



VERMONT AGENCY OF TRANSPORTATION

FY2023 Budget Presentation

*Kristin Higgins, P.E.
Structures Program Manager*

*Pamela M. Thurber, P.E.
Bridge Management & Inspection Manager*



- Funding splits for Structures
- Funding source distribution
- Structure asset population
- Asset condition
- Project Selection (VPSP2)
- Structures SFY 2023 Budget
 - Interstate Bridge
 - State Highway Bridge
 - Town Highway Bridge
- Accelerated Bridge Program
- Completed Projects (before/After)
- Future Funding and Risks



Presentation Overview

Interstate Bridge Program – Funds structures within Vermont’s Interstate corridor including bridges crossing over the interstate.

- Shared funding – 90% Federal and 10% State

State Highway Bridge Program – Funds bridges, large culverts, and retaining walls on Vermont’s State Highway system.

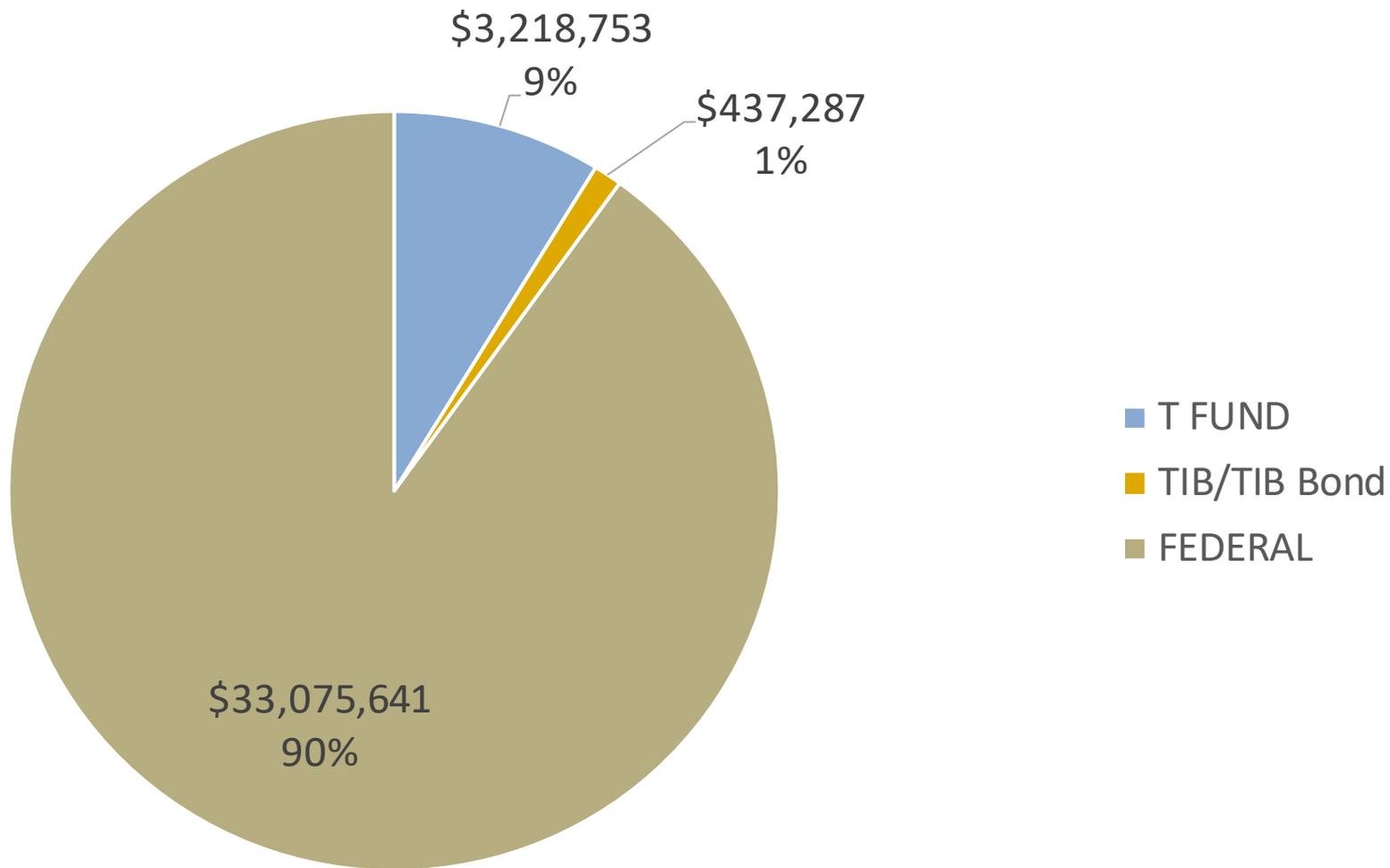
- Shared funding – 80% Federal and 20% State

Town Highway Bridge Program – Funds federally-eligible bridges on Class 1, 2, and 3 Town Highways.

- Shared funding – 80% Federal, 10%+ State, and 10%- Local

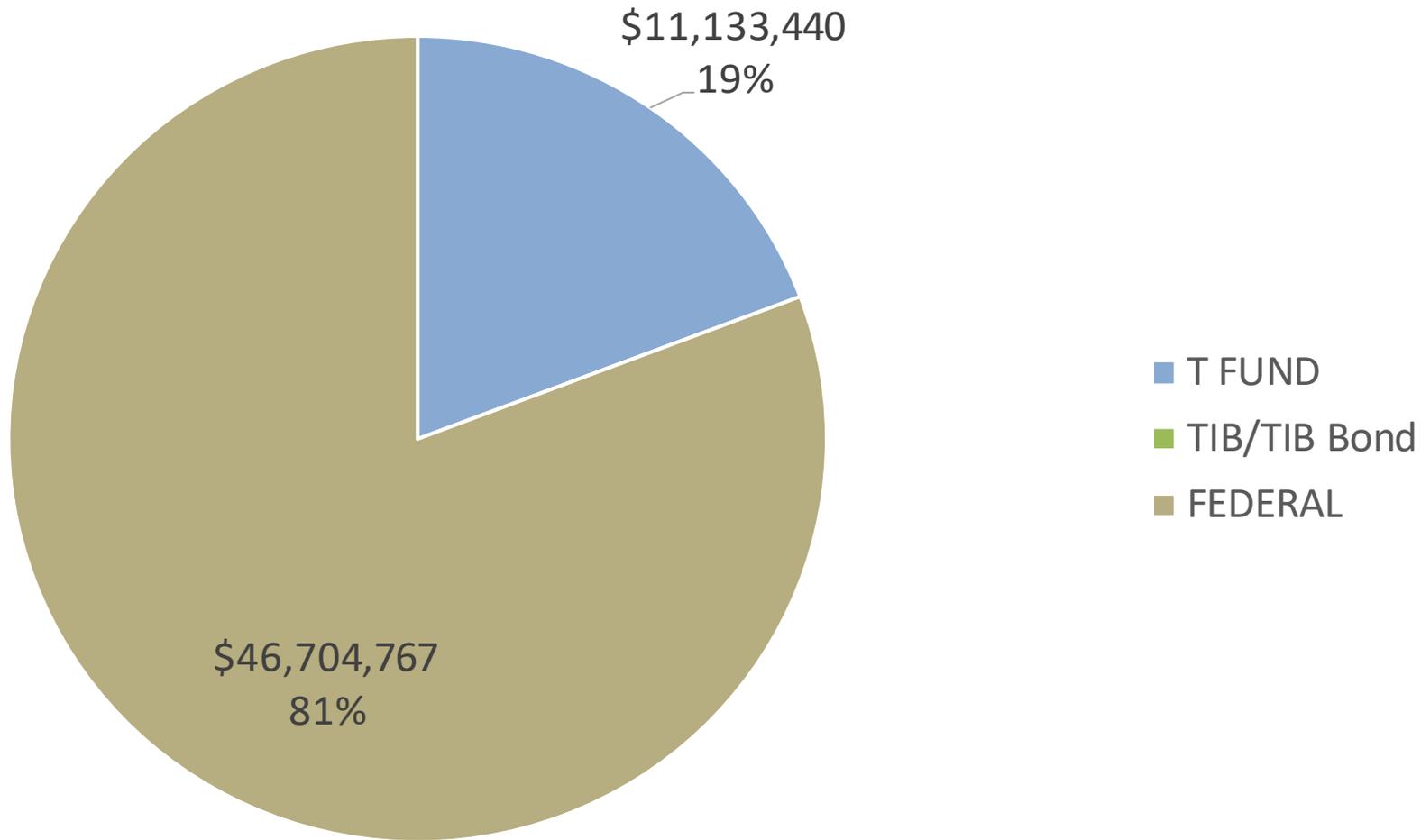
Bridge Programs Funded



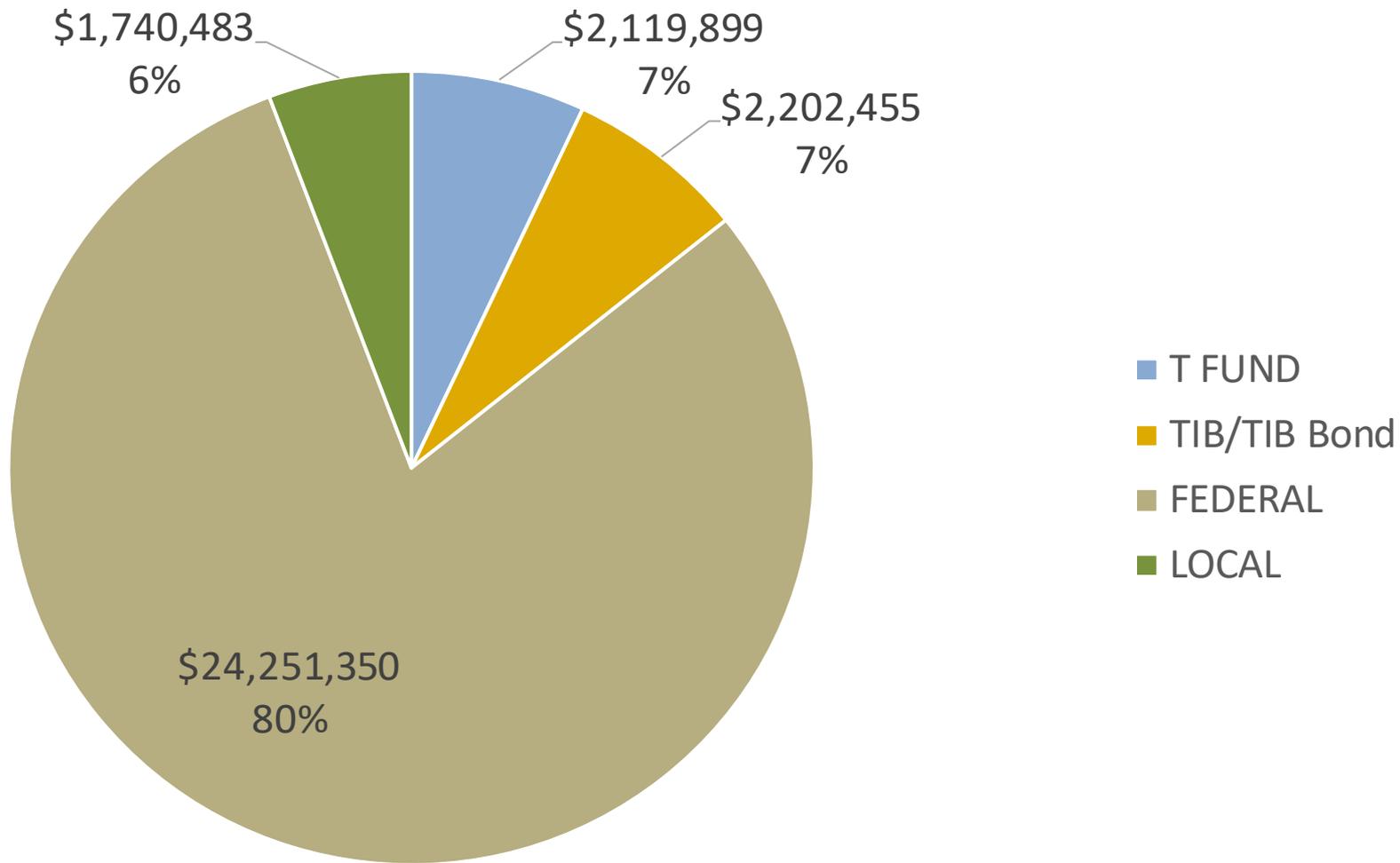


FY2023 Budget for the Interstate Bridge Program by Funding Source





FY2023 Budget for the State Highway Bridge Program by Funding Source



FY2023 Budget for Town Highway Bridge Program by Funding Source

Structure Type	Interstate State-Owned	State Highway Non-Interstate State-Owned	Town Highway Municipally-Owned	Other Private or Rail-Owned	Total All Owners
Long Structures (span length greater than 20 feet)	310	816	1,666	7	2,799
Poor	4	32	30	1	67
Fair	179	382	694	2	1,257
Good	127	402	942	4	1,475
Short Structures (span length greater than 6 feet to 20 feet)	204	1,059	*	*	1,263
Poor	10	50	*	*	60
Fair	91	585	*	*	676
Good	103	424	*	*	527
Total Structures	514	1,875	1,666	7	4,062

* VTrans does not maintain an inventory or perform safety inspections of town highway shorts

Structure Asset Population and Condition Classification

*reported to FHWA in March 2021



Good (G), Fair (F), Poor (P) – Bridge condition is determined by the lowest rating of National Bridge Inventory (NBI) component condition ratings (deck, superstructure, substructure, or culvert).

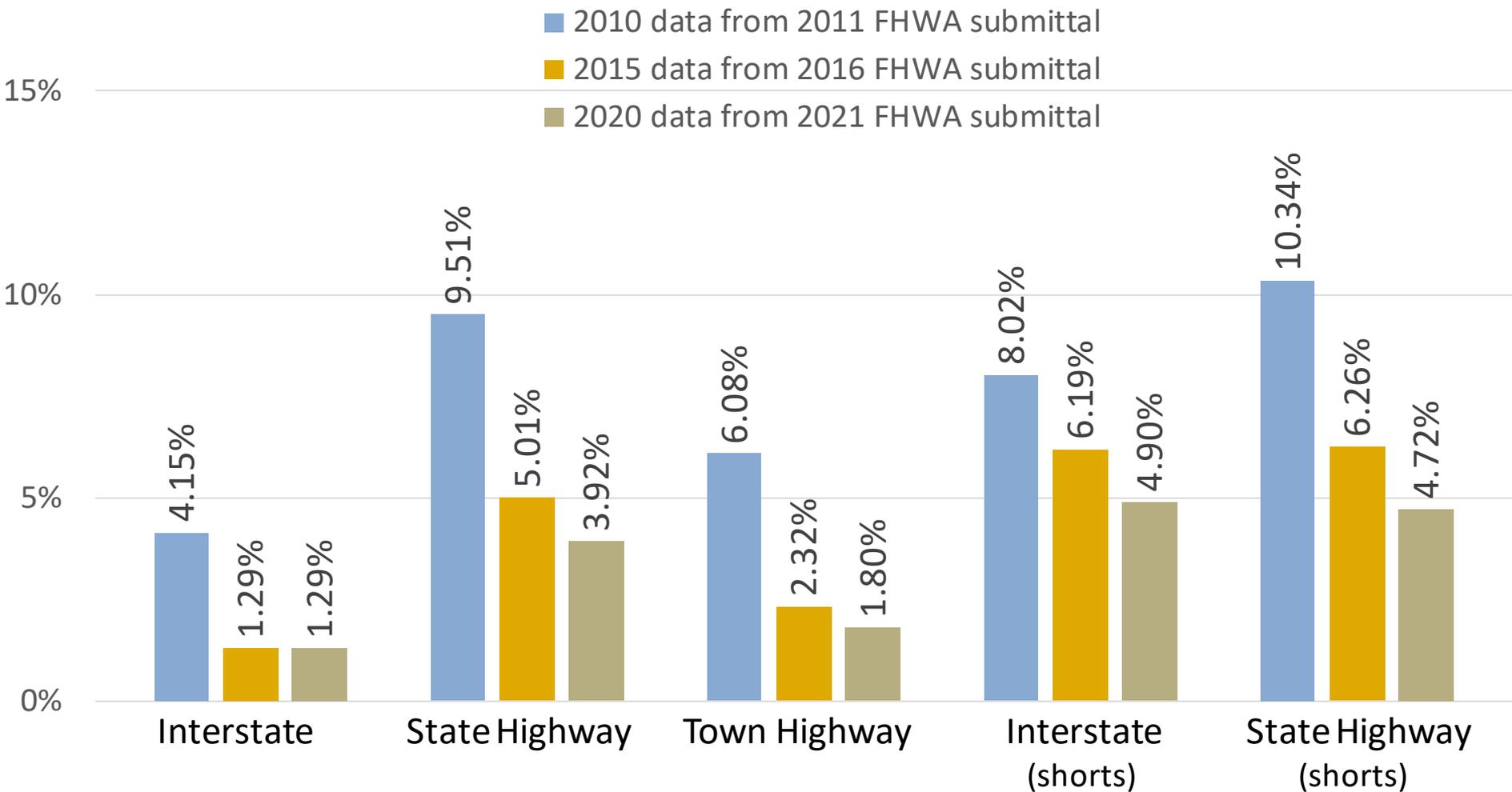
- If the lowest rating is greater than or equal to 7, the bridge is classified as Good; if it is less than or equal to 4, the classification is Poor. Bridges rated 5 or 6 are classified as Fair.

Structurally Deficient – Defined as a classification given to a bridge which has any component in Poor or worse condition.

- Previously defined as having a component condition rating of 4 or less (deck, superstructure, substructure, or culvert), OR having an appraisal rating of 2 or less for structural condition or waterway adequacy.

Bridge Definitions /Changes





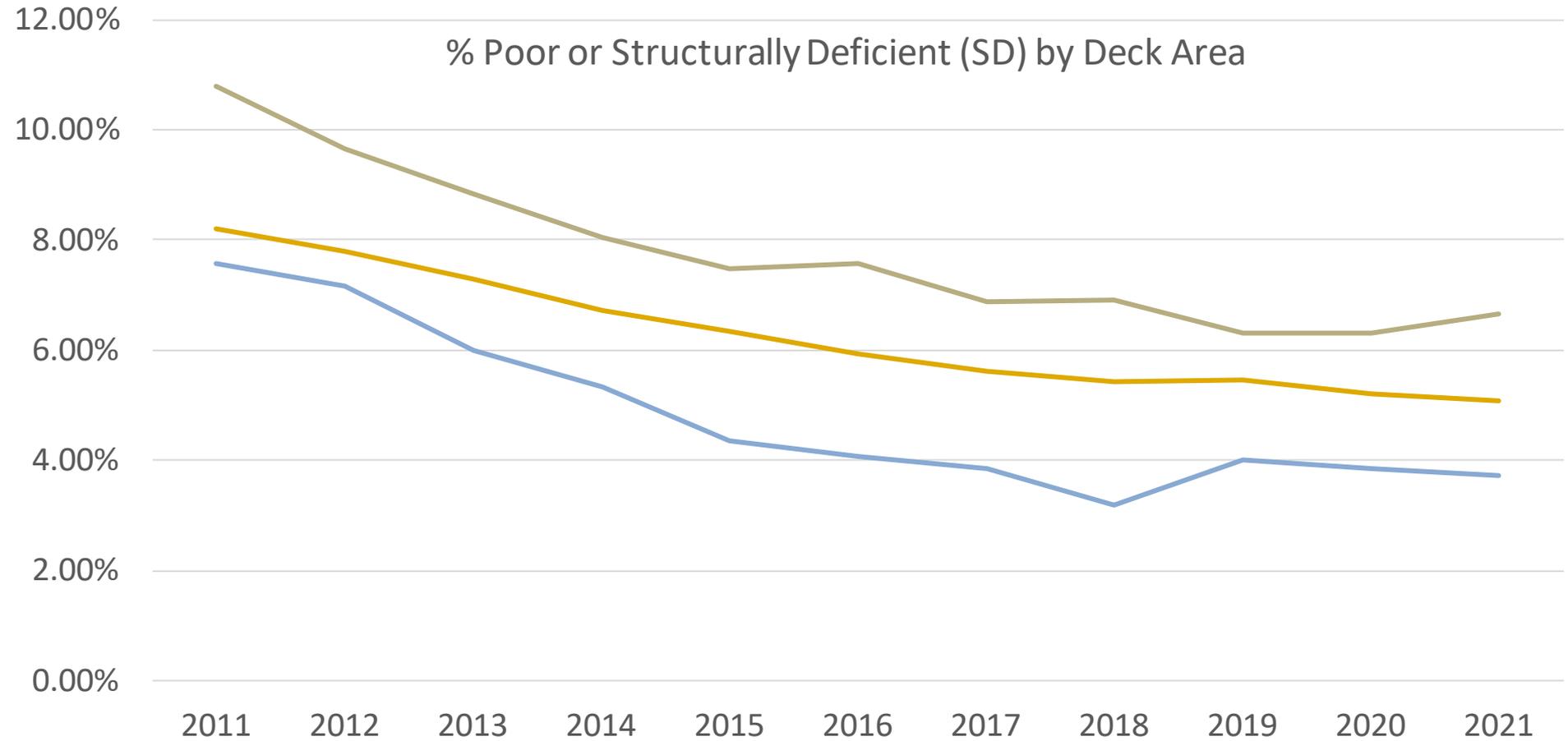
Structural Deficiency 10 Year Trend by Program

Vermont

National

Tri-State (VT/NH/ME)

% Poor or Structurally Deficient (SD) by Deck Area



Structural Deficiency Trends

*data from FHWA which includes all federal bridges





A performance-based, data driven project selection and prioritization framework that maximizes the transportation value delivered to Vermont taxpayers.

Beginning with Highway Safety and Design in 2021 and expanding to Bridges in 2022, there are two paths for a project to be added to the Capital Program. Highway Safety and Design

- Asset and Safety Driven
- Regionally Driven – Modernization and Expansion

Project Prioritization for Bridge Programs



A performance-based, data driven project selection and prioritization framework that maximizes the transportation value delivered to Vermont taxpayers.

Transportation Value is a fair, consistent, and reliable way to place communicate “Best-Value” combining this criteria.

- Safety (20 points)
- Asset Condition (20 points)
- Mobility / Connectivity (15 points)
- Community (10 points)
- Economic Access (10 points)
- Environment (10 points)
- Resiliency (10 points)
- Health Access (5 points)

Project Prioritization for Bridge Programs

Structures Program Budget FY2023

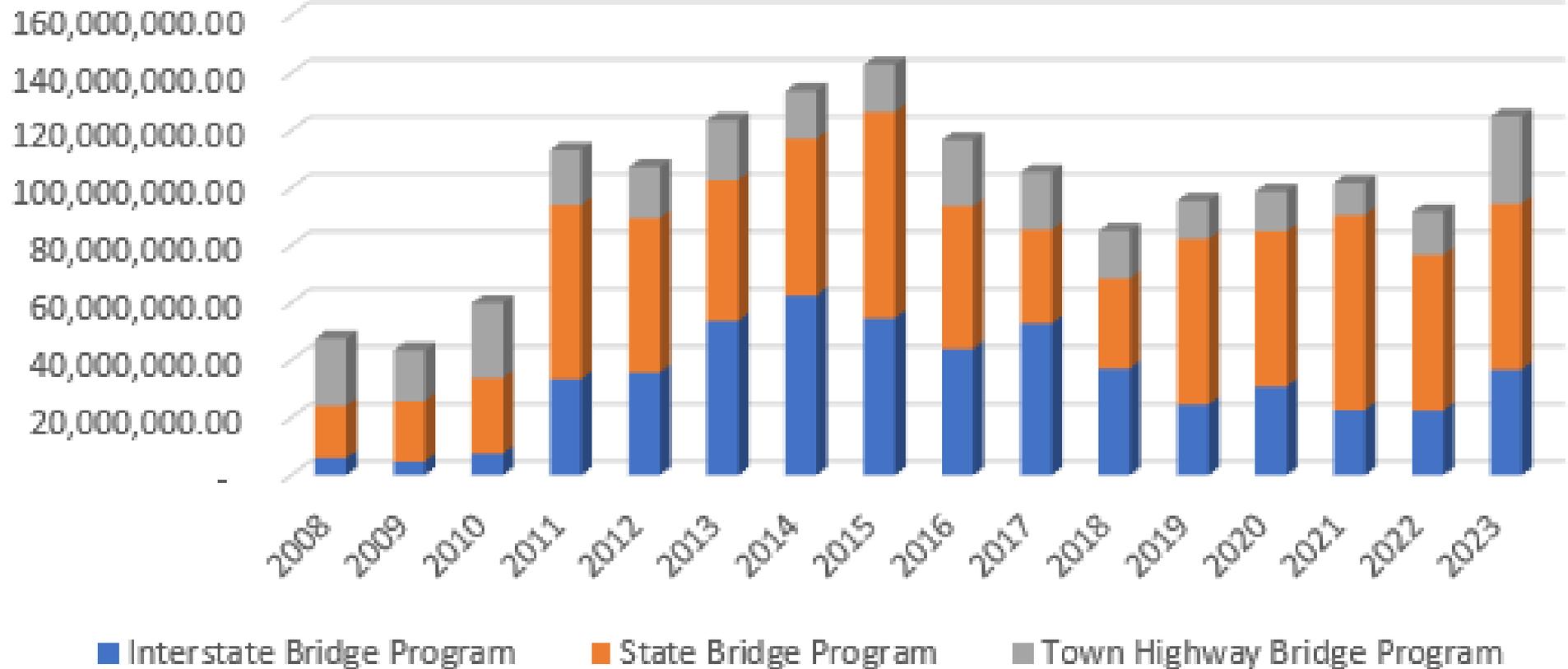
\$124.8 million for bridges:

- 107 Projects Funded
- 57 Projects Funded for Construction
- Spending increased \$37.5M from SFY 2022 (+43%)



Program Funding Trends

Program Funding Trends



Interstate Bridge Program FY2023

\$36.7 Million

18	Projects funded
9	Projects funded for Construction
1	Bi-state Project Vermont/New Hampshire on I-89
3	Bridge Maintenance and Preservation projects

Interstate Bridge Program Summary:

- Spending is up \$13.9 Million (+60%) from last year
- Lebanon NH – Hartford VT bridge on I-89 at exit 20 is under construction and will account for \$8.4M in spending over the next two years
- Four Bridge deck replacements and substructure rehabilitations on I-91 in Weathersfield and Westminster starting up this summer (two summers)
- Construction on I-89 in Sharon continues with South bound bridge Preservation
- Several bridges between Fairlee & St. Johnsbury are bundled in a preventative maintenance contract which will spend \$6.6 million over next two years

Rockingham IM091-1(66) Design Build - Update



Project Summary:

- Project start date – July 14, 2016
- Project complete – November 8, 2021
- Total project costs - \$55M

Hartford – Lebanon I89 Exit 20 bridge Reconstruction

- The traffic control should remain unchanged until **late fall/early winter of 2022**.
- There will be some I-89 North bound closures starting in Lebanon at exit 20 in order to facilitate setting of structural steel for the construction of the new portion of the bridge being constructed in the median.
- These are planned for overnight closures with detours through West Lebanon and Hartford.
- Once I-89 Southbound traffic is shifted onto the median bridge there will be impacts on the Vermont side as the taper lengths from the interchange are very short and do not allow for adequate merging lengths for the incoming I-91 traffic.
- In order to resolve this the project will shift all I-89 South traffic into one lane prior to the I-91 Interchange. The traffic will be consolidated into the passing lane leaving travel lane or right lane empty for the ramp traffic.
- Once past the I-91 interchange ramps the traffic control devices will end prior to entering the bridge. This leaves a short distance for any I-89 traffic wishing to exit to merge into the travel lane prior to exit 20.
- This will be the most challenging phase of traffic control for the project both with winter maintenance issues and traffic queues on I-89 south as well as short merging conditions for exit 20.

Interstate Bridge 10G New Projects

- Brattleboro BM 21202
 - Bridge maintenance Bridge 54 over I-91 – Concrete repairs & paving
- Brattleboro BM 21203
 - Bridge maintenance Bridge 9 on I-91 repair /replace the expansion joint trough and install downspouts
- Winooski BM 22504
 - Bridge maintenance Bridge 73N on I89 – Paving and plug joints (just beyond Exit 15)
- Fairlee IM 091-2(91)
 - Scoping for two large culverts BR 55-2 and 55-3

Interstate Bridge 10G Completed Projects

- Berlin Deck IM Deck(42-44) - 4 Deck replacements on I89
- Hartford IM 091-2(90) – Replaced Joint Membraned and paved
- Middlesex IM 089-2(50) – Spray on pipe liner
- Rockingham IM 091-1(66) – Completed Design Build Project

Interstate Bridge 10G Expanded Costs

- **Brattleboro IM 091-1(82) Bridges 4N & 4S**
 - Original scope was to replace fascia only. Decision was made to install a catch system to prevent concrete from falling onto Route 5 and replace both bridge decks due to deteriorating concrete throughout. Contract 1 was created and completed to address this immediate concern
- **Springfield IM 091-1(83) Bridges 26, 27 and 28 N & S**
 - Original project was for bridges 28 N & S over Route 5. Now the project includes bridges 26 N & S and 27 N & S. Maintenance of traffic will use a crossover which provides access to work on all these bridges which gains economy. The Interchange will be reconfigured to eliminate the cloverleaf which results in vehicles weaving to get on or off the interstate. Now adding Bridge 25.

State Highway Bridge Program FY2023

\$57.8 Million

57	Projects Funded
32	Projects funded for Construction (6 Large Culverts)
16	Large Culverts funded for development and Evaluated
4	Bridge Preservation/Maintenance Leveraging Federal Funds (80/20)
3	VT-NH Connecticut River Bridges

State Highway Bridge Program Summary:

- Up \$8.5 million (+17%) from last year
- North Hero-Grand Isle draw bridge project spending \$8 Million in SFY23
- Replace deck on Bridges 19 & 20 on VT 118 in Montgomery (held for lack of funding)
- Replace deck on Bridge 16 on VT 103 in Chester
- Replace bridges 77 & 82 on VT 14 in Calais (Held for lack of funding)
- Replacement of Bridge 47 on VT 12 in Braintree (ABC – 21 day closure)
- Replace bridge 1 (culvert) on VT 125 in Addison (ABC – 7 day closure)
- Replace Bridge 14 (Culvert) on 103 in Chester
- Rehabilitate Bridge 5 on US 2 between North hero and Alburgh
- Replace Bridge 20 (culvert) on US 9 in Searsburg (required bridge for wildlife passage)
- Replace Bridge 26 superstructure on US 103 in Ludlow Village (21 day closure)

Quechee Gorge Bridge - Rehabilitation



Project will Advertise in August of 2022

- Project estimate = \$12.35M for Construction
- Short construction window each summer
- Restore two lanes of traffic by mid Sept
- 3 full seasons needed plus ½ of a fourth season – Project completion by July 1, 2026
- Major rehabilitation – wider sidewalks, new protective fencing, steel repairs & painting

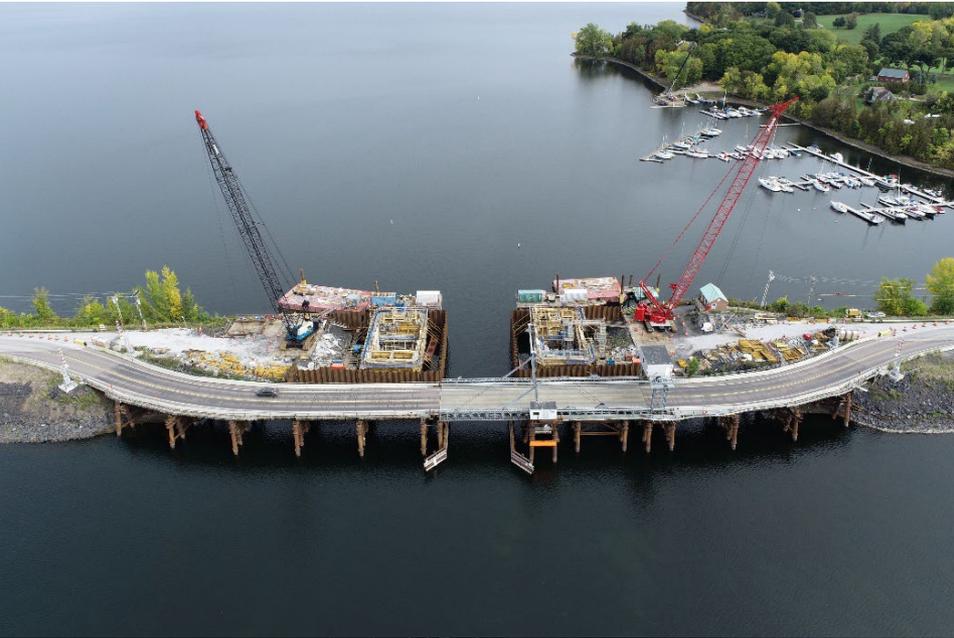


North Hero – Grand Isle Construction Update

- \$85 million Construction project
- New Bridge piers are complete
- Begin building the bascule span this winter. Bascule span must be in open position by **May 15, 2022**
- Abutments will be built this winter/spring along with miscellaneous electrical work
- Set steel for approach spans and place concrete
- Traffic switched to new bridge by **July 2022**
- Project final completion date is **July 1, 2023**



North Hero/Grand Isle Project Update



Middlebury Tunnel Project Update



Rendering



Drone Photo

Seven Capital projects to complete the replacement of two downtown Bridges:

- Middlebury WCRS (23) – Main project to design and construct project
- Middlebury EWP3(1) – Installed Temporary Bridges
- Middlebury EWP3(2) – Installed Tunnel drainage network (large shafts)
- Leicester WCRS(23) C/1 – Rehabilitate northern section of existing WYE
- Rutland - Middlebury WCRS(23) C/2 – New siding in Rutland and new switches in Middlebury
- Rutland WCRS(23) C/3 – Restore Rutland Wye for train storage
- Rutland WCRS(23) C/4 – Build new Sub track at the engine house

Middlebury Tunnel Project Update



Triangle Park Before



Triangle Park After

Cost per phase to complete the replacement of two downtown bridges

- Engineering = \$9.4M (\$9M main project plus \$415k support projects)
- Right of Way = \$15M (\$12M in miscellaneous rail upgrades, additional train engines, train cars and loading facility upgrades to accommodate detour)
- Construction = (\$72.3M includes all 7 capital projects)
- Total Project Costs = \$96.7M

Middlebury Tunnel Project Update



Middlebury Tunnel Project Update



State Highway Bridge 10G New Projects

- Berlin BF 0241(60)
 - Scoping to evaluate alternatives for BR 67 on VT 12 (Truss Bridge)
- Bloomfield BF 0271(27)
 - Scoping to evaluate alternatives for BR 9 on VT-102 (Truss Bridge)
- Buel's Gore BF 0200(11)
 - Scoping to evaluate alternatives for BR 29 on VT-17 (Culvert)
- Coventry BF 0251(49)
 - Scoping to evaluate alternatives for BR 132 on VT-14 (Culvert)
- Eden BF 029-2(15)
 - Scoping to evaluate alternatives for BR 220 on VT-100 over Gihon River.
- Lunenburg BF 028-4(34)
 - Scoping to evaluate alternatives for BR 123 on US-2 (Culvert)
- Littleton – Waterford BF A003(594)
 - rehabilitate Br #0B001 located on the NH/VT state line on VT 18
- Richford ER P20-1(806)C/2
 - Replacement of BR #30 on VT 105
- Royalton BF 0147(29)
 - Replacement of BR24, NECR over VT14 Includes realignment of VT14 with an increased vertical clearance and typical section.
- Williston BF 5500(19)
 - Scoping to evaluate alternatives for BR 23 on US-2 (Culvert)
- Wolcott B0 1446(38)
 - Scoping to evaluate alternatives for BR 6 on TH-3 (Truss bridge)
- 4 Preventative Maintenance Projects
 - 80% Federal Funds

State Highway Bridge 10G Completed Projects

- Calais BHF 037(10)
 - Replaced BR 74 on VT 14
- Chester BF 0134(50)
 - Replaced BR #51 on VT 11 (Culvert)
- Essex BF 5400(9)
 - Replaced BR #2 on VT 117 (Culvert)
- Lancaster, NH – Guildhall, VT
 - Replaced BR #127 on US2 over the Connecticut River on new alignment
- Plymouth BF 013-3(13) and (17)
 - Replaced two culverts on VT100
- Proctor BO 1443(54)
 - Replaced BR #3 over VTR
- Richford ER P20-1(806) C/1
 - Moved temporary bridge at BR 30 on VT105 to adjacent location. Permanent replacement will be advertised in March 2022
- Springfield BF 0134(43) and (45)
 - Replaced Bridges 57 and 60 on VT 11 (Culverts)
- Enosburg BF 0283(42)
 - Replaced BR 24 on VT 118
- Bennington BM20101
 - Strengthen East Rd. Bridge 11 Pier over VT 279
- 6 Preventative Maintenance Projects
 - Completed with 80% Federal funds

State Highway Bridge 10G Expanded Costs

- Rutland Town BM 20301 – Pier Rehab BR4
 - Access to rehabilitate the pier was more complex than we considered when estimating the work and all the bidders had more costs in their bid for accessing the pier and working around the utilities.
- Springfield BM19201 – Repair culvert invert (Liner)
 - Project was not deemed acceptable by Agency of Natural Resources. Project was brought into Structures to scope and determine the benefit of a full replacement. Estimate expanded assuming a full replacement would be the acceptable solution for this culvert structure.

Town Highway Bridge Program FY2023

\$30.3 Million

32	Projects funded
16	Projects funded for Construction
1	VT-NH Connecticut River Bridges funded for Construction
2	Covered Bridge Projects in development (Clarendon and Salisbury/Cornwall)

Town Highway Bridge Program Summary:

- Up \$15.4 million (+97%) from last year
- Brattleboro – Hinsdale to spend \$5.5m this summer on major utility relocation
- Construction funding for bridges in several towns:
 - Andover – BR #9 on Weston Andover Road over the Trout Brook – 60 Day road closure
 - Huntington – BR #32 on Camels Hump Road over the Brush Brook – Temporary Bridge
 - Leicester – BR #4 on Old Jerusalem Road over Leicester River – 180 Day road closure
 - Ludlow Village – BR #26 on VT 103 over Jewel Brook – 21 Day road closure
 - Newfane (Arch Bridge) – BR #12 on Depot Road over the Rock River – 180 Day closure
 - Montpelier-Berlin – BR #64 on US 2 over Winooski River – Temporary Bridge
 - Poultney – BR #7 on the Green (Thrall Rd and River St over Poultney River) - Road is Closed
 - Westminster – BR #5 on VT131 (FAS 0156) over Saxtons River – 60 Day Road Closure

HINSDALE-BRATTLEBORO

12210C

A004(152)



Town Highway Bridge 10G New Projects

- Poultney BF 0145 BR #4 on VT 31 - Evaluate truss bridge.
 - Likely to be a truss rehabilitation

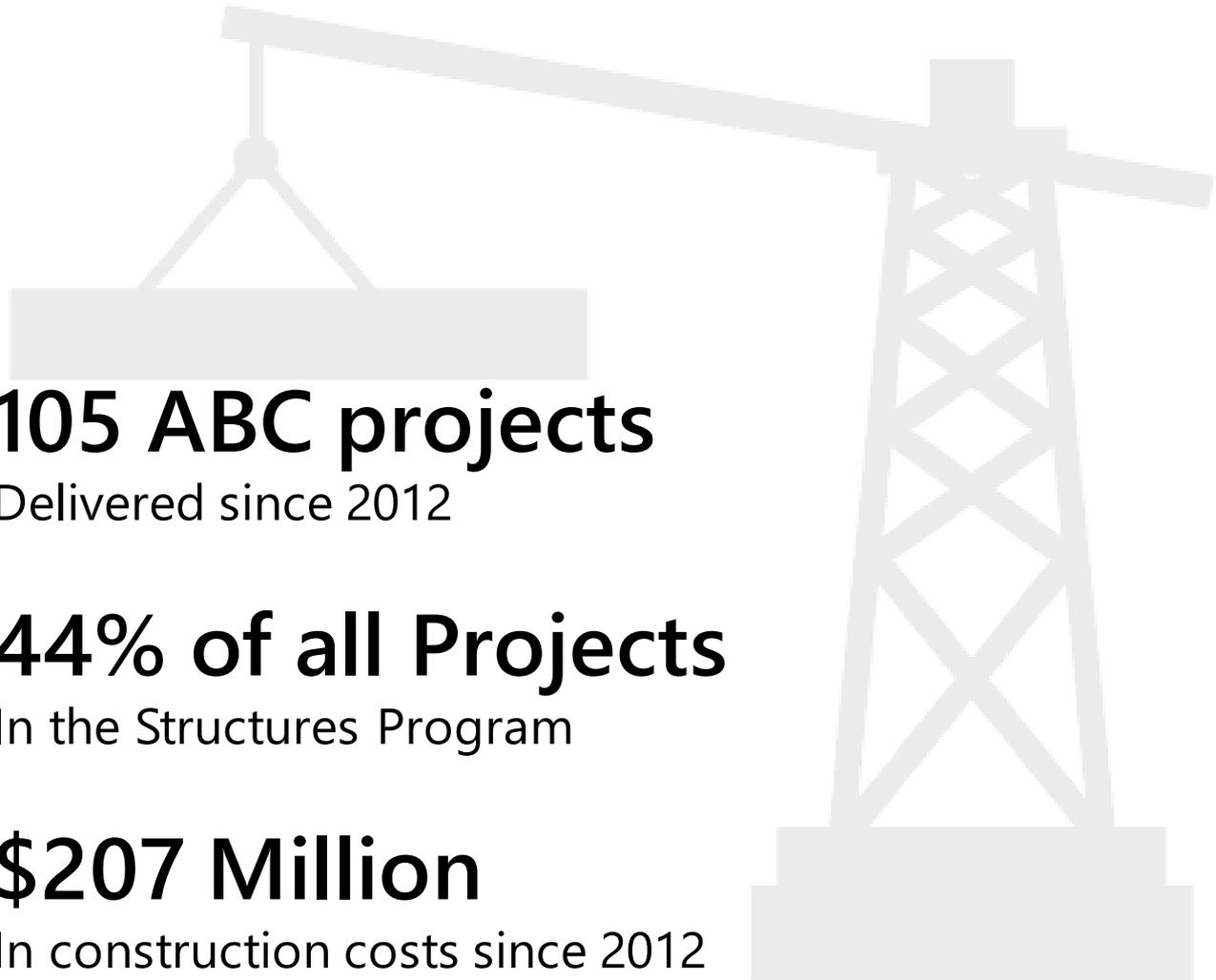
Town Highway Bridge 10G Completed Projects

- Burke BR #35 on Hayden Xing Rd over W. Passumpsic River
- Cornish Winsor Covered bridge – Conn River bridge Scour mitigation
- Enosburg BR #50 on E. Bakersfield Rd over Tyler Branch
- Newbury BR #15 on Boltonville Rd over Wells river
- Walpole – Rockingham BR6 over Connecticut River
- Derby Flat – Repair several culverts on federal lands

Town Highway Bridge 10G Expanded Costs

- No projects with substantial cost increase

Accelerated Bridge Program



105 ABC projects

Delivered since 2012

44% of all Projects

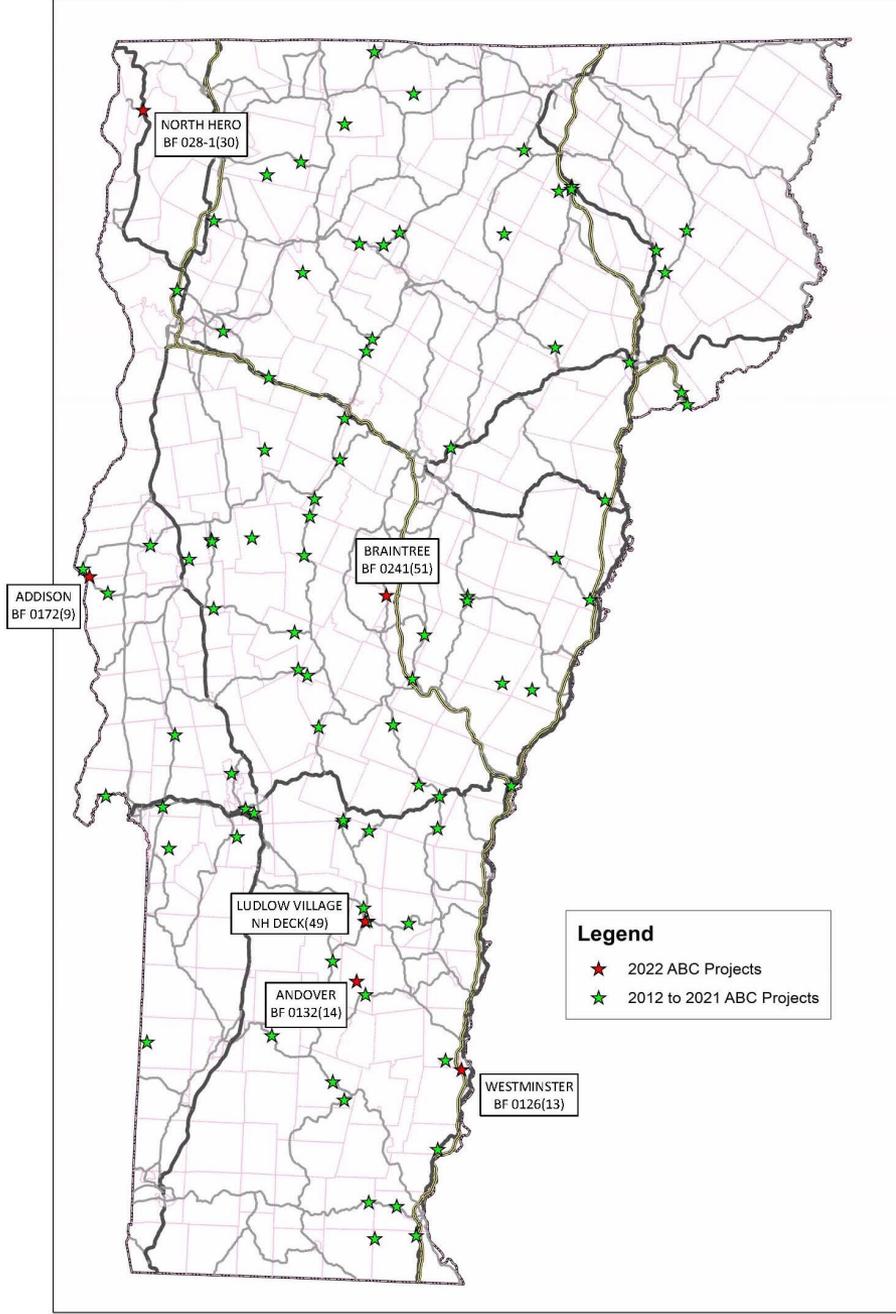
In the Structures Program

\$207 Million

In construction costs since 2012

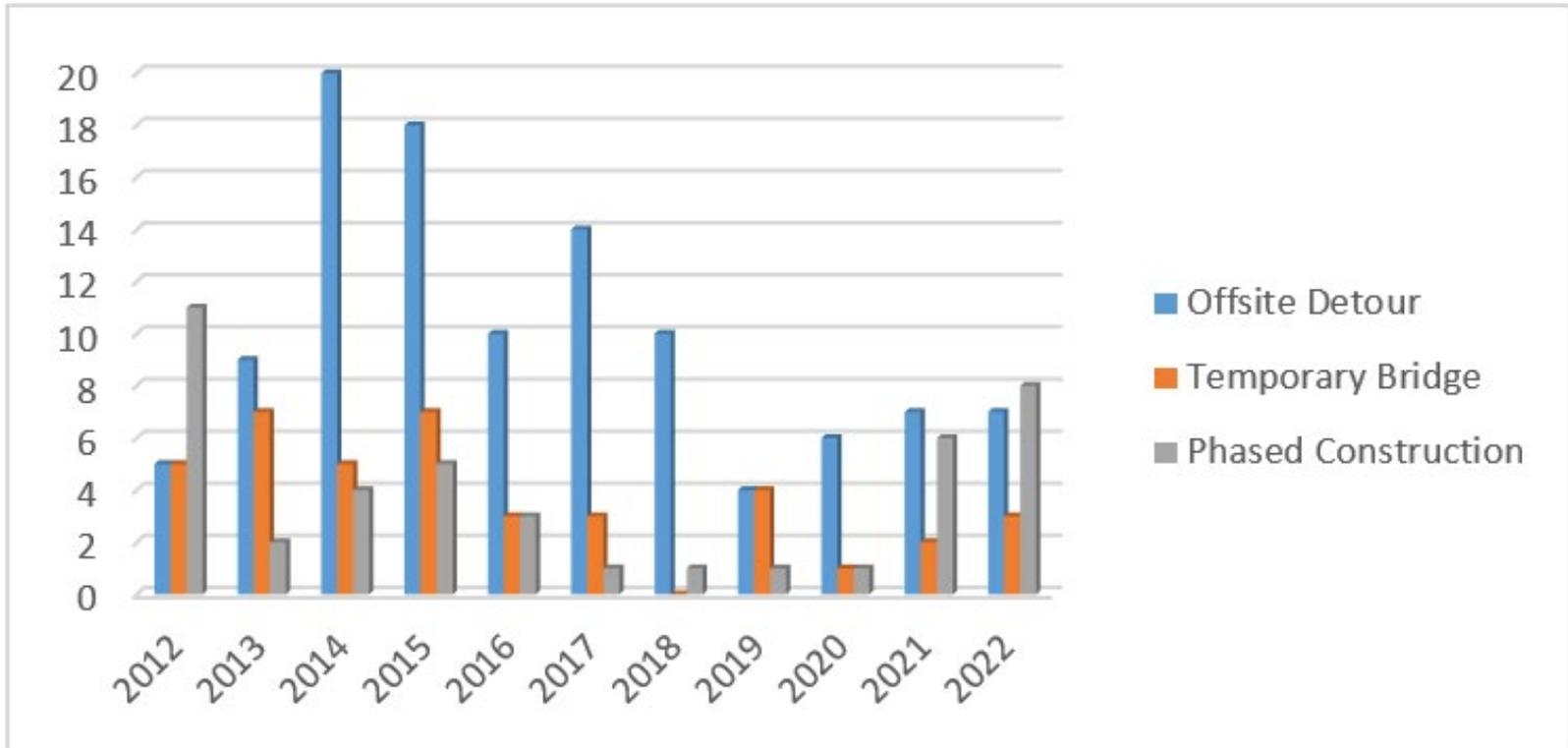
94% on time

Bridge openings (Plymouth VT 100 Delayed)



ABC Project Map

Road Closures Summer 2022



	PROJECT NAME	PROJECT NUMBER	ROUTE	Construction	Duration	Scope
2022	ADDISON	BF 0172(9)	VT-125	Accelerated	14 days	Culvert Replacement
2022	WESTMINSTER	BF 0126(13)	FAS Route 126	Conventional	60days	Deck Replacement
2022	LUDLOW VILLAGE	NH DECK(49)	VT-103	Accelerated	21 days	Deck Replacement
2022	ANDOVER	BF 0132(14)	FAS Route 132	Conventional	60 days	Full Bridge Replacement
2022	LEICESTER	BO 1445(37)	Old Jerusalem Road	Conventional	180 days	Culvert Replacement
2022	NEWFANE	BF 0106(6)	Depot Road	Conventional	180 days	Full Bridge Replacement
2022	BRAINTREE	BF 0241(51)	VT-12	Accelerated	28 days	Superstructure Replacement

Plymouth BF 013-3(13) and (17)

Background

- Two culvert replacements on VT Route 100
- Contract required 28 day closure period between August 16 and October 1, 2021.

Contractor

- Chose window of August 30th to Sept. 27th
- Lack of resources slowed construction of first culvert (metal culvert no headwalls)
- Proper equipment and resources were not obtained, and closure period was extended to October 29th target date.
- Unable to contain late season rain. Site inundated with water causing further delay.
- Additional subcontractors were brought in to complete project on Nov. 24th.

Disincentives and Liquidated damages were charged totaling \$218,615.00





Plymouth BR 115 Before



Plymouth BR 115 After



Plymouth BR 114 Before



Plymouth BR 114 After



Burke Before 09



Burke After



Calais Before



Calais After



Chester Before



Chester After



Newbury Before



Newbury After

Rockingham Before



Rockingham After



Lancaster - Guildhall Before



Lancaster - Guildhall After



Enosburg Before



Enosburg After



Enosburg Before

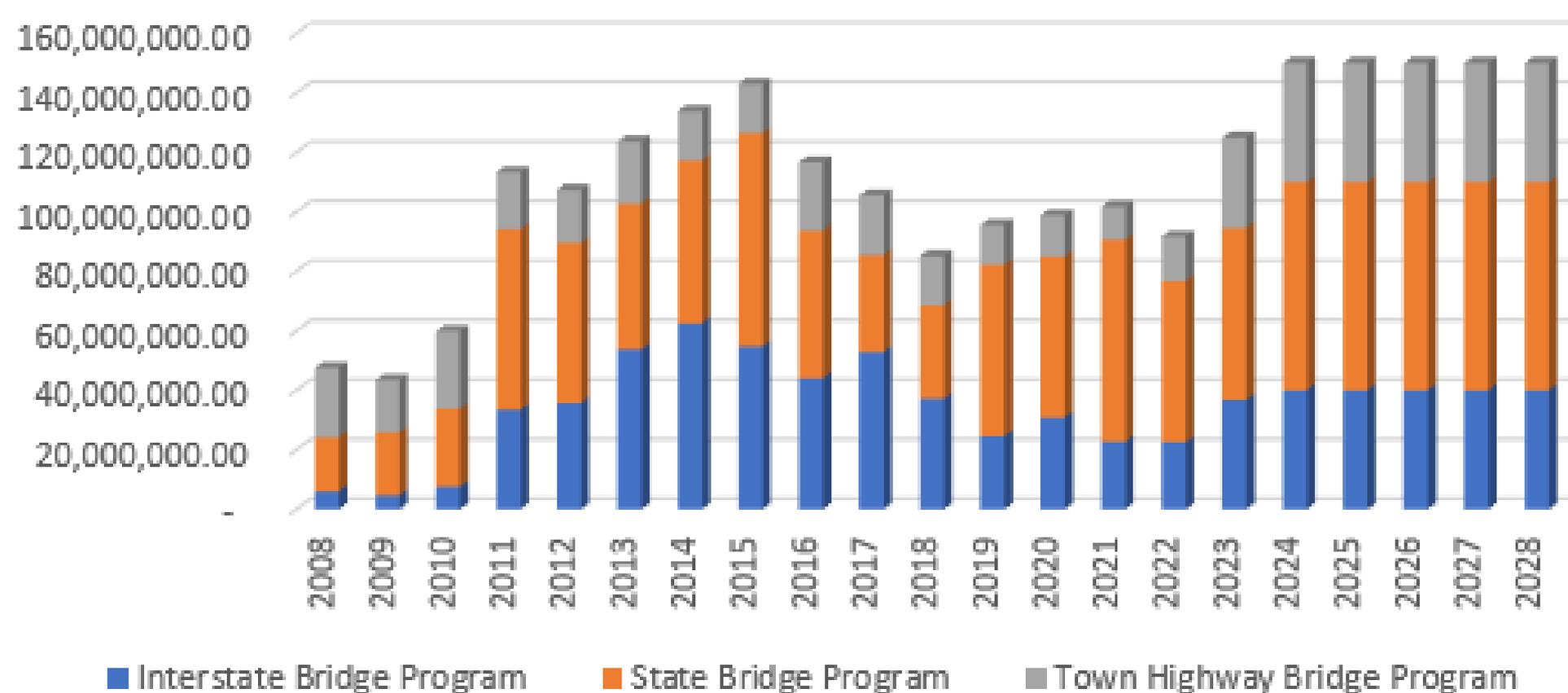


Enosburg After



Program Funding Trends - Projected

Program Funding Trends



Program Delivery Risk Registry

- Supply Chain
 - Currently in a nationwide driver shortage for Trucking
 - Was informed this was a problem for some projects this past summer
- Fabrication
 - Fabricators who build our girders are booked out to the first quarter of next year
 - Labor shortage to the extent shops cannot staff a second shift
- Contractors
 - Nationwide shortage of Laborers
 - Vermont Contractors are spread thin
- Designers
 - Design firms including VTrans have difficulty hiring engineering staff
 - Vermont just reclassified the Civil Engineering series but we have to get young people into the profession – Recruit at the Primary school level.

Kristin M. Higgins, P.E. | Structures
Program Manager

Project Delivery Bureau | Structures
Vermont Agency of Transportation -
Highway Division

219 North Main Street | Suite 201
Barre, VT 05641

e-mail: kristin.higgins@vermont.gov

phone number: 802-498-3398

Pamela M. Thurber, P.E. | Bridge
Mgmt. & Inspection Manager

Asset Management Bureau
Vermont Agency of Transportation -
Highway Division

219 North Main Street | Suite 201
Barre, VT 05641

e-mail: pam.thurber@vermont.gov

phone number: 802-595-2270

Questions?

