

Town of Williston, VT



Kick – Off Meeting

2016 – 2021

Comprehensive Plan

May 7 and 9, 2015 Kick-Off
Meetings

2016-2021 Comprehensive Plan

- Update of the 2011 – 2016 Comprehensive Plan
 - Five Year Plan with a long term focus
 - Statement of the Town's
 - Vision and aspirations of what it wants to become
 - Policy guide for making public investments in community facilities and public infrastructure
 - Blueprint for making decisions about future land use

2016-2021 Comprehensive Plan

- Required Elements of Vermont Municipal Plans

A plan for a municipality be consistent with state goals and compatible with the plans of other municipalities in the region and with the regional plan, and must contain the following elements:

- A statement of objectives, policies and programs
- Land Use Plan
- Transportation Plan
- Utilities and Facilities Plan
- Policies for the preservation of rare and irreplaceable natural areas
- Education Facilities Plan
- Program for Plan Implementation
- Compatible with development trends and plans for adjacent municipalities
- Energy Plan
- Housing Element
- Economic Development Element
- Flood Resilience Plan

2016-2021 Comprehensive Plan

- How is the plan developed?
 - Planning commission develops the plan
 - Ideas and input from the public
 - Discussions with other town boards, committees, and commissions
 - Special issue task forces
 - Survey of town residents
 - Planning Commission holds a public hearing, notifies other local, state and regional governments
 - Planning Commission sends a draft plan to the Selectboard
 - Selectboard reviews the plan, may recommend changes
 - Selectboard holds two public hearings
 - Plan must be approved by the regional planning commission

2016-2021 Comprehensive Plan

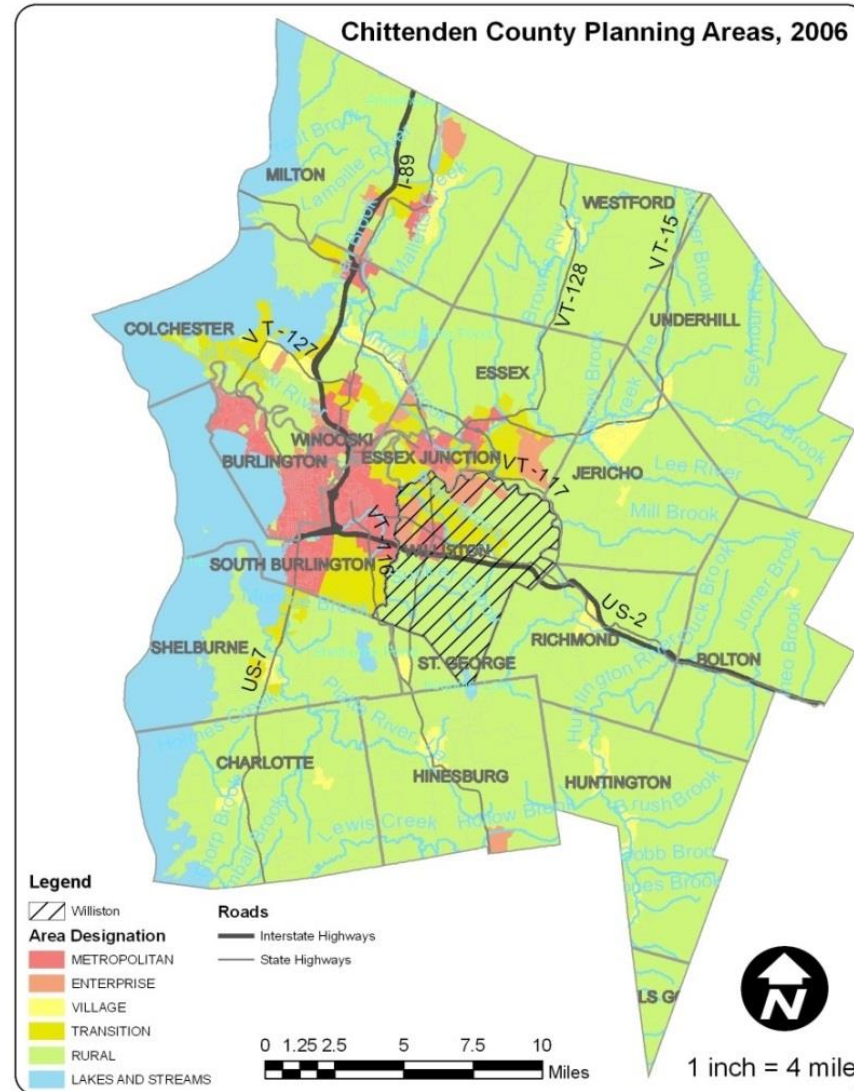
● 2016 – 2021 Plan Development Schedule

- **May 2015** **Town Wide Public Meetings
Create smaller focus groups around key issues**
- **May, June 2015** **Planning Commission forms Task Force Groups to work on
specific focus and topic areas**
- **June-Sept 2015** **Task Force Groups meet and report on recommendations
to Planning Commission**
- **Sept-Dec 2015** **Planning Commission develops draft of town plan**
- **January 2016** **Planning Commission holds public hearings**
- **February 2016** **Planning Commission forwards the plan to the Selectboard**
- **February 2016** **Plan reviewed by Regional Planning Commission**
- **March 2016** **Selectboard holds public hearing**
- **March-May 2016** **Selectboard completes its review of the plan**
- **June-Aug 2016** **Plan revised as necessary**
- **Sept 2016** **Selectboard hold public hearing**
- **Sept 2016** **Selectboard Adopts the plan**

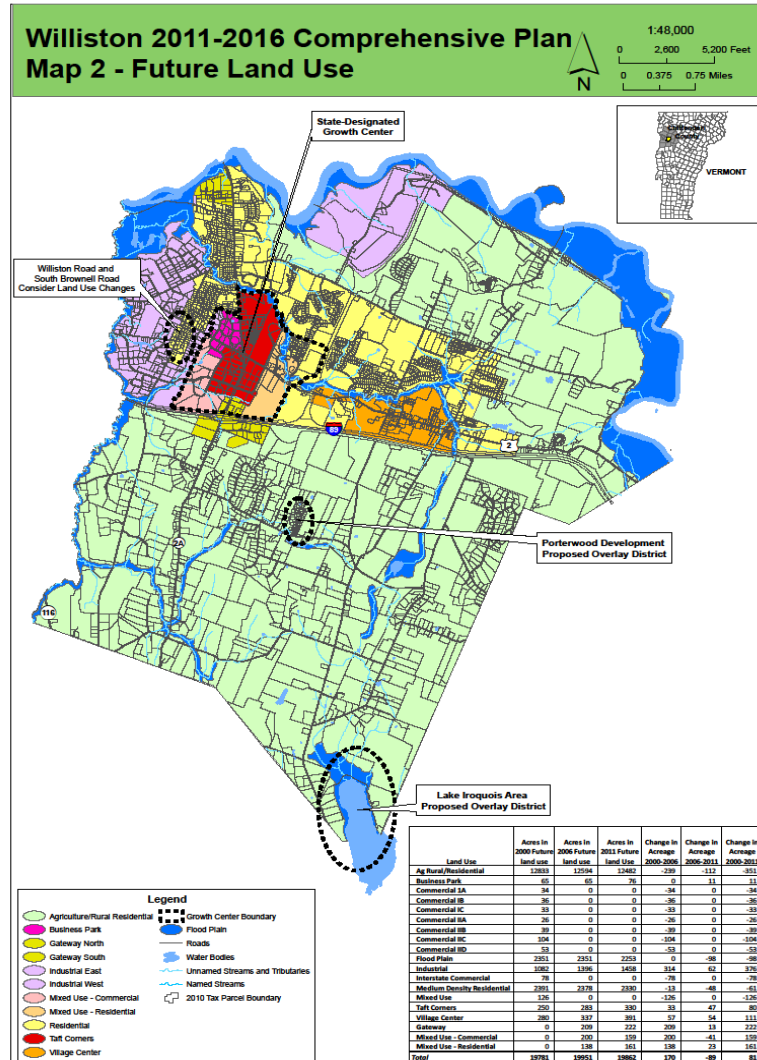
2016-2021 Comprehensive Plan

- 2011-2016 Comprehensive Plan
 - Williston's Evolving Vision
 - Land Use
 - Community Design
 - Growth Management and Housing
 - Transportation
 - Public Facilities
 - Education and Child Care
 - Energy Efficiency and Conservation
 - Watershed Health
 - Open Space and Working Landscapes
 - Implementation

2016-2021 Comprehensive Plan



2016-2021 Comprehensive Plan



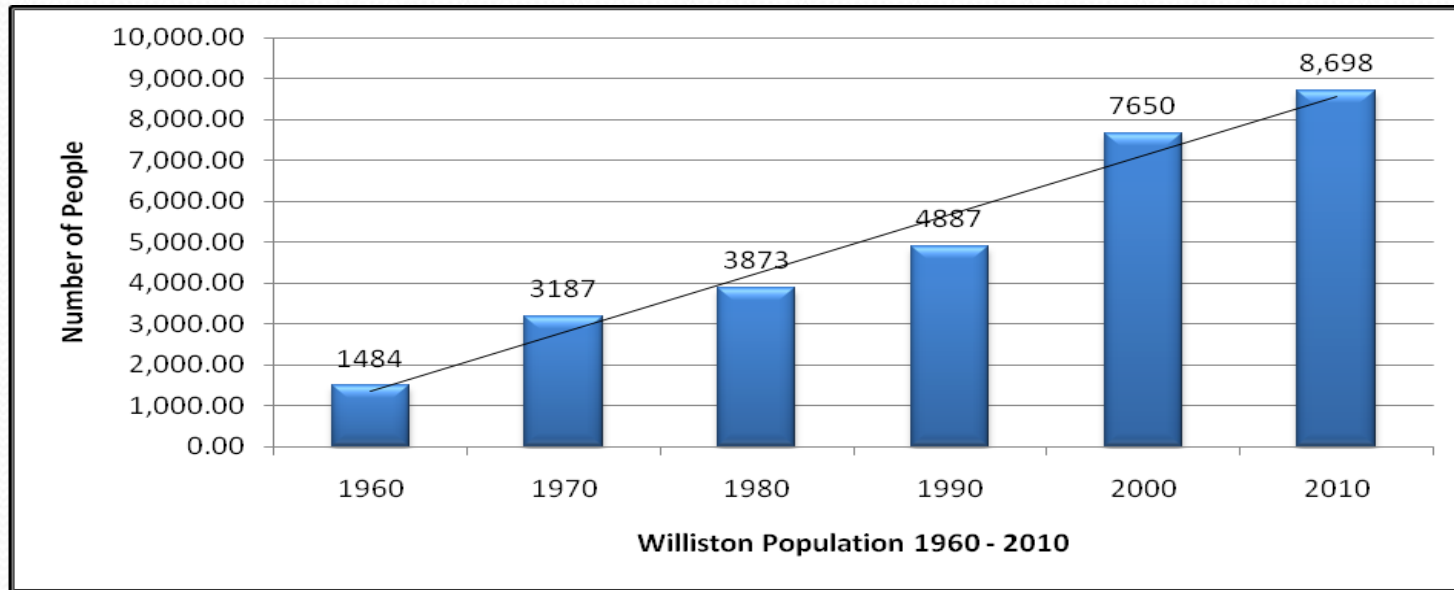
2016-2021 Comprehensive Plan

● Some Facts about Williston

- 9,014 resident population (2013 estimate)
- Approximately 11,000 jobs in Williston
- Roughly 30 square miles in size
- 1,400 students in public schools
- An aging population

2016-2021 Comprehensive Plan

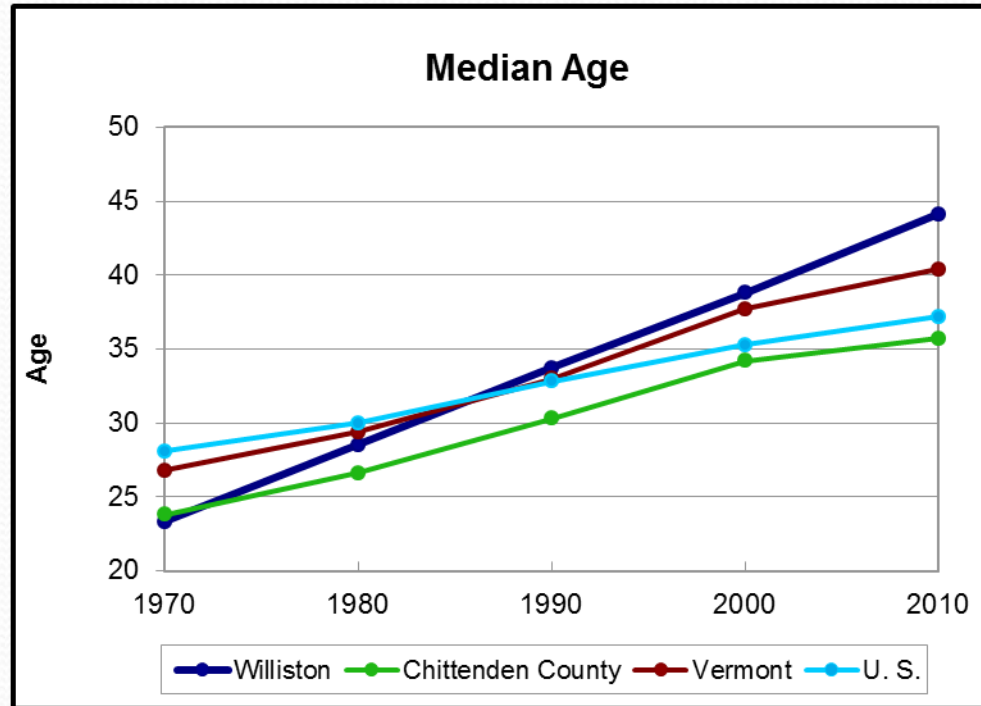
- Williston has a history of rapid growth



	2000 – 2010			
	2000	2010	# Change	% Change
Williston	7,650	8,698	1,048	13.7%
Chittenden Co.	146,572	156,545	9,973	6.8%
Vermont	608,821	625,741	16,920	2.8%

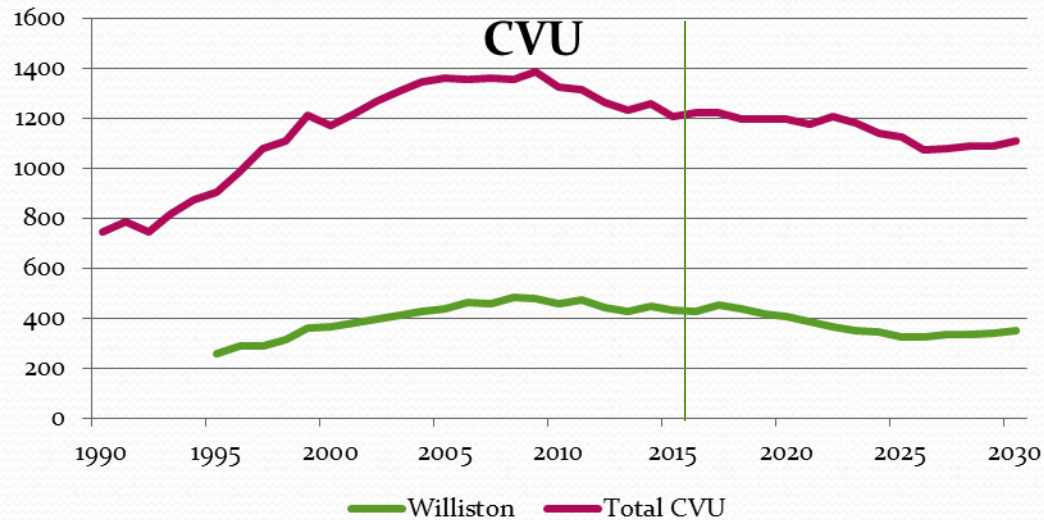
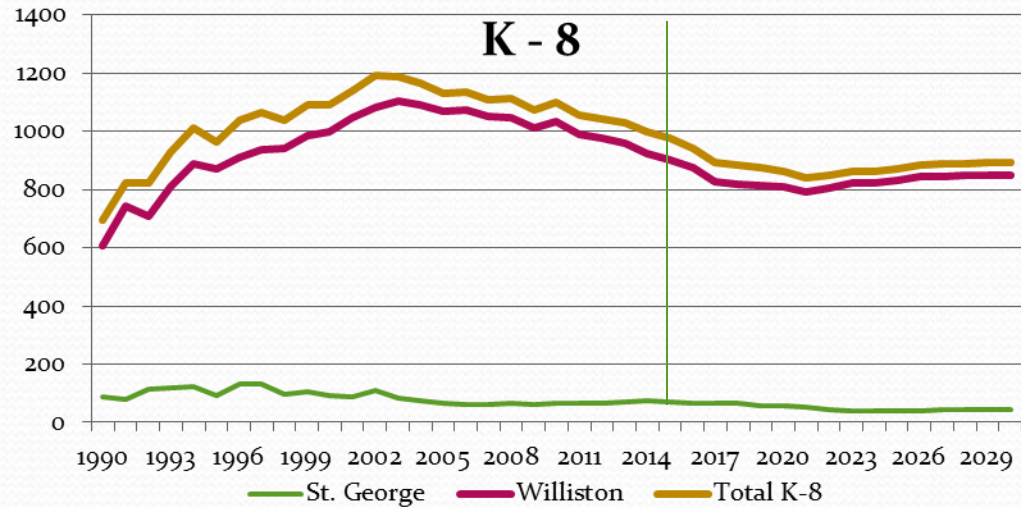
2016-2021 Comprehensive Plan

- We have an Aging Population



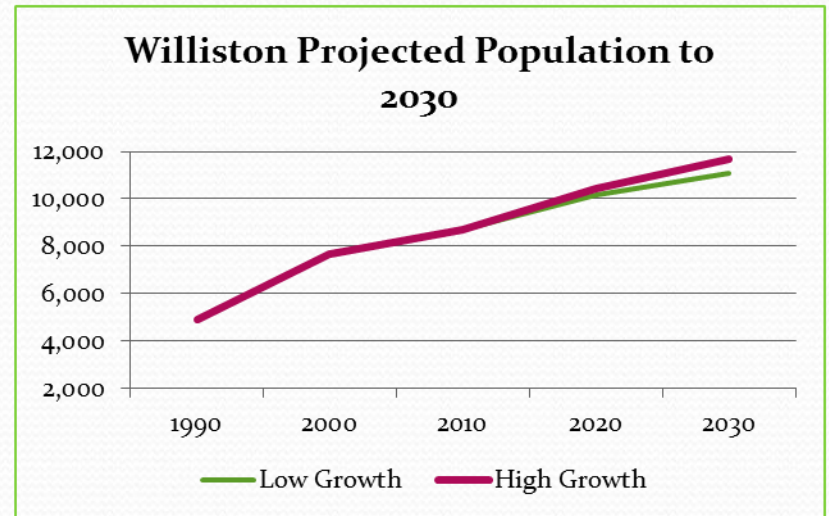
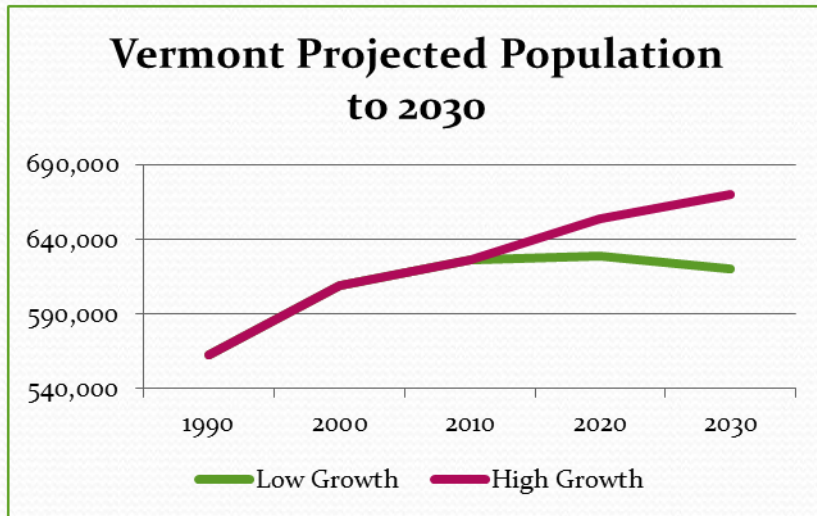
	1970	1980	1990	2000	2010
Williston	23.3	28.5	33.7	38.8	44.1
Chittenden County	23.8	26.6	30.3	34.2	35.7
Vermont	26.8	29.4	33.0	37.7	40.4
U. S.	28.1	30.0	32.8	35.3	37.2

2016-2021 Comprehensive Plan



2016-2021 Comprehensive Plan

Population Projections

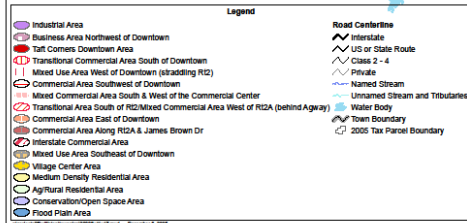
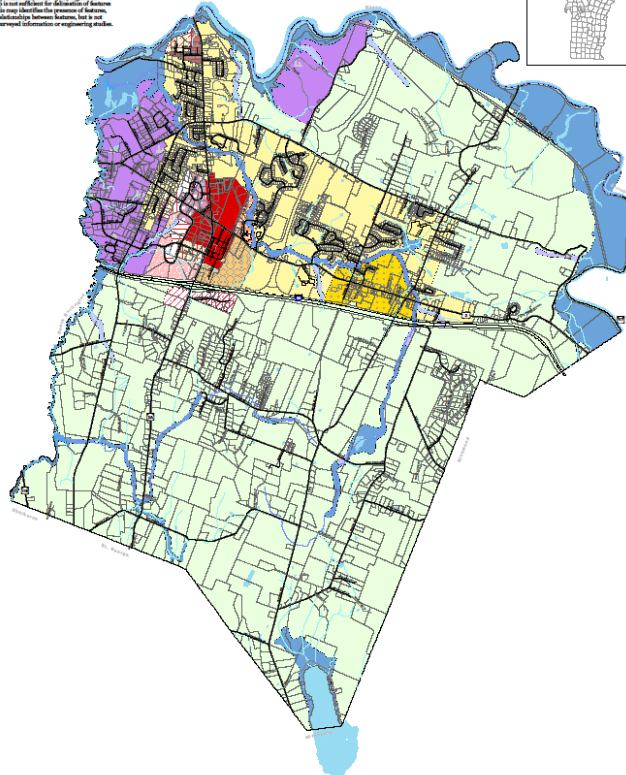


2016 – 2021 Comprehensive Plan

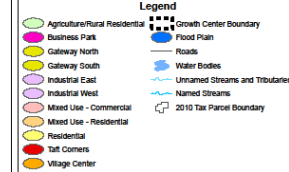
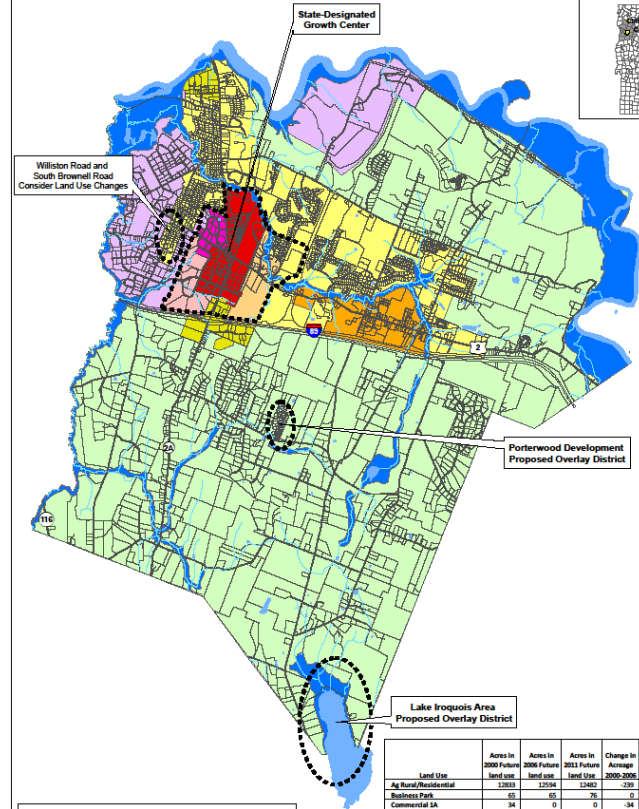
**Williston 2006 Comprehensive Plan
Map 1 - 2000 Future Land Use**

Sources:
Future Land Use - Town of Williston, 2006
Roads - VT Department of Transportation
Water - VT Department of Natural Resources
Surface Water - VT Hydrography and DUCS - 2000

Disclaimer:
The accuracy of information presented is determined by the sources. Errors and omissions are noted. The Williston County Regional Planning Commission is not responsible for errors. Questions of the accuracy of information should be resolved by the user. This map is not intended for use as a legal document. The map is not intended for use as a legal document. The map is not intended for use as a legal document.



**Williston 2011-2016 Comprehensive Plan
Map 2 - Future Land Use**



Land Use	Acres in 2000 Future Land Use	Acres in 2011 Future Land Use	Acres in 2016 Future Land Use	Change in Average 2000-2011	Change in Average 2011-2016	Change in Average 2000-2016
Agriculture/Rural Residential	1,000	1,000	1,000	-117	-117	-117
Business Park	65	65	65	0	0	0
Commercial IA	34	0	0	-34	0	-34
Commercial IB	36	0	0	-36	0	-36
Commercial IC	33	0	0	-33	0	-33
Commercial ID	26	0	0	-26	0	-26
Commercial IE	39	0	0	-39	0	-39
Commercial IF	104	0	0	-104	0	-104
Commercial IG	51	0	0	-51	0	-51
Flood Plain	2,011	2,011	2,011	0	0	0
Industrial	1,000	1,000	1,000	0	0	0
Interstate Commercial	78	0	0	-78	0	-78
Medium Density Residential	201	2,011	2,011	-13	-48	-61
Mixed Use	126	0	0	-126	0	-126
Taft Corners	250	250	250	0	0	0
Village Center	280	317	317	37	54	111
Gateway	0	200	222	200	22	222
Mixed Use - Commercial	0	200	200	200	-41	159
Mixed Use - Residential	0	138	161	138	23	161
Total	2,011	2,011	2,011	0	0	0

2016-2021 Comprehensive Plan

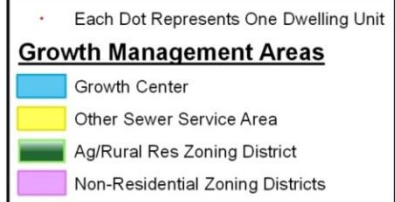
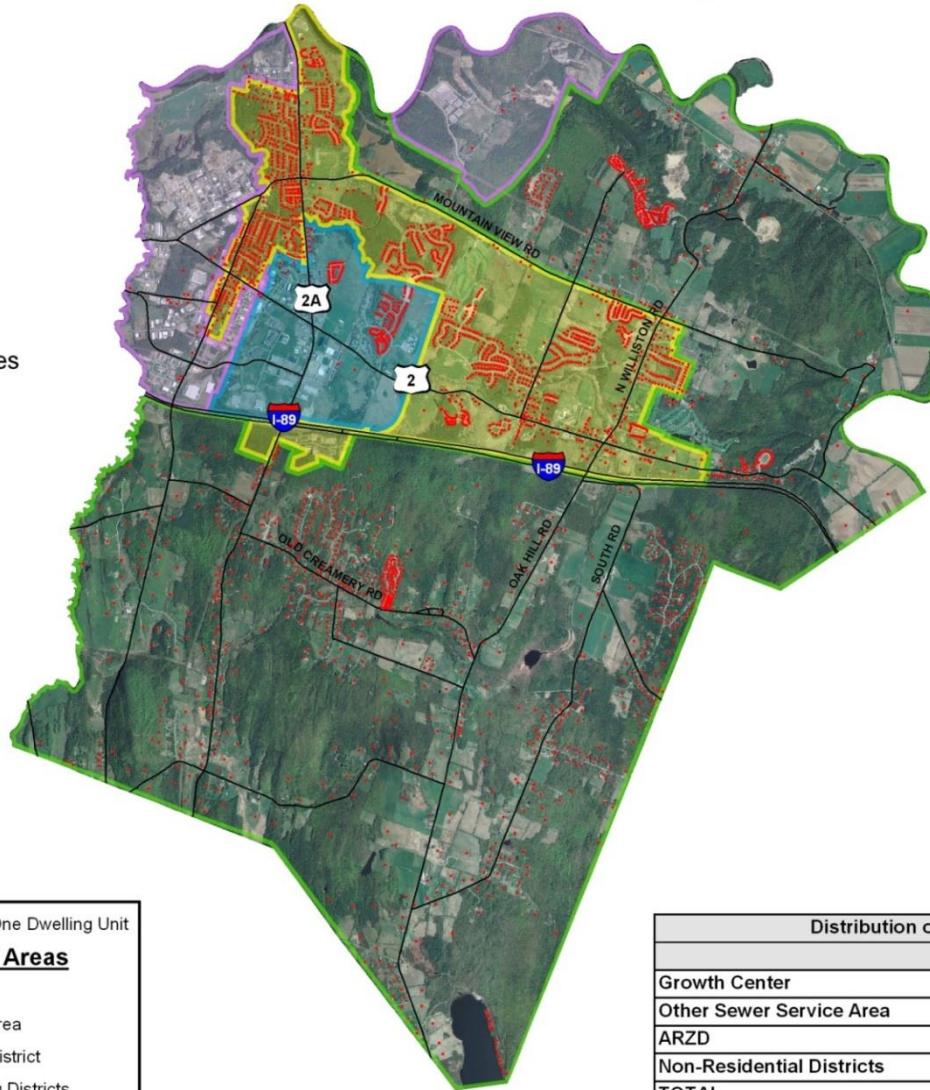
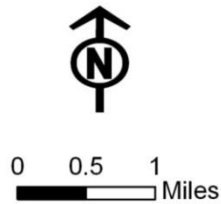


May 7 and 9, 2015 Kick-Off Meetings

2016 – 2021 Comprehensive Plan

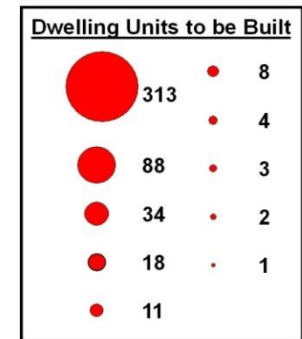
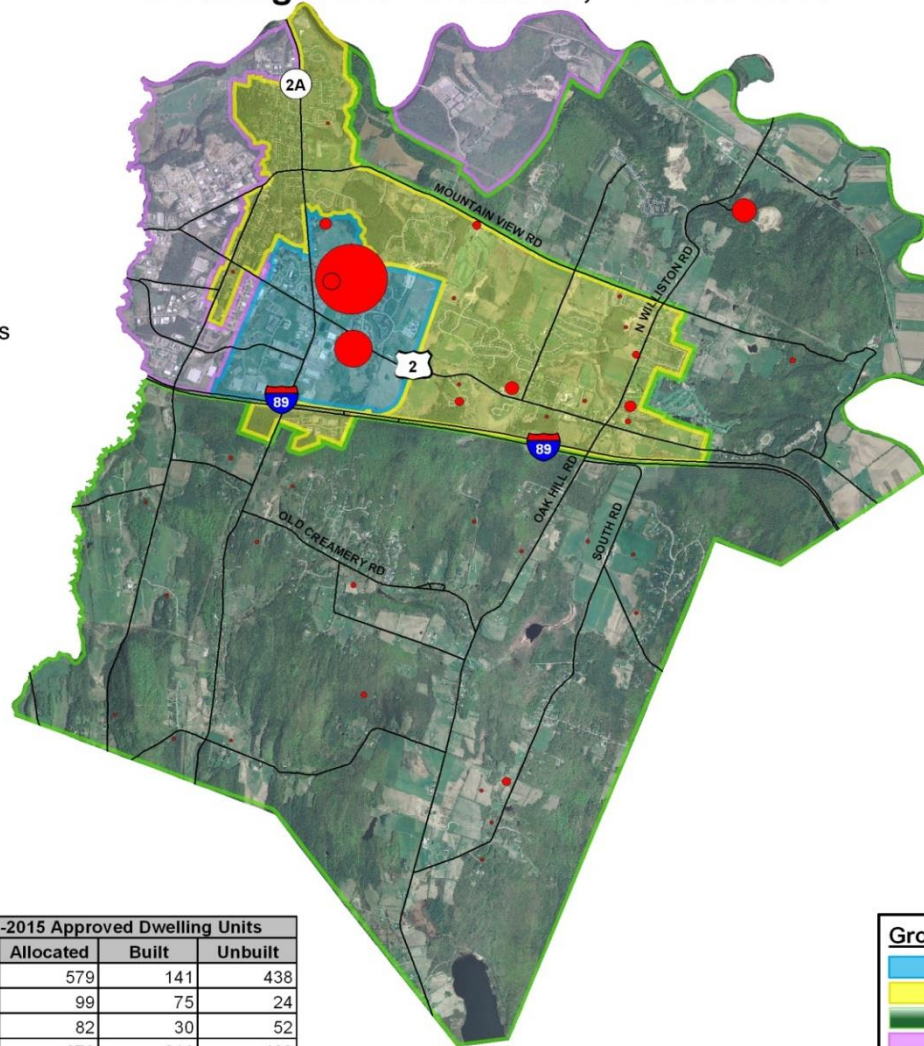
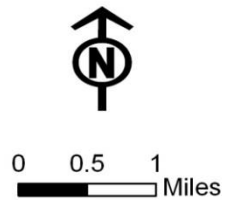


Dwelling Units Built Through 2010



Distribution of Dwelling Units		
	# of Units	% of All Units
Growth Center	266	8.2%
Other Sewer Service Area	1,791	55.5%
ARZD	1,134	35.2%
Non-Residential Districts	35	1.1%
TOTAL	3,226	100.0%

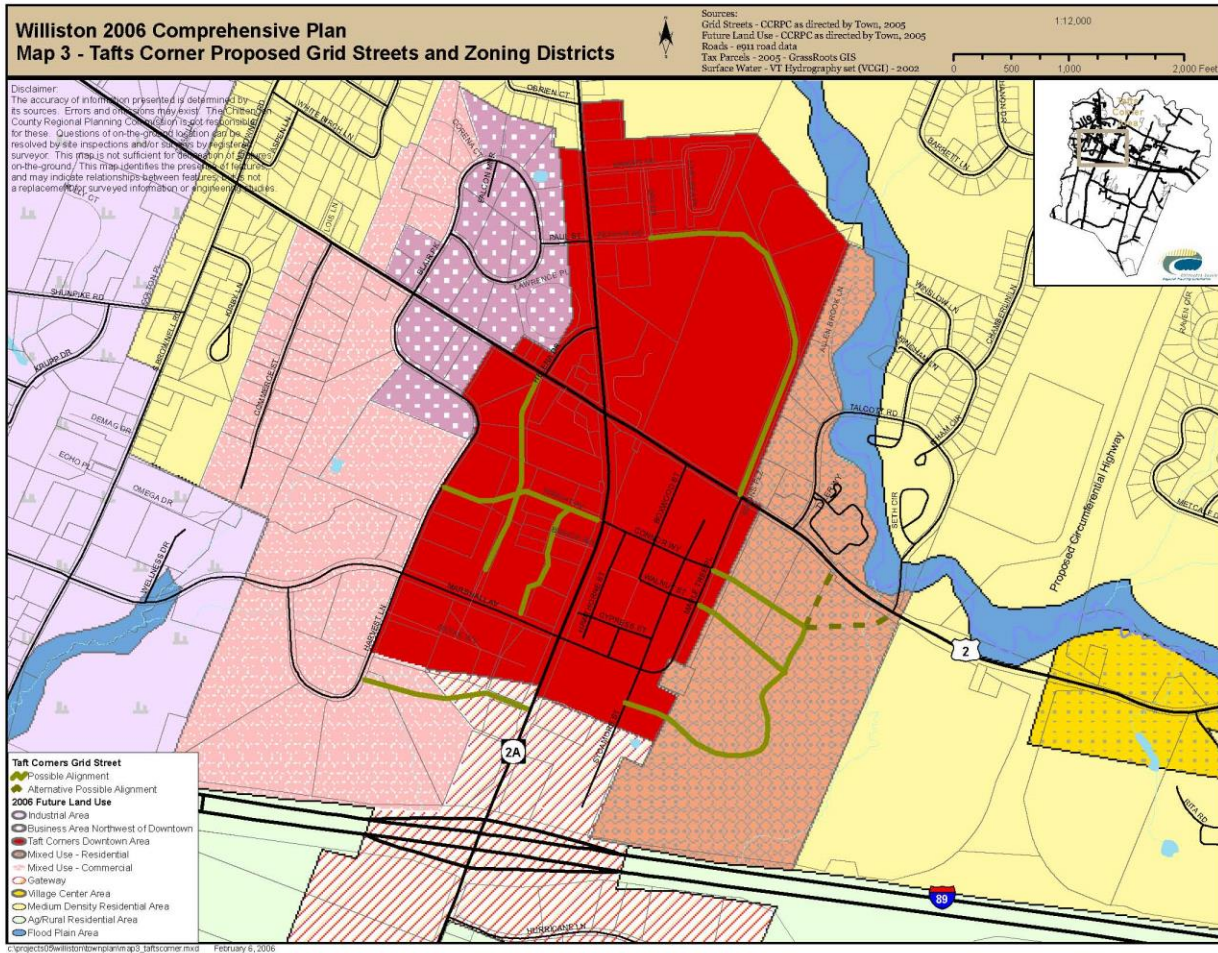
Residential Growth Management Dwelling Units Allocation, FY 2005-2015



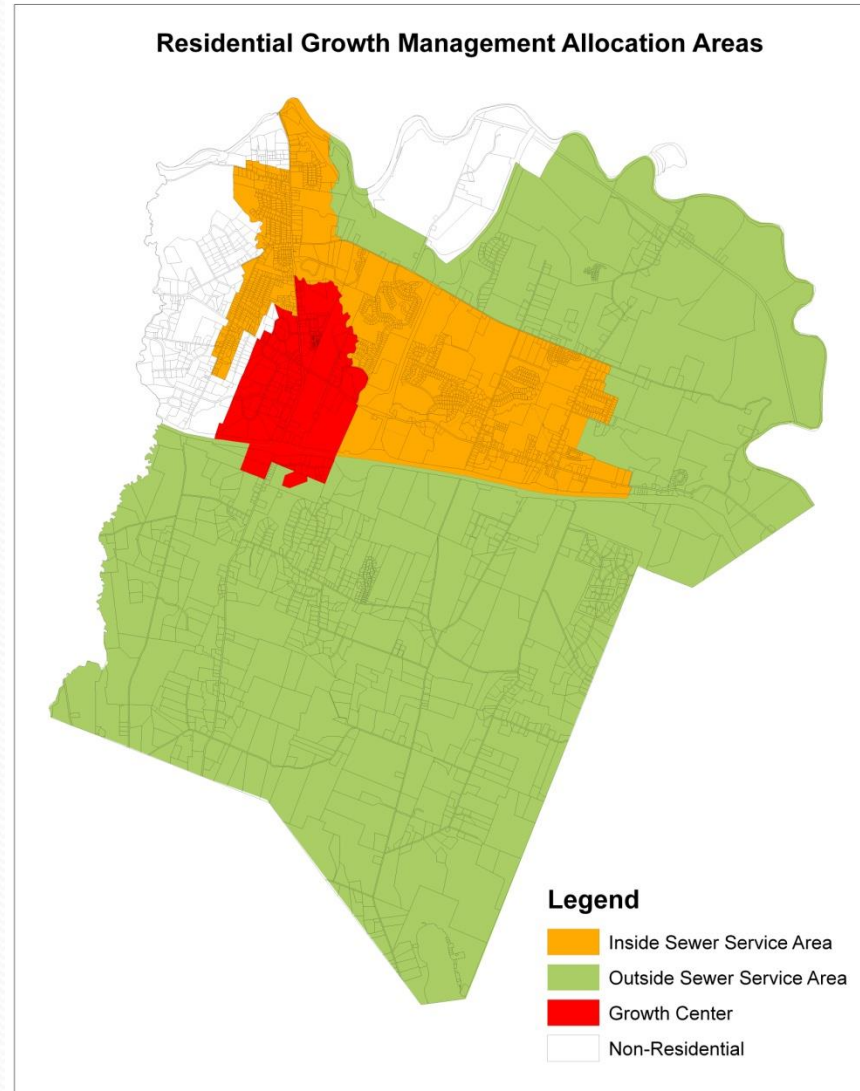
Growth Management 2005-2015 Approved Dwelling Units			
	Allocated	Built	Unbuilt
Growth Center	579	141	438
Other Sewer Service Area	99	75	24
ARZD	82	30	52
TOTAL	678	216	462

Growth Management Areas	
	Growth Center
	Other Sewer Service Area
	Ag/Rural Res Zoning District
	Non-Residential Zoning Districts

2016 - 2021 Comprehensive Plan



2016 -2021 Comprehensive Plan



2016 -2021 Comprehensive Plan

Key Feature of Growth Management

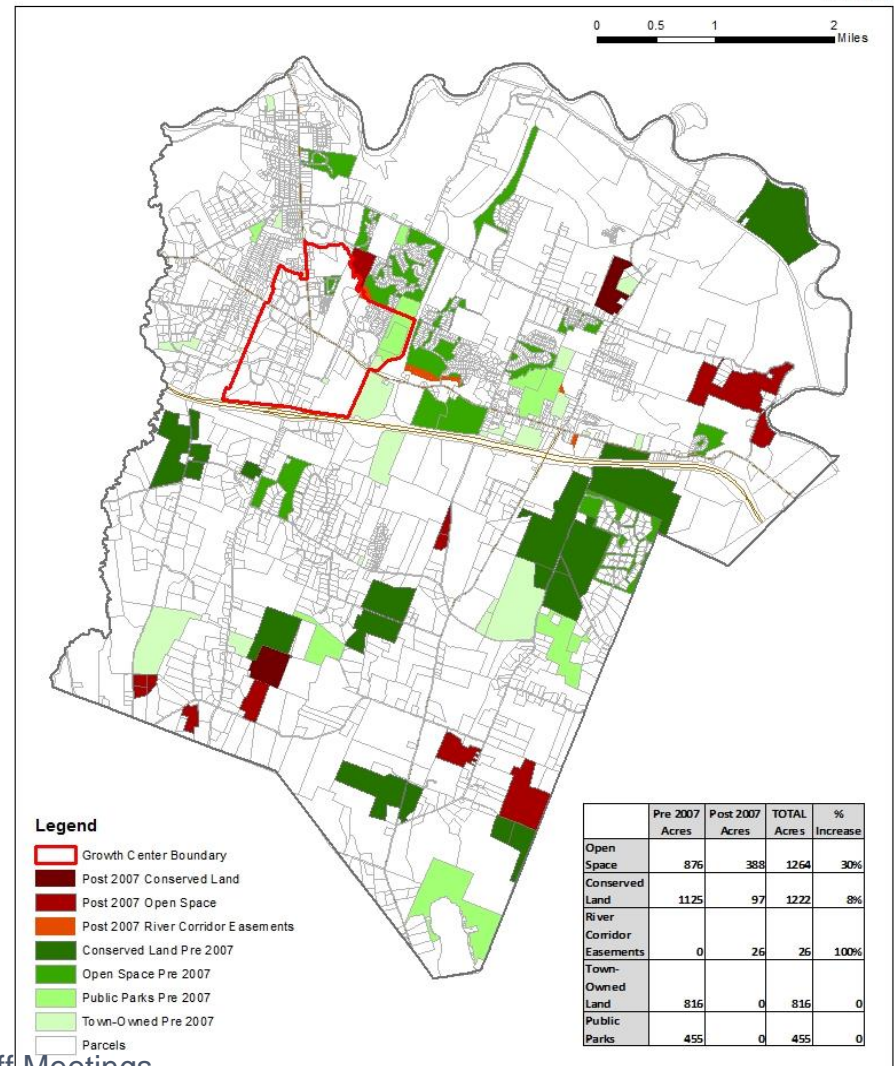
- Residential projects awarded allocation on a competitive basis yearly
- Growth management is part of the project approval process
- Growth is concentrated in the town's Growth Center
- Allocation is time limited – 5 years
- Maximum of 80 dwelling units per year allocated
 - ❖ 56 units in the growth center
 - ❖ 12 units in the remaining sewer service area
 - ❖ 12 units in the ARZD

2016-2021 Comprehensive Plan

Land Conservation



Conserved & Protected Open Space Lands, Williston, VT
Pre and Post October, 2007



2016-2021 Comprehensive Plan

- The Town of Williston will encourage and support a design-conscious, pedestrian-friendly, mixed-use development and redevelopment pattern in the Taft Corners area.
- The town has worked toward this objective by successfully obtaining Growth Center Designation in 2008 and revising the *Unified Development Bylaw* in 2009.
- The town will continue to support this objective by encouraging the construction of planned infrastructure and examining and monitoring the effectiveness of its bylaws.

Transportation Objectives

- The overall objective of the town is to develop a comprehensive approach to transportation that emphasizes the safe and efficient movement of people and goods utilizing a variety of transportation modes that includes transit, pedestrian and bicycle facilities, paths and trails, as well as roads and highways for the movement of cars and trucks. The town's transportation goals and objectives are intended to foster and support the utilization of "complete street" principles.... The town's transportation plan shall include four important elements and priorities:
- **Major Road Plan** - The functional classification map adopted here serves as a factual basis for the implementation of transportation and land use policies.
- **Sidewalks, Paths, and Trails** – A network of interconnected sidewalks, paths, and trails designed for serve the transportation and recreation needs of pedestrians and bicyclists.
- **Public Transportation Plan** – Transit routes designed to provide bus service connecting the town's high intensity growth center in Taft Corners linking Williston with other communities in the region.
- **Connectivity** - Ensuring good vehicular, bicycle, and pedestrian circulation among neighborhoods is among the main themes of planning in Williston.

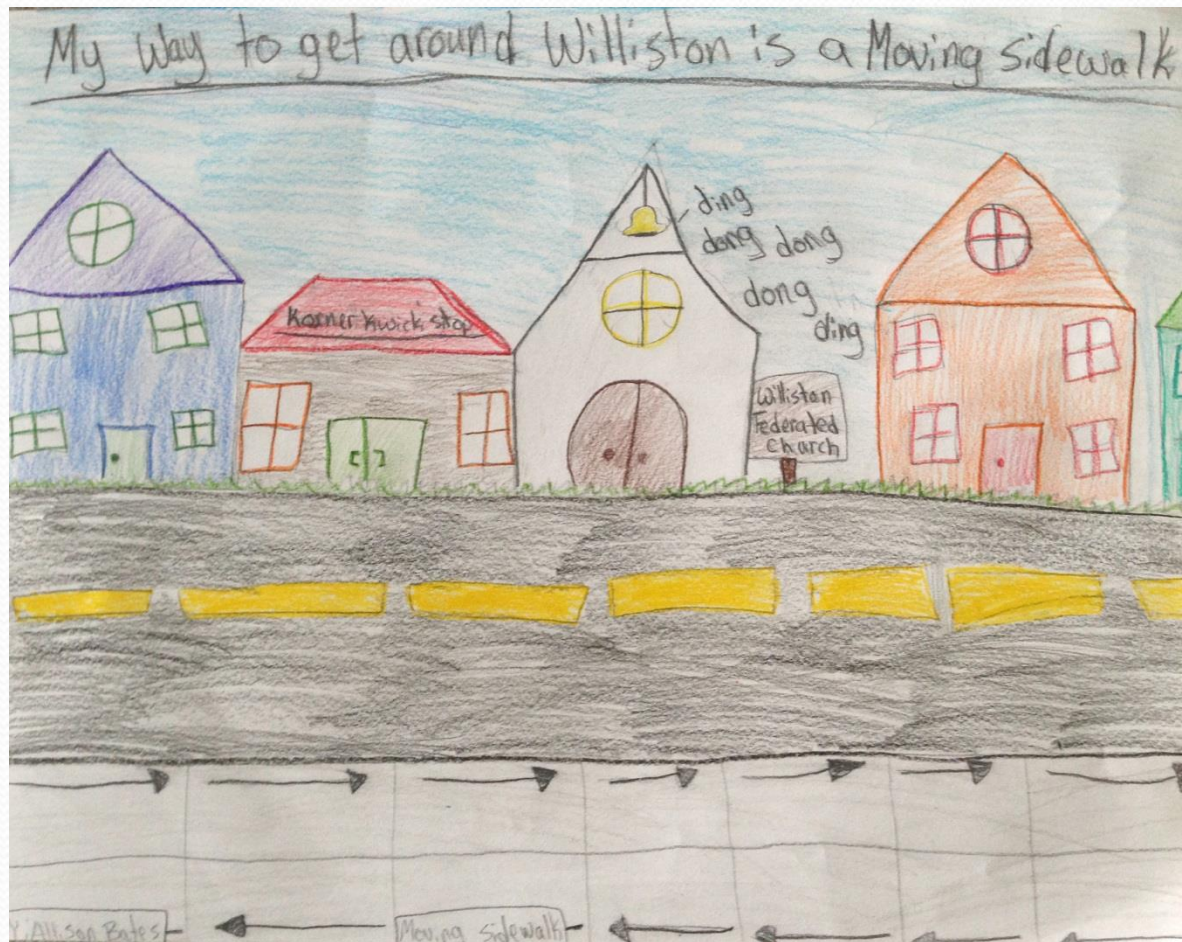
2016-2021 Comprehensive Plan

Transportation – How do we get around?



2016-2021 Comprehensive Plan

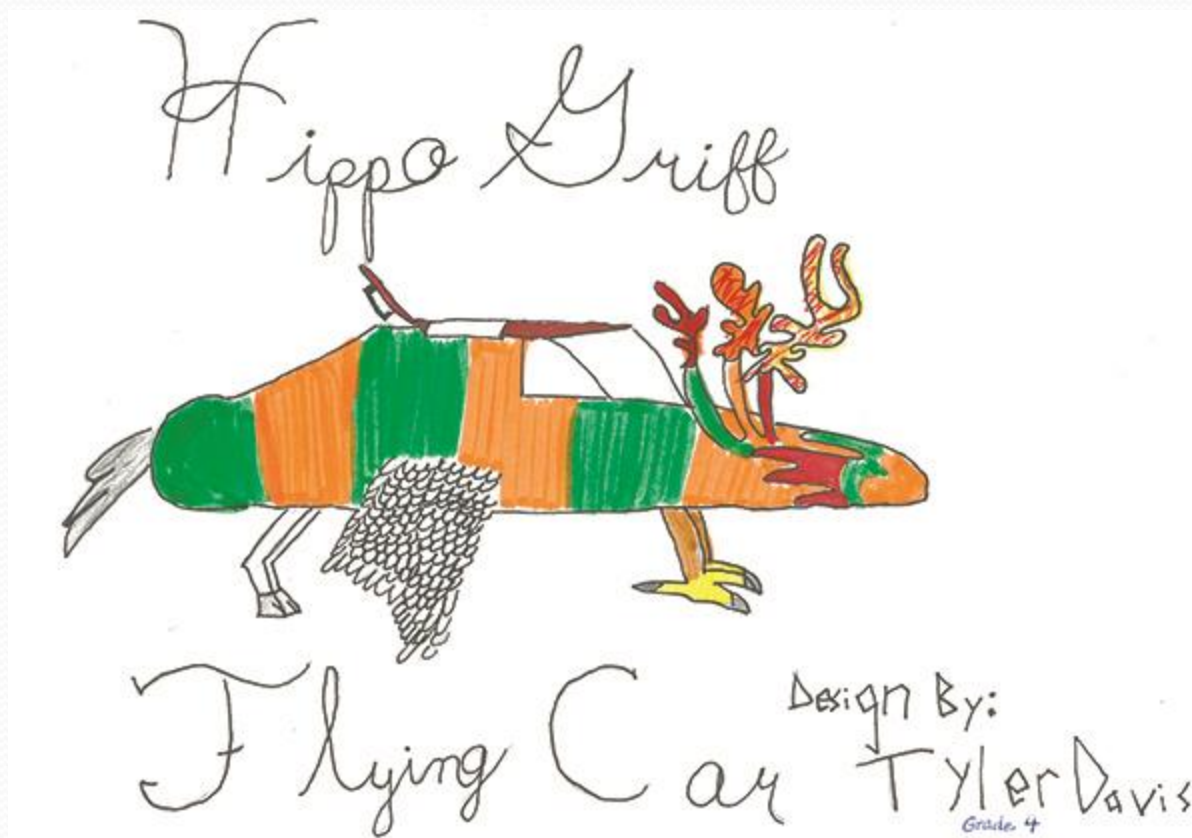
Transportation – How do we get around?



May 7 and 9, 2015 Kick-Off Meetings

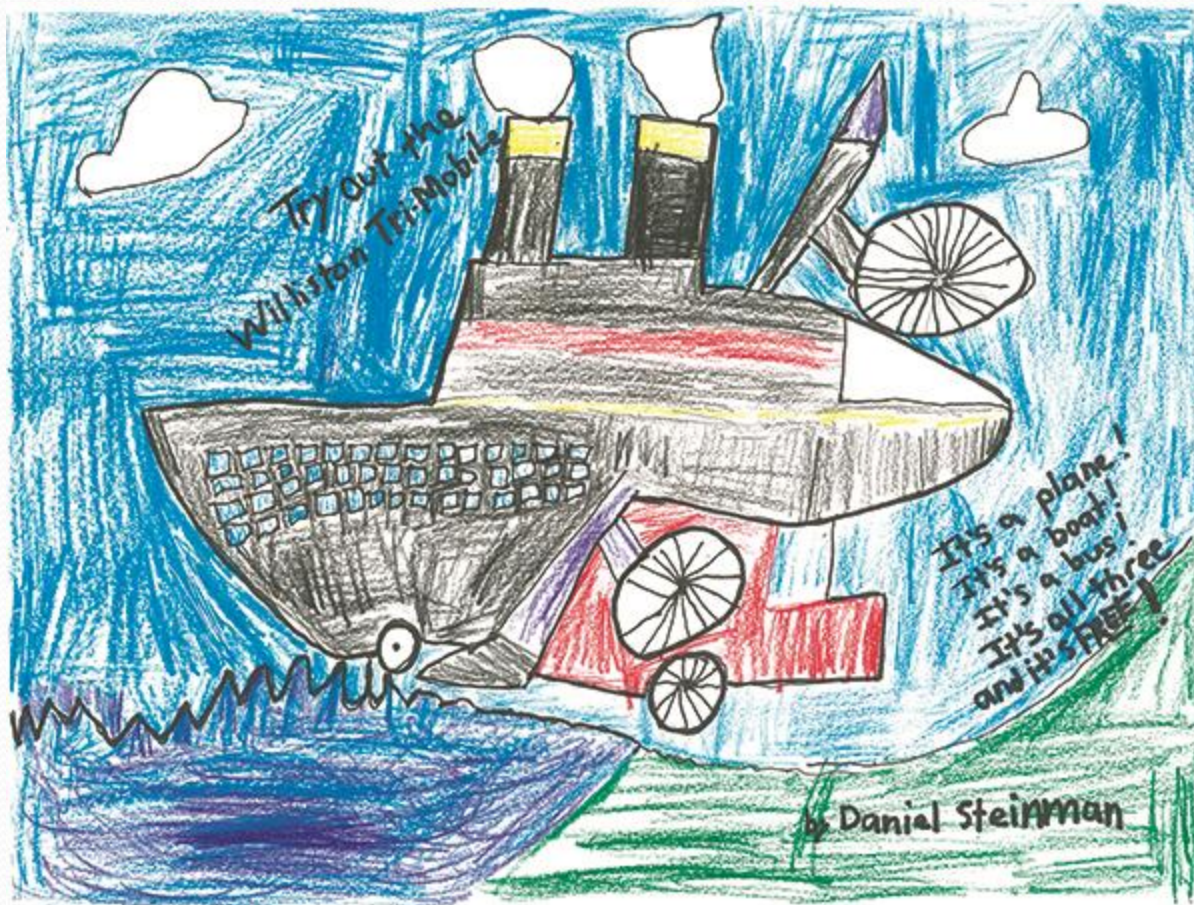
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Transportation – How do we get around?



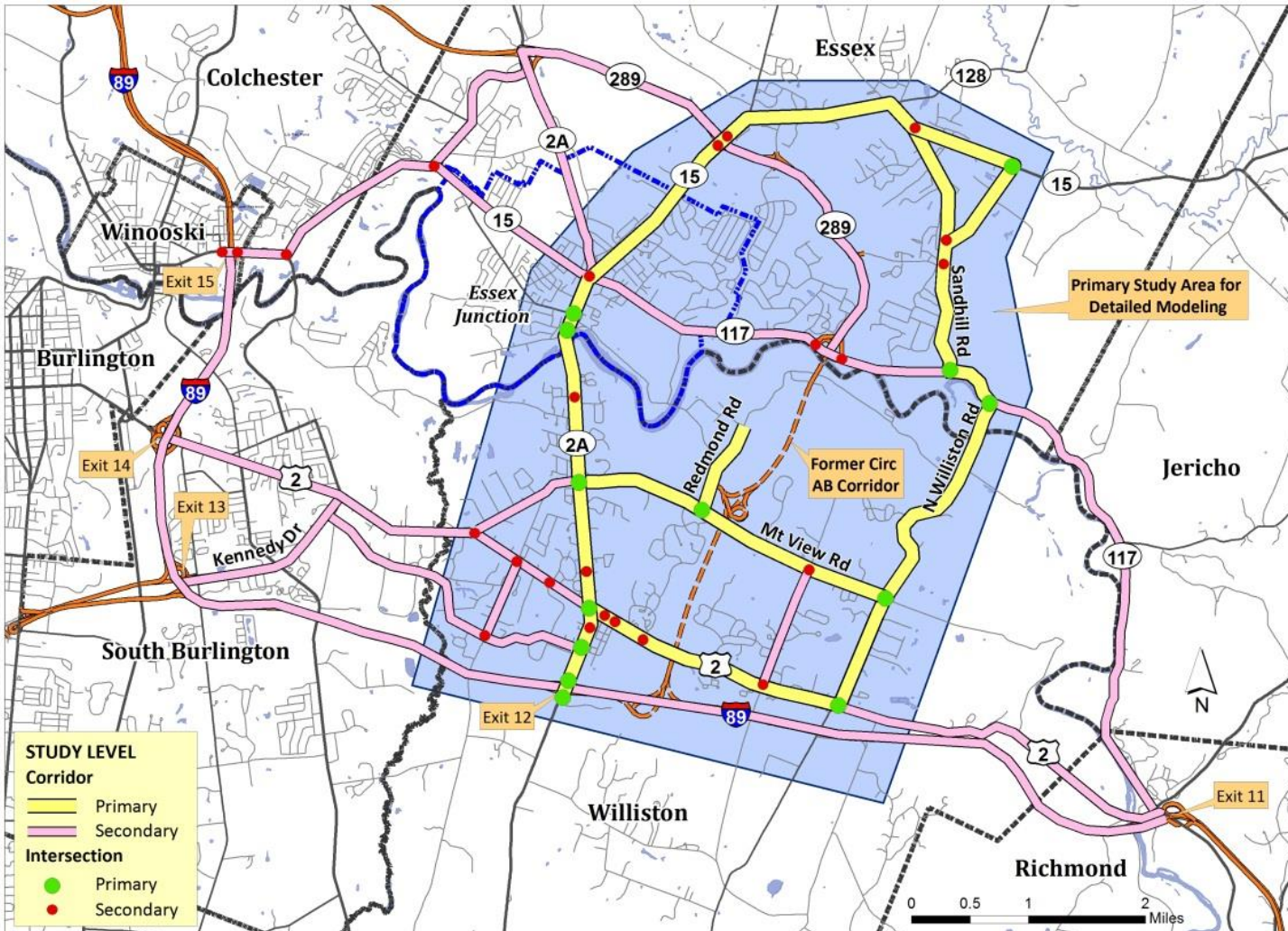
2016-2021 Comprehensive Plan

Transportation – How do we get around?



2016-2021 Comprehensive Plan

Do you remember the Circ Highway?



2016 – 2021 Comprehensive Plan

- What's next?
- Small group discussions
 - 4 or 5 things that you like and value about living in Williston (15 to 20 minutes)
 - Report back to the main group
 - 4 or 5 things that you'd like to see addressed in the new town plan (20 minutes \pm)
 - Report back to the main group

2016 – 2021 Comprehensive Plan

Stay involved, follow us on social media!

- Read our blog at WillistonPZ.blogspot.com
- Like us on Facebook at Williston, Vermont: Planning and Zoning
- Follow us on Twitter @WillistonPZ
- Follow us on Instagram @willistonvermontplanning
- Use the hashtag #willistonplans on any of the above!

WHAT WE LIKE ABOUT WILLISTON

VIEW CORRIDORS

- THOUGHTFUL DEVELOPMENT ✓
- NATURAL AREA ✓
- TRAILS PATHS ✓
- FAITH ON TOWN ✓
- SCHOOLS ✓
- CONVENIENT LOCATION ✓
- OLD VILLAGE CHARM ✓
- SENSE OF COMMUNITY ✓

RECREATION - PARKS + TRAIL + COUNTRY PARKS
LIBRARY
SUSTAINABLE ENERGY
TOWN BASED NEIGHBORHOOD
ACCESS TO SERVICES (EMERG. + TOWN)
DISTINCTIVE URBAN + RURAL

ROADS WOULD NOT FEEL
CONGESTED
ROADS WOULD BE KEPT
COMMUNITY RELATIONSHIP
RURAL AND NOT WITH CONVENIENCE

WHAT WE LIKE ABOUT WILLISTON

- DICHOTOMY OF RURAL LIVING WITH CONVENIENCE ✓
- WALKABILITY IN THE VILLAGE ✓
- SCHOOLS ✓
- LIBRARY ✓
- WALKING TRAILS ✓
- SCENIC VIEWS ✓
- GOOD JOB OPPORTUNITIES ✓
- SENSE OF SMALL COMMUNITY ✓
- RESPONSIVENESS OF OFFICIALS ✓
- COMPARATIVELY GOOD QUALITY OF DEV. ✓
- BUS SERVICE ✓
- FARMS AND WORKING LANDSCAPE ✓

- INTERSTATE ACCESS
- CONVENIENCE TO RTV
- DOG FRIENDLY TOWN
- TOWN SERVICES
- DIVERSE + WELL THOUGHT OUT DEV. PATTERN
- ESSENCE OF VERMONT LANDSCAPE

WHAT SHOULD THE PLAN ADDRESS

- THOUGHTFUL DEVELOPMENT NEAR RESIDENTIAL PORTIONS OF MTP (TREES, GREEN, BUFFERS)
- PEDESTRIAN/BIKE CONNECTIVITY IN TAFT CORNERS AREA
- CONNECTIVITY BETWEEN VILLAGE AND TAFT CORNERS AREA
- ECONOMIC DEV IN VILLAGE
- SHARED PARKING IN VILLAGE
- TRAFFIC FLOW OFF EXIT 12
- TRAFFIC CONTROL NEAR MTP
- DOG PARK
- OPEN/WOODED SPACE

CONSIDERING THE VILLAGE ROAD IN THE VILLAGE

SAFETY FOR CYCLISTS + PEDESTRIANS (AND CONNECTIVITY)

GAPS IN BIKE + PEDESTRIAN SYSTEM
BIKE ITS NOT SAFE

UNDERGROUND UTILITIES IN VILLAGE

TOWN SHOULD SET A GOOD EXAMPLE
FOR ENERGY EFFICIENCY + RENEWABLE ENERGY,
WATER QUALITY, AESTHETICS

MORE AFFORDABLE HOUSING

NO PARK BASED OR FARM BASED DEVELOPMENT
PARK/PICNIC GROUNDS

SERVICES FOR AGING POPULATION

SENIOR/COMMUNITY CENTER IN TAFT CORNERS AREA

PARK + RIDE SPACE + INFRASTRUCTURE

PARKING/TRAFFIC CALMING

ALL AGES COMMUNITY CENTER

BIKE PATH ON RT 2

MORE PATHS / CONNECTIONS

STORM WATER CONCERNS

HOUSING FOR YOUNGER PEOPLE (AFFORDABLE)

REMOVE 4 WAY STOP @ WILLISTON RD N. WILL

SOLAR LIGHTING ON REC PATH

BETTER SIGNAGE FOR REC PATH

INNOVATIVE THINKING ON SUSTAINABILITY

MORE SMALL BUSINESSES, FEWER CHAIN STORES

MORE HEART, MORE SOUL

WHAT SHOULD THE PLAN ADDRESS?

- EXTEND BIKE PATH (KIDS RIDE TO SCHOOL)
- TRAFFIC CONCERNS (VT 2A, MT VIEW RD)
- FOSTER WHOLE TOWN COMMUNITY
- LOWER SPEED LIMIT ON WAK ARD RD
- SENIOR CENTER
- TOWN POOL
- EXPENSIVE TO LIVE HERE
MOVING AT ALL LEVELS
- CONSIDER COSTS OF IMPLEMENTING REGULATIONS
- MORE BIKE PATHS TO GET PLACES
- MORE PLAY GROUNDS
- MORE ACCESS TO PUBLIC TRANSIT (LINK EXP)
- ASSISTED LIVING FOR SENIORS

- CONNECTED BIKE TRAILS + LANES AND PED.
- SPEND THE REST OF THE BIKE \$
- ASPHALT PATHS + SAFE SHOULDERS
- CONSIDER EXPANDING WATER + SEWER AREA
SERVING UP OLD STAGE RD.
- MORE AFFORDABLE + DIVERSE HOUSING
- BEAUTIFICATION OF WESTERN GATEWAY TO TOWN
- WINTER TRAILS FOR XC SKIING + SNOWMOBILES
(PARKING ACCESS)
- USE OF LAKE INQUIRIES
- ADDRESSING LIGHT POLLUTION
- BRING MORE FAMILIES INTO TOWN

What We Like About Williston:	What We Like About Williston:	What Should the Plan Address?	What Should the Plan Address?
<ul style="list-style-type: none"> -Dichotomy of rural living with convenience -Walkability in the Village -Schools -Library -Walking trails -Scenic views -Good job opportunities -Sense of small community -Responsiveness of officials -Comparatively good quality of development -Bus service -Farms and working landscape -Interstate access -Convenience to Burlington -Dog-friendly town -Town services -Diverse and well-thought-out development pattern -Essence of Vermont landscape 	<ul style="list-style-type: none"> -View Corridors -Natural Areas -Paths and Trails -Emphasis on Rural -Schools -Convenient Location -Old Village Charm -Sense of Community -Recreation- Parks-Trails- and Country Parks -Library -Sustainable Energy -Park-Based neighborhoods -Access to Services (Emergency and Transportation) -Distinctive Urban and rural (areas) -Chittenden Solid Waste Host Fees -Connectivity -Roads (are) well-kept -Rural, but with convenience 	<ul style="list-style-type: none"> -Thoughtful development near residential portions of Maple Tree Place (Trees, green buffers) -Pedestrian/and bicycle connectivity in Taft Corners -Connectivity between the Village and Taft Corners -Economic development in the Village -Shared parking in the Village -Traffic flow off Exit 12 -Traffic control near Maple Tree Place -Dog park -Open/wooded space -Crossing the road in the Village -Connected bike/ped trails and lanes -Spend the rest of the bike \$ -Asphalt paths and safe shoulders -Consider expanding water service up Old Stage Road -More affordability and diverse housing -Beautification of western gateway to town -Winter trails for cross-country skiing and snowshoeing (Parking Access) -Use of lake Iroquois -Addressing light pollution -Bring more families into town 	<ul style="list-style-type: none"> - Extend the Bike Path (Kids ride to School) -Traffic Concerns (VT 2A, Mtn View Road) -Foster Whole Town Community -Lower speed limit on Oak Hill Road -Senior Center -Town pool -Expensive to live here- (provide) housing at all levels -Consider costs of implementing regulations -More bike paths to get places -More playgrounds -More access to public transit (link bus especially) -Assisted living for seniors -Safety for Cyclists and Pedestrians -Fix gaps in the bike and pedestrian system -Bicycle safety -Put utilities in the Village underground -The town should set a good example- energy efficiency, water quality, aesthetics -More affordable Housing -Park Based or farm based development -(provide) park and picnic grounds -Services for aging population -Senior/community Center in Taft Corners area -Park and Ride Space and Infrastructure -Rotaries and Traffic Calming -All ages Community Center -Bike Path on Route 2 -More paths/Connections -Stormwater concerns -Housing for younger people (affordable) -Remove 4-way stop at Williston.North Williston Oak Hill Roads -Solar Lighting in Rec Path -Better signage for Rec Path -Innovative thinking about sustainability -More small businesses, fewer chain uses -More heart, More soul

TABLE OF CONTENTS

1	Introduction.....	1
2	The Build-out Methodology.....	1
	Identify Existing Development, Parcels and Districts.....	1
	Determine Land Constraints.....	1
	Determine Zoning Parameters.....	5
	Calculate Total and Net Development Potential.....	7
3	Build-out Results.....	8

TABLES

TABLE 1: Land Constraint Factors (LCFs).....	3
TABLE 2: Williston Land Constraint Factors (LCFs).....	4
TABLE 3: Williston Zoning Parameters.....	6
TABLE 4: Residential Results-Zoning District.....	10
TABLE 5: Non-Residential Results-Zoning District.....	11
TABLE 6: Residential Result-Pump Station Service Area.....	12
TABLE 7: Non-Residential Results-Pump Station Area.....	13

FIGURES

FIGURE 1A: Land Constraints: Hydrography
FIGURE 1B: Land Constraints: Wildlife Preservation
FIGURE 1C: Land Constraints: Topography
FIGURE 1D: Land Constraints: Water Resources
FIGURE 1E: Land Constraints: Natural Resources
FIGURE 2A: Minimum Residential Lot Size
FIGURE 2B: Non-Residential Floor Area Ratio (FAR)
FIGURE 3A: Existing Development
FIGURE 3B: Net Development Potential
FIGURE 3C: Total Development Potential

1 Introduction

This report describes the build-out methodology used to develop the Williston Build-out Analysis. Included in this report is a description of the tasks involved in providing Williston with an updated build-out from the Chittenden County Regional Planning Commission (CCRPC). The two major tasks involved were updating CCRPC's existing development databases and then using the CCRPC build-out methodology to calculate total, existing, and net build-out potential. The build-out scenario reflects Williston's current zoning regulations and utilized the most current datasets available. The technical appendix, which describes the technical aspects of the data updates, is available upon request from the CCRPC.

The build-out analysis will provide local officials a basis for examining the public sewage treatment plant's capacity for absorbing future growth and will serve as an input into a sewage capacity study Williston is conducting. Additionally, the build-out results will provide Williston with an illustration and tabular description of a possible future when/if all land is developed to the reasonable maximum extent allowed under current law and physical and ecological constraints.

2 The Build-out Methodology

The build-out methodology consists of five basic steps (described in greater detail in the subsequent text):

- (1) Identify existing development, parcels and districts,
- (2) Determine land constraints,
- (3) Determine zoning parameters,
- (4) Calculate total and net development potential, and
- (5) Report results by pump station service area and zoning district

Identify Existing Development, Parcels and Districts

CCRPC maintains datasets for all existing development in the Williston. Each data point contains a count of residential dwelling units or non-residential square footage. CCRPC's existing development data accounts for 3,261 dwelling units and 7,532,844 square feet of non-residential development. The first step of the build-out methodology is to determine the parcel and zoning district to which that development belongs. Each parcel (or portion thereof greater than 2 acres) is assigned to a zoning district. Parcels or portions less than 2 acres are assigned to the predominant zoning district on the parcel. After all existing development is assigned total dwelling units and non-residential square footage are calculated for each zoning district and pump station service area in Williston.

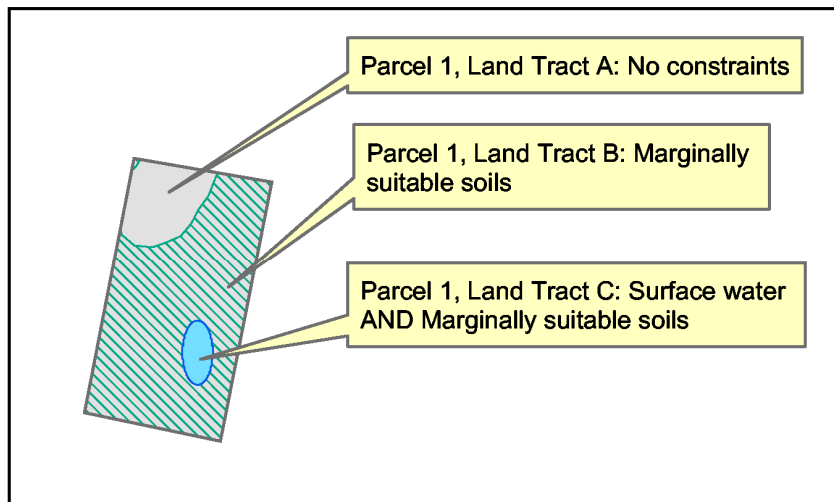
Determine Land Constraints

The "Landscape Suitability Analysis", prepared by CCRPC, identifies the regulatory, physical and ecological limitations of the landscape to accommodating development. The land areas identified in this process were subtracted from the land area of Williston to reveal the "Buildable Land" area.

The “prohibitive” and “partial” constraints identified in the Landscape Suitability Analysis are combined into a single table of Land Constraint Factors (LCFs). LCFs range from 0.0 (no limit to development) to 1.0 (fully constrained or not buildable). Land constraint factors act to limit development potential by allowing only a fraction of the land area affected by the given constraint to count towards the total available land for development on a parcel. A separate LCF is applied to each type of land constraint. Table 1 identifies the individual Land Constraints, the range of LCFs, and brief descriptions of the policies, regulations or other factors determining that range.

In addition to constrained lands, land areas such as roadways, open space, and special public parcels (e.g., cemeteries) are not buildable and were removed from the analysis.

Most parcels include a number of pieces, or land tracts, each with a distinct land constraint.



The picture above shows a single parcel with three land tracts. Each tract is formed by the overlay of constrained lands on a parcel. The portion of this parcel with no constraints makes up tract "A". A small portion of this parcel is covered by marginally suitable soils and a pond. This is labeled as tract "C". The remainder of the parcel is covered by marginally suitable soils and no other constraints. This is labeled as tract "B". If additional types of constrained lands covered this parcel, such as deer yards or high slope areas, additional land tracts would result.

TABLE 1: Land Constraint Factors (LCFs)

LCF	Numerical Factor	Statute/Policy	Description
Deer Wintering Area	.75	Criterion 8 of Act 250	An LCF is assigned to those districts containing a deer wintering area. In most cases, an LCF of 0.75 is used with the assumption that Act 250 control will be extensive but not complete. In a few more centrally located districts (suburban or village), LCFs are reduced to 0.25 or 0.50.
Floodplain	1.00	Federal Emerg. Management Association	Development is prohibited in the Flood Plain District.
Prime Agricultural Soils	0.0 to 0.90	10 V.S.A. Chapter 31; Criterion 9(B) of Act 250	CCRPC Planning Area designations are used to differentiate likely agricultural restrictions. LCFs of 0.0 to 0.20 are used in non-residential, mixed and urban districts – assuming mitigation will occur. 0.5 is used in “outer ring” Village Areas and suburban residential districts. 0.9 is used in rural districts assuming most development will be controlled by Act 250 restrictions.
Septic 5 Soils	0.50	Criterion 1(B) of Act 250	Category 5 “marginally suitable” soils are considered to be partly developable. 2002 State septic rules are considered. Soils LCFs do not apply in sewer districts.
Septic 6 Soils	0.90	Criterion 1(B) of Act 250	Minimal development is likely on these Category 6 “unsuitable soils”. 2002 State septic rules are considered. Soils LCFs do not apply in sewer districts.
Slope 8%	0.50 to 0.80	Criterion 1(B) of Act 250	Restrictions apply only to non-residential districts and to a portion of mixed-use districts. Industrial development is more restricted (0.80 LCF) than commercial development (0.50 LCF).
Slope 20%	0.75 to 1.00	Criterion 1(B) of Act 250	The 20% category replaces previous 15% and 30% categories. An LCF of 0.75 is applied to residential development in sewer districts and 0.85 elsewhere. In all districts, an LCF of 0.90 is applied to commercial development and 1.00 to industrial development.
Surface Water	1.00	1996 Procedure on Streamside and Lakeshore Vegetation Mgmt	Restricted area includes lakes/ponds, streams as identified on the CCRPC GIS coverage, and buffers. Buffers/setbacks are determined from Williston zoning regulations.
Class 1 & 2 Wetlands	1.00	10 V.S.A. Chapter 37, Sec. 905 (7-9), 1990 Vermont Wetland Rules	Under statute, Class 1 wetlands are to be buffered 100 feet and Class 2 wetlands 50 feet. An LCF of 1.00 is applied to all mapped wetlands with a minimum 50' buffer.
Development Isolation	1.00	10 V.S.A. Sec. 1674 / VT Water Supply Rules (1999)	All wellhead and surface-water sources for public community (PC) systems are required to maintain a development isolation zone around the point of intake, totaling a 200-foot buffer. This LCF does not apply in sewer districts.
Water Supply Source	0.25	10 V.S.A. Sec. 1674 / VT Water Supply Rules (1999)	Consists of surface-water Source Protection Areas. GIS polygons are fairly large, and not all land is restricted by local zoning. This LCF does not apply in sewer districts.
Rare and Endangered Species	0.75	10 V.S.A. Chapter 123, 5403 (a); Criterion 8 of Act 250	Under statute, “...a person shall not take, possess or transport wildlife or plants that are members of an endangered or threatened species.” In Act 250, a significant natural community with a rare state ranking may be protected as a “rare and irreplaceable natural area”. However, partial use of land has been allowed in such developments as Gauthier Industrial Park in Essex. An LCF of 0.75 is applied.
Above 2500' Elevation	1.00	Requires an Act 250 permit	ANR has guidelines for soil erosion control and water quality. Land above elevation 2500' is considered to be undevelopable.
OpenSpace/Conservat'n	1.00	No statute	Land that is preserved by public ownership and/or a legally recorded agreement, as identified in a CCRPC GIS coverage, is treated as undevelopable. Development is prohibited in Williston's Open Space and Floodplain districts.

NOTE: Where local zoning is more stringent than the policy/regulation/rule cited in this table, the local zoning has precedence. Williston may not be subject to all physical constraint factors.

TABLE 2: Williston Land Constraint Factors (LCFs)

ZONE	Deer Habitat	Flood- plain	Prime Agric Soils	Septic Soils5	Septic Soils6	Slope 8	Slope 20	Surface Water	200'/100' Surface Water Buffer	Class 1&2 Wetland	Devel. Iso	Water Supply Source	Rare Endan- gered	Open Space/ Conserv
Village Center (VC)	0.00	1.00	0.20	0.00	0.00	0.08	0.77	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Med. Density Res.(R)	0.00	1.00	0.50	0.00	0.00	0.00	0.75	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Ag./Rural Res. (AR)	0.75	1.00	0.90	0.50	0.90	0.00	0.85	1.00	1.00	1.00	1.00	0.25	0.75	1.00
Industrial (I)	0.75	1.00	0.20	0.00	0.00	0.77	0.99	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Commercial IA (CIA)	0.00	1.00	0.00	0.00	0.00	0.50	0.90	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Commercial IB (CIB)	0.00	1.00	0.00	0.00	0.00	0.53	0.91	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Commercial IC (CIC)	0.00	1.00	0.00	0.00	0.00	0.45	0.89	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Commercial IIA (CIIA)	0.00	1.00	0.00	0.00	0.00	0.58	0.93	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Commercial IIB (CIIB)	0.00	1.00	0.00	0.00	0.00	0.43	0.88	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Commercial IIC (CIIC)	0.00	1.00	0.00	0.00	0.00	0.62	0.94	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Commercial IID (CIID)	0.00	1.00	0.00	0.00	0.00	0.62	0.94	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Taft Corners (TC)	0.00	1.00	0.00	0.00	0.00	0.38	0.86	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Business Park (BP)	0.00	1.00	0.00	0.00	0.00	0.50	0.90	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Mixed Use (MU)	0.00	1.00	0.10	0.00	0.00	0.35	0.86	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Interstate Commercial (IC)	0.00	1.00	0.20	0.00	0.00	0.59	0.93	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Conserv./Open Space (COS)	0.75	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Floodplain (FP)	0.75	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.75	1.00
Winooski River (WR)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.75	1.00

Determine Zoning Parameters

After buildable land is determined, the build out then calculates how much development may occur on that land. This calculation results from applying zoning parameters for each zoning district. Zoning Parameters are provided in Table 3. The Zoning Parameters used in the build-out are: (1) percentage of each use allowed in a district, (2) minimum lot size, (3) lot coverage and floor-to-area ratios (FARs), (4) building and parking setbacks, (5) building stories, (6) parking levels, (7) parking calculations, and (8) build factor.

1. Percentages of uses in each of three categories – residential, commercial and industrial - are assigned to each zoning district. Uses are included in a zoning district if allowed in any form – permitted, conditional or with special conditions. They are excluded if incidental or allowed only as accessory to another use. Percentage estimates are based on a review of existing development (from CCRPC).

2. Minimum lot size, as specified in local zoning regulations, is used to establish residential density in most municipalities. Some mixed-use districts only specify lot coverage rather than dwelling units per acre. In the build out, all residential density is entered as minimum lot size (acres) per dwelling unit. Conversions from other measurement units are made as needed. Minimum lot sizes for zoning districts throughout the Williston are depicted in Figure 2A: Minimum Residential Lot Size.

3. Lot coverage and floor-to-area (FAR) ratios are used to establish non-residential build-out potential. Several factors may influence lot coverage/ FAR calculations - maximum coverage for buildings and total lot coverage, height of buildings and parking structures, parking ratios, setbacks and FAR. Maximum FARs for zoning districts throughout the Williston are depicted in Figure 2B: Non-Residential Floor Area Ratio (FAR).

4. Building and parking setbacks are determined from local zoning regulations. In this build-out analysis, a single value is entered for “average setback” in each zoning district. Since most lots are longer than they are wide, the side yard setback is given slightly greater weight. In some municipalities, parking setbacks are required only in the front yard and often are expressed as a percentage of the front yard building setback.

5. Building stories are determined from local zoning regulations. The number of stories is based on an average of 11 feet per story.

6. Parking levels may not exceed the number of building stories and underground parking is not included. In rural districts, only one parking level (surface parking) is assumed. However, greater levels of parking are used in higher-density districts with the assumption that parking structures may be built.

7. Parking calculations are based on one residential category and four non-residential categories – retail, office, hotel and industrial. A typical calculation is four required parking spaces per 1,000 square feet of office space @ 400 sq. ft. per space = parking ratio of 1.6. Parking ratios are weighted according to the mix of uses in any given zoning district.

TABLE 3: Williston Zoning Parameters

TOWN	ZONE	Assignment of			Minim Lot Size/Resid Density				Lot Coverage			Building Setbacks		Parking Setbacks			Park
		Pct Res	Pct Com	Pct Ind	Min Lot Size Septic	Build Factor Septic	Min Lot Size Sewer	Build Factor Sewer	Bldngs	FAR-Z	Total	Average Building Setback	# of Stories	Average Parking Setback	RPC Ping Area	# of Levels	Parking Area per Res. SqFt.
Wton	VC	0.85	0.15	0.00			0.46	0.75	0.20		0.60	18	3	6	V	3	0.7
	R	1.00	0.00	0.00			0.46	0.75	0.20			22	n/a	6	T	n/a	0.7
	AR	1.00	0.00	0.00	1.84	0.8		0.5	0.15			22	n/a	6	R	n/a	0.7
	I	0.00	0.10	0.90			n/a	0.25			0.70	22	3	6	SP	3	
	C-IA	0.00	1.00	0.00			n/a	0.25	0.25		0.65	22	3	6	M	3	
	C-IB	0.00	0.90	0.10			n/a	0.25	0.25		0.65	22	3	6	SP	3	
	C-IC	0.10	0.90	0.00			0.025	0.25	0.40		0.65	22	3	6	M	3	1.0
	C-IIA	0.15	0.35	0.50			0.025	0.25	0.25		0.65	22	3	6	M	3	1.0
	C-IIB	0.15	0.85	0.00			0.025	0.25	0.40		0.65	22	3	6	M	3	1.0
	C-IIC	0.00	0.60	0.40			n/a	0.25	0.25		0.65	22	3	6	M	3	1.0
	C-IID	0.00	0.60	0.40			n/a	0.25	0.25		0.65	22	3	6	M	3	1.0
	TC	0.25	0.75	0.00			0.0625	0.25			0.85	4	3	0	M	3	1.0
	BP	0.00	1.00	0.00			n/a	0.25	0.25		0.65	22	3	3	M	3	
	MU	0.70	0.30	0.00			0.18	0.25	0.20		0.60	22	3	6	M	3	0.8
	IC	0.00	0.70	0.30			n/a		0.25		0.65	22	3	6	M	3	
	COS											n/a	n/a	n/a	n/a	n/a	
	FP											n/a	n/a	n/a	n/a	n/a	
	WR											n/a	n/a	n/a	n/a	n/a	

*This table reflects the Zoning Regulations amended May 17th, 2004 and effective June 7, 2004.

*Zoning Parameters were not developed for the COS, FP, and WR district because the CCRPC build-out methodology assumes that these districts are not an appropriate place for additional development due to the conservation of open space and water course protection.

8. Build factors recognize the loss of build-out potential due to three factors - inefficiencies in lot shape, land requirements for on-site septic systems, and required land for new streets in conventional subdivisions. The former has a greater impact on small lots while the latter affects larger lots without sufficient existing road frontage to accommodate all potential development. In the build-out, build factors were developed according to the actual development pattern in Williston and varied for a portion of the zoning districts.

Calculate Total and Net Development Potential

After determining all land constraints and zoning parameters, four specific calculations are used to determine total and net development potential. Each specific calculation is described below.

Total residential development potential for each parcel is the unconstrained residential area (percent of residential area is determined as noted on page 6) times the build factor, divided by the minimum lot size. Total residential development potential for any parcel is at least equal to the amount of existing development.

$$\begin{aligned} \text{Sewer District: Total Development} &= \\ & ((\text{Unconstrained Area}) * (\text{Pct_Res}) * (\text{BuildFactorSewer})) / (\text{MinLotSizeSewer}) \\ \text{Outside Sewer District: Total Development} &= \\ & ((\text{Unconstrained Area}) * (\text{Pct_Res}) * (\text{BuildFactorSeptic})) / (\text{MinLotSizeSeptic}) \end{aligned}$$

Total non-residential development potential for each parcel is the product of the unconstrained non-residential area (percent of commercial and industrial areas are determined as noted on page 6) times the build factor times the FAR. Total non-residential development potential for any parcel is at least equal to the amount of existing development.

$$\begin{aligned} \text{Sewer District: Total Development} &= \\ & ((\text{Unconstrained Area}) * (\text{Pct_Com} + \text{Pct_Ind}) * (\text{BuildFactorSewer}) * \text{FAR}) \\ \text{Outside Sewer District: Total Development} &= \\ & ((\text{Unconstrained Area}) * (\text{Pct_Com} + \text{Pct_Ind}) * (\text{BuildFactorSeptic}) * \text{FAR}) \end{aligned}$$

Net residential development for a parcel is the net development potential is the total development potential minus the existing development. For parcels with existing development to be considered for subdivision, the buildable area must be greater than 3 times the minimum lot size for the zone.

$$\begin{aligned} \text{If } (\text{BuildableArea}) > 3 * (\text{MinLotSize}) \text{ then, } \text{Net Development} &= (\text{Total Units}) - (\text{Existing Units}) \\ \text{Otherwise, } \text{Net Development} &= 0 \end{aligned}$$

Net non-residential development assumes that all non-residential parcels may be redeveloped. The net development potential is the total non-residential development potential minus the existing non-residential development.

$$\text{Net Development} = (\text{TotalComIndSquareFootage}) - (\text{ExistingComIndSquareFootage})$$

3 Build-out Results

This section illustrates the amount of development expected under Williston's zoning regulations, existing development, and environmental constraints, in tabular format. Tables 4 thru 6 provide BUILD-OUT "baseline" results for each zoning district and pump station service area. Column headings from Tables 4 thru 6 are described below.

- Total Acres. This column indicates the total land area within each zoning district.
- Total Buildable Acres. This column identifies the total buildable area of all parcels for which build-out calculations are performed. Total buildable area is determined by subtracting zoning districts and parcels/areas identified by CCRPC as "undevelopable" from the total town area. Types of parcels identified as "undevelopable" include roadways, railroad right-of-ways, cemeteries, and parcels under special ownership.
- Total Residential Development Potential and Total Non-Residential Development Potential. Total build-out is calculated for each parcel and then summed for each zoning district and pump station service area. Residential results are given in dwelling units. Non-residential results are given in building square footage. Industrial and commercial uses are combined in the "non-residential" category.
- Existing Residential Development and Existing Non-Residential Development. Existing residential development and non-residential development are taken from local databases as consolidated by CCRPC.
- Net Residential Development Potential and Net Non-Residential Development Potential. As described in the previous section net development potential is calculated by subtracting existing development from total development potential.
- Status of Existing Development: % Development to Date. Percent of development to date equals the existing residential or non-residential development divided by the total residential or non-residential development potential.
- Status of Existing Development: Residential Units Per Acre and Non-Residential Square Footage Per Acre. Residential results are expressed as dwelling units (Total Residential Development Potential or Existing Residential Development) per buildable acre (Total Buildable Acres). Non-residential results are expressed as building square footage (Total Non-Residential Development Potential or Existing Non-Residential Development) per buildable acre (Total Buildable Acres).
- Build-out Status: Total Residential Development Per Acre and Total Non-Residential Development Per Acre. Results are expressed as total dwelling units or total non-residential square footage per buildable acre.

Recommendations for Further Use of the BUILD-OUT

The BUILD-OUT may be used to give Williston an opportunity to examine the ultimate effects of existing zoning regulations. The results are a tool that may be used in comparing existing zoning practices with long-range visions and goals. Williston and CCRPC should jointly determine appropriate steps for continued use of this land use-planning tool.

**Chittenden County RPC
Williston Build-out Analysis**

TABLE 4: Residential Results-Zoning District

Existing Development Status

Build-out Status

ZONE	ZONE	Total Acres	Total Buildable Acres	Total Residential Development Potential	Existing Residential Development	Net Residential Development Potential	% Development to Date	Residential Units Per Acre	Total Residential Development Per Acre
Agriculture/Rural Residential	AR	12,873	12,155	2,804	1,059	1,742	38%	0.09	0.23
Business Park	BP	65	60	121	121	-	100%	2.02	2.02
Commercial 1A	C1A	32	32	-	-	-	-	0.00	0.00
Commercial 1B	C1B	35	33	14	14	-	100%	0.43	0.43
Commercial 1C	C1C	35	31	26	-	26	0%	0.00	0.85
Commercial 2A	C2A	25	25	29	2	27	7%	0.08	1.17
Commercial 2B	C2B	37	37	52	-	52	0%	0.00	1.39
Commercial 2D	C2C	108	96	-	-	-	-	0.00	0.00
Commercial 2C	C2D	53	49	2	2	-	100%	0.04	0.04
Interstate Commerce	IC	80	76	-	-	-	-	0.00	0.00
Industrial	IND	1,101	1,042	29	29	-	100%	0.03	0.03
Mixed Use	MU	121	116	107	1	106	1%	0.01	0.93
Medium Density Residential	R	2,402	2,149	3,175	1,737	1,436	55%	0.81	1.48
Taft Corners	TC	242	223	303	123	180	41%	0.55	1.36
Village Center	VC	287	255	291	173	118	59%	0.68	1.14
Total		17,496	16,379	6,953	3,261	3,687	47%	0.09	0.23

**Chittenden County RPC
Williston Build-out Analysis**

TABLE 5: Non-Residential Build-out Results – Zoning District

		Existing Development Status				Build-out Status			
ZONE	ZN	Total Acres	Total Buildable Acres	Total Non-Residential Development Potential	Existing Non-Residential Development	Net Non-Residential Development Potential	% Development to Date	Non-Residential Space per Acre (Sq Ft/Acre)	Total Non-Residential Development Per Acre (Sq Ft/Acre)
Agriculture/Rural Residential	AR	12,873	12,155	51,616	51,616	-	100%	4.25	4.25
Business Park	BP	65	60	540,995	476,394	64,601	88%	7,942.75	9,019.83
Commercial 1A	C1A	32	32	288,379	267,734	20,645	93%	8,273.21	8,911.15
Commercial 1B	C1B	35	33	167,301	134,530	32,771	80%	4,104.01	5,103.73
Commercial 1C	C1C	35	31	203,533	168,286	35,247	83%	5,492.62	6,643.03
Commercial 2A	C2A	25	25	153,391	140,104	13,287	91%	5,655.59	6,191.96
Commercial 2B	C2B	37	37	178,938	54,730	124,208	31%	1,467.43	4,797.72
Commercial 2C	C2C	108	96	495,999	412,312	83,687	83%	4,291.08	5,162.03
Commercial 2D	C2D	53	49	344,029	248,581	95,448	72%	5,110.09	7,072.22
Interstate Commerce	IC	80	76	555,594	398,680	156,914	72%	5,216.34	7,269.41
Industrial	IND	1,101	1,042	5,590,509	4,018,599	1,571,910	72%	3,856.65	5,365.21
Mixed Use	MU	121	116	138,574	4,451	134,123	3%	38.49	1,198.30
Medium Density Residential	R	2,402	2,149	99,419	99,419	-	100%	46.27	46.27
Taft Corners	TC	242	223	1,965,266	1,049,624	915,642	53%	4,696.97	8,794.38
Village Center	VC	287	255	240,046	7,784	232,262	3%	30.53	941.51
Total		17,496	16,379	11,013,588	7,532,844	3,480,744	68%	459.90	672.41

TABLE 6: Residential Build-out Results – Pump Station Service Area

Pump Station Service Area ID	Total Acres	Total Residential Development Potential	Existing Residential Development	Net Residential Development Potential	% Development to Date
1	156	194	174	20	90%
2	132	266	225	40	85%
3	218	338	296	42	88%
4	461	92	72	20	78%
5	71	121	117	4	97%
6	328	332	123	209	37%
7	185	189	124	65	66%
8	140	49	0	49	0%
9	109	148	144	4	97%
10	184	198	163	35	82%
11	494	630	257	373	41%
12	52	41	39	2	95%
13	436	446	225	221	50%
14	852	708	248	459	35%
Total	3,819	3,752	2,207	1,543	59%

TABLE 7: Non-Residential Build-out Results-Pump Station Service Area

Pump Station Service Area ID	Total Acres	Total Non- Residential Development Potential (Sq. Ft.)	Existing Non- Residential Development Potential (Sq. Ft.)	Net Non- Residential Development Potential (Sq. Ft.)	% Development to Date
1	155.50	322,080	245,150	76,930	76%
2	131.91	5,904	5,904	0	100%
3	217.99	106,058	101,989	4,069	96%
4	460.81	2,478,733	1,932,377	546,356	78%
5	70.90	0	0	0	-
6	328.44	1,857,782	1,395,453	462,329	75%
7	184.85	1,304,384	1,013,630	290,754	78%
8	140.16	718,404	499,431	218,973	70%
9	108.70	288,379	267,734	20,645	93%
10	184.22	31,332	31,332	0	100%
11	494.08	13,045	5,875	7,170	45%
12	52.47	19,811	0	19,811	0%
13	436.49	117,307	4,760	112,547	4%
14	852.19	171,097	36,197	134,900	21%
Total	3,818.70	7,434,316	5,539,832	1,894,484	75%

Williston Community Forestry Plan



September 4, 2007

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Table of Contents

Acknowledgements.....	4
Executive Summary.....	5
Chapter 1. Introduction.....	6
1.1 Benefits of Community Trees.....	6
1.2 Purpose & Scope of the WCFP.....	6
Chapter 2. Williston's Trees.....	8
2.1 Historical Perspective.....	8
2.2 Tree Inventory.....	8
2.3 Economic Value.....	11
2.4 Future Needs & Actions.....	11
Chapter 3. Operations.....	13
3.1 Current Operations.....	13
3.2 Needs & Goals.....	15
3.3 Action Items.....	16
Chapter 4. Protection of Existing Trees.....	17
4.1 Current Policies.....	17
4.2 Needs & Goals.....	17
4.3 Action Items.....	18
Chapter 5. Planning for Future Trees.....	19
5.1 Current Policies.....	19
5.2 Needs & Goals.....	19
5.3 Action Items.....	21
Chapter 6. Maintenance.....	23
6.1 Current Maintenance Policies and Activities.....	23
6.2 Needs & Goals.....	24
6.3 Action Items.....	28
Chapter 7. Public Education and Outreach.....	31
7.1 Current Activities, Needs & Goals.....	31
7.2 Action Items.....	31
Chapter 8. Funding.....	33
8.1 Current Community Forestry Expenditures.....	33
8.2 Needs & Goals.....	34
8.3 Action Items.....	37

Appendix A. WCFP Timetable for Implementation.....	A1
Appendix B. Williston Tree Inventory Report.....	B1
Appendix C. Williston Public Tree Valuation.....	C1
Appendix D Arbor Day Tree Survey Results.....	D1
Appendix E Draft Street Tree Bylaw.....	E1

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Prior to its final draft, the plan was reviewed by the Conservation Commission (Jude Hersey, Carl Runge, Gary Hawley, Mike Harris, Jean Kissner, and Ginger Isham), the Planning Commission (Steve Bradish, David Yandell, Ronald Herath, Kevin Batson, George Oslo, and Debbie Ingram), the Cemetery Commission (Larry Keefe, David Isham, Don Phillips, and Joan Pentkowski), Town Planner Lee Nellis, Public Works Director Neil Boyden, and Allen Brook School Principal John Terko. Thanks to all who contributed.

Executive Summary

Trees play an important role in every community, providing benefits that are by turns economic, aesthetic, and cultural. Williston currently has over 1,300 public trees in street rights-of-way and on municipal properties. This number will continue to increase as residential and commercial developments are constructed. The vast majority of Williston's public trees are now very young and in good health, although they will need proper maintenance and stewardship in order to reach their full potential. As the estimated value of the Town's community tree resources is over \$1 million, these trees need to be regarded and managed as a valuable part of the public infrastructure. The Williston Community Forestry Plan evaluates existing policies, resources and operations relating to public trees, assesses current needs, and establishes goals and actions for management of Williston's community forest over the next five years.

Primary conclusions reached in the development of this plan include the following:

- A great deal of preventive maintenance, especially structural pruning and proper mulching, is needed to ensure that Williston's small trees grow into healthy mature trees with strong form;
- Tree species diversity must be increased in Williston;
- The Town must do a better job of ensuring that street trees installed or retained as part of new developments are sited appropriately, planted correctly, cared for after planting, and protected from construction;
- Training is needed for Town employees (and others involved in public tree care) in routine and hazard tree maintenance practices;
- Public education surrounding rights and responsibilities for public trees is needed;
- Planting of new public trees is currently done on a piecemeal basis. A well planned and systematic approach to new tree plantings is needed;
- A budget commitment will be necessary if Williston plans to train municipal employees, conduct needed preventive tree care, and plant new public trees on an annual basis;
- Implementation of this Community Forestry Plan would be facilitated by the establishment of a Tree Board and/or the assumption of an active role by the Town Tree Warden.

The overall goal of this 5-year plan is to design and implement a practical Community Forestry Program in Williston that allows the Town to get the maximum benefit out of its tree resources over the long term.

Chapter 1: Introduction

1.1 Benefits of Community Trees

Trees provide many functions and benefits within a community. Some of these benefits, like decreased heating and cooling costs, erosion control, reduction of stormwater runoff, and increased property values, translate directly into economic savings. The U.S. Forest Service estimates that over a 50-year lifetime, one tree generates \$31,250 worth of oxygen, provides \$62,000 worth of air pollution control, recycles \$37,500 worth of water, and provides \$31,250 worth of soil erosion control.¹

Other benefits of trees are not quantifiable in monetary terms, but are no less valuable. These involve the aesthetic and social advantages of maintaining healthy street and shade trees within a community. The degree of planning and care that street and shade trees receive is directly proportional to the benefits that a community can reap from its tree resources. Therefore, it is important to set guidelines and strategies for developing, maintaining, protecting, and managing a healthy community forest.

Street and Shade Tree Benefits

- Trees conserve energy by shading and cooling buildings and pavement, reducing the need for air conditioning.
- Trees provide screening and buffers between buildings and adjacent land uses.
- Trees increase property values.
- Trees provide food and shelter for urban and suburban wildlife.
- Properly placed street trees can provide traffic calming functions.
- Trees reduce soil erosion and stormwater runoff by holding the soil together and intercepting and reducing the velocity of rainfall.
- Trees provide oxygen and improve air quality by absorbing pollution and odors.
- Trees make streets, parks, and neighborhoods more livable and beautiful.
- Trees reduce glare and reflection from urban surfaces.
- Trees mark the passage of time and provide living memorials for significant community events.

1.2 Purpose and Scope of the Williston Community Forestry Plan

Williston has reached the size as a community where it is responsible for a significant number of street and shade trees that require long-term maintenance and care in order to thrive. Additionally, the Town has realized the potential benefits of planning for and directing the expansion of its community forest in the future. The Williston Community Forestry Plan (WCFP) provides a 5-year plan for the comprehensive management of

¹ USDA, Forest Service Pamphlet #R1-92-100

trees on municipal properties (community parks, public schools, cemeteries, and other town parcels) and within town highway rights-of-way.

This plan's purpose is: 1. to summarize and evaluate existing resources, policies, operations and educational initiatives relating to community trees; 2. to assess current needs; and 3. to establish goals and actions for future development and management of the community forest. The WCFP does not apply to forestry resources within Country Parks or Conservation Areas, which are addressed via individual management plans for these areas. Although the plan provides valuable information for home and business owners and addresses public education concerning tree stewardship throughout Williston, this plan does not specifically address trees on privately owned parcels.

Chapter 2: Williston's Trees

2.1 Historical Perspective

Vermonters have long valued public street and shade trees for their beauty and the sense of place they bring to a community. When Vermont towns like Williston were first established in the mid 1700's, trees in select places were often left standing as development and land clearing progressed. These trees often became centerpieces within towns and on homesteads, but it was not for another century (at the same time that the local tourist industry was beginning) that most New England villages began planting trees with the intent of beautifying the village landscape.² In Williston's Village Center and outlying homesteads in 1800s and early 1900s, trees were likely planted by homeowners to provide shade and beauty. Many of the historic buildings and older farmsteads throughout town are still graced by large, stately trees planted during this time period. Trees were also planted by citizens to beautify municipal and community properties like the Town Hall, schools, parks, cemeteries and churches.

As Williston has grown in population and become more developed, trees on municipal properties and along street rights of way have continued to be an important asset. Since the 1970s, Williston has seen a marked increase in residential and commercial development. There has been a 98% increase in residential population and a 563% increase in its working population over just the past 20 years.³

Beginning in 1997, the Town began to require developers creating new streets to plant trees along them; however, few standards have been implemented to guide that process or ensure the future success of these trees. With the establishment of the State of Vermont's Urban and Community Forestry Program, financial and technical resources have become available to assist municipalities with inventorying their tree populations and developing and implementing comprehensive plans for planting, care and maintenance of community tree resources.

2.2 Tree Inventory

No community tree resource can be properly managed unless its composition, key attributes, and condition are well understood. In 2004, the Williston Planning & Zoning Department received a Trees for Local Communities (TLC) Grant from the Vermont Urban and Community Forestry Program (VUCFP) to conduct an inventory of public street and shade trees. The health, condition, and general characteristics of over 1,300 trees were assessed by professional arboriculture consultants Trees New England, LLC during 2005 and 2006. Inventoried trees included those in all community parks, cemeteries, public school grounds,* the public library and municipal buildings, Maple

² Campanella, T.J. 2003. *Republic of Shade: New England and the American Elm*. Yale University Press, New Haven, CT.

³ Williston, Town of. 2006. *Williston Comprehensive Plan*. Williston, VT.

* A portion of the Williston Central School grounds was not included in the 2005-06 Tree Inventory.

Tree Place, and five residential subdivisions where trees had been planted within the street ROW (see Appendix A for a detailed map of inventory areas). Each tree was given a unique identification number, and all data were organized into spreadsheets linked to a Geographic Information System (GIS) for spatial referencing. This system provides excellent baseline data about the current community tree resource in a format that can be easily updated as maintenance or additional plantings occur in the future. Results of the 2005-6 Tree Inventory are summarized below; the Inventory Report is found in Appendix B.

2.2.1 Species Diversity

Williston's street and shade tree community is lacking diversity. Although 35 different species of tree were identified during the inventory, 73% of these trees are either ash or maple. Green ash (*Fraxinus pennsylvanica*) and Norway Maple (*Acer platanoides*) are particularly over-represented in the Town's street tree population (Fig. 1), comprising 43% and 13% of all trees, respectively. Tree species diversity is generally greater in the Town's parks and cemeteries than along the street ROW (Fig. 2), where species selection has been limited to some degree due to the need for salt tolerant trees. In several residential and commercial areas, all or nearly all of the trees which have been planted are of a single species. This is not ideal, since species- or genus-specific plant diseases may damage or destroy all the trees in an area at once, leaving the landscape completely altered. This was a lesson learned the hard way in many New England communities during the 1950s and 60s when Dutch Elm Disease wiped out thousands of mature American elm (*Ulmus americana*) trees lining village streets.

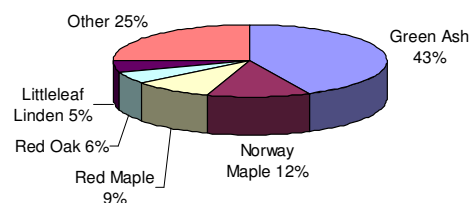


Figure 1. Overall species composition of Williston's community trees.

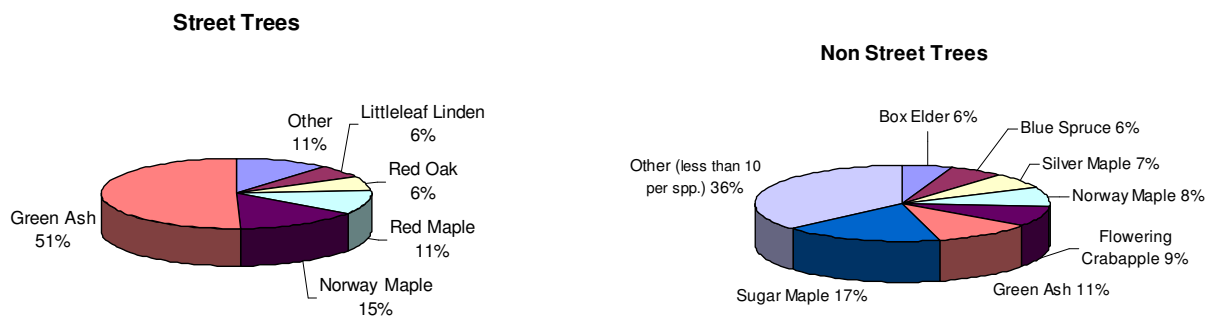


Figure 2. Species composition of street trees (left) and non street trees on municipal properties (right).

Many professional arborists and urban forestry associations now recommend that community tree populations should consist of no more than 10% of any one species, 20% of any one genus, or 30% of any one family of trees.^{4,5} Williston will need to develop specific strategies for diversification of its community tree population, while recognizing that it may be several decades before the recommended diversity targets are met.

2.2.2 Size and Age Composition

The International Society of Arboriculture (ISA) recommends that a community tree population be diversified in terms of size and age distribution. According to DBH measurements (diameter at breast height (4.5'), a general indicator of tree size and age) collected during the tree inventory, the vast majority of Williston's public trees are small or very small (84% are $\leq 6''$ in diameter) (Fig 4). This is primarily due to the extensive residential and commercial development experienced during the past 20 years, and the fact that the Town has only recently required the installation of street trees as a condition of development approval for subdivisions. Although the age distribution of Williston's trees is not ideal, the small size of many trees will make maintenance and structural pruning much easier in the near term. As long as the growth and development of young trees in Williston is fostered, a sustainable population with a more diverse size and age composition will eventually develop.

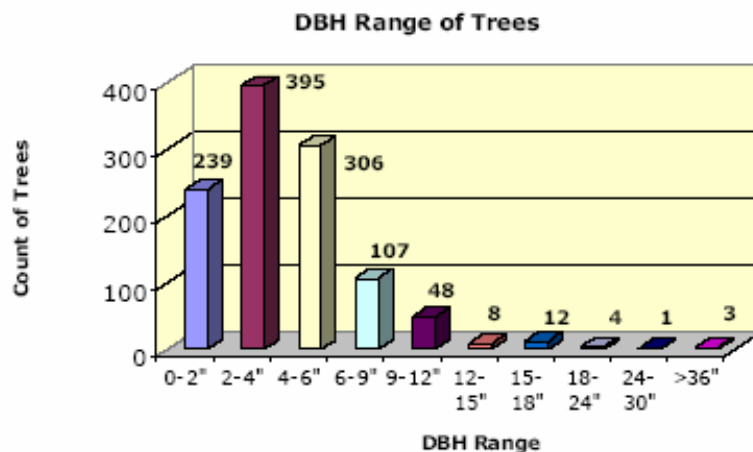


Figure 3. DBH ranges of Williston's community tree population.⁶

⁴ Santamour, F.S. 1990. *Trees for Urban Planting: Diversity, Uniformity, and Common Sense*. In Proceedings of the 7th Metropolitan Tree Improvement Alliance Conference, 11-12 June 1990, Lisle, IL.

⁵ Miller, R.H. and R.W. Miller. 1991. *Planting survival of selected street tree taxa*. Journal of Arboriculture 17(7): 185-91.

⁶ Trees New England. 2006. *Town of Williston Urban Street Tree Inventory and Assessment Report*. Petersham, MA.

2.2.3 Health and Condition

The vast majority of Williston's community trees are in good health. Over 94% of the trees inventoried were in good condition, meaning that they had minimal to no trunk damage, branch dieback, or suckering, and possessed a full canopy characteristic of the species. Of the remaining trees, 35 (3%) were in fair condition, 10 (1%) were in poor condition, and 13 (1%) were dying or dead. Though the health of most public trees is good, most (96%) are in need of one or more types of routine maintenance, including structural pruning, crown cleaning or crown raising. In addition, over 32% of trees showed some evidence of trunk damage (which often results from vehicular or lawn care equipment impact) and 32% were improperly mulched.

2.2.4 Inventory Summary

In summary, Williston's community trees are generally young but in good health. A great deal of structural pruning is necessary in the near future to ensure that these young trees develop a strong form which will promote good health in the future. Fortunately, structural pruning of very young trees is a relatively simple process. Species diversity is also lacking and needs to be taken into consideration in future planting efforts.

2.3 Economic Value

2.3.1 2007 Valuation of Williston's Trees

The value of Williston's public tree resource was assessed in 2007 using the Replacement Cost Method (RCM), which estimates the cost of replacing each tree at the same location with one of the same species, condition and size. RCM is the most commonly used method of tree assessment when the majority of trees to be assessed are small enough that they could physically be replaced with trees of a similar size. The market values of different tree species are taken into account, as well as the condition and location of the tree to be replaced, and removal, clean-up and installation costs. Using this method, the Town's 1300+ public trees have an estimated value of \$1,143,400.00. See Appendix C for valuation details.

2.4 Future Needs & Actions

2.4.1 Inventory Remaining Trees on Williston Central School Grounds

There are an estimated 20 to 50 trees on the grounds of the Williston Central School which have not yet been inventoried due to an administrative oversight. These trees should be assessed and incorporated into the existing tree inventory by Fall 2007.

2.4.2 Conduct Periodic Updates of Tree Inventory

The Tree Inventory must also be updated regularly to include new tree plantings and to record removals and any maintenance activities conducted. Unless information about the size and condition of all trees is also updated as maintenance is conducted, a complete update of the inventory data will need to be conducted every 5 to 7 years.

Ideally these updates will be synchronized with updates of the Community Forestry Plan.

2.4.3 Review Progress and Update 5-year Williston Community Forestry Plan

An assessment of the Town's progress in implementing this Community Forestry Plan should be carried out by the year 2012. The plan should then be updated and modified as necessary to reflect changed needs and goals in Williston's Community Forestry Program. The updated plan should be re-adopted by the Selectboard, to guide community forestry activities through 2017.

Chapter 3: Operations

Numerous individuals and groups, including municipal departments, town boards, and volunteer groups have a role in managing Williston's community forest resource. This chapter identifies these parties and defines their respective roles, responsibilities, and interactions.

3.1 Current Operations

3.1.1 Town of Williston

3.1.1.1 Public Works Department

The Williston Public Works Department (PWD) is primarily responsible for the management and maintenance of Williston's public street and shade trees. The PWD makes decisions regarding the interaction between trees and transportation infrastructure such as sidewalks, curbs, streets, utility lines, and pedestrian and bike paths. Most of the tree maintenance currently conducted by the Williston PWD involves removing trees or pruning branches which have become safety hazards for vehicular and/or pedestrian traffic. Landscaping and maintenance of municipal properties such as the town offices and community parks are also the responsibility of the PWD.

Because the PWD is responsible for transportation infrastructure in Williston, the department reviews all development proposals which include new private or public streets and/or paved pedestrian paths. The Director of Public Works ensures that new streets and recreational paths meet Town specifications, and also reviews the landscaping associated with transportation corridors.

3.1.1.2 Williston School District

The Williston School District (WSD) serves the towns of Williston and St. George, and provides primary education for students in grades pre-K to 8. The District has two schools, the Allen Brook School off Talcott Road and the Williston Central School in the historic Village Center. Planting and maintenance of all trees and landscaping on school grounds is carried out by the District itself. As with the PWD's activities, tree maintenance on school properties has typically been limited to addressing safety and hazard concerns due to time and budget constraints. The activities of the WSD are directed by the Williston School Board, a five member board of elected directors.

3.1.1.3 Cemetery Commission

The Cemetery Commission is a volunteer Town board charged with the care and management of the Town's four cemeteries. Maintenance of trees and landscaping within the cemeteries is either conducted by commission members themselves or contracted out to landscaping professionals. All decisions regarding the management of trees in Williston's cemeteries involve the Cemetery Commission.

3.1.1.4 Planning and Zoning Department

The Williston Planning and Zoning Department (PZD) is responsible for developing and administering the Comprehensive Plan, zoning bylaws and land use regulations. Each of these documents relates to public street and shade trees in some manner. The comprehensive plan sets out strategies for overall community design, including urban forestry, while the Town's bylaws provide a potential avenue for protecting existing public trees and developing standards and regulations for new tree plantings associated with future streets, pathways and new developments. The PZD is also responsible for implementing grant-funded planning projects such as tree inventories and development of this Community Forestry Plan. Most long-range or comprehensive planning for Williston's community trees will likely be coordinated through the PZD.

Williston PZD staff also manage several Town volunteer boards, including the Planning Commission, Conservation Commission, Development Review Board, and the Historical and Architectural Advisory Committee. The Development Review board evaluates proposed developments in Williston and ensures that they comply with zoning bylaws. The Conservation Commission and HAAC also review proposed developments as they relate to environmental issues and historic preservation/design criteria, respectively, and provide recommendations to the DRB. The Planning Commission works on long-range planning issues in Williston. Each of these boards may influence community tree management via planning or development review.

3.1.1.5 Tree Warden

The State of Vermont mandates that every municipality retain a Tree Warden, to be appointed annually by the Town Selectboard. According to 24 V.S.A § 2502 – 2511, the Tree Warden is responsible for maintaining the health, appearance, and safety of trees within public rights of way and for protecting them from noxious insect pests and diseases. The Tree Warden also enforces any laws relating to public trees, and may implement a tree planting and preservation program. Legally, only a tree warden or someone with his/her permission may cut down a publicly owned tree. In Williston, as in many Vermont communities, this office has become essentially an honorary position with few associated duties. The Williston Tree Warden occasionally determines whether a tree in or near a ROW is privately or publicly owned, but otherwise the traditional duties of a Tree Warden have become the responsibility of the PWD. Recently there has been a renewed interest in active duties for Tree Wardens in some Vermont towns, as municipalities recognize the complex array of tasks involved in managing community tree resources. Potential future roles for the Tree Warden in Williston include increasing public awareness about responsibility for trees within the Town ROW, educating citizens about proper tree care and maintenance, implementing a historic tree registry program, assisting with tree plantings on public property, and participating in Arbor Day celebrations organized by the Town.

3.1.1.6 Recreation Department

The Williston Recreation Department (WRD) develops and implements recreational programs for residents of all ages. This department also assists the PWD in maintaining a system of community parks, primarily in residential areas of the Town. WRD staff manage the Williston Recreation Committee, a volunteer advisory board that reviews department projects and programs. Both the Recreation Department and the Williston Recreation Committee are involved in the management of trees in community parks.

3.1.2 Other Groups and Individuals

3.1.2.1 Williston In Bloom

Williston In Bloom (WIB) is a registered local chapter of America In Bloom, a national community beautification and improvement program (for more information, go to www.americainbloom.org). WIB provides volunteer landscaping of public spaces including municipal building grounds, street medians and intersections, and Town ROWs. Volunteers with WIB are often involved in planting new trees to replace removals or to enhance areas that have been sparsely planted. The PWD works closely with WIB to coordinate landscaping activities.

3.1.2.2 Vermont Urban and Community Forestry Program

The Vermont Urban and Community Forestry Program (VUCFP) is a division of the Vermont Division of Forests, Parks, and Recreation whose mission is to “promote the stewardship of urban and rural landscapes to enhance the quality of life in Vermont communities.” The VUCFP provides technical resources and financial assistance to the Town in the management of its community forestry resources. Grant funding has been secured by the Town of Williston through VUCFP’s Trees For Local Communities grant program for tree inventories and to develop this comprehensive plan. In addition, VUCFP staff include five District and Urban Foresters who are available to municipalities for technical advice and planning assistance.

3.1.2.3 Williston Residents, Homeowner’s Associations, and Businesses

Many individuals and organizations not specifically identified in this plan may have an interest in stewardship of Williston’s community trees. For example, individuals or homeowner’s associations may be interested in taking over some of the maintenance of trees in their street ROWs. This should be permitted, provided the individual or group has been trained in proper maintenance techniques and has received permission from the Public Works Director. We also expect that citizens and businesses will participate in the community tree planning process, and in tree-related educational initiatives sponsored by the Town.

3.2 Needs and Goals

Having the Public Works Department take on many of the traditional roles of the tree warden has worked well for the Town of Williston. The PWD should continue to conduct the majority of street tree maintenance, especially addressing hazard tree

situations. It is likely that the Cemetery Commission and School Board will also continue to maintain trees within their own jurisdictions. With the development of this plan, there is a unique opportunity to unite the activities of different maintenance jurisdictions under a cohesive set of goals. Although many sections of the WCFP can be implemented by the individual groups described above, the establishment of a Tree Board which directly oversees the implementation of the plan and coordinates between all interest groups will assist greatly in this endeavor. In addition, there are excellent opportunities for the appointed tree warden to take a more active role in Williston's community forestry. In order for the community forestry program in Williston to be truly exemplary, a Tree Board and active Tree Warden should be involved.

3.3 *Action Items*

3.3.1 *Establish a Williston Tree Board*

A Tree Board should be established by the Selectboard which has the specific responsibility of implementing the WCFP. The Tree Board can coordinate with the PWD, School Board, and Cemetery Commission on funding and accomplishing maintenance objectives, and may keep the inventory/maintenance database up-to-date. Similarly, the Tree Board can work with the PZD, Tree Warden, Williston-In-Bloom, or Recreation Department on specific projects from tree planting to public education to securing funding for forestry activities. Establishment of a Tree Board will ensure that the WCFP is implemented as efficiently as possible.

3.3.2 *Encourage the Tree Warden to take an Active Role*

There are many aspects of community forestry in Williston for which the appointed Tree Warden could offer assistance that is greatly needed. Potential roles for the Tree Warden include increasing public awareness about responsibility for trees within the Town ROW, making determinations about ROW locations, organizing and facilitating public hearings when a public tree removal is proposed, educating citizens about proper tree care and maintenance, implementing an historic tree registry program, assisting with new tree plantings, and participating in Arbor Day celebrations hosted by the Town. In the event that the current Tree Warden is not interested in or able to take an active role but wishes to remain in the position, VT state statute allows for the appointment of a deputy tree warden.

Chapter 4. Protection of Existing Trees

4.1 *Current Policies*

As of the writing of this Community Forestry Plan, the Town of Williston has no written policies, regulations or bylaws concerning protection of municipally owned trees. State law (24 V.S.A. § 2508 -2510) maintains that “a public shade tree shall not be cut or removed, in whole or in part, except by a Tree Warden...or by a person having the written permission of a Tree Warden.” Fines for willfully defacing a public tree are set at “not more than \$50,” and for critically injuring or killing a public tree at “not more than \$500,” to be paid to the municipality. Furthermore, public trees in residential areas cannot be removed without a public hearing, presided over by the Tree Warden.

Protection of trees (public or private) to be retained during construction of new development is also a concern of the Planning & Zoning Department. The current Interim Stormwater Management Regulations specify that developments required to complete a Runoff & Erosion Control Plan (RECP) or a Runoff and Erosion Control Checklist have to mark construction disturbance limits on the ground and demonstrate how existing vegetation is to be protected during construction. No specific standards for this protection are detailed.

4.2 *Needs and Goals*

It is doubtful whether the somewhat archaic State tree protection statutes described above have ever been invoked to protect a tree in Williston. However, they do highlight some important questions about the level of protection for existing community trees. There is a general lack of public awareness regarding the ownership of and responsibility for trees along Town streets and highways. In a survey of Williston residents conducted by the Williston Community Forestry Working Group, 71% thought that care and maintenance of street trees was the responsibility of individual landowners. In reality, where street trees have been planted within the ROW, they are the responsibility of the Town, and should not be removed or even pruned without express permission from the Director of Public Works. However, residents have the right to request that the PWD conduct maintenance on trees in the ROW, or inspect trees for suspected insect pest or disease damage.

During construction of new development projects, trees should be retained and protected from construction damage wherever possible. The current stormwater regulations are a good start, but do not go into enough detail to ensure that trees to be retained are adequately protected during construction. Specific performance standards are needed.

4.3 *Action Items*

4.3.1 Draft and Adopt a Tree Protection Ordinance

The Williston Planning and Zoning Department will develop a Tree Protection Ordinance which will prohibit intentional damage to trees on municipal properties or within Town ROWs. Removing, cutting, pruning, and/or applying chemicals to any public tree shall also be prohibited without prior consent from the Director of Public Works. Proper channels for requesting the removal of a public tree will be specified in the ordinance. Enforcement and penalties will be described. Once the draft ordinance has been reviewed and finalized, it will be submitted to the Selectboard for adoption.

4.3.2 Develop Performance Standards for Tree Protection During Construction

Performance standards for tree (and other vegetation) protection during construction will be developed and incorporated into the Williston Public Works Standards. Diagrams illustrating required tree protection methods should also be developed to assist developers in complying with the standards. At a minimum, these standards should include clearly delineating construction disturbance limits out to a tree's vegetation dripline, designating specific construction access pathways, minimizing grade changes, and installing underground and above-ground utilities an appropriate distance from existing trees.

Chapter 5: Planning for Future Trees

New community trees are planted in Williston under one of two scenarios: Installation of street trees may be required as a condition of new development, or trees may be planted by the Town itself on municipal properties or to replace tree removals from within the street ROW. This chapter discusses existing policies, current needs, and proposed strategies regarding installation of new public trees.

5.1 Current Policies

5.1.1 Street Trees in New Subdivisions

The current Williston Subdivision Regulations (effective since June 8, 2002) require developers of new subdivisions to plant hardwood shade trees at intervals of no less than 60' within the ROW along both sides of private and public drives. Trees must be 2" in diameter (measured at 1' above the ground) at the time of planting. Typical cross sections of various types of streets (dense residential, urban, rural residential) are provided in the *Williston Public Works Specifications*. Under these regulations, street trees have been installed in at least five recent subdivisions.

5.1.2 Trees in Other New Developments

Proposed developments in certain commercial areas and in Williston's historic Village Center are subject to design review by the Historic and Architectural Review Committee (HAAC), which includes a review of landscaping. The design review guidelines under Section 4.21.3 of the Williston Zoning Ordinance specify that the total cost of landscaping in commercial design review districts shall be at least 3% of total construction cost of the development. Street trees "of appropriate size and species" are required along all streets. In the Village Center, developers are required to "preserve and maintain the greenbelt" along village streets, including planting new and/or replacement street trees of traditional varieties.

5.1.3 Other Public Tree Planting

The Town does not currently have a written policy governing how and when new and replacement trees are to be planted on municipal properties and within existing Town ROWs. In the past, tree plantings have been organized when available funds remain in the DPW landscaping budget near the end of a fiscal year. Most tree plantings are replacements of dead trees that were removed.

5.2 Needs and Goals

5.2.1 Street Trees in New Developments

Street tree planting should continue to be required whenever development projects create new public or private streets. Installation of street trees should also be required where development is proposed adjacent to existing roads that do not have adequate street tree plantings. The current regulations and cross sections for street trees in new developments are not detailed enough to ensure high quality street tree installations.

For example, street trees have been planted in at least five new developments under the current subdivision regulations. In at least one of these developments, many of the trees were planted too deeply, resulting in trunk rot that is now causing failure of these trees during high wind events. Comprehensive performance standards are needed for tree species selection and diversity, planting area dimensions, distances from curbs, sidewalks, utilities, and intersections, and sizes and quality of plant stock. In addition, professional oversight of the installation process is essential for large planting projects to ensure that trees are installed correctly and according to approved landscaping plans. Maintenance, including irrigation, of newly installed street trees should be the responsibility of the developer for a defined period following planting. This will reduce the chances of the Town having to replace dead or dying street trees that were not planted properly or cared for after planting.

5.2.2. Town-Sponsored Public Tree Planting

The planting of new public trees, independent of new development, should also be a high priority for the Town. Although some street tree removals are now replaced on a piecemeal basis, very few new trees are being planted in other suitable planting sites throughout town. This is partly due time and budget constraints, but also reflects the fact that vacant planting sites have not been quantified or identified in any systematic manner. The Town needs to identify street ROWs and municipal properties where the public tree resource could be improved. Following this, prioritization of potential planting sites can occur.

When prioritizing locations for tree planting, the Town should solicit input from all relevant municipal departments and boards, as well as residents of the community. In drafting this WCFP, the members of the Community Tree Working Group asked key town personnel (from PWD, Williston School District, Cemetery Commission, etc.) to prioritize locations for new tree plantings. Members of the community were also asked to suggest tree planting locations in a survey distributed at Williston's first Arbor Day event (see Appendix D for survey results). From the results of these inquiries, the following preliminary list of planting sites has been identified:

1. New Fire Department
2. Allen Brook School
3. New Police Department
4. Tafts Corners area
5. Williston Central School
6. Along the bike path that travels behind the Williston Central School
7. Deer View Cemetery

This list needs to be expanded and refined after further inquiries and completion of a vacant planting site inventory. Once a priority list is developed, realistic annual targets and schedules for tree planting can be generated.

5.3 *Action Items*

5.3.1 *Develop and Adopt a Street Tree Bylaw*

The Williston Planning & Zoning Department will develop a Street Tree chapter in its new Unified Development Bylaw to provide performance standards for the planting of new street trees associated with new developments in all zoning districts. At a minimum, the bylaw will include the following:

- Tree species diversity requirements
- Minimum standards for planting strips
- Minimum spacing requirements for street trees
- Distances from curbs, sidewalks, utilities, and intersections
- Prohibited species due to invasive tendencies
- Requirements for size and quality of planting stock
- Requirements for landscaping plans
- Requirements for supervision of planting by a certified arborist in projects over a certain size
- Maintenance and irrigation requirements following planting
- Standards for transplantation of existing street trees to new locations

This bylaw will help ensure that street trees installed as part of new developments will survive to maturity and realize their full potential in terms of providing urban forestry benefits to the community.

5.3.2 *Update the Williston Public Works Standards*

Street cross sections in the *Williston Public Works Standards* will be updated to incorporate spacing, distance, and planting strip dimensional requirements adopted in the Street Tree Bylaw. Detailed illustrations for planting of street trees and protection of existing trees during construction will also be included in the *Public Works Standards*.

5.3.3 *Inventory and Prioritize Vacant Planting Sites*

The Town will conduct an inventory of vacant planting sites in street ROWs and on municipal properties. Analysis of suitable planting sites in street ROWs will focus on existing residential neighborhoods, the Village Center, and relevant commercial districts. Site characteristics such as available rooting space, distance to known utilities, exact geographic location (GPS), salt exposure, and soil type will be recorded at each site to assist in future species selection. This effort will likely be coordinated by the Williston Planning Department with assistance from the Williston Conservation Commission, Williston In Bloom, and other volunteers. Data will be incorporated into the existing Street Tree Inventory Database, and displayed using ArcGIS.

Once the inventory is complete, future planting sites will be prioritized. Prioritization will require input from municipal officials, Town boards, homeowners' associations, area businesses, and residents of the community. There may be instances where home or business owners would rather not have street trees planted in the ROW, or instances

where property owners would like trees in inappropriate locations. Cooperation and coordination between the Town and property owners will be important in planning any new street tree planting efforts.

5.3.4 Develop Annual Targets for New Tree Planting

After prioritization of vacant planting sites is complete, the Town will develop annual targets for the number of new public trees to be planted each year. These numbers will be a reflection of the actual need for new and replacement trees, based upon the list of priority planting sites, as well as anticipated funding and available planting and maintenance labor. Until the vacant planting site inventory has been completed and targets developed, the Town should strive to plant at least 10 new public trees each year.

5.3.5 Work to Increase Tree Species Diversity

The Town will strive to increase public tree diversity so that Williston's tree population contains no more than 20% of any one tree genus. This can be accomplished via requiring developers to meet diversity targets within individual developments, ensuring that new public trees planted increase rather than decrease species diversity, and placing a temporary ban on planting species that are over-represented in the Town's public tree population.

5.3.6 Consider Establishing a Municipal Tree Nursery

Many towns and cities across the northeastern U.S. (including at least 3 municipalities in Vermont) have established municipal tree nurseries in order to reduce costs for new and replacement tree plantings, or to assure adequate supplies of desirable tree species and sizes. If an adequate site for a nursery can be identified on town-owned lands, bare-root species could be purchased from wholesale nurseries, planted, and grown to adequate sizes for planting on municipal properties and within ROW. There are many factors which must be considered prior to establishing a nursery including the economic costs vs. benefits; potential nursery locations; access and irrigation; and the increased maintenance burden on public works staff. These analyses should be undertaken, however, to determine whether a municipal tree nursery makes sense for Williston.

Chapter 6. Maintenance

Maintenance of existing trees is a key component of any urban forestry program. Preventive maintenance such as structural pruning, mulching, and occasional fertilizing will allow trees to realize their full potential in terms of growth, longevity, and benefits to the community. “Reactive” or emergency maintenance activities, those that follow after a problem or safety hazard has developed, are also integral to any maintenance program. These can include eliminating unacceptable risks to public safety and property caused by trees, addressing conflicts between trees and utilities, or treating identified pest or disease eruptions. Although emergency maintenance activities must take priority over routine tree care, fewer threats to public safety and property will develop over time if an effective preventive care program is put into practice.

The maintenance of public trees in Williston is undertaken by the Public Works Department, School District, or the Cemetery Commission, depending upon where the trees are located. The PWD is responsible for the majority of the Town’s community trees (see Fig 6.1), and will be charged with the care of most public trees planted in Williston in the future. Unless explicitly stated otherwise, the text of this chapter refers primarily to the activities of the Williston PWD.

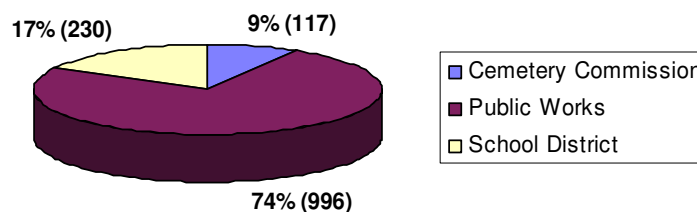


Figure 6.1. Percentages (numbers) of all public trees in Williston maintained by the Public Works Department, Williston School Board, or the Cemetery Commission.

6.1 Current Maintenance Policies and Activities

At present, maintenance of community trees on municipal properties or in the public ROW is primarily limited to addressing threats to public safety and/or property caused by trees. These “urgent care” activities include the following:

- pruning deadwood or limbs that are liable to fall on structures, roadways, or pedestrians;
- pruning or removing trees which have sustained storm damage;
- pruning trees that obscure visibility at intersections or road curves;
- removing dead, diseased or dying trees (especially if they pose a safety hazard);

- Pruning trees that are conflicting with overhead wires or restricting clearance for vehicles or pedestrians which must pass under tree limbs.

Urgent care activities are accomplished in order of their threat to public safety, and take priority over all other tree maintenance. Individual hazard cases are generally identified by PWD employees or brought to the attention of the PWD by concerned residents. Most urgent care tree work is carried out by PWD employees themselves (there are currently seven (7) PWD employees available for part-time tree maintenance), although professional tree services are occasionally contracted when trees to be maintained/removed are particularly large or where significant skill is required to avoid damaging infrastructure.

Virtually no preventive maintenance or structural pruning is currently conducted on public trees. Trees around municipal buildings and in parks occasionally receive new mulch, and trees in the public ROW may or may not receive mulch and/or fertilizer depending upon the activities of the landscaping company hired by each particular development. No structural pruning or training of young trees is conducted, and little preventive monitoring for infectious diseases or pests is performed. This is true for public trees maintained by the PWD, School District, and the Cemetery Commission. The deficiency in preventive care is likely due to a lack of information about specific preventive maintenance needs and how to focus efforts, as well as a shortage of training, time, and funding for PWD employees or others involved in maintenance activities.

6.2. Maintenance Needs and Goals

6.2.1. Identified Needs

Maintenance needs were identified for all public trees during the Town's 2005-06 tree inventory. The inventory revealed that 96% of public trees could benefit from one or more types of routine pruning. Since most of Williston's community trees are still very small, structural pruning of young trees to encourage a strong growth form is an especially prevalent maintenance need. Maintenance needs vary considerably among areas maintained by the PWD, School District, and Cemetery Commission, reflecting differences in species composition, age class, and size of trees in these areas.

6.2.1.1. Williston's Cemeteries

Williston's three older cemeteries, East Cemetery, Chittenden Cemetery, and Allen Cemetery, contain sizeable, mature trees. In many cases, these older "specimen" trees have reached a point where they require support, in the form of cabling or bracing, in order to prevent trunk splitting or loss of large limbs. Twenty-one cemetery trees (18%) will require cabling in the near future in order to extend their lifespan (Fig 6.2). Since the hardware and installation costs to cable and/or brace large trees can be expensive, this will be a significant maintenance obstacle for the Cemetery Commission in the coming years. Eight cemetery trees are also identified as needing to be removed; three of these are priority safety hazards while the remainder are non-priority removals.

Crown cleaning and crown raising are significant preventive maintenance needs in Williston's three older cemeteries (see Fig 6.2). Completion of this maintenance should reduce the need for additional cabling in the future. Williston's fourth cemetery, Deer View, is recently established and contains very young, small trees. Structural pruning to encourage strong form is the most immediate need in Deer View Cemetery. Finally, 55% of all cemetery trees will benefit from additional mulch; none are over-mulched.

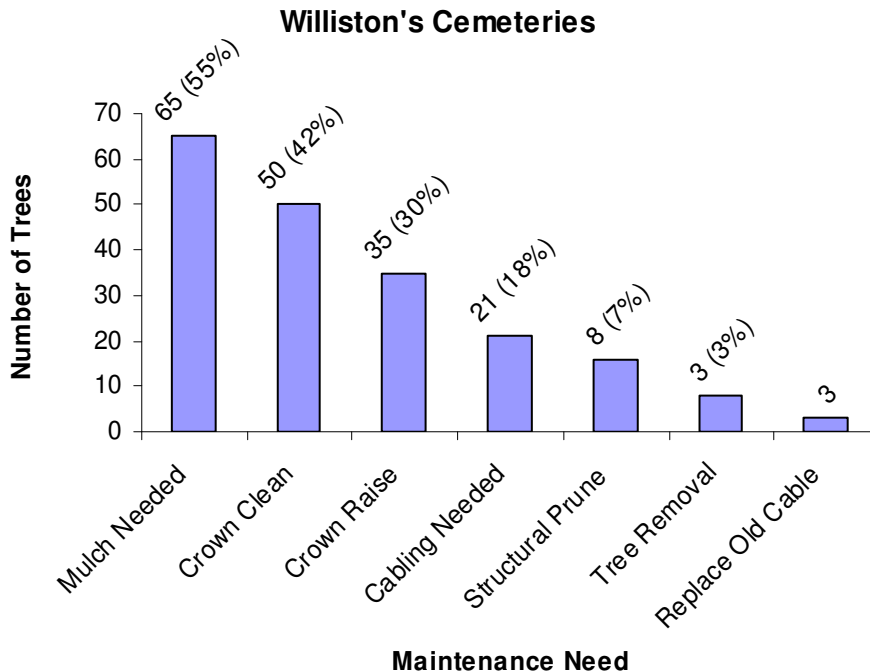


Figure 6.2. Most common maintenance needs identified for all trees in Williston's cemeteries (n=117).

6.2.1.2 Williston School District

Trees on the grounds of the Williston Central School and Allen Brook School are primarily young and in good health. Seventy-two percent (72%) of the 105 Allen Brook School trees and 90% of the 68 inventoried Williston Central School trees are less than 6" in trunk diameter. Structural pruning (68%) is the primary maintenance need for these small trees. There are some considerably larger trees on the Dorothy Alling Memorial Library grounds (also partially maintained by the Williston School District); however, these trees are also primarily in good health.

Crown raising and cleaning are needed for 17% and 14% of all School District trees, respectively. Thirteen non-priority removals are also noted in the inventory. The removals are mostly small trees that have sustained significant trunk injuries and/or crown damage from which they will never adequately recover. Trunk injuries are

present in nearly a third of all trees on school or library grounds. If it is evident that the primary cause of trunk injury is contact with mowers and/or weed whackers, the School District should consider creating larger mulched areas under all trees. Over half of the trees maintained by the school district (62%) are in need of mulch, while 20% have excess mulch that can be re-distributed to areas where mulch is lacking.

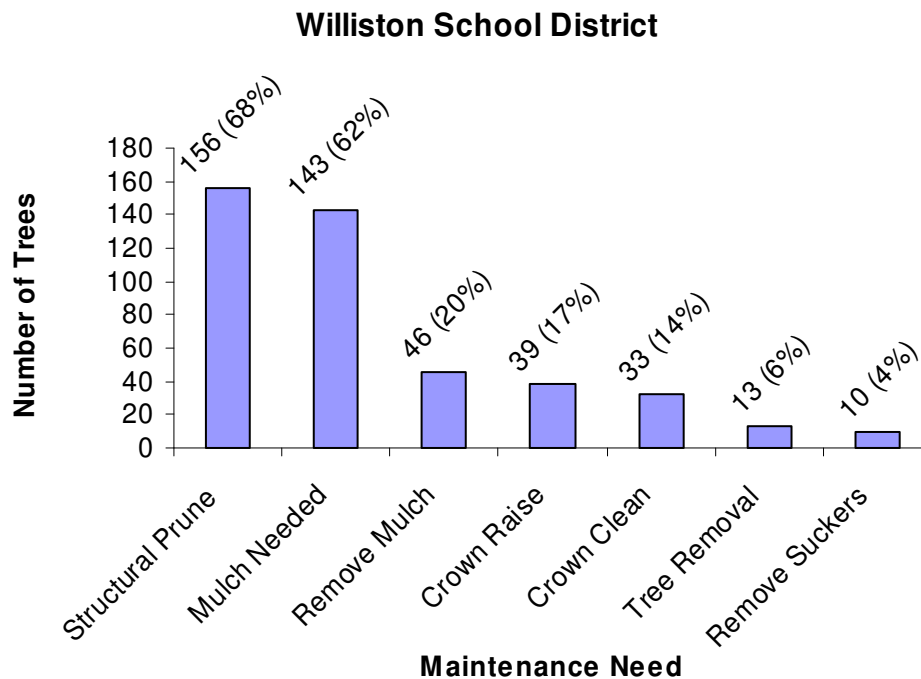


Figure 6.3. Most common maintenance needs identified for all trees maintained by the Williston School District (n=230).

6.2.1.3 All Other Public Trees

The majority of the public trees maintained by the Public Works Department are small and in good condition. Primary preventive care needs are two-fold: structural pruning and proper mulching. Structural pruning is needed for well over 90% of the nearly 1000 trees under the jurisdiction of the PWD. Since it will take at least one half hour to prune each tree for structure, a significant time commitment will be required to complete this maintenance (estimated at 470 man hours), even when it is spread over many years. The initial investment in structural pruning is well worth the time and money in consideration of the alternative- that these trees will require costly hazard maintenance once they become large, mature trees with poor structure. Systematic and proper

pruning of immature trees has been proven to reduce priority hazard maintenance⁷ and produce cost-savings over time.⁸

A large percentage of PWD trees (42%) are over-mulched. A mulch layer that is too thick, or in direct contact with the tree's trunk, can lead to root girdling, suffocation of deeper roots, rodent damage, fungal growth, and may stress the tree due to poor gas exchange in the bark cells. "Mulch volcanoes" are more prevalent in certain developments than others, and are likely the work of particular landscaping companies. Alternately, in some areas, trees are in need of additional mulch. Trunk injuries are also very common in PWD trees (34% of all trees). Depending upon the tree and its placement, trunk injuries can be the result of collisions with mowers, weed whackers, plows, plowed snow and ice, or other vehicles. In some cases (mower and weed-whacker collisions), enlarging the circumference of the mulch circle under the tree may reduce future collisions. Addressing mulching problems will be a significant preventive maintenance task for the PWD; luckily, proper mulching can easily be achieved via a combination of volunteer effort and public/landscaping crew education.

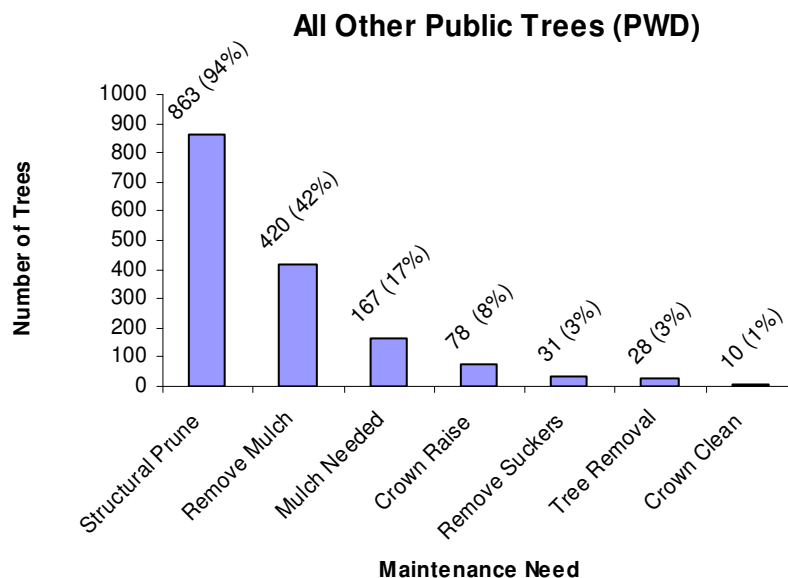


Figure 6.4. Most common maintenance needs identified for all trees maintained by the Williston Public Works Department (n=996).

Twenty eight PWD trees need to be removed in the near future. Five of these trees are priority safety hazards (these have already been removed by the PWD), and the remainder are currently non-priority removals.

⁷ Luley, C.J, Sisinni, S, and A. Pleninger. 2002. *The effect of pruning on service requests, branch failures, and priority maintenance in the City of Rochester, New York, US.* Journal of Arboriculture 28(3):137-143

⁸ Miller, R.W. and W.A. Sylvester. 1981. *An economic evaluation of the pruning cycle.* Journal of Arboriculture 7(4): 109-112.

The maintenance needs of Williston's public trees are now well documented in the 2005-06 Inventory report and database. Remaining impediments to conducting preventive maintenance include lack of funding, manpower, and expertise. Field training of municipal employees and others responsible for public trees is needed, especially in structural pruning and proper mulching techniques. Some of the burden of this preventive maintenance must also be taken on by community volunteers if the Town hopes to get caught up with maintenance in a timely manner.

6.3. Action Items

6.3.1 Continue Hazard Tree Maintenance

Managing trees that pose an immediate threat to public safety or property will continue to be the highest maintenance priority for the PWD, School District, and Cemetery Commission. As long as hazard trees continue to be recognized in a timely manner, the current system of identifying hazards can be continued. Once scheduled preventive maintenance is initiated in Williston (see 6.3.2), identification of existing and potential hazard trees should be facilitated. Public education for residents and business owners explaining how and when to inform the PWD about a potential hazard tree will be considered.

6.3.2. Implement a Cyclical Schedule for Preventive Maintenance

The Williston Planning Department, Conservation Commission, and (future) Tree Board will assist the PWD, School Board and Cemetery Commission in developing realistic cyclical schedules for conducting routine preventive maintenance. Preventive maintenance may include the following activities; all pruning will be conducted in accordance with ANSI A300 standard practices for tree and shrub maintenance.

- **Structural Pruning:** Pruning of young trees (generally <10 years old) to encourage the formation of a strong central leader trunk and evenly spaced scaffold branches. Permanent branches should be selected to maintain an even radial distribution.
- **Crown Cleaning:** Removal of dead, dying, diseased, or weakly attached branches from a tree's crown.
- **Crown Raising:** Removing the lower branches of a tree to provide vertical clearance for buildings, vehicles, and pedestrians.
- **Crown Reducing:** Selective pruning to decrease crown height and/or spread, usually near buildings or utility wires.
- **Non-priority Removals:** Removal of dead or dying trees that do not pose an immediate threat to public safety or property. Conducting scheduled removals will allow for replacement of these trees with new plantings.
- **Mulching:** Addition of mulch under trees helps reduce soil moisture loss due to evaporation and prevents weed growth, reducing competition for water and nutrients. A 2" to 4" layer of mulch should be applied evenly under the base of

- the tree, extending 4' to 6' from the base of the trunk. Mulch should be pulled away from the base of the trunk to prevent bark decay.
- Fertilizing: Fertilizer will be applied to trees only when nutrients have been determined to be deficient based upon a soil test. All fertilizers will be used in accordance with the manufacturer's directions.

Ideally, all areas maintained by the PWD will be covered within a 5-year period; school grounds and cemetery maintenance may be conducted on a shorter cycle. Maintenance will be scheduled on a geographic basis, and each year's activities will include maintenance of some trees of every size or age class. This will allow for some volunteer pruning of smaller trees (see 6.3.7) which will reduce the workload of municipal employees. As new public trees are planted, they will be added to the preventive care cycle. The additional cost of maintaining newly planted trees should eventually be offset by the reduced number of hazard trees resulting when trees are pruned regularly for strength.

6.3.4 Develop and Implement a Policy for Non-Priority Tree Removals

Non-priority tree removals should generally be dealt with as part of the scheduled preventive care cycle. In other words, non-priority removals may not always be conducted as they are identified. Residents should have explicit means of requesting removal of a tree from the Town PWD, in case the tree is in fact a safety concern. If the tree in question is not a safety hazard but should be removed, residents should have the option of removing the tree themselves at their own expense, or waiting until routine tree maintenance is scheduled in their area. If the Public Works Director or Tree Warden does not feel the tree needs to be removed, a public hearing should be held before a decision is made (by the Public Works Director or Tree Warden) to remove or keep a public tree. This requirement for a public hearing is mandated by state law, and should be codified in a future Tree Protection Ordinance (see 4.3.1).

6.3.5 Create and Maintain a Maintenance Database

Using the 2005-6 inventory database and GIS files, a maintenance database will be developed in order to catalogue and keep track of all maintenance activities conducted in each calendar year. Aerial maps with uniquely identified trees will be printed for the PWD, School District, and Cemetery Commission in order to facilitate recording of maintenance activities for specific trees. The central maintenance database for all public trees can be kept up-to-date by the Planning and Zoning Department. The maintenance database will be integral in situations where pruning of a single tree needs to span several years, or in identifying locations where new trees are needed to replace recent removals. Trees that may become safety hazards in the future can also be identified as such in the database.

6.3.6 Provide Training for PWD Employees and Others Involved in Public Tree Care

Workshops and training opportunities for municipal employees and others involved in public tree care will be made available. Trainings are needed in structural pruning and training young trees, routine pruning (crown cleaning, raising, and reduction), reducing and managing tree wounds and ice damage, tree planting procedures, proper mulching, and other relevant tree care topics. Whenever possible, trainings will be conducted by a Certified Arborist, and will be hands-on workshops conducted in the field. The Town should also consider encouraging an interested municipal employee or board member to become an International Society of Arboriculture (I.S.A.) Certified Arborist. Maintaining a Certified Arborist on the PWD staff will ensure the quality and consistency of tree care in Williston.

Information on proper tree care must also be provided to landscaping companies conducting maintenance in developments with public street trees. If landscaping companies cannot be persuaded to mulch and/or prune public trees correctly, they must be directed to cease maintenance activities for these trees.

6.3.7 Establish, Train and Utilize Volunteer Citizen Pruning Crews

The routine and structural pruning of young trees (77% of Williston's public trees are < 6 DBH) can be accomplished by interested citizens with a modest amount of training and access to hand tools. The Conservation Commission, Public Works Department and Planning and Zoning Department will work collaboratively to establish and train crews of citizen pruners who can be responsible for some of the routine maintenance needed on small trees. The utilization of volunteer pruning crews will reduce the workload of municipal employees, as well as lifting some of the financial burden for preventive care from the PWD, School Board, and Cemetery Commission. Pruning crews can also conduct activities such as removal or addition of mulch, fertilization, and irrigation of new trees. Crews may be organized on a town-wide basis or be associated with a particular subdivision. Homeowners may be more likely to persist with maintenance activities and pruning if they feel a sense of ownership for the trees they are caring for.

6.3.8 Keep informed about emerging pest and disease threats

Municipal employees and boards involved in public tree maintenance will stay informed about emerging pest and disease threats and will monitor trees for signs of infection/infestation during routine tree care activities. In the event that a disease or pest infestation is suspected, the State Department of Forests, Parks and Recreation will be consulted for advice. Any decision about whether and how to treat an affected tree will be made by party responsible for maintenance (PWD, School District, or Cemetery Commission).

Chapter 7. Public Education and Outreach

7.1 Current Activities, Needs and Goals

An informed and involved community, including residents, landowners, business owners, and those employed in Williston, is integral to the success of the Williston Community Forestry Plan. Currently, there is very little town-sponsored public education on urban forestry issues. Workshops are occasionally offered through the State Urban and Community Forestry Program, and Williston has recently held its first event in celebration of Arbor Day. Still, there remains a significant need for additional public education, both in informing the public about laws and regulations governing public trees, and in providing leadership and training in proper stewardship of trees on both public and private property. The Town will undertake the initiatives detailed in the following section in order to inform and involve the public in matters relating to community forestry.

7.2 Action Items

7.2.1 Work towards becoming a Tree City USA

Tree City USA is a program run by the National Arbor Day Foundation which offers certification to municipalities having urban forestry programs that meet certain criteria. To become a Tree City USA, a town must: a) have a tree ordinance or forestry plan; b) observe/celebrate Arbor Day; c) have a Tree Board; and d) spend \$2 per capita on urban forestry. By the time this Community Forestry Master Plan is adopted, Williston will have satisfied the first two criteria. Establishment of a Tree Board is proposed in Chapter 3, and proposed budgets are discussed in Chapter 8. The Town must spend approximately \$16,500 annually on community forestry in order to meet the final criteria. Benefits of participation in the program include the increased community pride and support for stewardship of trees that can follow from a municipality's designation as a Tree City USA, and an enhanced ability to secure financial assistance (grants) for future urban forestry projects.

7.2.2. Continue to Celebrate Arbor Day

Arbor Day in Vermont is always the first Friday in May. In May 2007, the Town held its first-ever Arbor Day events, including a workshop on tree planting, an informational booth, and a survey to gauge the level of citizen support and background knowledge surrounding urban forestry issues. The results of this survey are found in Appendix D. Arbor Day can be observed in a variety of ways in order to engage the public, including tree planting projects, educational workshops, photo or drawing contests, field trips or interpretive walks, children's activities, or plant sales. The possibilities for celebration of trees are almost endless, and Arbor Day is an excellent opportunity to bring annual attention to Williston's community forestry program.

7.2.3 Create a Voluntary Heritage Tree Program

Trees which are especially noteworthy in the community, whether they are on public or private property, can be enrolled in a voluntary “Heritage Tree” program. Trees might be nominated for a list of Heritage Trees based upon extraordinary size, age, aesthetics, ecological value, or other unique characteristics. Alternately, trees may have historic significance based upon their particular location or their association with a notable local event, person, or structure. As long as the owner of the tree consents, nominated trees meeting defined criteria could be designated as Heritage Trees. A list of Williston’s Heritage Trees and their vital statistics could be posted on the Town’s website or maintained in the public library. The primary purpose of the program would be to increase public awareness about trees and their value within a community, although owners of Heritage Trees may also be willing to agree to some form of nominal protection for their specimen trees. If any trees are identified that meet the criteria of the National Register of Historic Trees or the Vermont Big Tree List, owners should be encouraged to nominate their trees for these honors.

7.2.4 Provide Urban Forestry Workshops and Trainings for the Community

Proper stewardship of Williston’s trees, both public and private, is the ultimate goal of this Community Forestry Master Plan. To that end, the Town will host occasional trainings and workshops for the public about tree planting, care and maintenance. Other ideas for workshops include tree species identification or recognition/treatment of common tree pests and diseases. These workshops could be organized by the Tree Warden, a future Tree Board, the Conservation Commission, or the Williston Planning Department. They may also coincide with Arbor Day celebrations, and could be geared for adults or children.

7.2.5 Support Local Schools in Forestry Education

Educating youth about appropriate stewardship of trees within their community is an important means of ensuring the future success of Williston’s community forestry program. The PZD, Tree Warden, and (future) Tree Board should work directly with educators at the Williston Central School and Allen Brook School to develop community forestry themed curriculum and activities that fit within the state’s standards for education.

7.2.6 Utilize Local Media Outlets for Urban Forestry Issues & Events

Every effort will be made to obtain positive media coverage for urban forestry issues and events in Williston. The *Williston Observer* has been very receptive to covering community tree issues in the past, running several stories about the recent tree inventory and another about the development of this plan. The *Observer* will likely continue to be a primary outlet for informing Williston residents about urban forestry issues, although certain events may also warrant wider coverage by the Burlington Free Press or local TV news channels.

Chapter 8. Funding

A successful Community Forestry Program in Williston will require reliable financial resources that can be fulfilled via an annual budgetary commitment from the Town, in addition to grant funding secured for specific projects. This chapter discusses current Town budgets for community forestry, the projected cost of implementing the Williston Community Forestry Plan over the next 5 years, and strategies for achieving financial goals.

8.1 Current Community Forestry Expenditures

It is very difficult to estimate what has been directly spent on the planting, care, and maintenance of public trees in Williston in the past. This is because budget categories are generalized for landscaping or road maintenance or buildings/grounds, and include many expenses that are not related to trees as well as those that are. In addition, town employee's labor time for tree-related work has not been specifically documented in most cases. The following chart is a very rough estimate of what was spent on community forestry-related matters in FY 2007, based upon approximations made by each department. The second column is the general budget category (if applicable) out of which the public tree expenses were drawn.

Table 8.1 Estimated public tree expenses in FY 2007.

Budget Category	Category Total	Est. Tree Expenses	Tree Work Conducted
PWD – Highway Landscaping Expenses	\$10,000	\$2,000	Purchase of trees for planting, equipment rental, contracted services for hazard trees
PWD – Highway Summer Maintenance Salary	\$145,620	\$2,242	Labor, hazard tree elimination, pruning
Planning – Miscellaneous Planning Studies	\$12,500	\$3,000	Arborist consultant services- tree ordinance development
Planning – Equipment	\$4,000	\$160	Pole saws, pruners, diameter tape
Conservation Com. – Salary	\$22,690	\$3,760	Drafting urban forestry plan, arbor day celebrations, tree inventory analysis
Conservation Com. – Operating Expenses	\$5,250	\$170	Trees/materials for Arbor Day, training for WCC members & staff
Conservation Com – Trail Maintenance	\$5,000	\$50	Pruners, hand saw
Parks & Recreation – Park Maintenance Salary	\$9,750	\$2,500	Planting, maintenance, removal of trees in parks, mulch
Cemetery Maintenance	\$21,200	\$4,025	Crown cleaning, removal, cabling of cemetery trees
School District – Buildings & Grounds	\$1,171,469	\$4,000	Planting, maintenance, removal of trees on school grounds

Total Tree Expenditures		\$21,907	
Estimated Routine Maintenance Only		\$10,792	

The FY 2007 total of \$21,907 includes expenditures for tree maintenance costs (labor and materials) as well as planning and administrative tasks associated with urban forestry. It should be noted that this total already exceeds the \$2 per capita spending minimum required to become a Tree City USA. The FY 2007 estimates will not necessarily be representative of all years, however, since several 2007 projects (\$6,760 in planning/conservation costs for Tree Inventories and Ordinance Drafts, as well as \$4,025 in cemetery hazard tree mitigation costs) are not annual expenditures. The total estimated maintenance expenditures (\$10,792) is more representative of what is currently spent annually on public tree planting, care, and maintenance in Williston.

8.2 Needs and Goals

8.2.1 Maintenance Costs

As discussed in Chapter 1, public trees provide benefits that translate into economic savings through reduced energy costs, cleaner air, interception of stormwater runoff, and reduced soil erosion. In addition, the replacement value of the Town's current public trees is over 1 million dollars (see Appendix C). Therefore, the Town's public trees should be maintained and managed similar to any other element of the community's public infrastructure. Public trees require maintenance and upkeep to provide optimum benefits to the community, just as highways, public buildings, street lights, sidewalks, or utilities do, and funding for this maintenance must be dependably included in the annual budgets for the PWD, Cemeteries, and Schools. Fortunately, public trees will increase in value as they grow and are properly maintained (unlike most public infrastructure that decreases in value over time).

The Town's recent tree inventory provides baseline information from which to estimate maintenance needs for public trees over the next five years. The following tables were developed by consulting arborists Trees New England, and were modified by Planning Department Staff to reflect in-house maintenance rates. Hourly rates for contracted maintenance are based on 2006 prices from Vermont tree care companies.

Table 8.2 Current maintenance needs, labor hours, and cost estimates for trees under the jurisdiction of the Williston Public Works Department.

Maintenance Need	No. Trees	Time (hrs)	\$/hr in-house (\$/hr contracted)	Total cost in-house (Total cost contracted)
Removals	28	28	\$30/hr (\$100/hr)	\$840 / (\$2,800)
Crown Clean	10	20	\$30/hr (\$100/hr)	\$600 / (\$2,000)
Crown Raise	78	78	\$30/hr (\$100/hr)	\$2,340 / (\$7,800)
Add Mulch (not incl. cost of mulch)	167	28	\$30/hr (\$50/hr)	\$840 / (\$1,400)

Remove Mulch	420	210	\$30/hr (\$50/hr)	\$6,300 / (\$10,500)
Structural Prune	940	470	\$30/hr (\$55/hr)	\$14,100 / (\$25,850)
Total (next 5 yrs)	1117	834		\$25,020/ (\$50,350)
Annual				\$5,004/ (\$10,070)

Table 8.3 Current maintenance needs, labor hours, and cost estimates for trees under the jurisdiction of the Cemetery Commission. No in-house costs are displayed since the Cemetery Commission does not have salaried staff.

Maintenance Need	No. Trees	Time (hrs)	\$/hr contracted	Total cost contracted
Removals	8	16	\$100/hr	\$1,600
Crown Clean	50	100	\$100/hr	\$10,000
Crown Raise	35	35	\$100/hr	\$3,500
Add Mulch (not incl. cost of mulch)	65	11	\$50/hr	\$550
Structural Prune	35	17.5	\$55/hr	\$963
Cabling	24	48	\$100/hr	\$4,800
Total	217	227.5		\$21,413

Table 8.4 Current maintenance needs, labor hours, and cost estimates for trees under the jurisdiction of the Williston School District

Maintenance Need	No. Trees	Time (hrs)	\$/hr in-house (\$/hr contracted)	Total cost in-house (Total cost contracted)
Removals	13	13	\$30/hr (\$100/hr)	\$390 (\$1,300)
Crown Clean	33	66	\$30/hr (\$100/hr)	\$1,980 (\$6,600)
Crown Raise	39	39	\$30/hr (\$100/hr)	\$1,170 (\$3,900)
Add Mulch (not incl. cost of mulch)	143	24	\$30/hr (\$50/hr)	\$720 (\$1,200)
Remove Mulch	46	23	\$30/hr (\$50/hr)	\$690 (\$1,150)
Structural Prune	200	100	\$30/hr (\$55/hr)	\$3,000 (\$5,500)
Remove Suckers	10	1	\$30/hr (\$50/hr)	\$30 / (\$50)
Total	484	266		\$7,980 / (\$19,700)

The largest maintenance burden in Williston is generated by street and park trees under the jurisdiction of the PWD. The estimated \$50,350 that it would cost to contract the needed maintenance out to consulting arborists over the next 5 years is reduced by more than half (\$25,020, or \$5,004 per year) when the work is done in-house by PWD employees. This assumes that PWD employees have the time (roughly 834 person-hours over the next 5 years) to conduct the needed maintenance, and that they receive the training required to carry out the more technical maintenance activities. In reality, the

required maintenance may need to be accomplished via a combination of contracted services and in-house work.

Some of the low-expertise maintenance (such as structural pruning of young trees and adding or removing mulch) can be accomplished through volunteer initiatives within residential developments and across the Town as a whole. This will reduce the maintenance budget accordingly, although there will be Planning Staff salary costs associated with coordinating these volunteer programs and training volunteers.

It should be noted that the estimated maintenance costs in Tables 8.2-8.4 do not take into account costs involved in handling emergency situations (downed trees or branches creating immediate safety hazards) nor do they cover costs for materials (e.g. mulch) or equipment. Although the \$5,000+/year needed is below the estimated current annual expenditure by the PWD (roughly \$6,700 in FY07) very little of this type of preventive maintenance currently conducted with that \$6,700. It is very likely that, even with significant volunteer involvement, additional funds will be required in order to complete the required preventive maintenance in an efficient and timely manner.

Maintenance of trees managed by the Williston School District and Cemetery Commission will also likely require budget increases. Like the PWD, the WSD can reduce costs by conducting maintenance in-house and completing some maintenance on smaller trees with volunteer citizen crews. The Cemetery Commission is limited in its ability to reduce costs, as it has no formal staff and many of the cemetery trees are of significant size that they require professional care. The roughly \$14,800 in cabling and crown cleaning costs will likely need to be contracted out to arborists; however, the costs could be partially covered by grant funding or a one-time budget increase.

8.2.2 New Tree Plantings

Planning for expansion of Williston's community forest will also require at least a modest financial commitment. If the Town plans to purchase and plant 10 public trees each year, this could cost as much as \$5,000 annually for 2.5" caliper balled & burlapped stock, or as little as \$200 for bare-root trees and mulch. Bare-root trees will usually have a greater mortality rate since their roots have typically been exposed to the air during shipping and processing, so it is advisable to plant at least some balled and burlapped or container-grown stock each year. Once a vacant planting site inventory is completed, opportunities may arise to plant more than 10 trees in some years, which will require a larger financial commitment.

8.2.3 Other Expenses

Implementation of many of the other action items in this plan will require some amount of funding. Although cost estimates for these undertakings have not yet been developed, many of the projects are excellent candidates for outside grant funding.

Some, such as Arbor Day celebrations, may also be covered by donations or existing budgets (i.e. planning or conservation).

8.3 Action Items

8.3.1 Consider Tree-Specific Budget Categories

Knowing with certainty how much money the Town of Williston spends on public tree infrastructure and maintenance is a key factor in being able to secure matching grant funding for community forestry projects in the future. This task would be made infinitely easier by categorizing budgets to reflect what is spent solely on public trees.

8.3.2 Increase Budget(s) to Reflect the Costs of Identified Maintenance Needs

Although some of the costs involved in preventive tree maintenance can be covered under current budgets and/or reduced by utilizing volunteer labor, additional funds will be needed to complete the list of identified maintenance tasks within 5 years. The Town should make an effort to increase budgets in order to cover the costs of preventive tree maintenance.

8.3.3 Fund Tree Plantings Annually

A modest amount of funding (\$1,000 to \$3,000) should be made available each year for new public tree plantings, with the goal of planting 10 trees annually until vacant planting sites have been identified and prioritized. At this point the number of trees planted annually and associated funding will be re-evaluated. Donations and discounts on tree stock will be sought at local nurseries to help offset the cost of new tree plantings, and some low cost bare-root plants may be installed each year.

8.3.4 Solicit Grant Funding for Community Forestry Projects

The Vermont Urban & Community Forestry Program (VUCF) offers grant funding for planning, education, planting, and maintenance projects related to community trees. Other federal, state, and local foundations and grant programs (such as the Vermont Community Foundation, or the Vermont Municipal Planning Grant Program) may also be potential funding sources for certain forestry projects. The Williston Planning Department, Conservation Commission, or future Tree Board will solicit grant funding to implement several of the action items in this plan. Projects that are excellent candidates for grant funding include inventorying and prioritizing vacant planting sites, completing tree planting projects, establishing and training citizen pruning crews, conducting hazard maintenance on very large trees in Williston's cemeteries, and providing urban forestry workshops for the community.

Appendix F – Energy Consumption and Distribution in Williston

This appendix provides background information about energy consumption and distribution in Williston. As Table 9.1 shows, there has been a big change in residential energy consumption patterns in recent years. Fuel oil and other liquid fuels are still the most common source of heat for homes, but most new development relies on natural gas. No data are available on heat sources for other land uses.

Table F.1 - Home Heating In Williston

source	1990	share	2000	share	change	
Natural gas	43	2.44%	1066	36.49%	2379%	
LP gas	220	12.48%	324	11.09%	47%	
Electricity	148	8.39%	25	0.86%	-83%	
Fuel Oil	1087	61.66%	1424	48.75%	31%	
Coal	36	2.04%	7	0.24%	-81%	
Wood	229	12.99%	75	2.57%	-67%	
other	0	0.00%	0	0.00%		
Total Dwellings	1763		2921		66%	

Source: Bureau of the Census

Natural Gas

Natural gas is supplied in Williston by Vermont Gas Systems (VGS). The present service area is shown on Map F.1 – Energy Distribution. VGS’s local distribution lines - natural gas is delivered to homes and businesses via underground piping - are served by a main transmission line running south from Canada. VGS negotiates with individual users and developers to expand service based on a density threshold and a projected ability to recoup installation costs. It is presently considering expansion of its service area in Williston to include: existing residences along Rt. 2A, Old Creamery Road to Porterwood Drive, and North Williston Road to Williston Woods. The potential for expansion is determined by consumer interest and environmental factors, such as the difficulty of excavation (VGS, B. Gray, 2005, pers. comm.).

Electric Power: Regional Distribution

Currently, Hydro Quebec and Vermont Yankee supply about two-thirds of Vermont’s electricity (DPS, 2003). Power is distributed to Williston homes and businesses by the Green Mountain Power Corporation and the Vermont Electric Cooperative. Map F.1 – Energy Distribution shows the existing utility service areas, transmission lines, and substation locations.

Two regional transmission lines cross Williston. The Vermont Electric Power Company (VELCO, which is owned by the State’s electric distribution utilities) operates a 115 kilovolt (kV) line that runs along the Winooski River and to the “Essex” Substation, which is located in Williston, east of the Rt. 2A bridge. VELCO also operates a 115kV line that runs from the Essex

Substation south, along Rt. 2A to the Williston Substation located south of I-89 and northeast of Brownell Mountain. From that point, this line runs west into South Burlington. A third VELCO substation was placed in service in October 2004. It is located just south of Maple Tree Place. This facility was designed to allow for the installation of two additional 115 kV to 12.5 kV step-down transformers and VELCO does not foresee the need for an additional substation in Williston in the near future (VELCO, D. Mace, 2005, pers. comm.). It is making improvements at other existing substations.

As part of its Northwest Vermont Reliability Project (NRP), VELCO will upgrade the Essex Substation (located in Williston), and upgrade and expand the Williston Substation (increasing the 0.52 acre site to 1.06 acres). These upgrades should be complete by 2007 (VELCO, S. Rowe, 2005, pers. comm.). The NRP is projected to meet the transmission needs for a statewide load of 1,200 megawatts (MW). The DPS predicts Vermont will reach that load in the year 2011. If that prediction is accurate and no other factors change, VELCO will likely seek additional upgrades to its transmission system. These upgrades could take several forms, any of which will require an upgrade of the equipment at the substations in Williston (VELCO, D. Mace, 2005, pers. comm.).

Electric Power: Local Distribution

The electricity supplied by VELCO's transmission lines is distributed locally by Green Mountain Power Corporation (GMP) and the Vermont Electric Cooperative (VEC). GMP serves most of the area north of the Interstate. South of I-89, it provides power along South Brownell and Van Sicklen Roads, and to the Meadowridge Subdivision. An existing 34.5kV subtransmission line operated by GMP crosses the western part of Williston. This line runs from VEC's Williston substation to GMP's Digital substation in South Burlington. Upgrades that will provide a back-up source of power to local customers if VELCO's 115kV line and transformers serving the area are lost were approved in 2002.

VEC's substation near the intersection of Old Creamery and Rt. 2A serves most customers south of the Interstate. A 34.5kV line was recently extended from VELCO's Taft Corners substation to this facility. This new line, which is jointly operated by VEC and GMP, is located along the existing utility corridor. VEC anticipates the need for additional upgrades within the next five years, either as a joint-venture with GMP at the Taft Corners Substation or in the form of a new substation. (VEC, H. Abendroth, 2005, pers. comm.).

Other Energy Sources

There are regional fuel oil, kerosene, propane, coal, and wood distributors. The municipal energy plan called for by Objective 9.5 should provide additional information about these sources. Williston is also home to three uses of recovery energy.

Cogeneration. Cogeneration is used at the wastewater treatment facility that serves Essex, Essex Junction, and Williston. The on-site power system burns

methane to produce over 400,000 kilowatt-hours of electric power per year: 41% of the facility's current demand. At the same time, this system is expected to reduce CO₂ emissions by over 500,000 pounds, the equivalent of eliminating 42 cars from the road. The on-site power system uses a new controls method – the first of its kind for use in a biogas cogeneration application – which enables the facility to blend natural gas with the methane to boost kilowatt output during periods of peak demand. This increases energy cost savings to approximately \$30,000 per year (Northern Power Systems, Project Brief, 2003).

Landfill Methane Recovery. The Chittenden County Solid Waste District (CCSWD) is installing a methane gas recovery system at the existing landfill off Redmond Road. This system is expected to be on-line in the summer of 2005, feeding electricity back into the electrical grid via Green Mountain Power. CCSWD is also planning a new landfill that will incorporate methane gas recovery and energy generation in Williston (T. Moro, pers. comm., 2005).

Farm Waste Methane Recovery. The feasibility of energy production from anaerobic digestion and methane recovery from organic wastes is being explored by the Vermont Public Service Department and the Agency of Agriculture, Food, and Markets (see Vermont Methane Pilot Project, 2000, prepared by J. Fehrs). The state has worked with the North Williston Cattle Company to install a system that began operating in 2005. It will recover methane and help manage dairy waste.