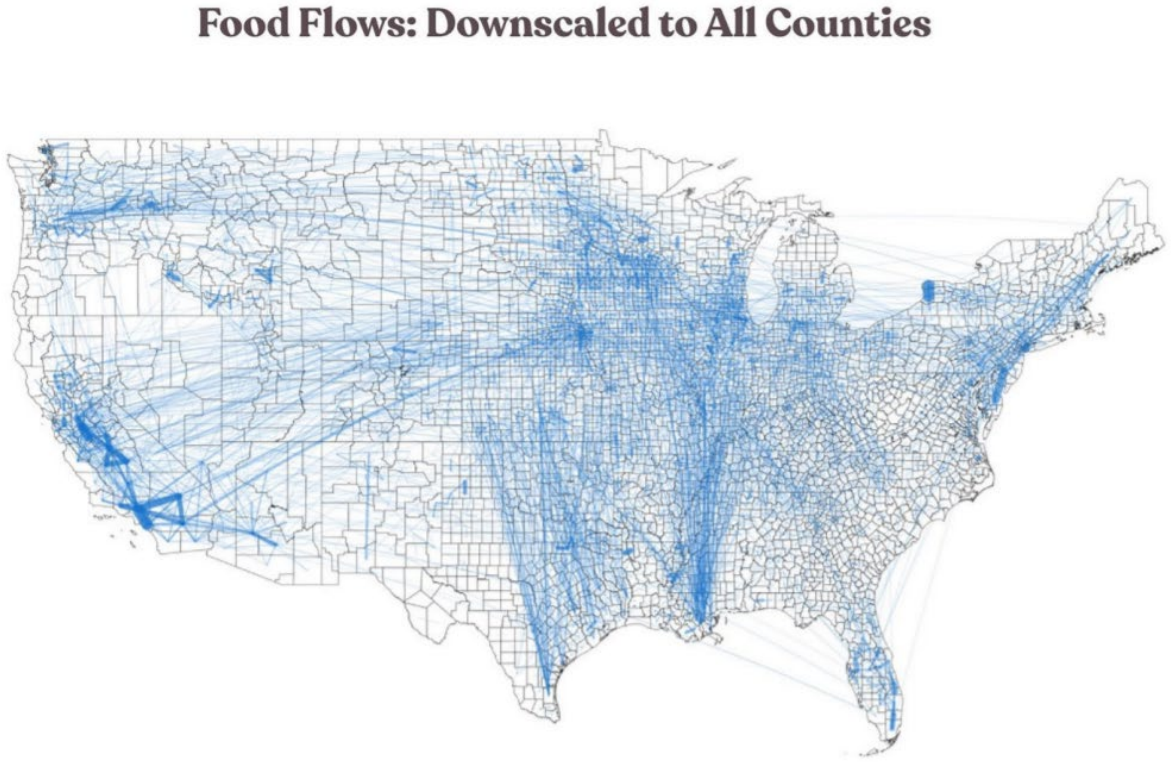
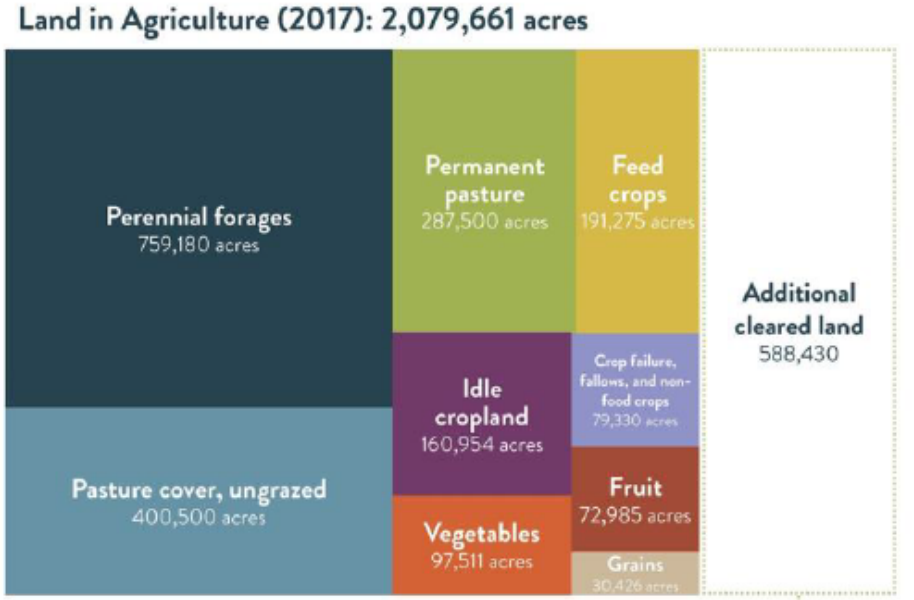


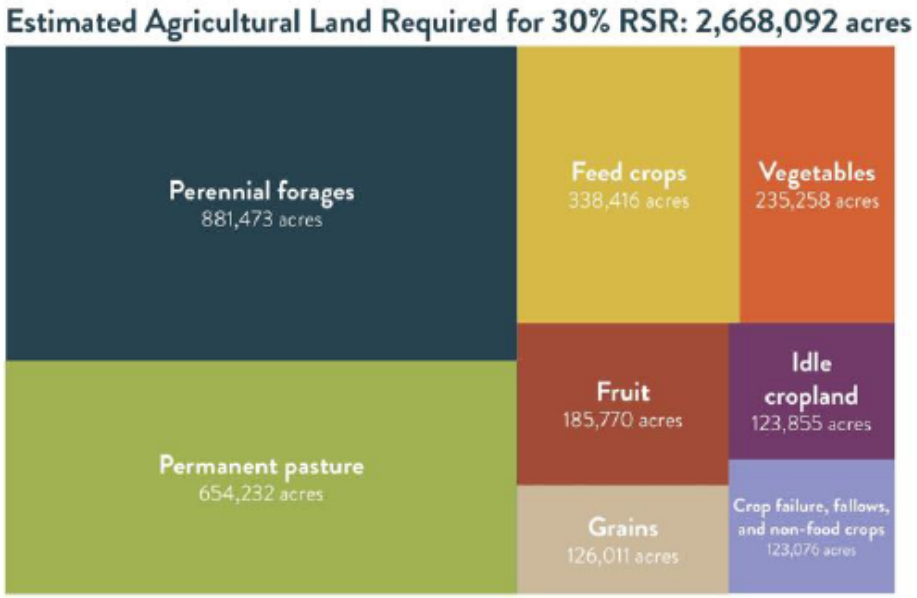


Source: Ellen Kahler, VSJF Presentation to House Agriculture:
https://legislature.vermont.gov/Documents/2022/WorkGroups/House%20Agriculture/Food%20Security/W~Ellen%20Kahler~New%20England%20Feeding%20New%20England-%20Cultivating%20a%20Reliable%20Food%20Supply~1-26-2021.pdf

To achieve 30% regional production available for consumption (in servings), **400,000** in existing underutilized cropland and **590,000** in new cropland would need to be brought into production.

2022 USDA Ag Census Vermont:
543,096 acres of land used for farming





Source: https://nefoodsystemplanners.org/wp-content/uploads/NEFNE_Executive-Summary.pdf
Source: https://nefoodsystemplanners.org/wp-content/uploads/NEFNE-VERMONT-State-Brief.pdf

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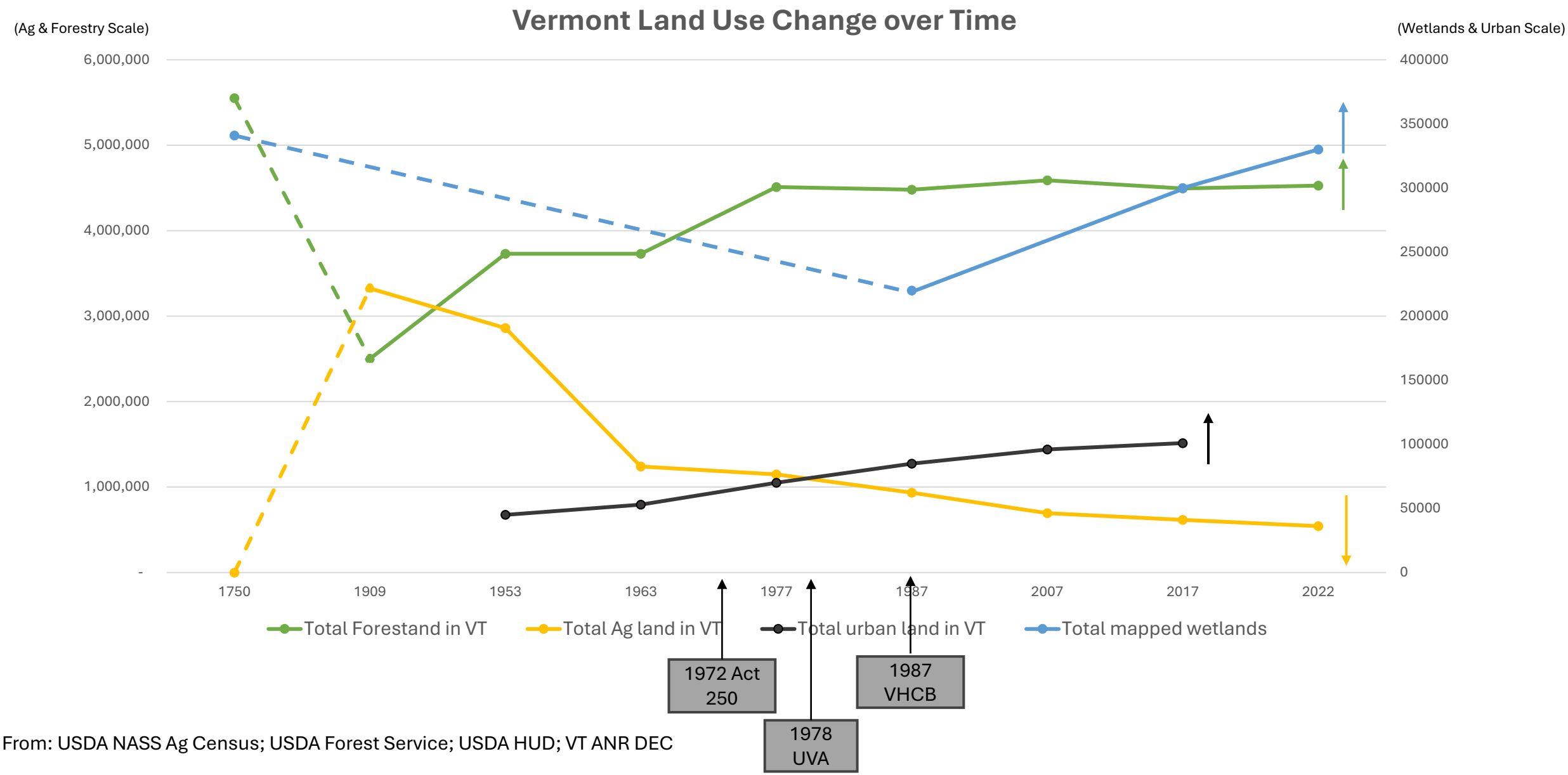

From: USDA NASS Ag Census; USDA Forest Service; USDA HUD; VT ANR DEC

3. Example Existing VT Ag Land Use Protection Strategies

Agricultural Easements

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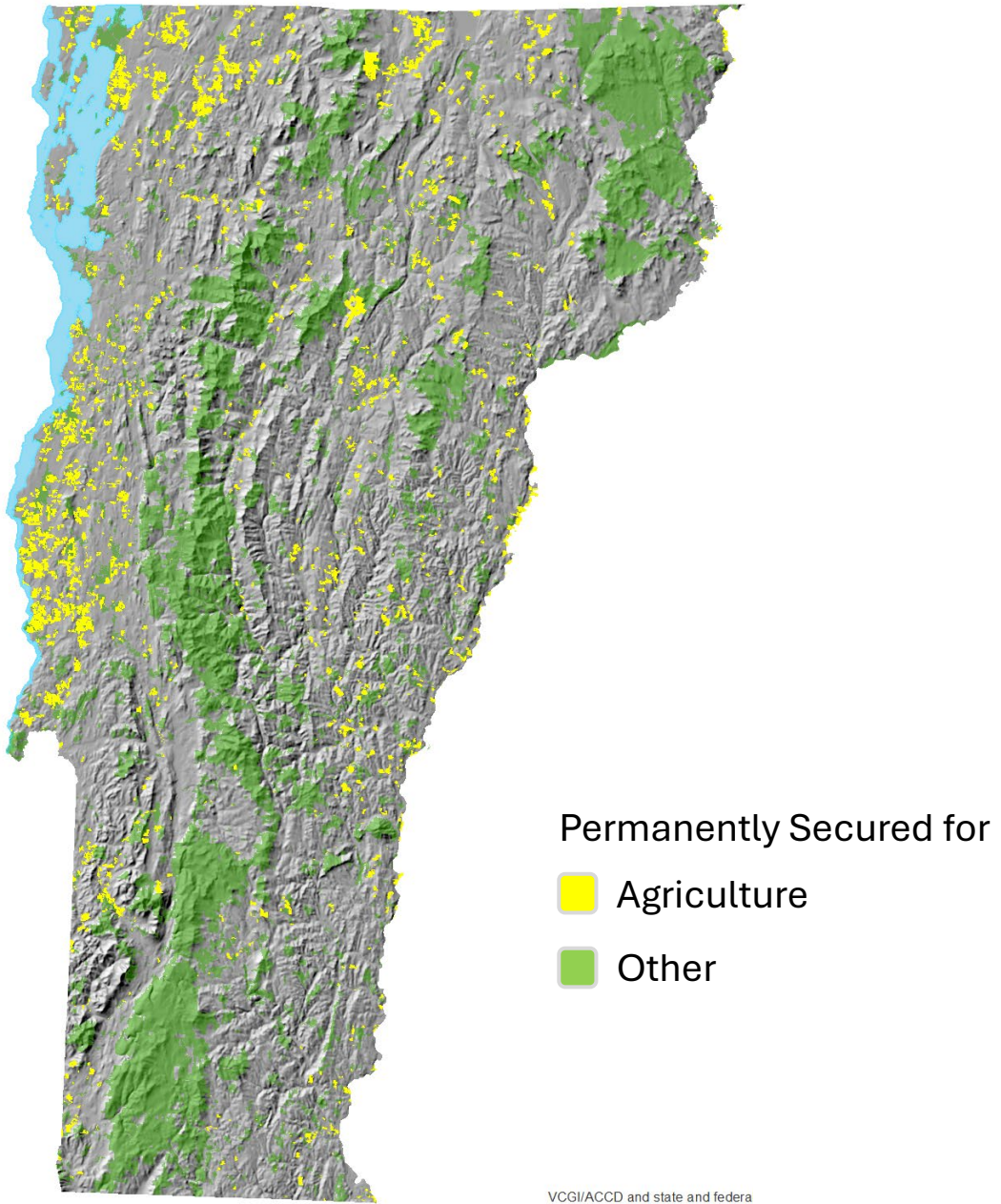
WATER QUALITY DIVISION

Summary

- **226,623 acres** of Agricultural Easements in Vermont
- “Permanently Secured for Agriculture” (yellow)

Methods

- Agricultural Easements “contain” = area within (acres)
- Geospatial overlay



Agricultural Easements Contain

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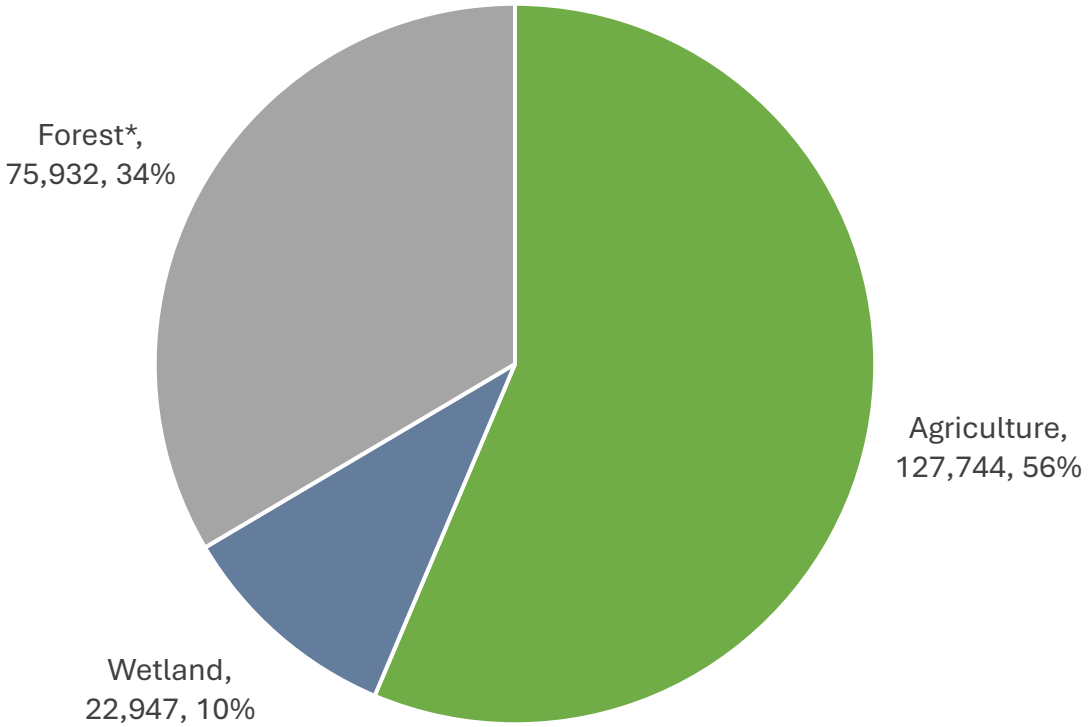
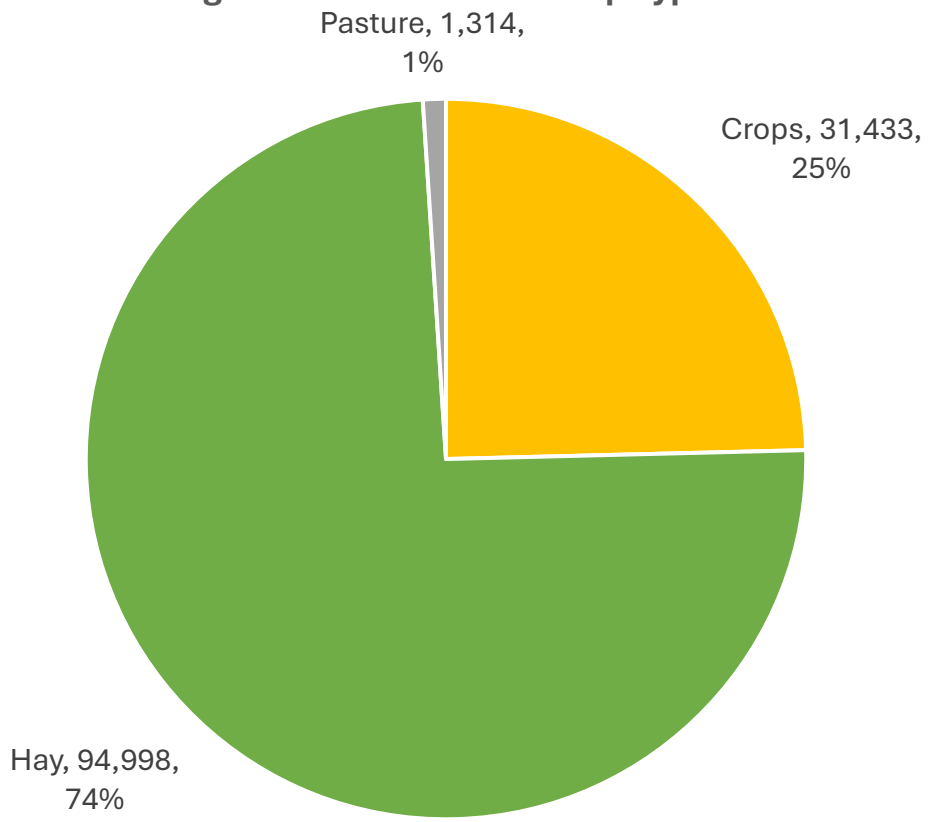
WATER QUALITY DIVISION

Agricultural Easement Landcover



*Forest not geospatially determined, difference from agricultural and wetland landcovers

Agricultural Easment Crop Type



*Agricultural landcover/crop type from 2016 (UVM Spatial Lab)

Source: How to Reference Vermont's Land and Water Area - https://vcgi.vermont.gov/resources/how-and-education-resources/how-reference-vermonts-land-and-water-area

Agricultural Easements Contain

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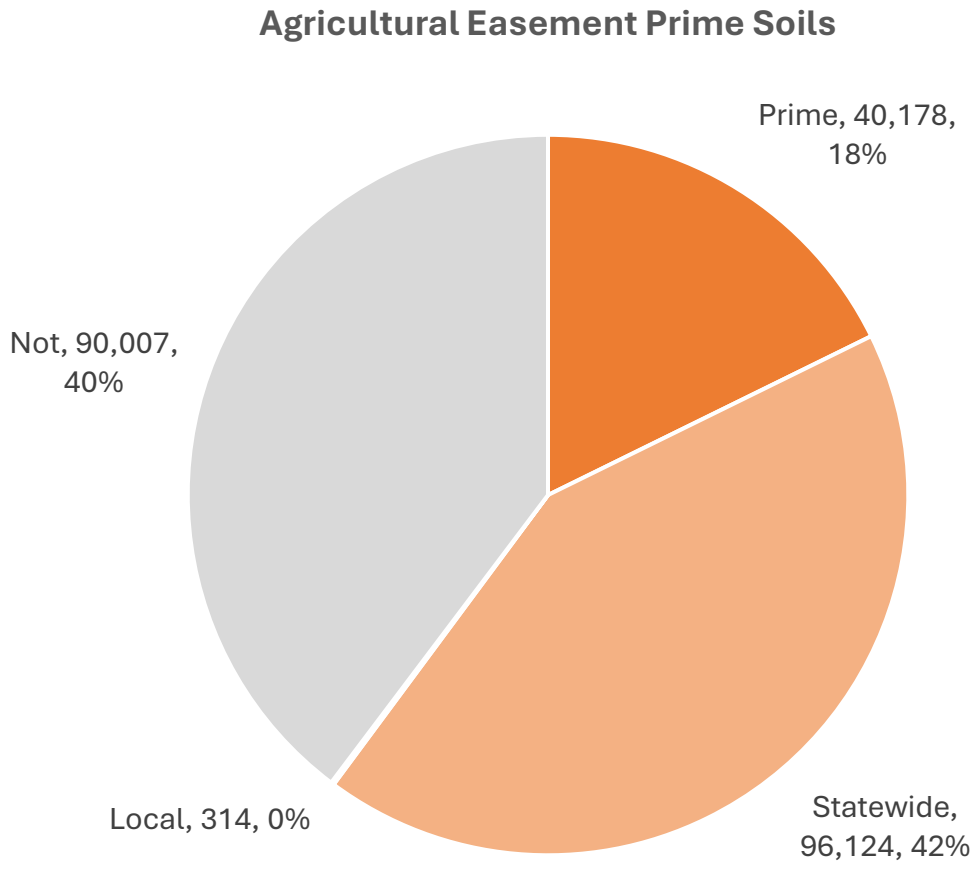
WATER QUALITY DIVISION

Prime Soils

- "best combination of physical and chemical characteristics for producing food, feed, forage"
- "soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods"
    - Prime
    - Statewide
    - Local
- **60%** of Agricultural Easements are on Prime Soils



Agricultural Easements

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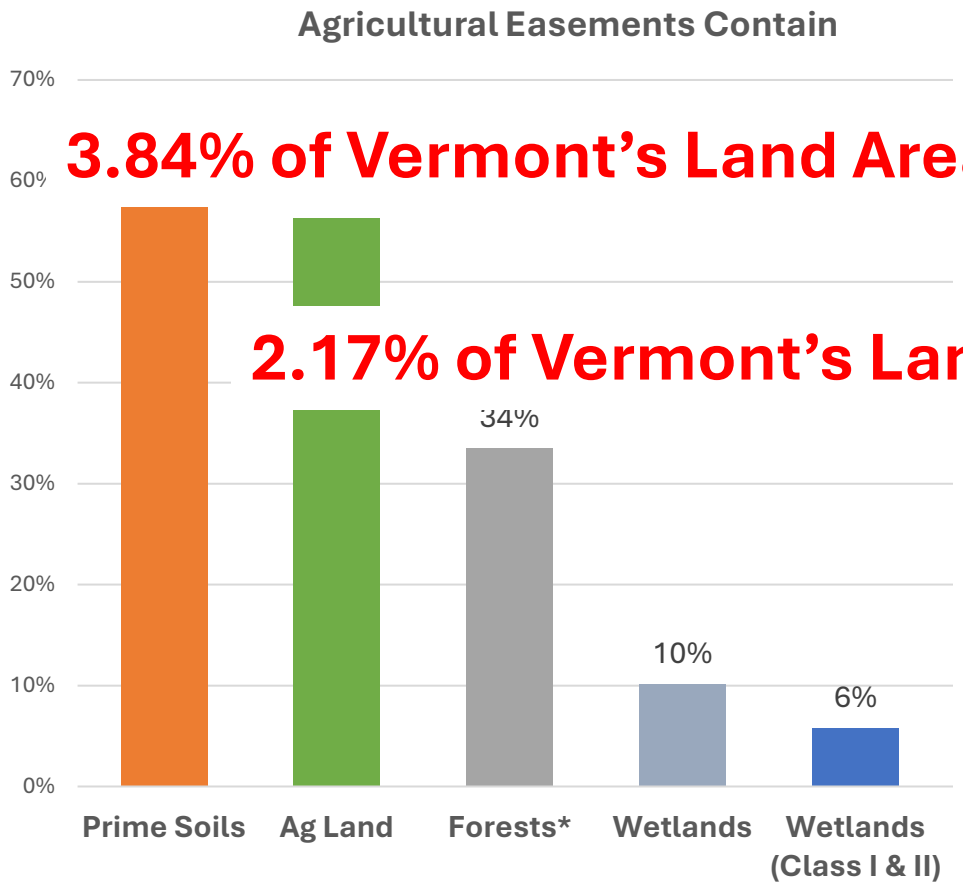
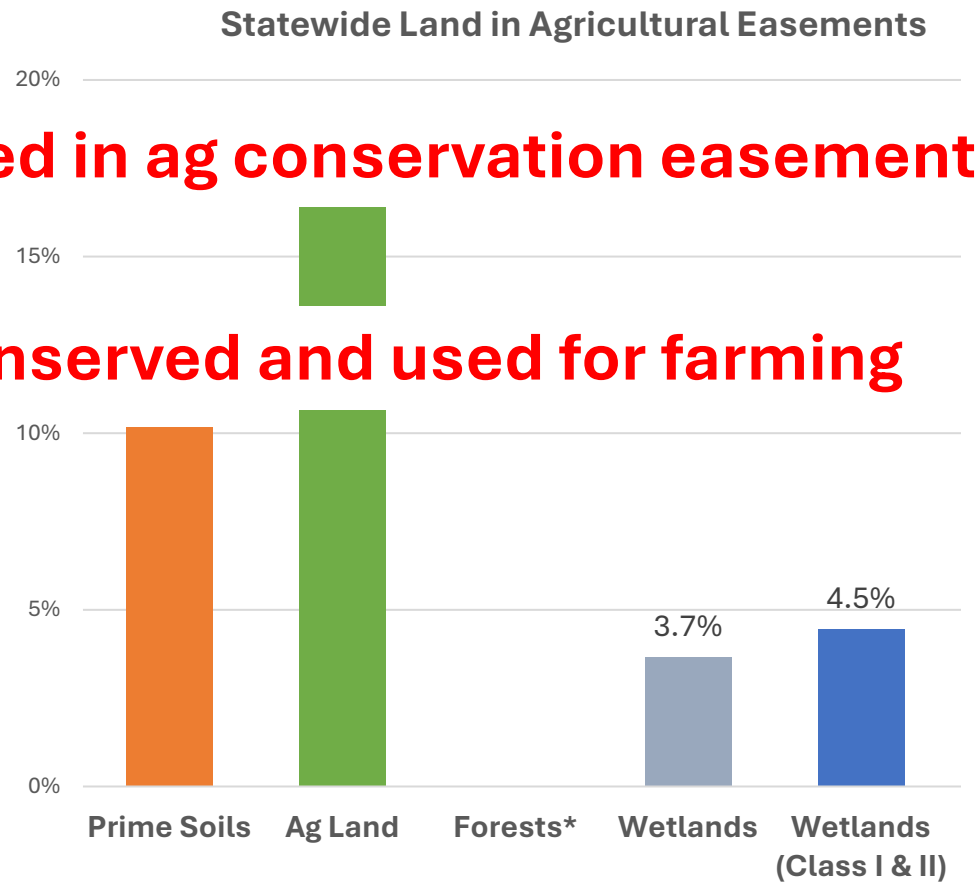
WATER QUALITY DIVISION

3.84% of Vermont's Land Area is conserved in ag conservation easements

2.17% of Vermont's Land Area is conserved and used for farming





*Agricultural Land is **56%** of Agricultural Easements in Vermont

*Agricultural Easements are **18%** of Agricultural Land in Vermont

Source: How to Reference Vermont's Land and Water Area - https://vcgi.vermont.gov/resources/how-and-education-resources/how-reference-vermonts-land-and-water-area

Agricultural Easements – Data utilized for analysis

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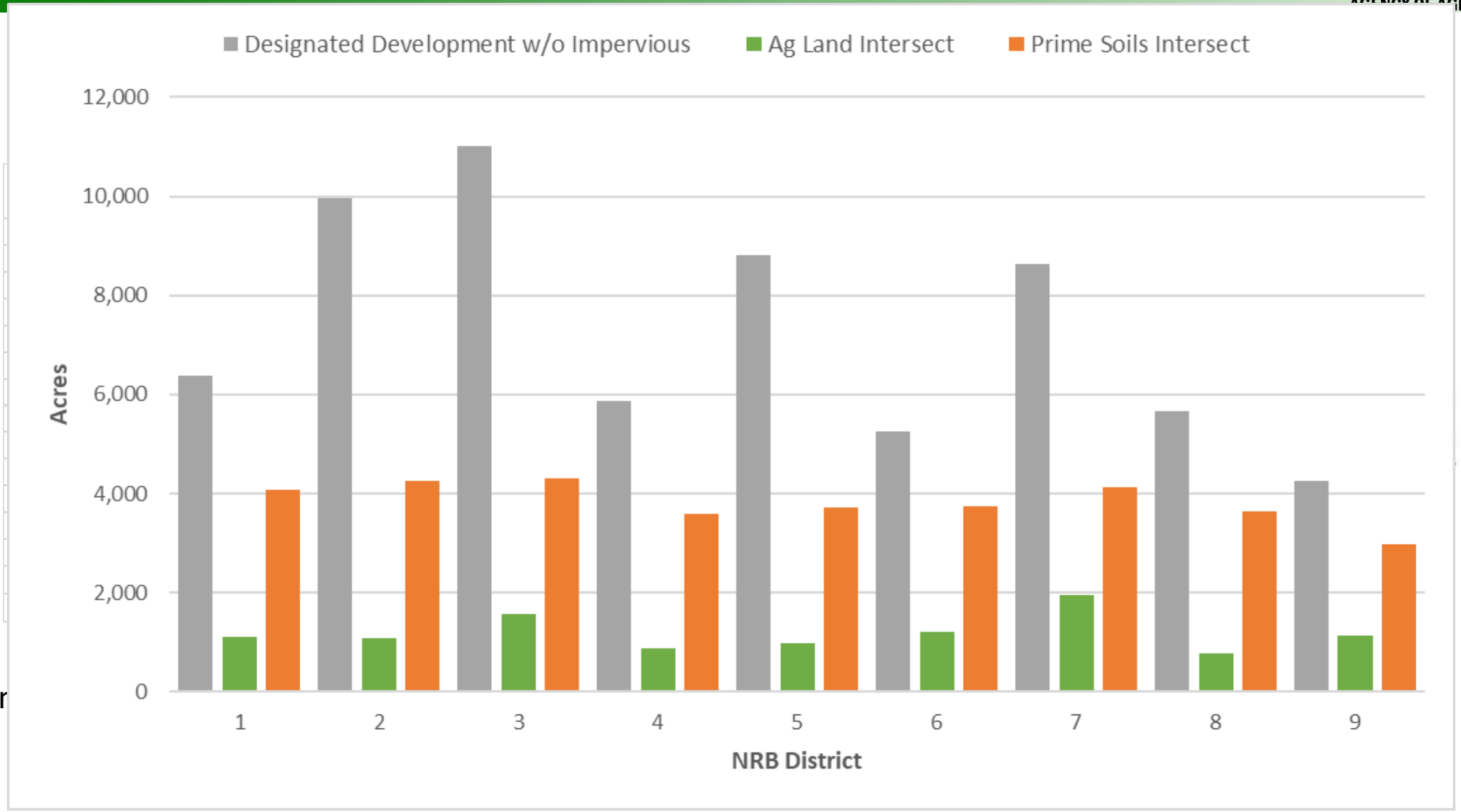
GIS Layers Analyzed

- Agricultural Easements
  - TNC's Protected Lands Layer: NE_Secured_Areas_2022_Public
- Vermont Open Geodata Portal (https://geodata.vermont.gov/):
  - Vermont Agriculture Land Cover 2016
  - Vermont Wetlands Land Cover 2016
  - VSWI Wetlands Class Layer
  - Agricultural Important Soil Units

Judson Peck (judson.peck@vermont.gov)
Agriculture Data Analyst | Water Quality Division
Vermont Agency of Agriculture, Food and Markets

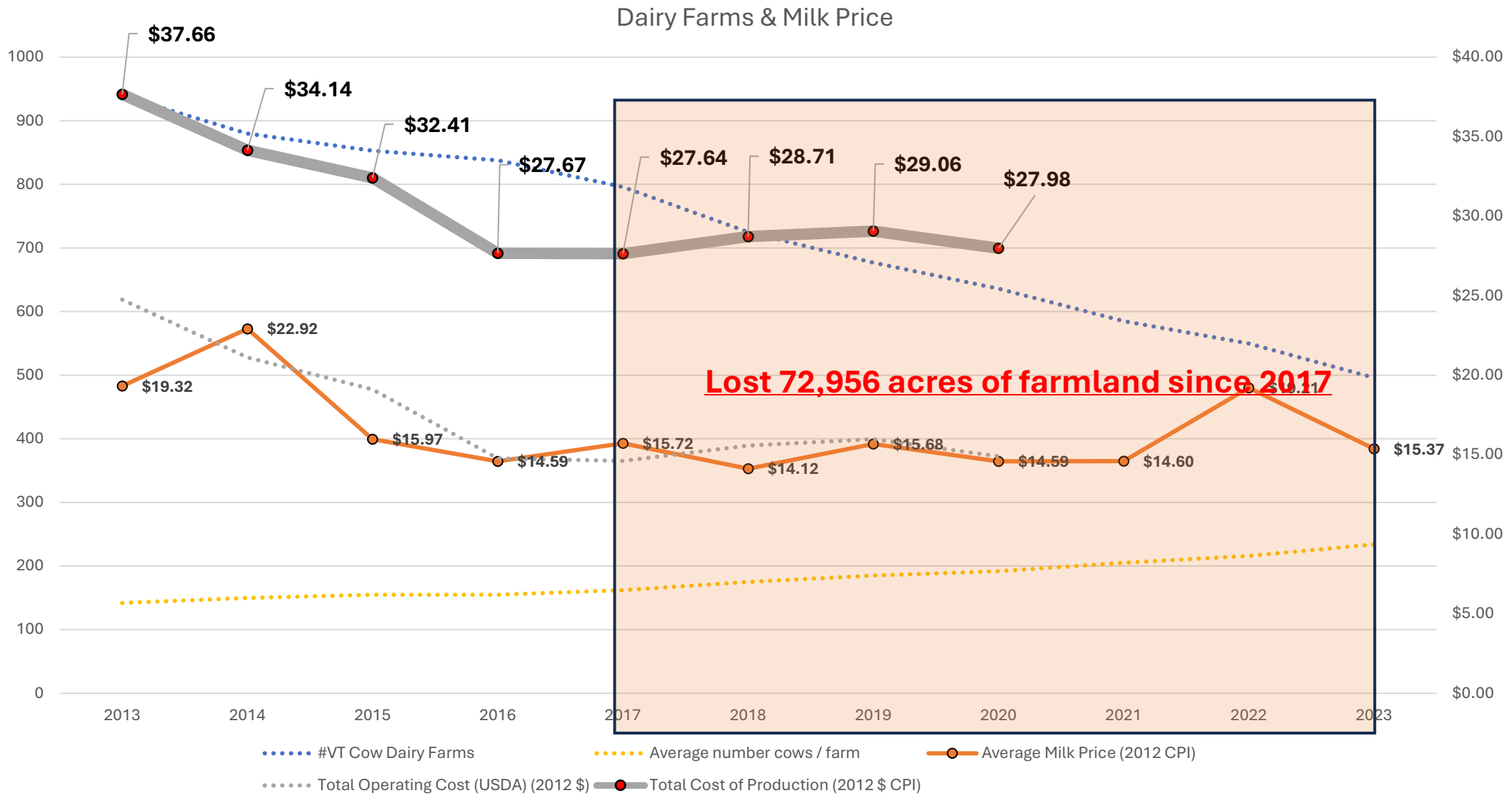
Prime & Primary Agricultural Soils



69% of mapped impervious surfaces in Chittenden County (NRB District 4) are built on Prime and Statewide soils

Source: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

4. Agriculture & Climate Change Mitigation & Resilience Strategies



From: Vermont Dairy Updates: https://www.uvm.edu/sites/default/files/Agriculture/dairy-update/2024-april-dairy-update.pdf
From: https://www.ers.usda.gov/data-products/milk-cost-of-production-estimates/

VT Agriculture = 85% of P reductions for LCB & Memph.

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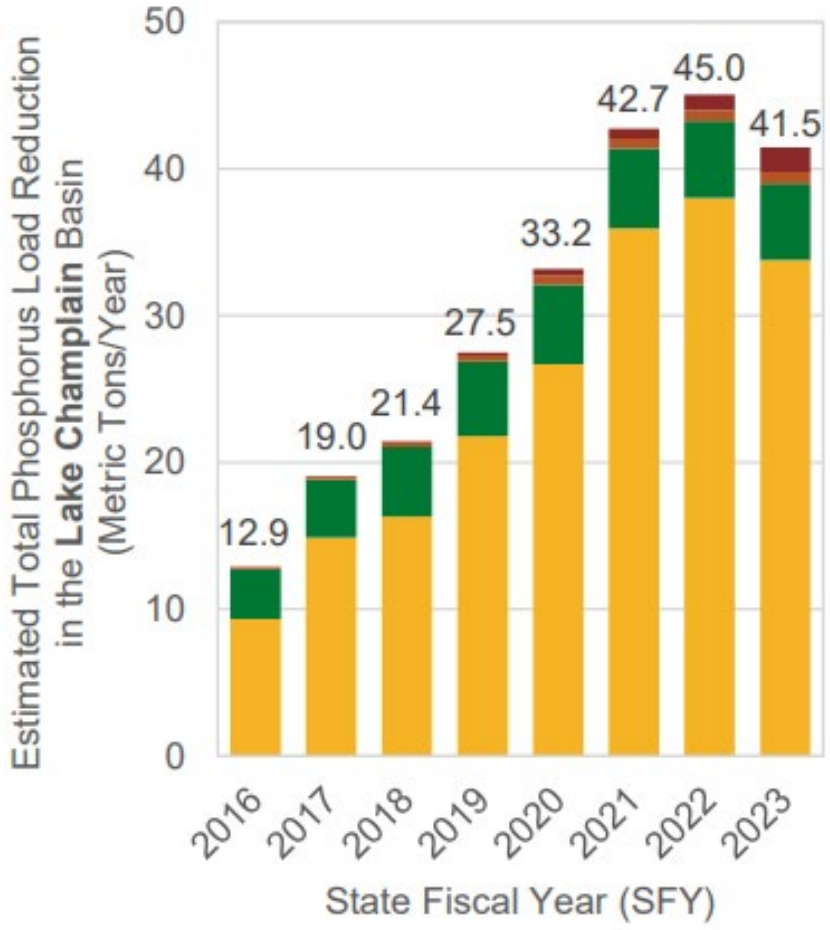

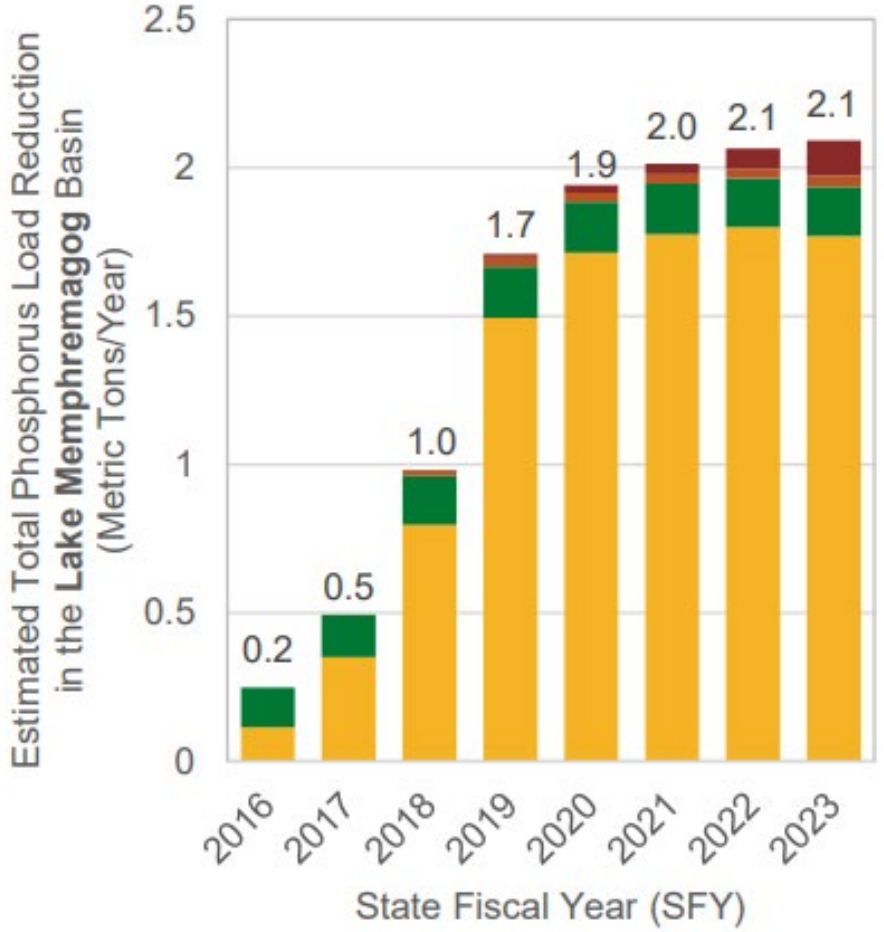

Agriculture Natural Resources Stormwater Transportation Related Stormwater

Source: https://dec.vermont.gov/sites/dec/files/WID/CWIP/Clean%20Water%20Initiative%202023%20Performance%20Report.pdf

Field Practices

493,160 Acres of Conservation Practices Implemented

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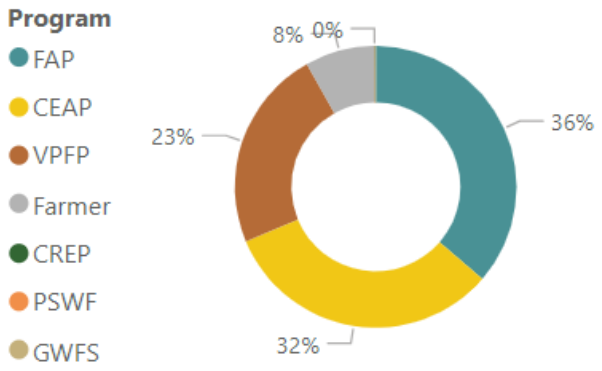
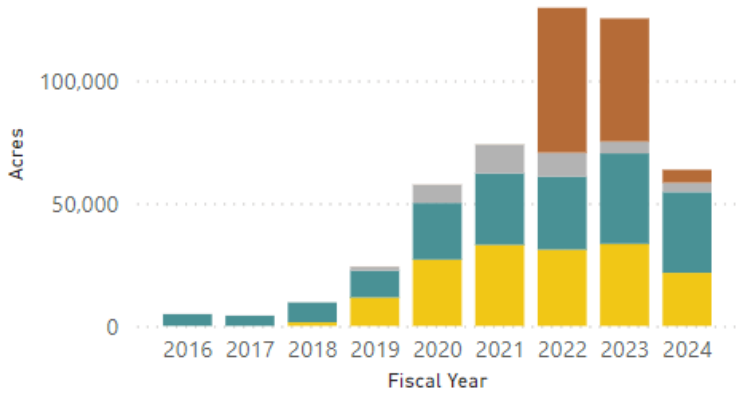
WATER QUALITY DIVISION

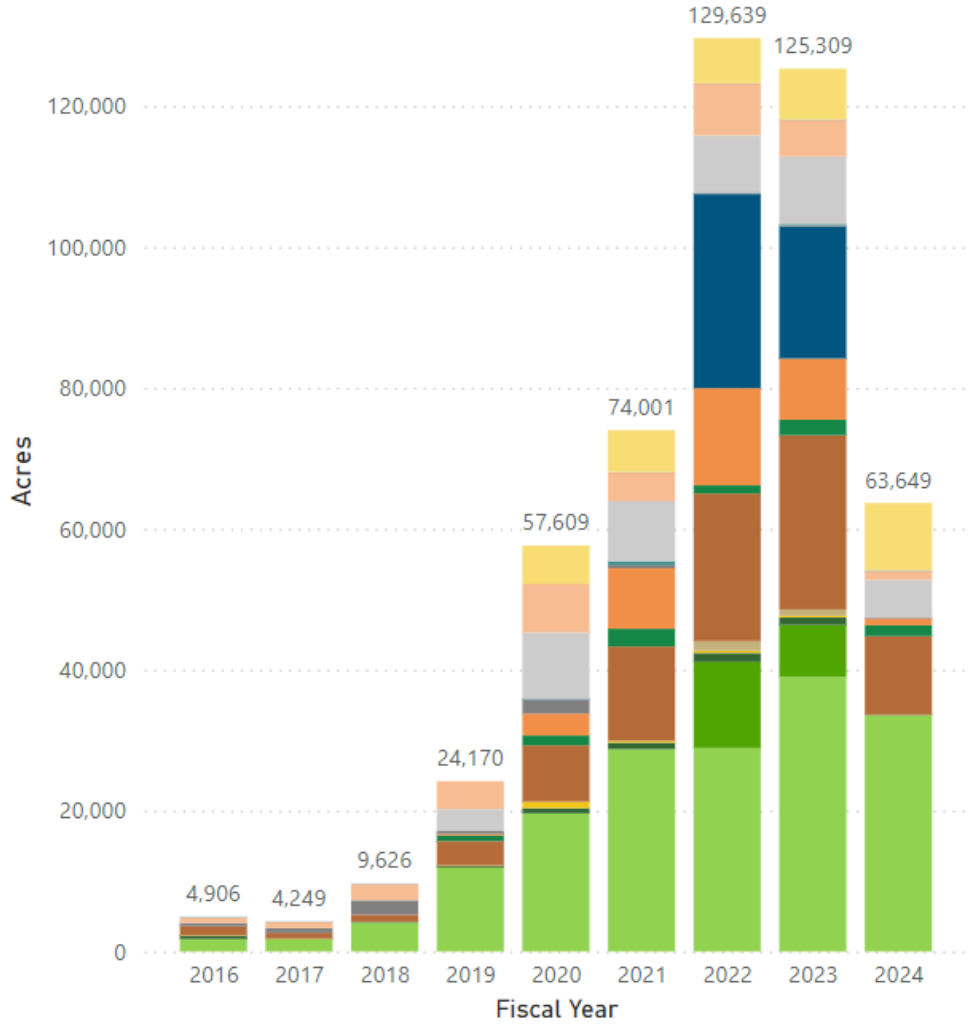
Acres by Program



Acres by Fiscal Year and Program

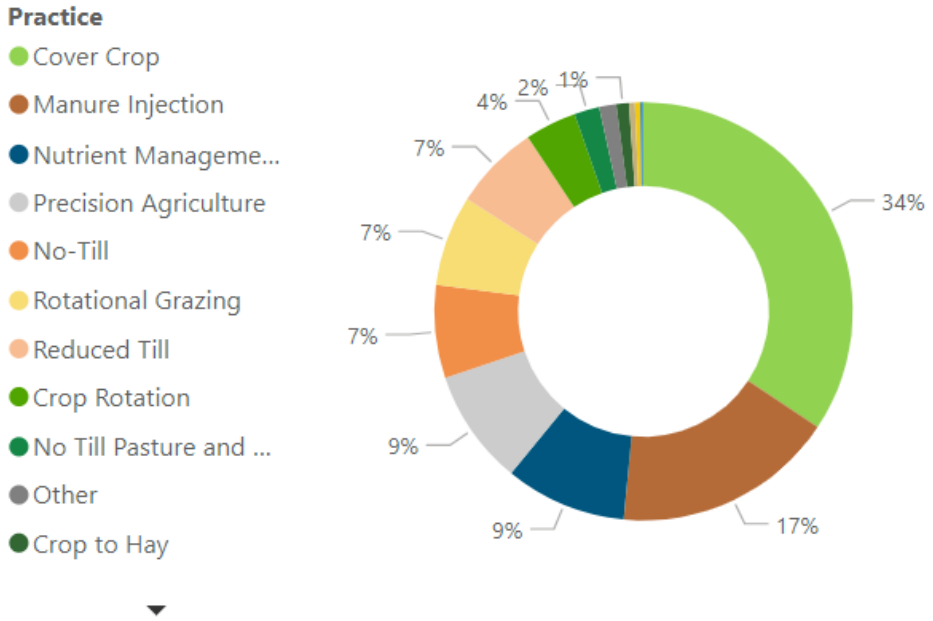


Acres by Fiscal Year and Practice

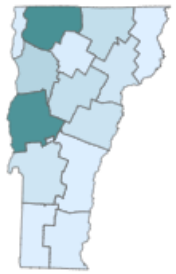


Due to ongoing projects, data reported in the most recent fiscal year is not complete until the following fiscal year, i.e. fiscal year 2024 data is not complete.

Acres by Practice



Acres by County



Acres by Basin

Source: https://app.powerbigov.us/view?r=eyJrIjoiNzkyNWFhNTMtNTAyNy00M2IyLWE5NzMtMzVmZGZmZGM4OWMwIiwidCI6IjIwYjQ5MzNiLWJhYWQtNDMzYy05YzAyLTcwZWRjYzc1NTljNiJ9

Methods for Growing Crops have different environmental outcomes

Management:

Full width tillage
No Nutrient Management
No Field specific conservation practices

Management:	Avg. P reduction	USDA COMET ERCs:
Cover crop	0.42 kg/ac/yr	0.15 tons CO_2e/ac/yr
Reduced and No-Till technology	0.51 kg/ac/yr	0.19 tons CO_2e/ac/yr
Nutrient Management	0.06 kg/ac/yr	0.37 tons CO_2e/ac/yr
Riparian Buffers	0.47 kg/ac/yr	0.74 tons CO_2e/ac/yr
Crop Rotation	0.33 kg/ac/yr	0.22 tons CO_2e/ac/yr

Source: https://comet-planner.com

How do we measure soil health?

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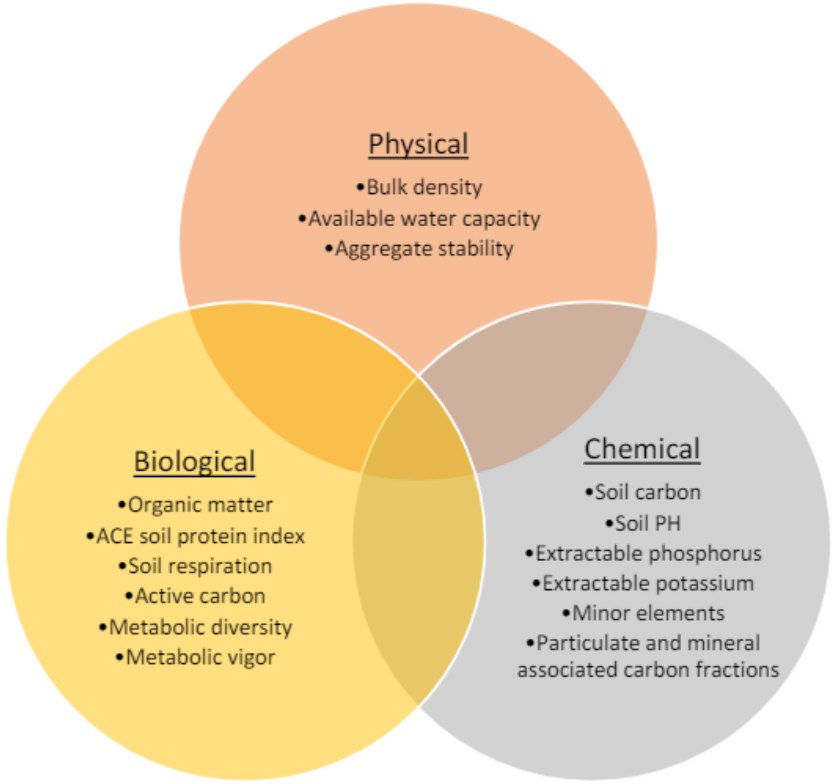

Figure 2. Physical, Chemical and Biological indicators of soil health measured by the 2021 State of Soil Health initiative.

Integration and optimization of the soil's biological, physical, and chemical processes of the soil that are important for sustained productivity and environmental quality. - Cornell Soil Health Lab

The continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans - NRCS

Source: https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/Articles_and_Factsheets/State_of_Soil_Health_Summary_Statistics_2022.pdf

Importance of Organic Matter & Soil Health

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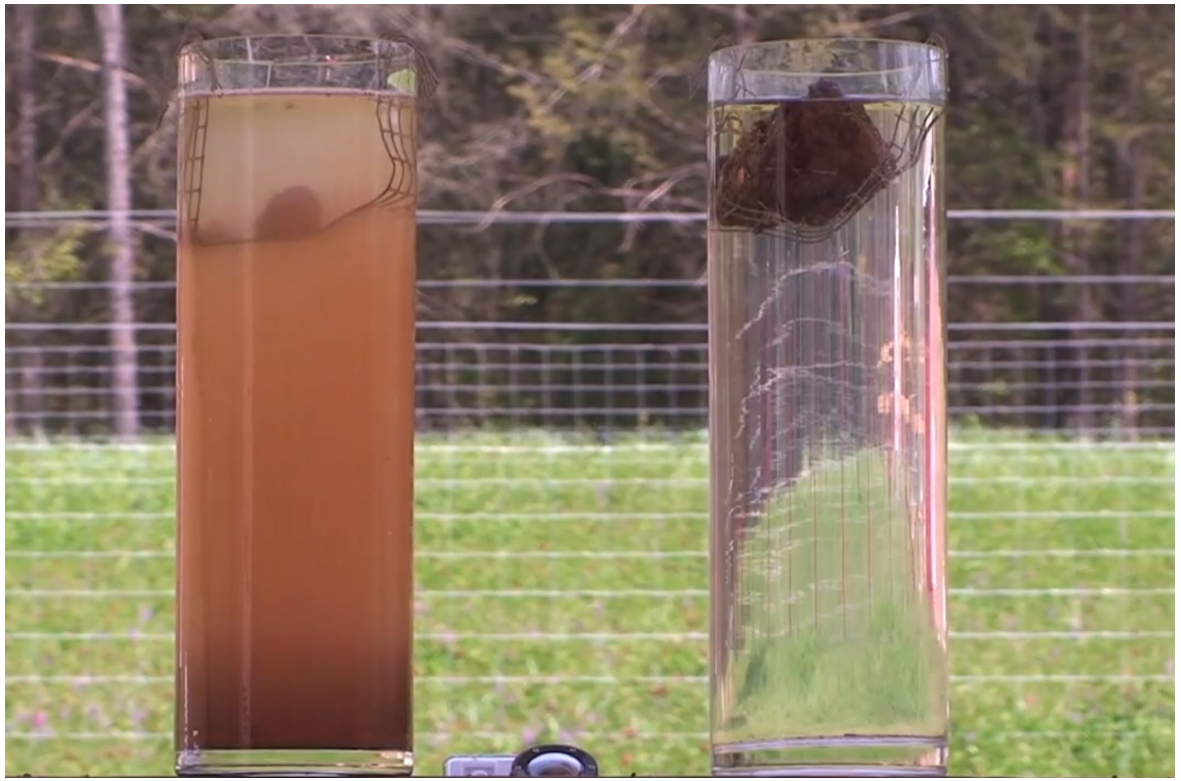


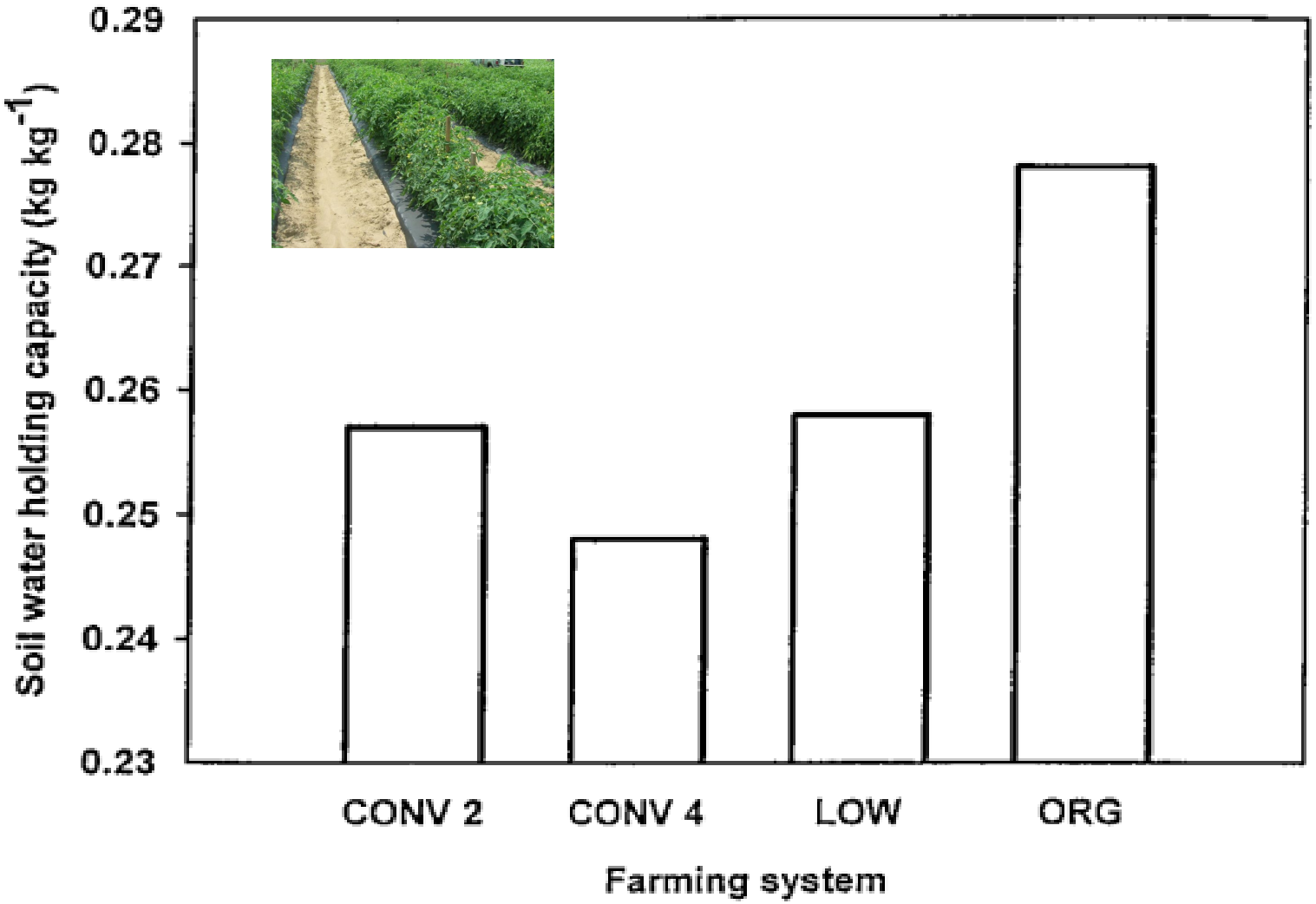
Acre inch of water = 27,000 gallons

Source: USDA NRCS

Organic Matter and Infiltration

(Colla et al., 2000)

Organic Matter and Drought Resilience



(Colla et al., 2000)

Organic Matter in Vermont Agriculture

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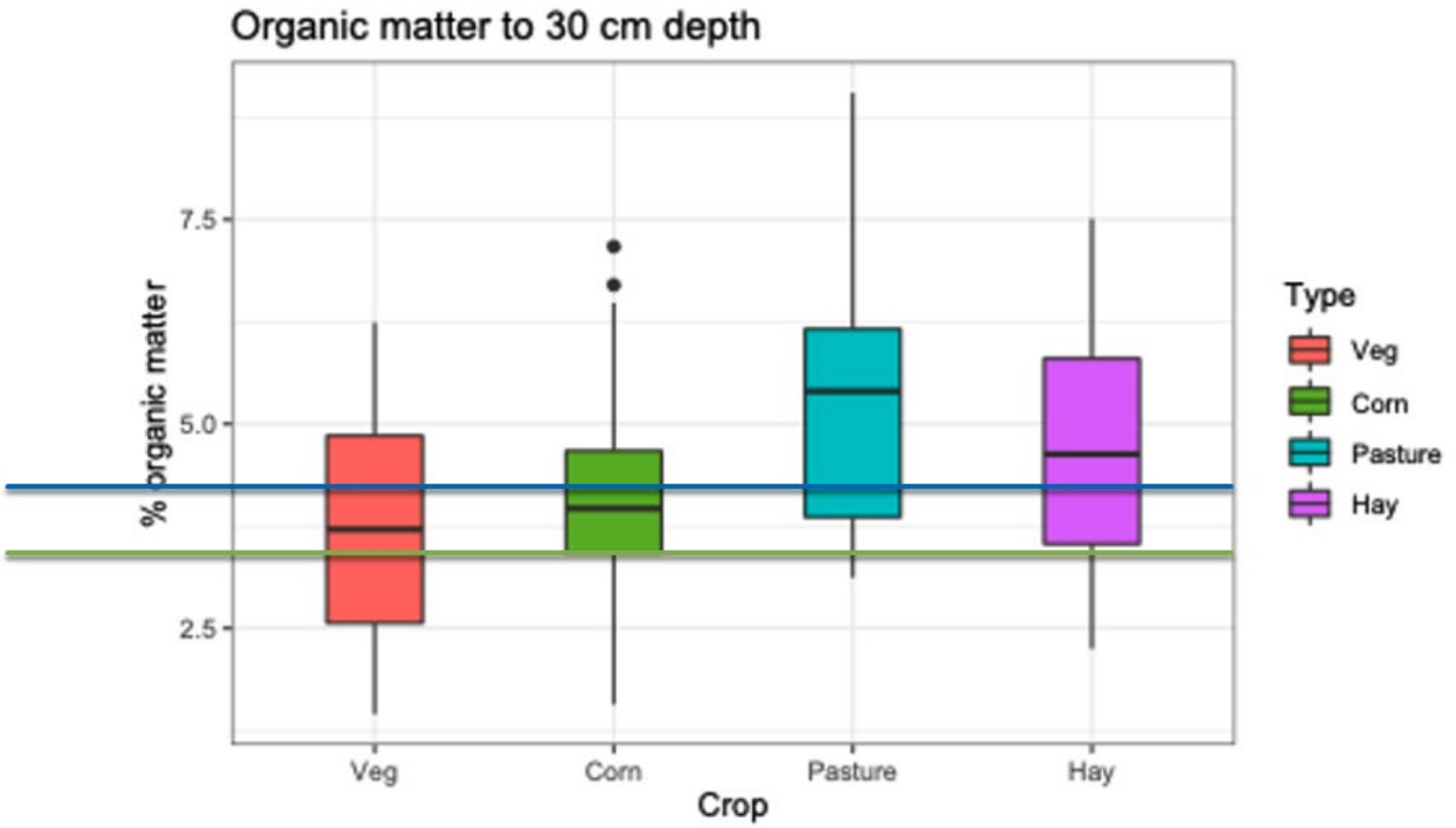
4.3% is the Vermont farm field average (2021)

3.2% is the national average (NRCS RACA)



From 221 farm fields, sampled in 2021 for the State of Soil Health in Vermont project

From: https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/Articles_and_Factsheets/State_of_Soil_Health_Summary_Statistics_2022.pdf

Vermont Farmer Perspectives on Improving Soil Health

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- **99%** believe improvements in soil health have **benefits for the environment** off their farm.
- **95%** believe they should take additional steps beyond required practices to **protect soil health.**
- **90%** believe they have a responsibility to **be part of climate solutions**
- **94%** believe they have the **knowledge and technical skill to enhance soil health** on their farm, yet only **58%** have the **financial capacity** to do so

Vermont farmers have:

- High level of stewardship ethic & motivation
- High level of knowledge and skill
- Need for financial capacity to adopt

Ultimately the limiting factor is the economic question: *is it worth it for my farm?*

From: *VT PES Technical Research Report #3: Results of the Farmer Conservation & Payment for Ecosystem Services Survey;* https://agriculture.vermont.gov/sites/agriculture/files/doc_library/3.%20Farmer%20PES%20Survey%20Results_%20VT%20PES%20Task%203a%20Report.pdf

WQ Conservation Practices – Estimated GHG Mitigation Benefit w/ COMET-Planner ERC

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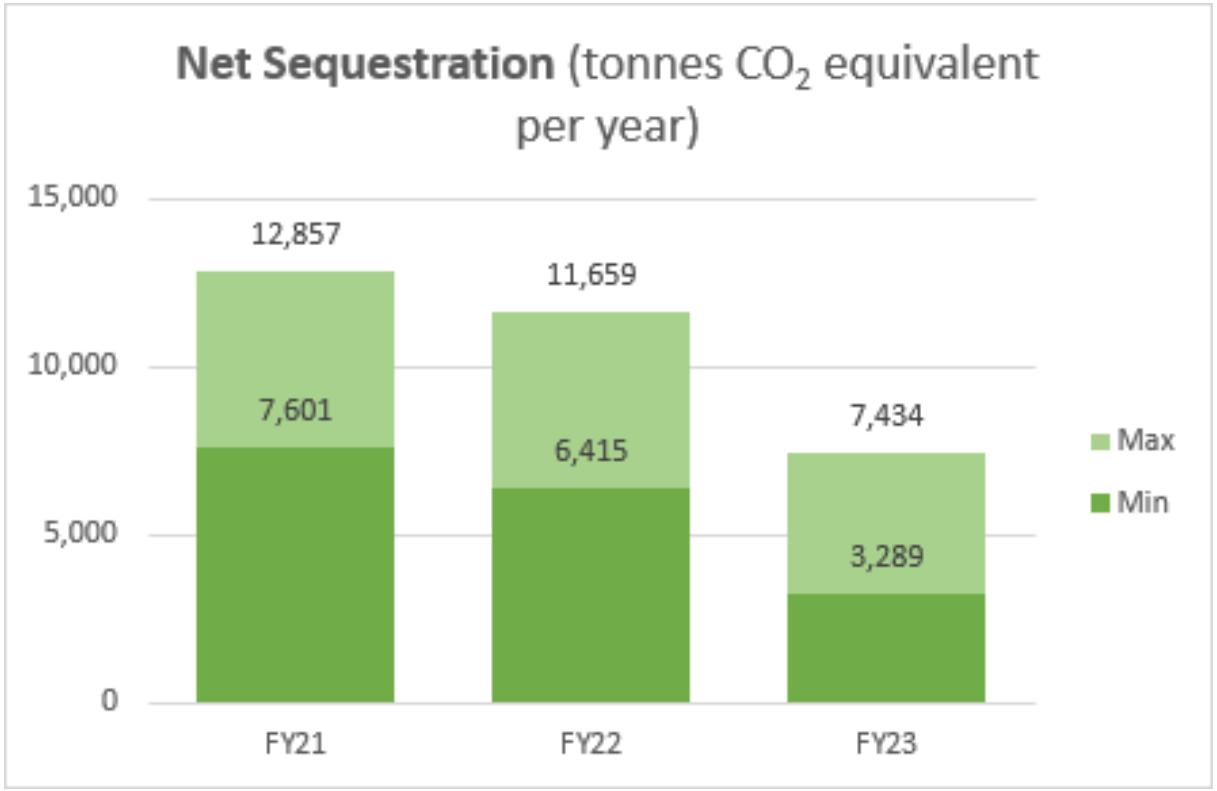


<u>Annual</u> soil carbon sequestration in Vermont ag soils under a high investment scenario would store in the soil the same amount of CO_2-e as eliminating the emissions from 200,000 cars.

Estimating soil carbon gains

1) First, we estimate the annual increased amount of soil organic matter in the top 30 cm of agricultural fields using best management practices, and we assume:

- Average bulk density on farm fields in Vermont is 1.3 (measured by the State of Soil Health Project)
- Best management practices increase soil organic matter by 0.09% points annually

Soil organic matter content x bulk density of soil x depth x area = Metric tons soil organic matter per hectare

0.0009 x 1.3 x 0.3 meters x 10000 square meters/hectare = 3.51 MT SOM per hectare per year

2) Second, we calculate the portion of soil organic matter that is organic carbon using an updated conversion factor of 0.5 from research by Pribyl (2010)[iii].

Soil organic matter content x 0.5 = soil organic carbon content

3.51 MT SOM x 0.5 = 1.76 MT Carbon per hectare per year

3) Third, we use the molecular weights to convert the MT of carbon to equivalent MT of CO_2 (CO_2e).

MT Carbon x (44/12) = MT CO_2e

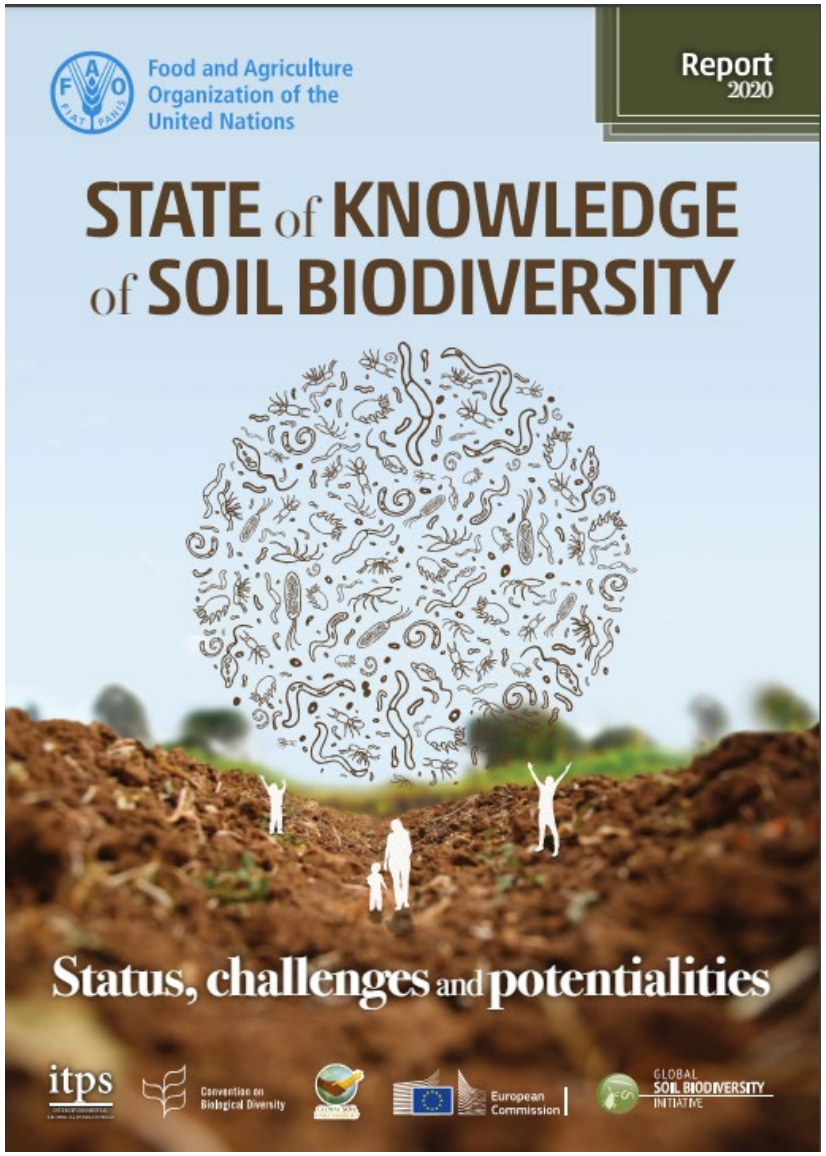
1.76 MT Carbon per hectare per year x (44/12) = 6.44 MT CO_2e per hectare per year

4) Fourth, we extend that across all hay and corn fields in the state of Vermont. According to the National Agricultural Statistical Service, there are 34,398.28 hectares of corn and 111,288.55 hectares of hay in Vermont[x]. Together, that's 145,686.38 hectares of the 485,622.78 total hectares operated by farms in VT[x].

1.76 MT Carbon per hectare per year x 145,686.38 hectares = <u>256,408.83 MT C per year</u>

6.44 MT CO_2e per hectare per year x 145,686.38 hectares = <u>937,494 MT CO_2e per year</u>

Source: VAAFM
Source: https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/Articles_and_Factsheets/Soil_carbon_and_sequestration_2022_Research_brief.pdf



Foreword

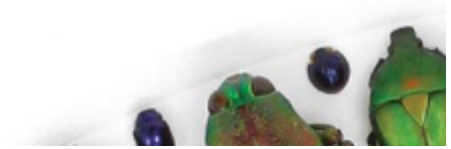
Soil biodiversity could constitute, if an enabling environment is built, a real nature-based solution to most of the problems humanity is facing today, from the field to the global scale. Therefore efforts to conserve and protect biodiversity should include the vast array of soil organisms that make up more than 25% of the total biodiversity of our planet.

FAO Director-General

QU Dongyu

Executive Secretary of CBD

Elizabeth Maruma Mrema



Source: FAO, ITPS, GSBI, CBD and EC. 2020. State of knowledge of soil biodiversity - Status, challenges and potentialities, Report 2020. Rome, FAO. https://doi.org/10.4060/cb1928en

5. Vermont Farm Tax Credits, Exemptions, and Financial Outlook

Vermont Farm Tax Credits & Exemptions

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- **Farm Income Averaging Credit**
  - Enacted 2002
  - # Taxpayers: 132
  - Estimate: $104,000
- **Energy Purchases for Farming Exemption**
  - Expenditure: ~$2.5M/yr
- **Agricultural Inputs Exemption**
  - Expenditure: ~$20.3M/yr
- **Ag Machinery Exemption**
  - Expenditure: ~$2.7M/yr
- **Diesel Fuel Tax Exemption**
  - $568,000 (all sectors)
- **Use Value Appraisal**
  - $319M Listed Value of Farm Buildings Exemption
  - Total Tax Savings to Enrolled Landowners: $69.5M (Ag & forestry combined)

Total State Farm Tax Credits & Exemptions: $ **95,672,000.00**

2022 USDA NASS Ag Census:

Estimated value of land & buildings: $ **741,648,000**
Estimated market value of all machinery: $ **742,302,000**

Market Value of ag products sold: $ **1,033,194,000**
Total farm production expenses: $ **794,317,000**

Vermont UVA

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Agricu

U.S. pric

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150
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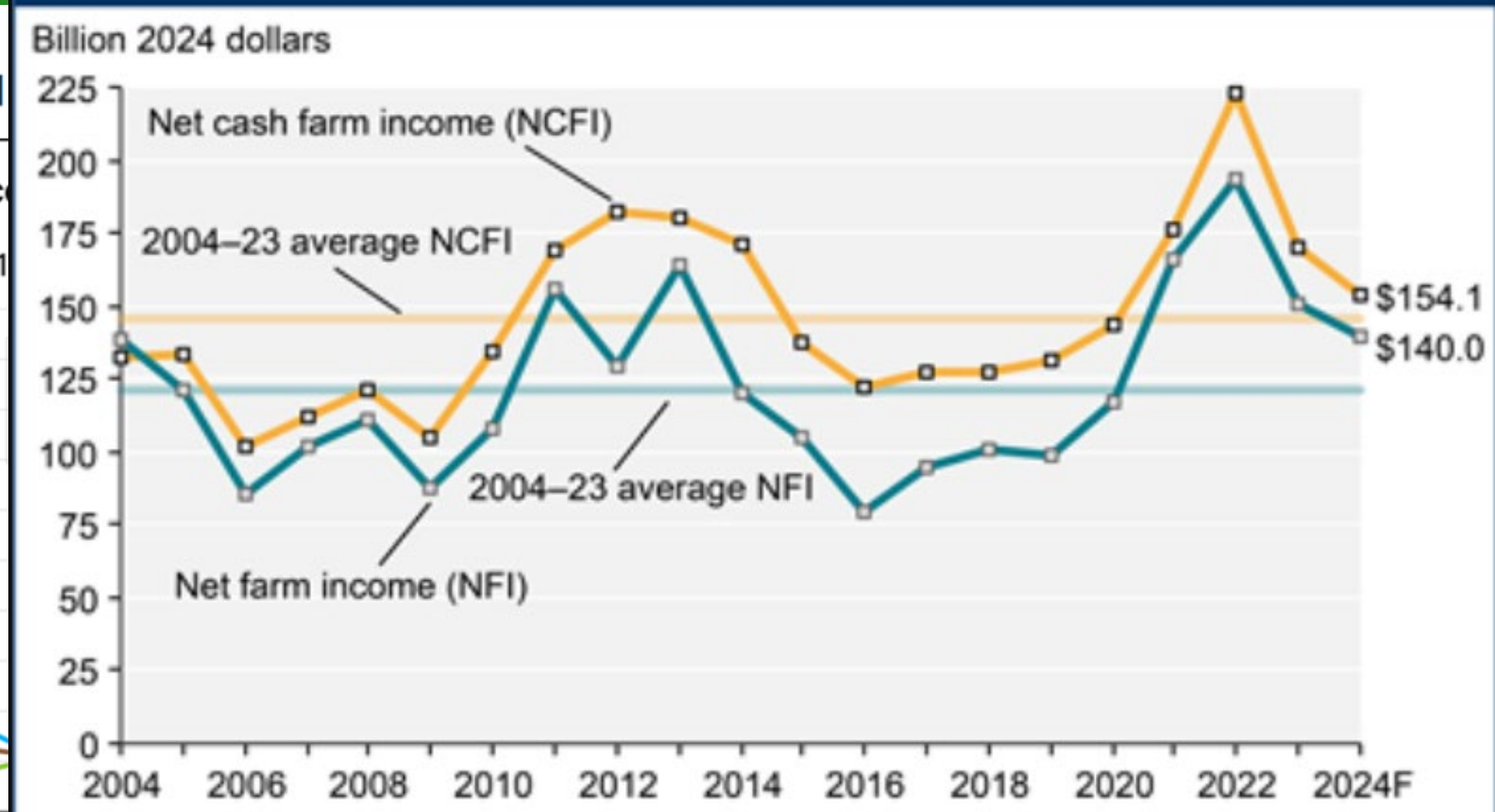
Source: US
Agricultura

U.S. net farm income and net cash farm income, inflation adjusted, 2004–24F



Note: F = forecast. Values are adjusted for inflation using the U.S. Department of Commerce, Bureau of Economic Analysis, Gross Domestic Product Price Index (BEA API series code: A191RG) rebased to 2024 by USDA, Economic Research Service.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of September 5, 2024.

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Source: https://www.ers

2022 USDA NASS Ag Census VT – Analysis Table 5

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	2022	(x $1,000)				
item						
# farms	6537					
Net farm income operations	$ 310,620,000					
Average per farm	$ 47,517					
Farms with net gains	2813	43%				
Average per farm	$ 140,812					
Producer with net losses	3714					
Total losses	$ 85,038,000					
Average per farm	$ 22,897.00					
Farms with gains of	**6537**		**% farms**	**% profitable farms**	**% total net revenue gain**	**Average**
less than 1,000	154	$ 78,000	2%	5%	0.02%	$ 506.49
1,000 - 4,999	450	$ 1,226,000	7%	16%	0.3%	$ 2,724.44
5,000 - 9,999	375	$ 2,763,000	6%	13%	0.7%	$ 7,368.00
10,000 - 24,999	469	$ 7,600,000	7%	17%	1.9%	$ 16,204.69
25,000 - 49,999	402	$ 14,772,000	6%	14%	3.7%	$ 36,746.27
50,000 or more	**963**	**$ 369,665,000**	**15%**	34%	93.3%	$ 383,868.12
Total	**2813**	**$ 396,104,000**				
Farms with losses	**6537**		**% farms**	**% unprofitable farms**	**% total net revenue loss**	**Average**
less than 1,000	183	$ 91,000	3%	5%	0.1%	$ 497.27
1,000 - 4,999	889	$ 2,733,000	14%	24%	3.2%	$ 3,074.24
5,000 - 9,999	875	$ 6,520,000	13%	23%	7.6%	$ 7,451.43
10,000 - 24,999	1011	$ 16,182,000	15%	27%	18.9%	$ 16,005.93
25,000 - 49,999	411	$ 14,492,000	6%	11%	17.0%	$ 35,260.34
50,000 or more	355	$ 45,467,000	5%	10%	53.2%	$ 128,076.06
Total	**3724**	**$ 85,485,000**				$ 22,955.16

*Maple syrup accounted for $112,125,000 (11%) of total sales 2022.

2022 USDA NASS Ag Census VT – Analysis Table 5

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- 2022 was the highest level of net cash farm income index recorded in the U.S.

- 43% of farms (2,813) in Vermont had **positive** net cash farm income that totaled $396.1M in revenue.
- 57% of farms (3,714) in Vermont had **negative** net cash farm income and lost $85.5M.

- 15% of all farms (963) in Vermont earned more than $50,000 and accounted for 93.3% of total net revenue gain with $369.7M or an average of $383,868.12 per farm.
- 65% of profitable farms (1850) in Vermont accounted for 6.7% of total net revenue gained with $26.4M or an average of $14,291.35 / farm.

- 3,724 farms experienced net cash farm losses, losing a total of $85.5M and losing an average of $22,955 / farm.

- 85% (5,574) of Vermont's 6,573 farms yielded an average net farm income of (-$10,000) per farm and none of those farms earned a net farm income above $50,000.

6. Nexus with UVA Program

Agricultural use value can be written as the following general equation:

$$\tilde{v} = \frac{\tilde{A}}{r+\tau}$$

$\tilde{v}$ = Agricultural use value
$\tilde{A}$ = Net agricultural revenue
$(r+\tau)$ = Capitalization rate

From: Anderson, John. Agricultural Use-Value Property Tax Assessment: Estimation and Policy Issues. Public Budgeting & Finance, 2012. https://doi.org/10.1111/j.1540-5850.2012.01025.x

Vermont's UVA program for agriculture can be written as the following formula:

$$\tilde{v} = \left(\frac{\left(\frac{((2024\ Weighted\ Avg.Rental\ Rate)+(4\ Previous\ Years\ Avg.Rental\ Rate))}{5\ Years}\right)}{Capitalization\ Rate}\right)+4\ Previous\ approved\ Agr.Current\ Use\ values}{5\ Years}$$

Vermont's UVA program for agriculture can be written as the following formula:

$$\tilde{A} = \left(\left((Total\ VT\ Cropland)(Statewide\ Crop\ Rental\ Average)\right)\left(\frac{Total\ VT\ Cropland}{Total\ VT\ Crop\ \&\ Pasture\ Land}\right)\right) + \left(\left((Total\ VT\ Pastureland)(Statewide\ Pasture\ Rental\ Avg)\right)\left(\frac{Total\ VT\ Pastureland}{Total\ VT\ Crop\ \&\ Pastureland}\right)\right)$$

$$(r+\tau) = (Debt\ to\ Cost\ of\ Capital\ Ratio) + (Risk) + (Statewide\ Effective\ Tax\ Rate)$$

UVA Ag Equations – Excel Summary

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1. 2023 Weighted avg. Rental Rate

$$\left(\left((Total\ VT\ Cropland)(Statewide\ Crop\ Rental\ Average)\right)\left(\frac{Total\ VT\ Cropland}{Total\ VT\ Crop\ \&\ Pasture\ Land}\right)\right) + \left(\left((Total\ VT\ Pastureland)(Statewide\ Pasture\ Rental\ Avg)\right)\left(\frac{Total\ VT\ Pastureland}{Total\ VT\ Crop\ \&\ Pastureland}\right)\right)$$

2. 2023 Capitalization Rate

$$(Debt\ to\ Cost\ of\ Capital\ Ratio) + (Risk) + (Statewide\ Effective\ Tax\ Rate)$$

3. Ag UVA Calculation

$$\left(\frac{\left(\frac{\left((2023\ Weighted\ Avg.Rental\ Rate)+(4\ Previous\ Years\ Avg.Rental\ Rate)\right)}{5\ Years}\right)}{2023\ Capitalization\ Rate}\right)+4\ Previous\ approved\ Agr.Current\ Use\ values}{5\ Years}\right)$$

2024 Ag UVA Value

$$\left(\frac{\left(\frac{\left((\$53.53)+(\$190.87)\right)}{5\ Years}\right)}{6.56\%}\right)+\$1{,}672}{5\ Years}\right) = \$483 \text{ for 2024 Ag Land Use Values}$$

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- Vermont's rate = 6.56%

Capitalization rate:		
debt/cost of capital	2.813%	(10 yr. avg. of 30-yr. Treasury Bonds)
risk	2%	
property tax	1.75%	(statewide effective tax rate)
Capitalization rate:	**6.56%**	

Current FSA Loan Interest Rates

Program	Interest Rates
Farm Operating - Direct	5.250%
Farm Operating - Microloan	5.250%
Farm Ownership - Direct	5.500%
Farm Ownership - Microloan	5.500%
Farm Ownership - Direct, Joint Financing	3.500%
Farm Ownership - Down Payment	1.500%
Emergency Loan - Amount of Actual Loss	3.750%

Effective as of September 1, 2024

TABLE 1
Capitalization Rates used by Selected States in Computing Agricultural Use Value

State	Capitalization rate computation
Arizona	FLB rate + 1.5%
Illinois	Five-year average FLB rate
Indiana	Computed from Chicago FRB real estate loan and operating loan interest rates
Iowa	7%
Kansas	Five-year average FLB rate + add-on of at least 0.75% and not more than 2.75% (determined by Director of Property Valuation) + county average property tax rate Legislature specifies that above computation must be at least 11%, but not more than 12% (in 2002)
Louisiana	Max {12%, calculated rate}, where calculated rate = risk free rate + 2.33% risk component + 0.16% nonliquidity component
Maryland	Computation in 1999: 9–2% for inflation + 5% for capital market imperfection + 1% effective property tax rate = 13%
Massachusetts	Five-year average FLB rate
Mississippi	Min{10%, calculated rate}
New Mexico	Cap rate is established for five-year period of use, based on FLB and PCA rates
North Dakota	12-year trimmed average of St. Paul FLB rate, computed by omitting highest and lowest rates, averaging remaining 10 years rates
Ohio	60% of Average Farm Credit Services 15-year interest rate + 40% of previous five-year average interest rate on equity
Oklahoma	65% of five-year average FLB rate + 17.5% of five-year average second mortgage rate + 17.5% of five-year average CD rate + county effective tax rate
Oregon	Five-year average FLB rate + effective property tax rate
South Carolina	FLB rate + effective local tax rate + risk adjustment of 15% + 0.3% for nonliquidity
Texas	Max {10%, FLB rate + 2.5%}
Utah	Five-year average FLB rate
Virginia	10-year average of Agricultural Credit Association interest rate + 10-year average of effective true property tax rate + risk adjustment (optional)
West Virginia	Riskless rate + risk adjustment + nonliquidity adjustment + management rate + statewide effective property tax rate
Wisconsin	Max {11%, five-year average of one-year ARM agricultural loan rates + municipal tax rate}
Wyoming	Five-year average Omaha FLB rate

Source: Kansas Department of Revenue (2000), supplemented with the author's additions for Indiana, Kansas, Ohio, Virginia, and Wisconsin.

Agricultural use value can be written as the following general equation:

$$\tilde{v} = \frac{\tilde{A}}{r+\tau}$$

$\tilde{v}$ = Agricultural use value
$\tilde{A}$ = Net agricultural revenue
$(r+\tau)$ = Capitalization rate

From: Anderson, John. Agricultural Use-Value Property Tax Assessment: Estimation and Policy Issues. Public Budgeting & Finance, 2012. https://doi.org/10.1111/j.1540-5850.2012.01025.x

"Estimating Net Income: The first requirement of use-value assessment is to estimate the net income stream generated by agricultural land… Since that equation is a perpetuity, we need a representative estimate of annual net income generated by agricultural land. **Net income is the difference between gross income generated via agricultural production and the cost of inputs used in that production**." (Anderson, 2012)

$$\tilde{v} = \frac{\tilde{A}}{r+\tau}$$

$\tilde{v}$ = Agricultural use value
$\tilde{A}$ = Net agricultural revenue
$(r+\tau)$ = Capitalization rate

From: Anderson, John. Agricultural Use-Value Property Tax Assessment: Estimation and Policy Issues. Public Budgeting & Finance, 2012. https://doi.org/10.1111/j.1540-5850.2012.01025.x

UVA Ag Equations

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1. 2023 Weighted avg. Rental Rate

$$\left((Total\ VT\ Cropland)(Statewide\ Crop\ Rental\ Average)\right)\left(\frac{Total\ VT\ Cropland}{Total\ VT\ Crop\ \&\ Pasture\ Land}\right)+$$
$$\left(\left((Total\ VT\ Pastureland)(Statewide\ Pasture\ Rental\ Avg)\right)\left(\frac{Total\ VT\ Pastureland}{Total\ VT\ Crop\ \&\ Pastureland}\right)\right)$$

USDA United States Department of Agriculture
National Agricultural Statistics Service

Quick Stats

Home | Recent Statistics | Developers | Help

Navigation History: Data

Double click any cell below to filter the data by that item. Right click on column heading to pivot or hide columns.

Save :: Spreadsheet :: Printable :: Map :: (1347 rows)

Program	Year	Period	Geo Level	State	State ANSI	watershed_code	Commo	Domain	Domain Category	RENT, CASH, CROPLAND - EXPENSE, MEASURED IN $ / ACRE - VALUE	RENT, CASH, CROPLAND - EXPENSE, MEASURED IN $ / ACRE - CV (%)	RENT, CASH, CROPLAND, IRRIGATED - EXPENSE, MEASURED IN $ / ACRE - VALUE	RENT, CASH, CROPLAND, IRRIGATED - EXPENSE, MEASURED IN $ / ACRE - CV (%)	RENT, CASH, CROPLAND, NON-IRRIGATED - EXPENSE, MEASURED IN $ / ACRE - VALUE	RENT, CASH, CROPLAND, NON-IRRIGATED - EXPENSE, MEASURED IN $ / ACRE - CV (%)	RENT, CASH, PASTURELAND - EXPENSE, MEASURED IN $ / ACRE - VALUE	RENT, CASH, PASTURELAND - EXPENSE, MEASURED IN $ / ACRE - CV (%)
SURVEY	2023	YEAR	STATE	PENNSYLVAN	42	00000000	RENT	TOTAL	NOT SPECIFIED	107	...	172	...	106	...	41.5	...
SURVEY	2023	YEAR	STATE	SOUTH CAROLINA	45	00000000	RENT	TOTAL	NOT SPECIFIED	56	...	122	...	49	...	19.5	...
SURVEY	2023	YEAR	STATE	SOUTH DAKOTA	46	00000000	RENT	TOTAL	NOT SPECIFIED	128	...	219	...	126	...	30	...
SURVEY	2023	YEAR	STATE	TENNESSEE	47	00000000	RENT	TOTAL	NOT SPECIFIED	117	...	197	...	113	...	23	...
SURVEY	2023	YEAR	STATE	TEXAS	48	00000000	RENT	TOTAL	NOT SPECIFIED	44	...	113	...	31	...	8.5	...
SURVEY	2023	YEAR	STATE	UTAH	49	00000000	RENT	TOTAL	NOT SPECIFIED	86.5	...	114	...	33	...	4.1	...
SURVEY	2023	YEAR	STATE	VERMONT	50	00000000	RENT	TOTAL	NOT SPECIFIED	60.5	...	...	...	59.5	...	29	...
SURVEY	2023	YEAR	STATE	VIRGINIA	51	00000000	RENT	TOTAL	NOT SPECIFIED	68.5	...	122	...	66.5	...	24.5	...
SURVEY	2023	YEAR	STATE	WASHINGTOI	53	00000000	RENT	TOTAL	NOT SPECIFIED	238	...	440	...	76	...	9	...
SURVEY	2023	YEAR	STATE	WEST VIRGINIA	54	00000000	RENT	TOTAL	NOT SPECIFIED	45	...	...	...	45	...	14	...
SURVEY	2023	YEAR	STATE	WISCONSIN	55	00000000	RENT	TOTAL	NOT SPECIFIED	156	...	268	...	151	...	37.5	...
SURVEY	2023	YEAR	STATE	WYOMING	56	00000000	RENT	TOTAL	NOT SPECIFIED	60	...	86.5	...	20	...	5.9	...
SURVEY	2022	YEAR	NATIONAL	US TOTAL	...	00000000	RENT	TOTAL	NOT SPECIFIED	148	...	227	...	135	...	14	...
SURVEY	2022	YEAR	STATE	ALABAMA	01	00000000	RENT	TOTAL	NOT SPECIFIED	69	...	129	...	66.5	...	23.5	...

Data

Source: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_0007_0008.pdf

Source: USDA NASS, 2023 Cash Rents and Leases Survey – State Data: Vermont; https://quickstats.nass.usda.gov/results/58B27A06-F574-315B-A854-9BF568F17652#7878272B-A9F3-3BC2-960D-5F03B7DF4826

UVA Ag Equations

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3A

$$\left(\frac{\left(\frac{((2023\ Weighted\ Avg.Rental\ Rate)+(4\ Previous\ Years\ Avg.Rental\ Rate))}{5\ Years}\right)}{Capitalization\ Rate}\right)+4\ Previous\ approved\ Agr.Current\ Use\ values$$
$$5\ Years$$

5 Year Weighted Average

Total VT Cropland (USDA Census):

479,680 acres

	2023	2022	2021	2020	2019
Statewide Rental Average/ acre:	$ 60.50	$ 58.50	$ 52.00	$ 53.00	$50.00
Wgt. Average:	**78%**	**78%**	**78%**	**78%**	**78%**

Total VT Pastureland (USDA Census):

136,372 acres

	2023	2022	2021	2020	2019
Statewide Rental Average/ acre:	$ 29.00	$ 26.50	$ 26.50	$ 29.00	$29.00
Wgt. Average:	**22%**	**22%**	**22%**	**22%**	**22%**

5 yr. wgt. avg. (2014-2018)

2023	2022	2021	2020	2019	*5 yr. Average*
$ 53.53	$ 51.42	$ 46.36	$ 47.72	$ 45.38	***$ 48.88***

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Landlord Rental Approach

- Good survey data on an annual basis
- Rent is a portion of land costs for farmer.
- Rent reflective of a value for a use of agricultural land.

Net Income Approach

- 85% (5,574) of Vermont farms in 2022 earned less than $50,000 and lost an average of -$10,000 a farm.

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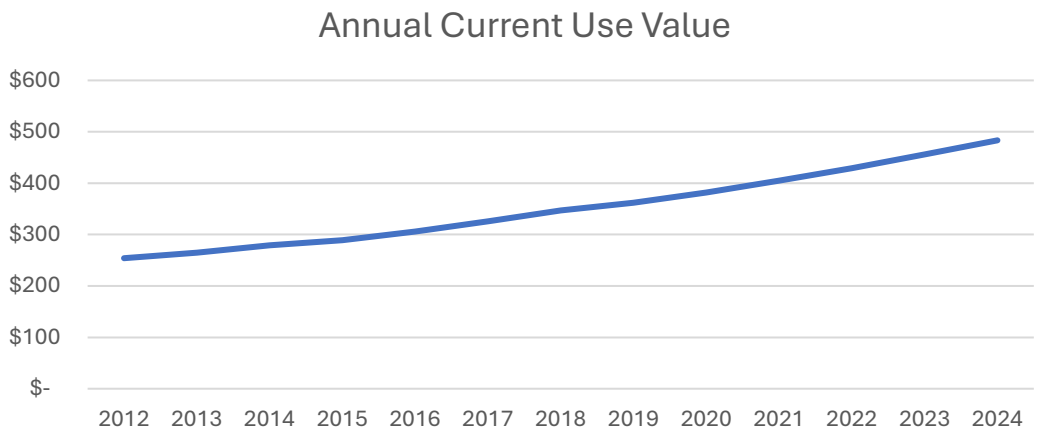
Landlord Rental Approach



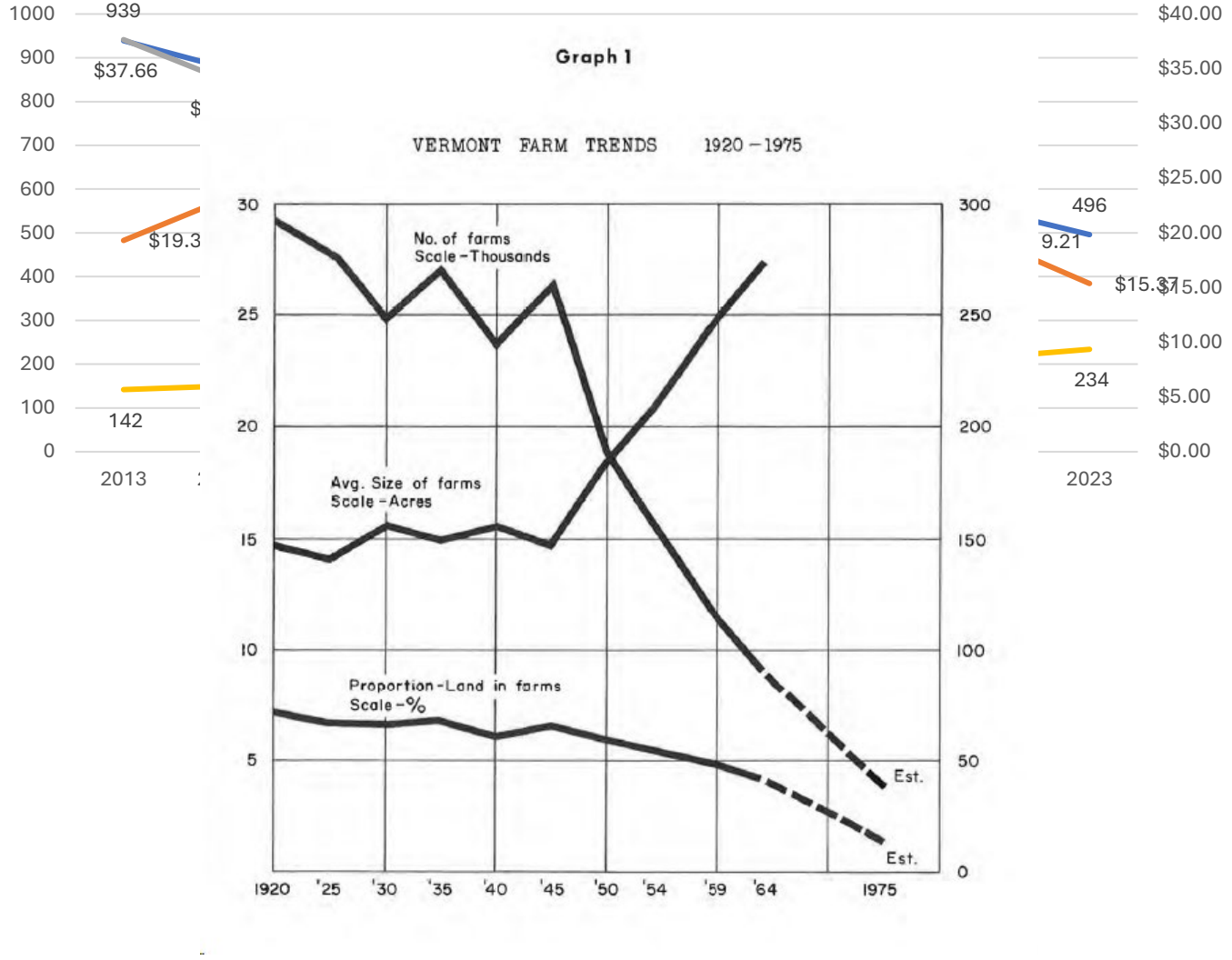
Without CU	474300	
	4743	
	Muni	Edu
	0.4	1.4386
	1897.2	6823.2798
	$ Tax Bill **8,720.48**	

With 2012 CU	474300	
	320500	
	3205	
	0.4	1.4386
	1282	4610.713
	$ Tax Bill **5,892.71**	

With 2024 C	474300	
	$343,400.00	
	$3,434.00	
	0.4	1.4386
	$1,373.60	$4,940.15
	Tax Bill **$6,313.75**	

Net Income Approach

Dairy Farms & Milk Price



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Landlord Rental Approach

Average the 2024 value with prior 4 years' C.U. values:				
2020				$ 382
2021				$ 405
2022				$ 429
2023				$ 456
2024				$ 745
Current Use Value:				$ 483

Net Income Approach

2022 USDA NASS Ag Census – VT
Table 1 & Table 7

Net cash farm income: $310,620,000
Land in Farms: 1,173,890 acres

Income per acre of land farmed: $264.61

Contact

VERMONT
AGENCY OF AGRICULTURE, FOOD & MARKETS

Ryan Patch
VAAFM
Ryan.Patch@vermont.gov
802-272-0323

State of Vermont
Department of Taxes
133 State Street
Montpelier, VT 05633-1401

Agency of Administration

Memorandum

To: Senator Mark McDonald

From: Bill Johnson, Director, PVR

Date: April 12, 2010

RE: Description of methodology used to set agriculture and forestland Use Values

As part of the discussions about H.485, you expressed a desire to acquire a better understanding of the methodology and criteria used by the Current Use Advisory Board (CUAB) to set the use values. Specifically you requested a one or two paragraph explanation of the methodology for each of the use values – agriculture and forestland.

Enclosed is an explanation for your review. If you have questions, please let me know.

Cc: Rich Westman, Commissioner
Senator Ann Cummings, Chair Finance
Senate Finance Committee

State of Vermont
Department of Taxes
133 State Street
Montpelier, VT 05633-1401

Methodology and Criteria used in the Determination of Vermont's Use Values for the Current Use Program

Monday, April 12, 2010

Annually the Current Use Advisory Board (CUAB) sets values for the agriculture and forest programs within the overall current use program. The values are intended to reflect the "productive capacity and income producing capacity" of enrolled agriculture and forest land. 32 V.S.A. §3754(a). As such, the use values are intended to look solely at the agricultural and silvicultural return from the land without regard to any other types of value, such as recreational or developmental, that would be included in a traditional fair market value analysis.

The following are the current methodologies and criteria used by the CUAB in determining the agriculture and forestland use values.

Agriculture Use Value

The CUAB uses a rental value methodology for the determination of the agriculture use value. The rental values are generated by Farm Service Agency (FSA) county committees. The Vermont Agency of Agriculture may from time to time conduct an independent survey of regional agriculture land rental rates to verify the accuracy of the FSA rent rates. Values for the 14 counties are averaged for cropland and pasture and then weighted by the proportion of cropland and pasture in the state and the relative acreage of the county cropland and pasture acreage to that of the State. The resulting weighted average is then averaged with comparable values over a five year period and the result is then capitalized.

The capitalization rate is determined using three components: cost-of-capital, risk and statewide effective tax rate. The resulting value is then averaged with the four prior years' agriculture use values as adopted by the CUAB. The resulted average insures that there will not be major shifts in the value. The Board annually reviews the methodology and the resulting agriculture use value and votes as to whether to adopt that value for the forthcoming year.

Forest Use Value

The CUAB uses a formula that estimates the income return that an acre of forestland will provide to its owner to determine the forestland use value. To do this, the methodology uses statewide current stumpage values for timber to estimate the projected annual stumpage value that remains

in Vermont forests.[1] The statewide estimated stumpage value is then expressed on a per acre basis and reduced to reflect the cost to forestland owners of managing their property. What remains after netting is a value per acre that could be realized by the owner at the time of harvest. The estimates of the remaining stumpage value and forested acres are factors established by annual forest inventory surveys conducted by the University of Vermont, School of Natural Resources.

Once a net per acre monetary return to owner has been determined, the amount is capitalized to estimate the present value of future monetary benefits that can be derived from an acre of typical forestland. The single year per acre value is then averaged with the four preceding years of actual use values as set by the CUAB to come up with a statewide forestland use value to be used in the coming year.[2] The Board annually reviews the methodology and the resulting forestland use value and votes as to whether to adopt that value for the forthcoming year.

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[1] Stumpage value is the dollar amount that a forestland owner receives for harvested timber. The statewide value is obtained using a survey that consider stumpage values in three regions of Vermont and reflects timber sales from private land over the three most recently published quarters as reported to the University of Vermont, School of Natural Resources.

[2] The statewide use value is adjusted for forestland that is more than a mile from a class 1, 2 or 3 road. The more than a mile adjustment reduces the forestland use value by 25 percent to reflect the additional management costs associated with land that is more difficult and expensive to access.