



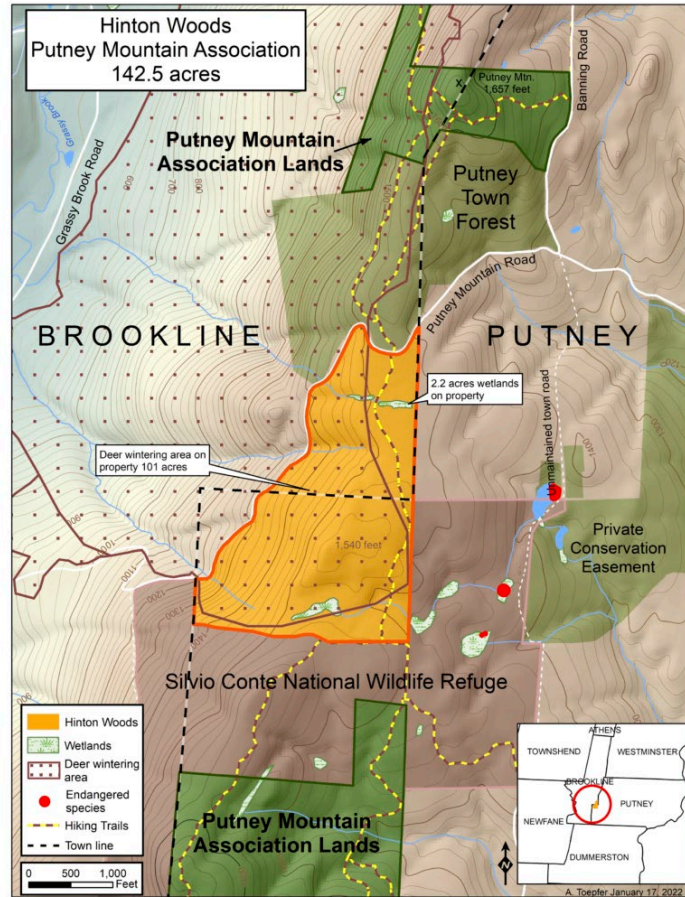
Connecting everyone to the outdoors™

The power of nature-based climate solutions

Lessons from near and far



My childhood classroom...



Source: <https://putneymountain.org/>



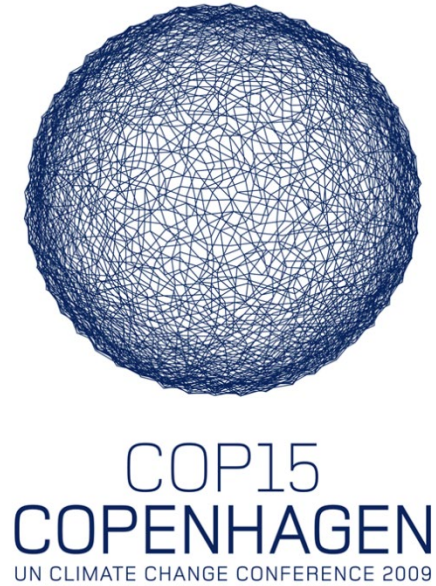
Photo by Joanne Russo

Live, learn, grow, and build lasting relationships



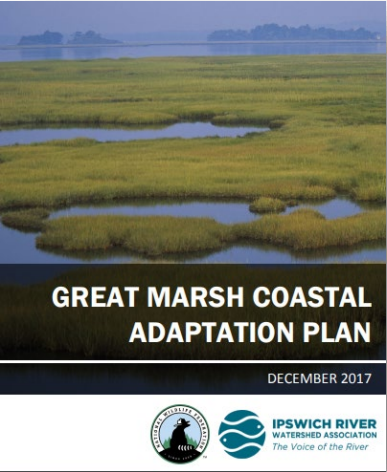
Photos by Joanne Russo & Chris Roberts

From Putney, VT to Copenhagen



Source: The Guardian

A career at the intersection of conservation and climate



Access to the outdoors is a **fundamental human need and essential to our health and well-being.**

PEOPLE NEED PARKS.



OUR COMMITMENTS



HEALTH

We create opportunities for everyone to experience the physical and mental health benefits nature provides, from close-to-home parks to awe inspiring outdoor experiences.



EQUITY

Everyone needs access to the benefits of nature. Working hand in hand with communities, we are closing the park equity gap by creating parks and protecting land where it's needed most.



CLIMATE

The parks we create and the lands we protect safeguard people from extreme heat, poor air and water quality, flooding, and sea level rise, making communities more resilient and prepared for change.



COMMUNITY

We work alongside community members and leaders to create, protect and advance the outdoor places and spaces that are essential to everyone's well-being.

OUR INITIATIVES



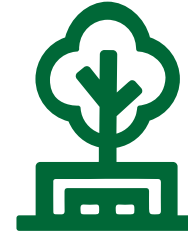
LANDS

We work with landowners, partner groups and public agencies to acquire, create access to, and secure public ownership and stewardship of the lands and waters that make our communities great places to live, work, and play.



TRAILS

Working with communities, we are creating and protecting trail systems across the country. Urban, suburban, and rural trails connect people to nature, recreation, schools, workplaces, and their broader neighborhood.



PARKS

Working alongside youth and community members, equitable development entities and builders, we create parks that reflect and serve local communities and connect people to nature and to each other.



SCHOOLYARDS

We work in partnership with students, parents, and communities to redesign and create schoolyards that are open to the public, serving as a hub for community empowerment, improved health and education, and climate resiliency.



In Vermont

We've conserved over 67,000 acres of forestland

Including additions to

- Green Mountain National Forest
- Missisquoi National Wildlife Refuge
- State Parks
- State Forests
- Community Forests



POSTED

PRIVATE PROPERTY

**HUNTING, FISHING, TRAPPING OR
TRESPASSING FOR ANY PURPOSE
IS STRICTLY FORBIDDEN**

VIOLATORS WILL BE PROSECUTED

Name _____

Address _____

In Vermont

- More than 1 out of every 5 Vermonters, including 31,000 kids, don't have close to home access to the outdoors
- Only 63% of Vermont's conserved land provides public access, compared with 87% in NH and Maine.
- 43% of Vermont's K-12 schools lack walkable off campus park or open space. But if you are low income or live in a community that suffers from poor mental health, you are **roughly 1.5x less likely** to have walkable park and open space access provided by local schools.
- 27% of Vermont is conserved. To achieve a goal of 30% conservation by 2030, **we need to conserve an additional 20,000 acres per year. Clock is ticking!**

The climate crisis

What does it mean for VT?



Connecting everyone to the outdoors™

The climate crisis is accelerating

The Washington Post

2°C: BEYOND THE LIMIT

Dangerous new hot zones are spreading around the world

RollingStone

Can We Survive Extreme Heat?

Humans have never lived on a planet this hot, and we're totally unprepared for what's to come

The New York Times

Opinion

Climate Change Will Cost Us Even More Than We Think

Economists greatly underestimate the price tag on harsher weather and higher seas. Why is that?



Racist Housing Practices From The 1930s Linked To Hotter Neighborhoods Today

January 14, 2020 · 2:38 PM ET
Heard on All Things Considered



VT Climate Assessment

2021 update

Climate change is here – and impacting communities across Vermont.

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

Vermont is getting wetter. Heavy rain events happen more often, contributing to more flooding and water quality problems.

- VT’s average temperature has increased by almost 2°F (1.11°C) since 1900.
- Average annual precipitation in VT has increased by 21% since 1900
- Extreme weather events such as droughts and floods are expected to continue to increase with climate change. Vermont experiences 2.4 more days of heavy precipitation than in the 1960s, most often in summer.



Multiple, complex impacts could lead to surprises.

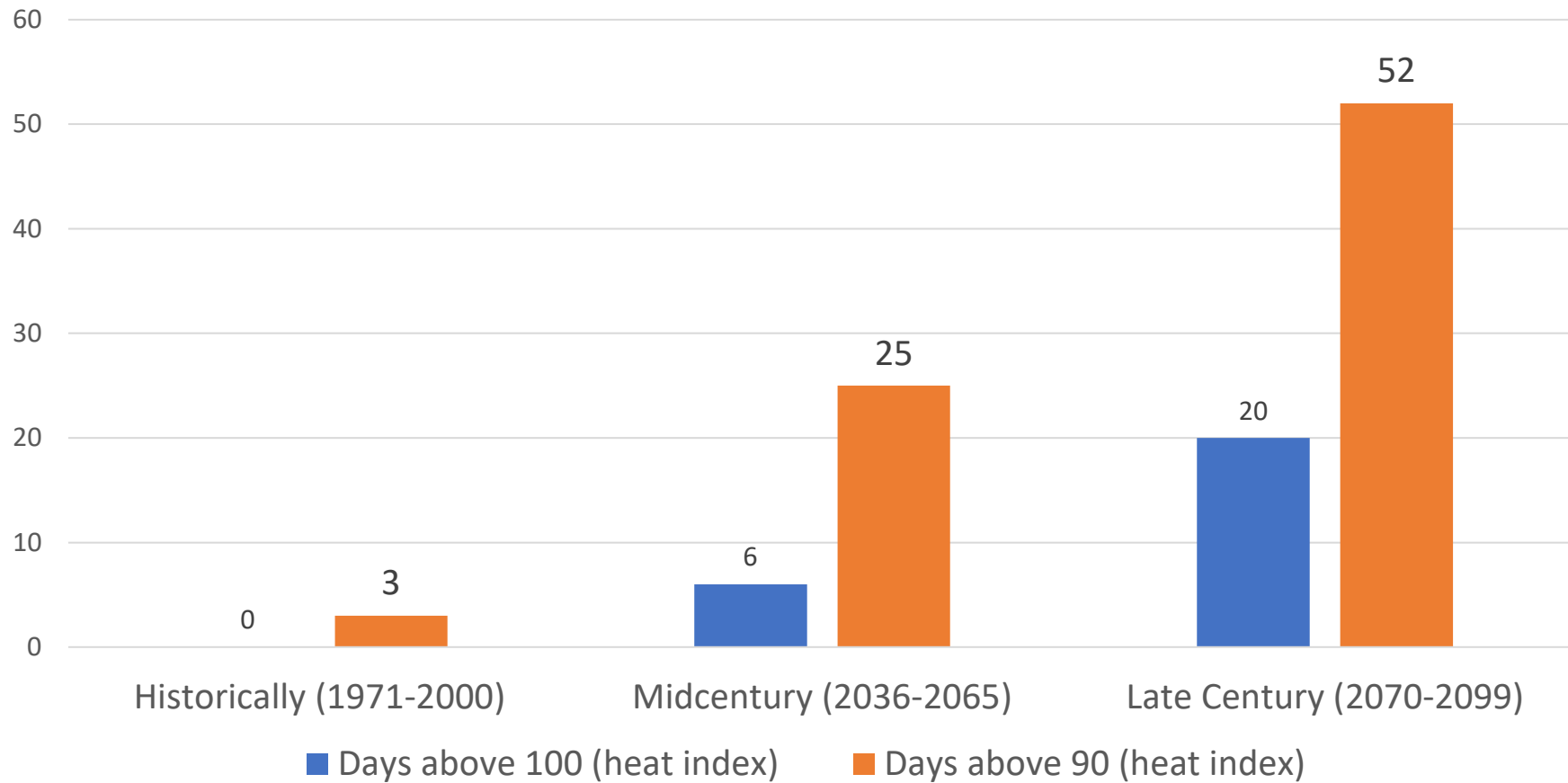
Climate impacts and risks will increase without action.

Dig in to learn more...

Source: <https://site.uvm.edu/vtclimateassessment/>

Extreme heat

Chittenden County: Avg. # of days a year with extreme heat



Source: <https://www.ucsusa.org/resources/killer-heat-interactive-tool>



Key takeaways on the climate crisis

The climate crisis is:

- Happening here and now
- Accelerating rapidly
- Disproportionately impacts underserved, low-income populations
- Exacerbates structural inequities

Photo by Robert Rose. Source: <https://nara.getarchive.net/media/flooding-hurricanetropical-storm-ludlow-vt-august-29-2011-an-automobile-is-cd248f>

Our shared imperative

The role of conservation as a nature-based climate solution

Protect people by creating greener, more equitable and climate resilient communities

Reduce carbon in the atmosphere by conserving and permanently protecting carbon-rich natural landscapes



Wolcott Community Forest. Photo by Chris Bennet, courtesy of Trust for Public Land



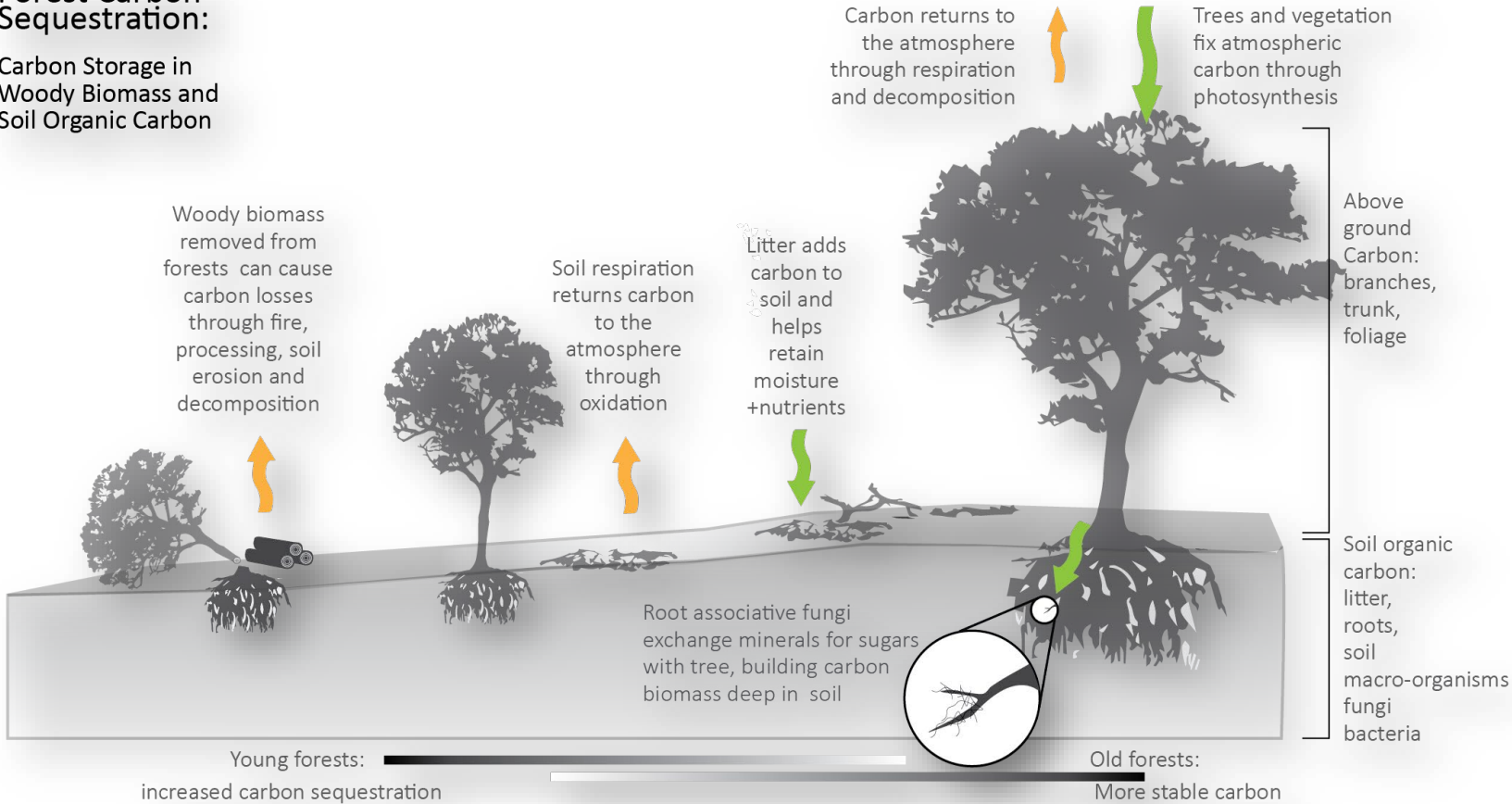
Parks and open space are nature-based solutions

- **Reduce** greenhouse gas emissions in the atmosphere
- **Absorb** stormwater runoff and **protect** against riverine flooding
- **Cool** urban heat islands
- **Connect** people and communities, building social cohesion

Natural areas are critical to protect climate – and people

Forest Carbon Sequestration:

Carbon Storage in Woody Biomass and Soil Organic Carbon



As vegetation grows, it pulls carbon from the atmosphere, storing it in their trunks, roots, and soil.

- *Sequestration* = carbon pulled down from the atmosphere annually
- *Storage* = carbon already stored in the tree

Natural lands in VT store over 499 million metric tons of carbon...

...equivalent to carbon emissions from burning more than 1 billion tons of coal

Source: <https://web.tplgis.org/carbonmap/>



Hunger Mountain. Photo by Kurt Budliger, curtesy of Trust for Public Land

Natural Climate Solutions (NCS)

Relatively untapped potential:

- Globally, NCS could provide 1/3rd of necessary emissions reductions ... but they receive only 1% of climate funding
- In the United States, NCS from conservation, forestry and improved land management practices could absorb 21% of our current net annual greenhouse gas emissions

Climate protection requires that we protect existing natural areas and restore degraded lands



Otter Creek. Photo by Brian Mohr/Ember Photography, courtesy of Trust for Public Land

Protect against flooding

Quantifying flood mitigation services: The economic value of Otter Creek wetlands and floodplains to Middlebury, VT – Watson et al.

- Wetlands saved Middlebury \$1.8 million in flood damages during Tropical Storm Irene
- Wetlands and floodplains reduce flood damages by 54–78%
- Annual value of flood mitigation services provided to Middlebury, VT by upstream wetlands floodplain: \$126,000-\$450,000



Wolcott Community Forest. Photo by Chris Bennett, courtesy of Trust for Public Land

Cooling oasis during heatwaves

During heatwaves, heavily forested parks can be as much as 16-17 degrees cooler than nearby neighborhoods that lack adequate green space



National Oceanic and
Atmospheric Administration
U.S. Department of Commerce

Source: <https://www.noaa.gov/news/hot-days-in-city-it-s-all-about-location>



Huntington Community Forest. Photo by Peter Cirilli, courtesy of Trust for Public Land

Connect people

- Close to home trails and parks reduce vehicle miles driven (reducing emissions)
- During times of disaster, social cohesion is a key determinant of resilience



Every state \$1 invested in land conservation returned \$9 in natural goods and services.



Spending on outdoor recreation in Vermont supports 51,000 jobs

with an associated \$1.5 billion in wages and salaries.



Economic benefits of land conservation

2018 report: *Vermont's return on investment in land conservation*

Conducted by Trust for Public Land in collaboration with fellow members of the VT Forest Partnership

Each year, tourists spend \$2.61 billion in Vermont. Tourists and residents generate \$5.5 billion in annual consumer spending related to outdoor recreation, resulting in \$505 million in tax revenues.



In 2016, Vermont produced 1.99 million gallons of the country's 4.21 million gallons of maple syrup, worth \$59.7 million.



<https://www.tpl.org/resource/vermonts-return-investment-land-conservation>



Lessons from around the country



Connecting everyone to the outdoors™





The Power of Parks to Address Climate Change

A SPECIAL REPORT

A reason for hope

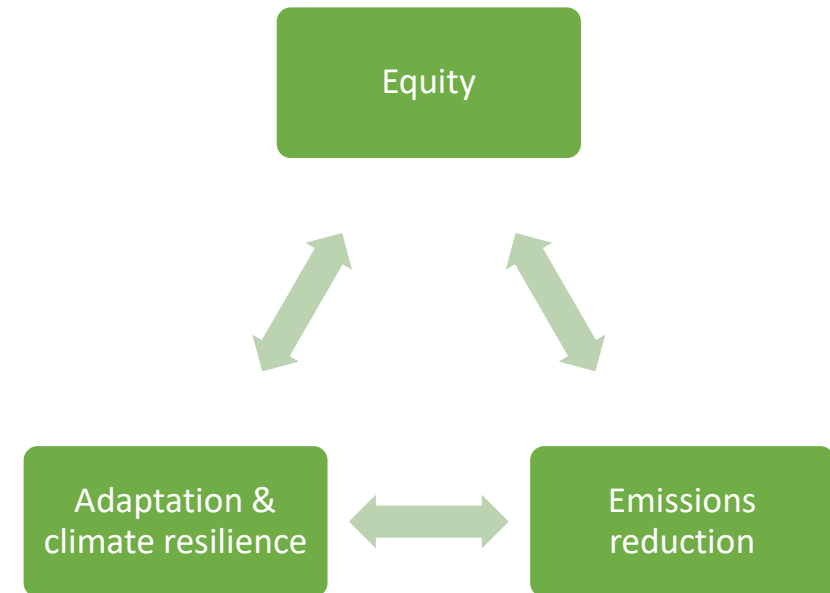
Among the cities in TPL's 2022 national survey on climate:

- 94% are addressing **urban heat**
- 89% are improving surfaces to manage **floods**
- 59% are providing emergency services for **natural disaster response**
- 42% are producing **renewable energy** or increasing **energy efficiency**
- 40% are managing parks to protect against **wildfire**
- 20% are managing park trees and landscapes to **reduce carbon emissions**
- 16% cities have adopted policies to use parks as a **climate resilience strategy**

A network of cities advancing nature-based climate solutions



- Urban Sustainability Directors Network Nature-based Climate Initiatives Working Group: Over 40 cities and counties participating
- Nature-based climate action rooted in:



Boulder, CO: Community-led nature-based climate action



Pollinator Pathways

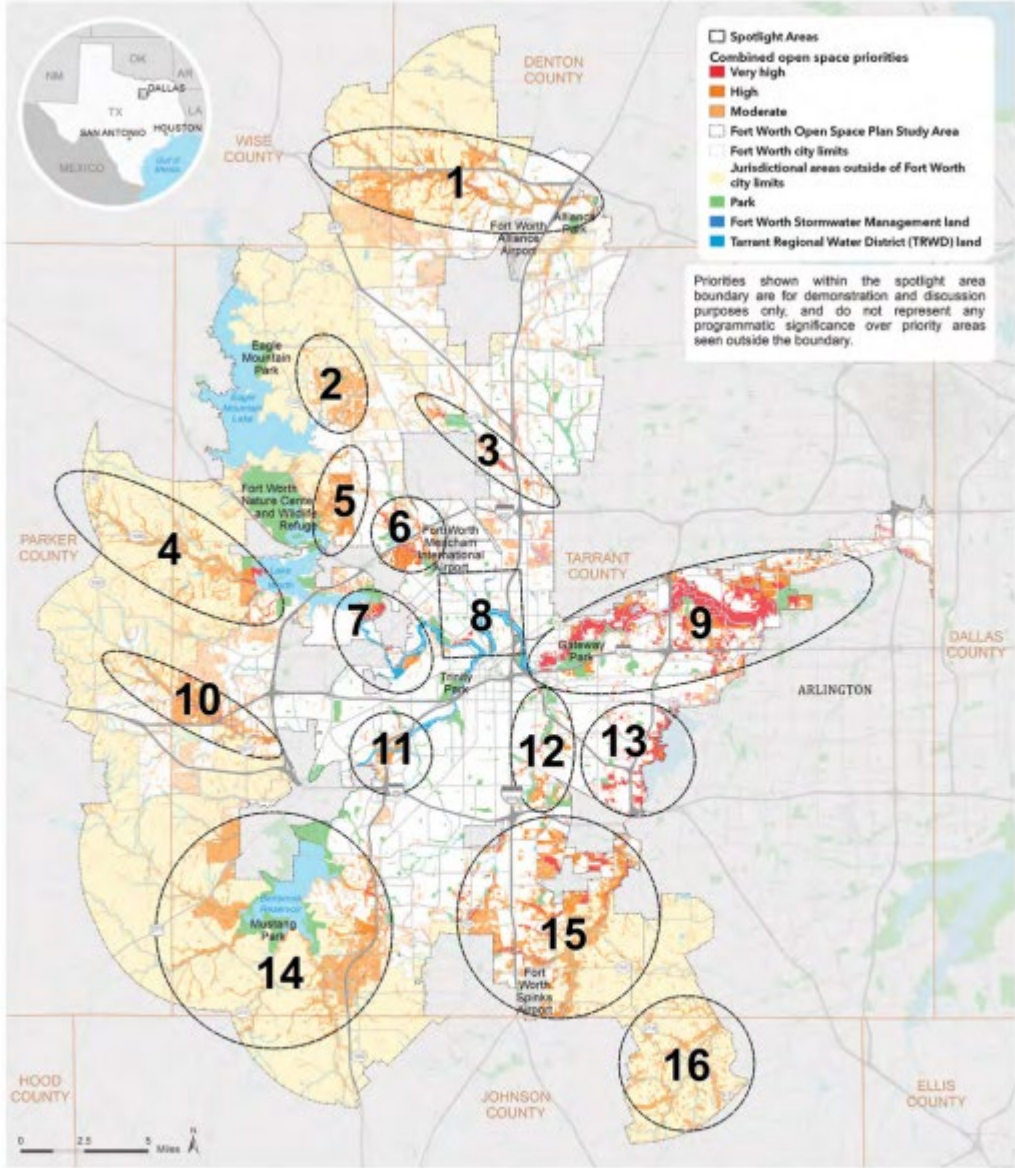


Connected Canopies



Absorbent Landscapes





Fort Worth, TX

Guiding objectives of their open space conservation program

1. Ecosystem preservation
2. Stream, river, and lake health
3. Community health
4. Recreation
5. Flood control
6. Equitable access to open space
7. Economic development

Spotlight Areas

FORT WORTH OPEN SPACE CONSERVATION PROGRAM, TEXAS

February 22, 2022. © Trust for Public Land. Trust for Public Land and Trust for Public Land logo are federally registered marks of Trust for Public Land. Information on this map is provided for purposes of discussion and visualization only. [tpl.org](https://www.tpl.org)





New green schoolyard. © JENNA STAMM FOR TRUST FOR PUBLIC LAND

Camden, NJ

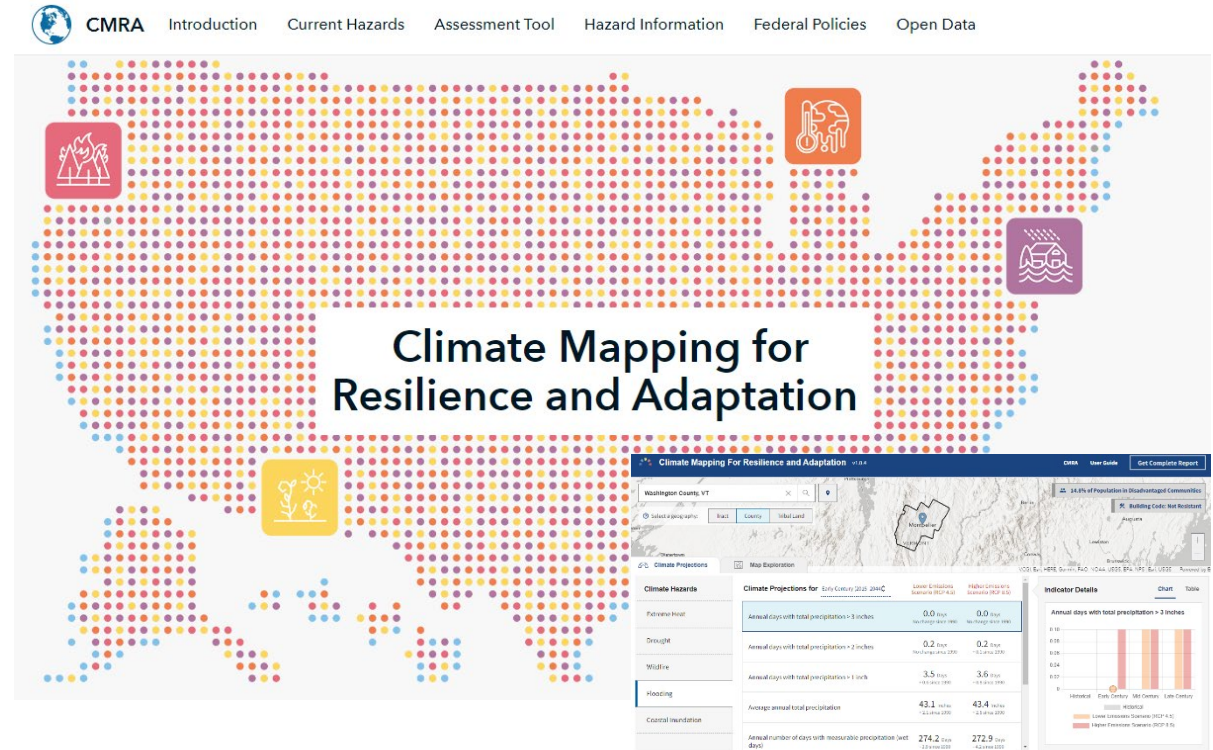
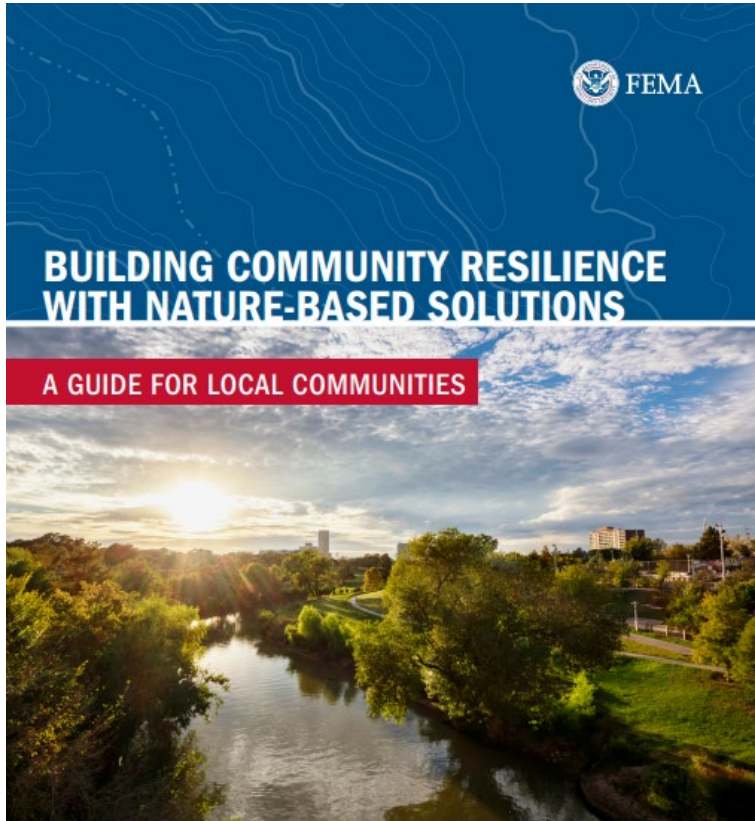
Next generation parks and open space plan



FIGURE 2. The project mapping framework offers a holistic view of park and green infrastructure investment need by incorporating data from varied topics into a single analysis.

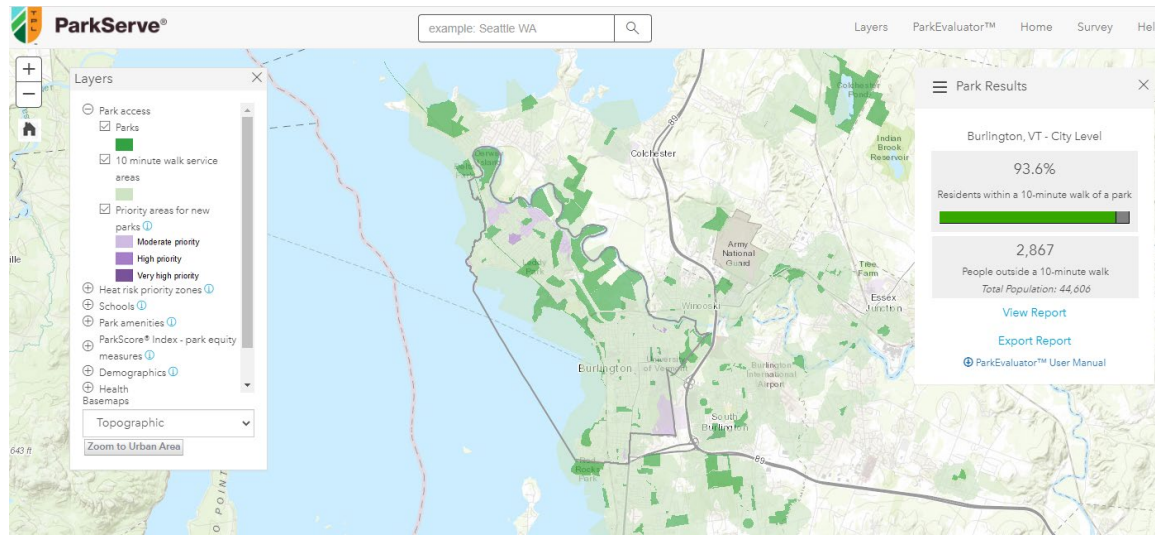
Resources for learning and action

Federal resources



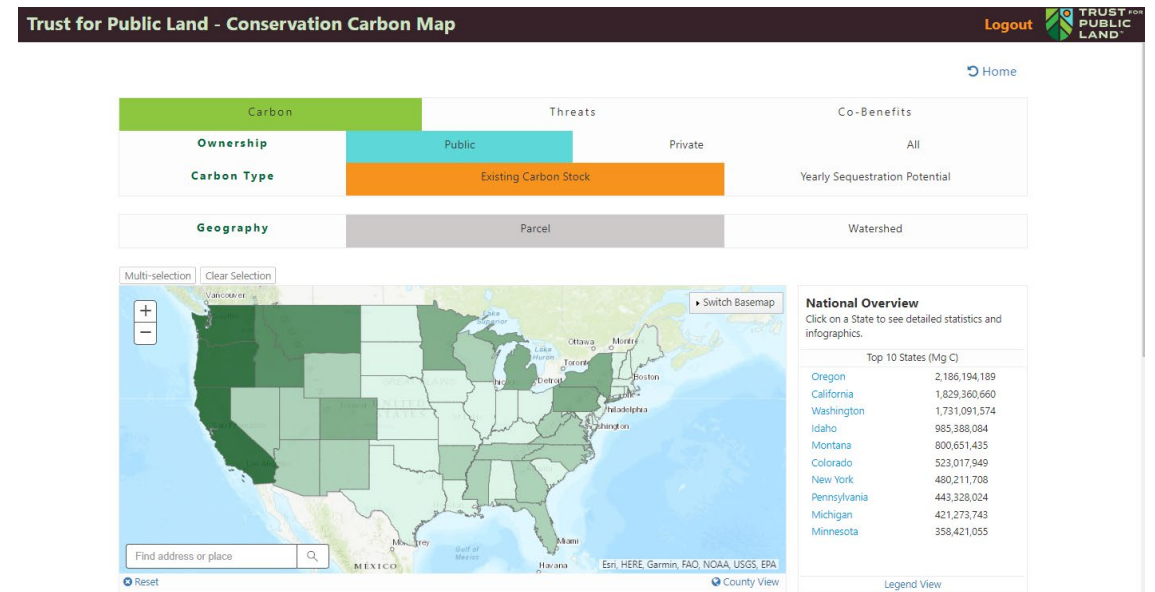
Trust for Public Land resources

Parkserve



<http://parkserve.org/>

Conservation Carbon Map

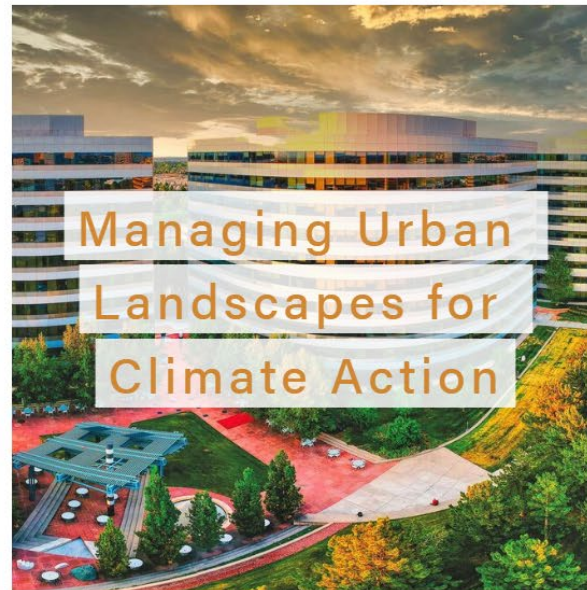
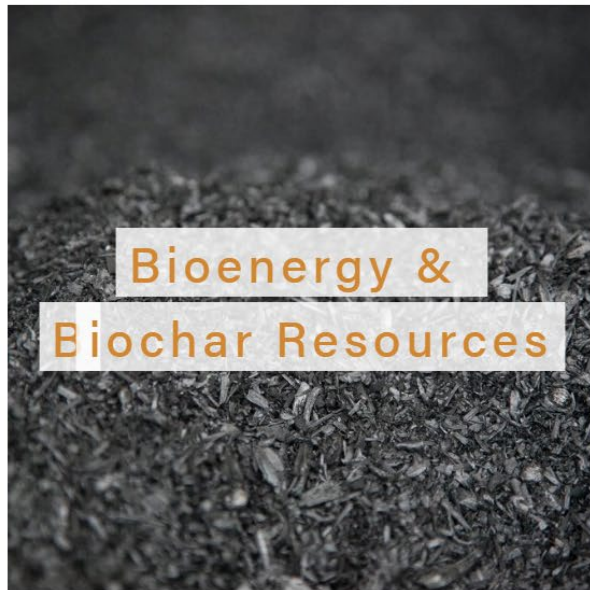


<https://web.tplgis.org/carbonmap/>

Growing carbon-rich, climate resilient communities

NATURE-BASED CLIMATE SOLUTIONS

Toolkits + Resources



<https://naturebasedclimate.solutions/>



Rolston Rest. Photo by Kurt Budiger, courtesy of Trust for Public Land

Key takeaways

Conservation is a climate solution!

1. Nature has a big role to play in improving community resilience and reducing harmful greenhouse gas emissions
2. We have the tools, data, and resources to effect change
3. Together we can create a healthy, livable future for all



Trust for Public Land (TPL) is a national nonprofit that works to connect everyone to the benefits and joys of the outdoors. As a leader in equitable access to the outdoors, TPL works with communities to create parks and protect public land where it is needed most.

Since 1972, TPL has protected more than 3 million acres of public land, created more than 5,000 parks, trails, schoolyards, and iconic outdoor places, raised \$84 billion in public funding for parks and public lands, and connected more than 9 million people to the outdoors.

Connecting everyone to the outdoors™

Taj Schottland

Associate Director, National Climate Program
Trust for Public Land

Taj.schottland@tpl.org





BURLINGTON
PARKS
RECREATION
WATERFRONT
VERMONT

+



+

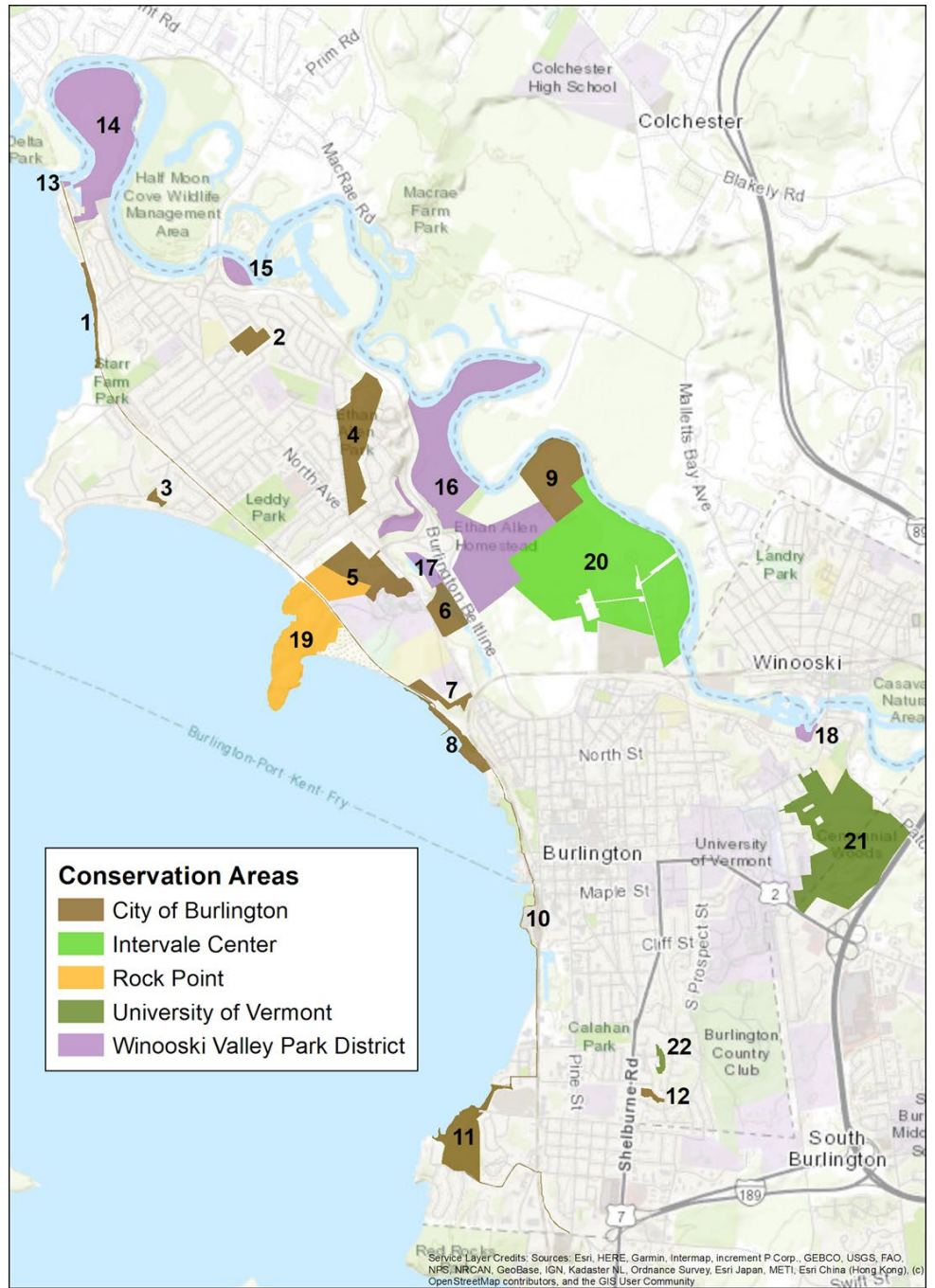


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Follow the Blaze!

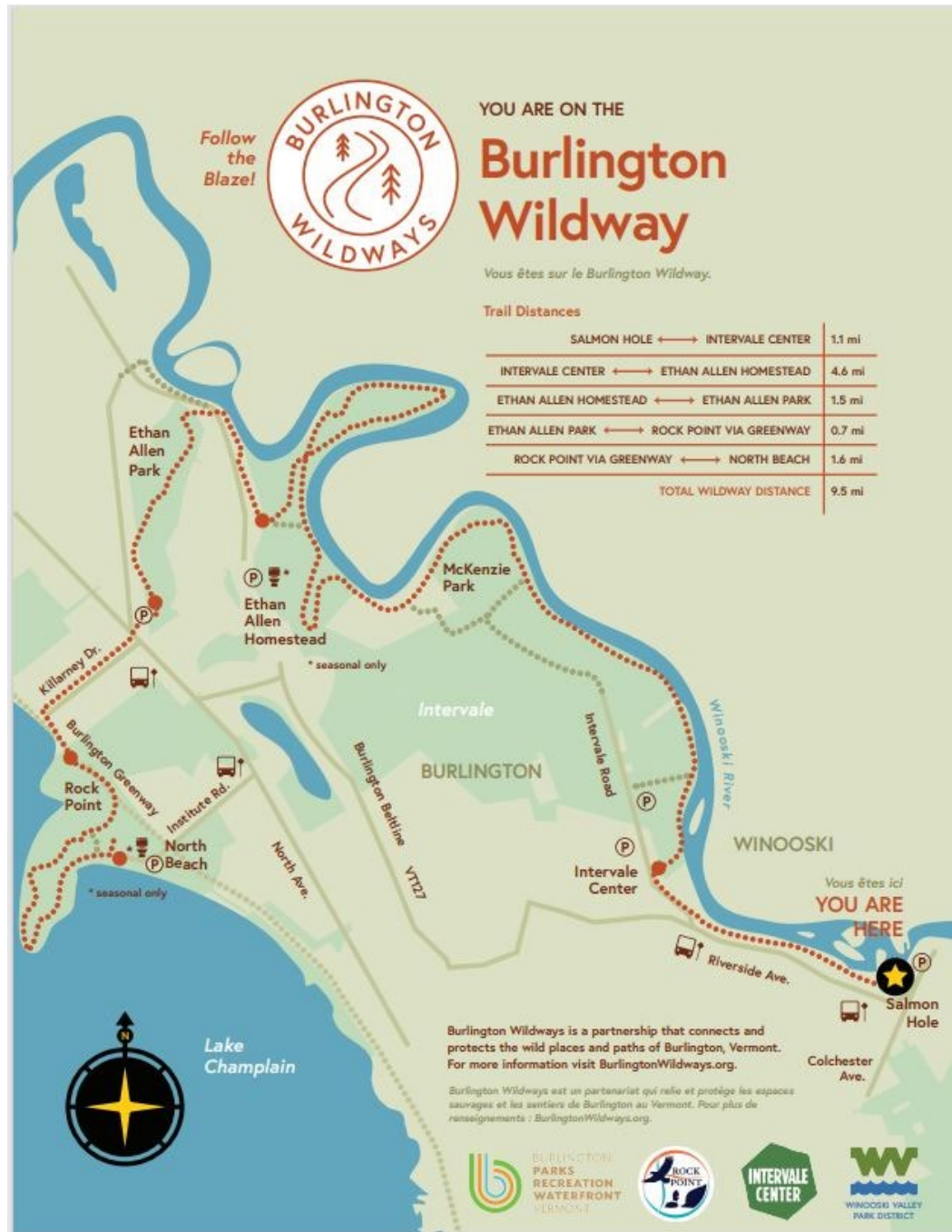


YOU ARE ON THE Burlington Wildway

Vous êtes sur le Burlington Wildway.

Trail Distances

SALMON HOLE ←→ INTERVALE CENTER	1.1 mi
INTERVALE CENTER ←→ ETHAN ALLEN HOMESTEAD	4.6 mi
ETHAN ALLEN HOMESTEAD ←→ ETHAN ALLEN PARK	1.5 mi
ETHAN ALLEN PARK ←→ ROCK POINT VIA GREENWAY	0.7 mi
ROCK POINT VIA GREENWAY ←→ NORTH BEACH	1.6 mi
TOTAL WILDWAY DISTANCE	9.5 mi



Lake Champlain

Burlington Wildways is a partnership that connects and protects the wild places and paths of Burlington, Vermont. For more information visit BurlingtonWildways.org.

Burlington Wildways est un partenariat qui relie et protège les espaces sauvages et les sentiers de Burlington au Vermont. Pour plus de renseignements : BurlingtonWildways.org.



Question:

**Why bother with
conservation in Burlington?**

**Isn't that what the rest of the
state is for?**

Answer: ???











Answer:

**Cities are very often
in interesting spots
ecologically!**



Answer:

Cities are the population centers!

Urban nature creates lovers of urban nature!

We won't grow an inclusive, next generation of climate and conservation leaders without access to nature – right here in the city



Answer:

**Cities can
(sometimes) do
things that other
areas can not
do! And they
get some
amazing results.**



Question:

Why frame conservation work and climate action as the same thing?

Answer:

Because they are AND...

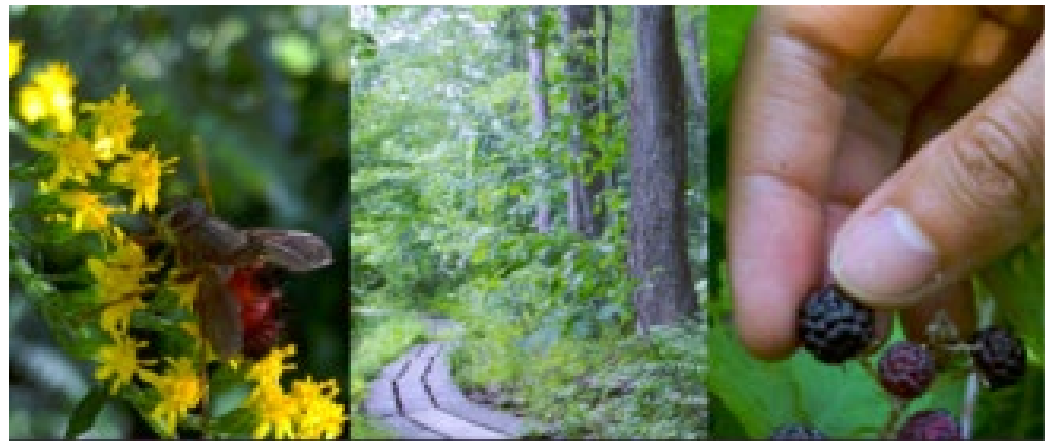


Effective communication strategies are important!

Arboreal Ecosystems Process (No)
Life in the Forest (YES)

Riparian Buffers (No)
River Edge(YES)

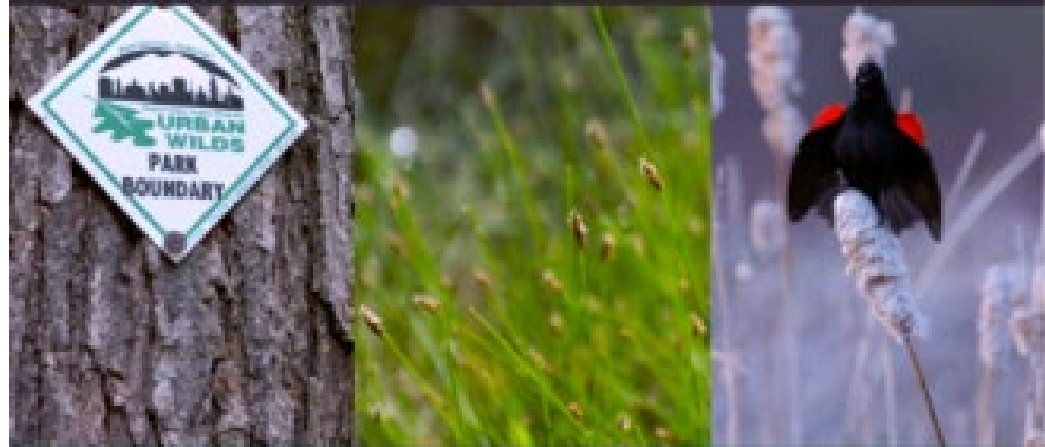




NATURE-BASED CLIMATE SOLUTIONS

An Addendum to the Burlington Open Space Protection Plan

February 2022

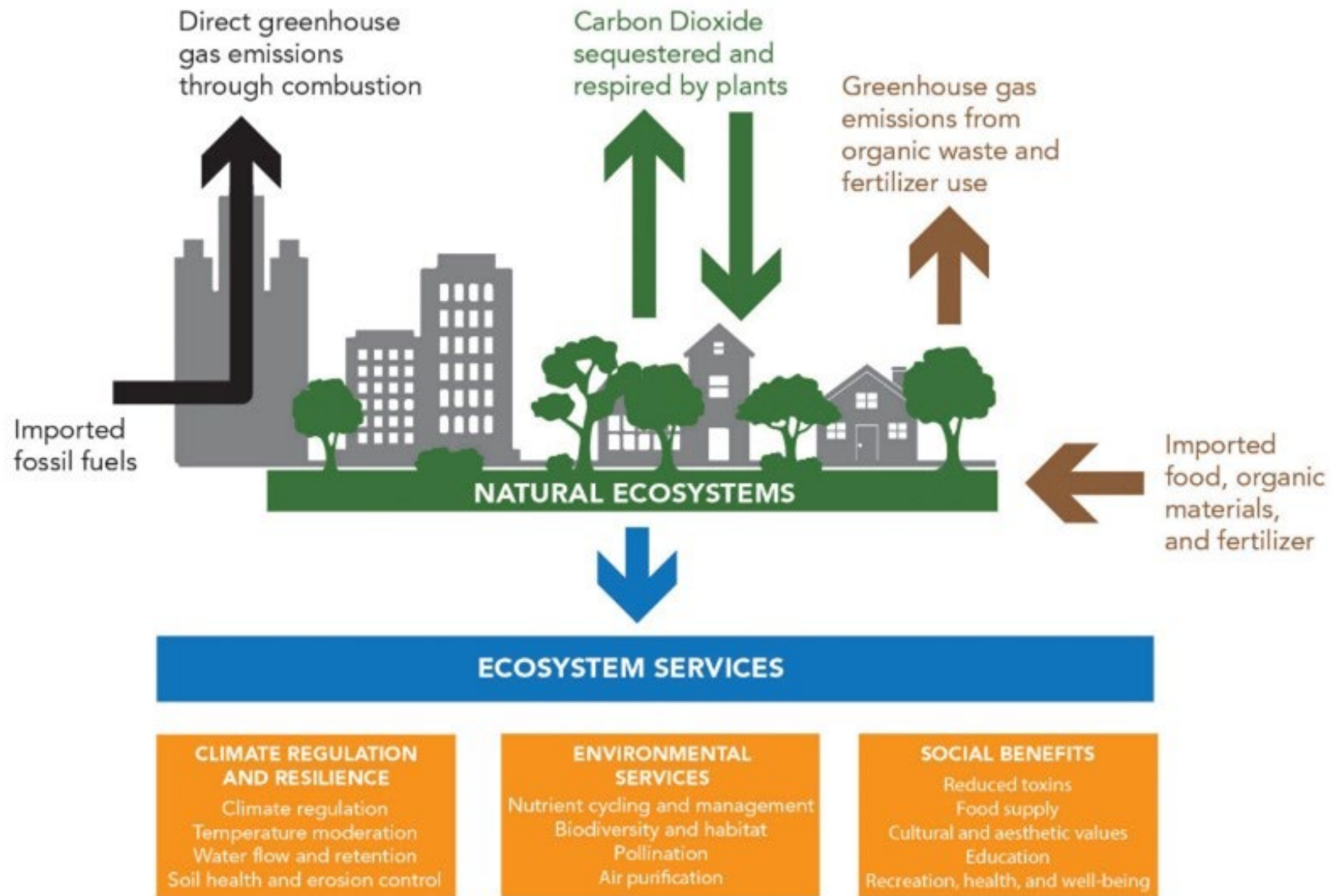


NET ZERO ENERGY

BURLINGTON VERMONT

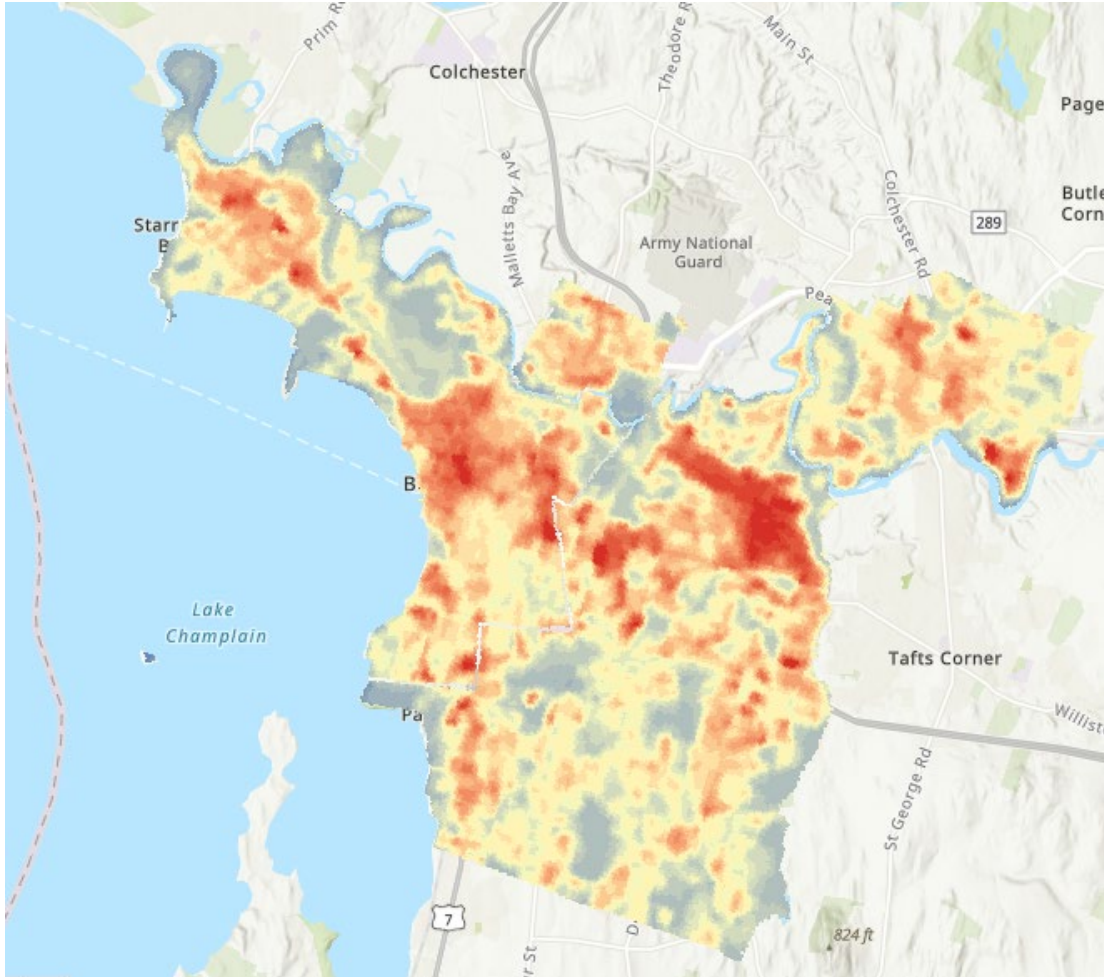


**BURLINGTON'S NET ZERO ENERGY GOAL IS
TO REDUCE AND EVENTUALLY ELIMINATE FOSSIL FUEL USAGE IN HEATING AND GROUND TRANSPORTATION.**



New study reveals Burlington is trapping heat on par with much larger cities

By Grace Benninghoff
Jul 18 2021



Urban heat islands

How we design our communities matters

We have an opportunity to begin addressing structural inequities and improve quality of life for those who are most vulnerable

Source: Trust for Public Land National Heat Island Data:
<https://www.arcgis.com/home/webmap/viewer.html?layers=0b71ede748004d5cb6bc088b05d3529a>

Burlington's NBCS Plan

Six Focus Areas

Water and Wetlands

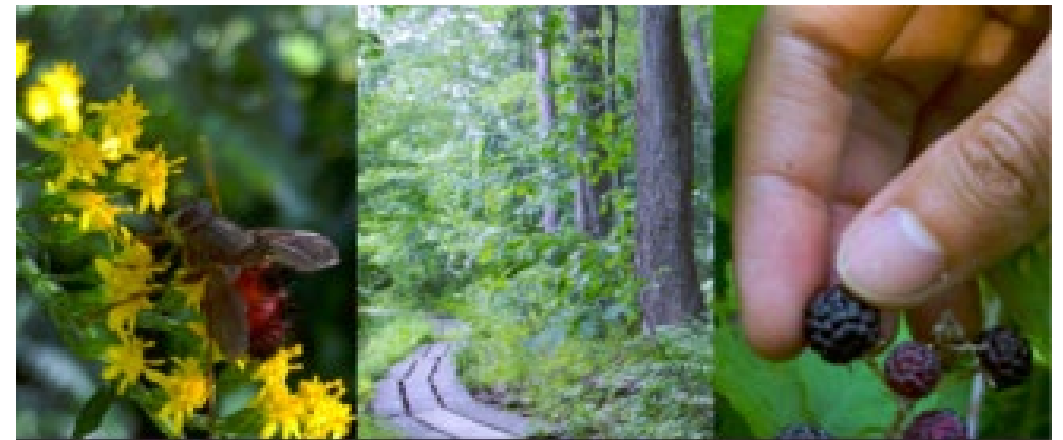
Lawns, Fields, and Small Open Spaces

Agriculture and Community Gardens

Green Infrastructure

Urban Forests and Tree Canopy

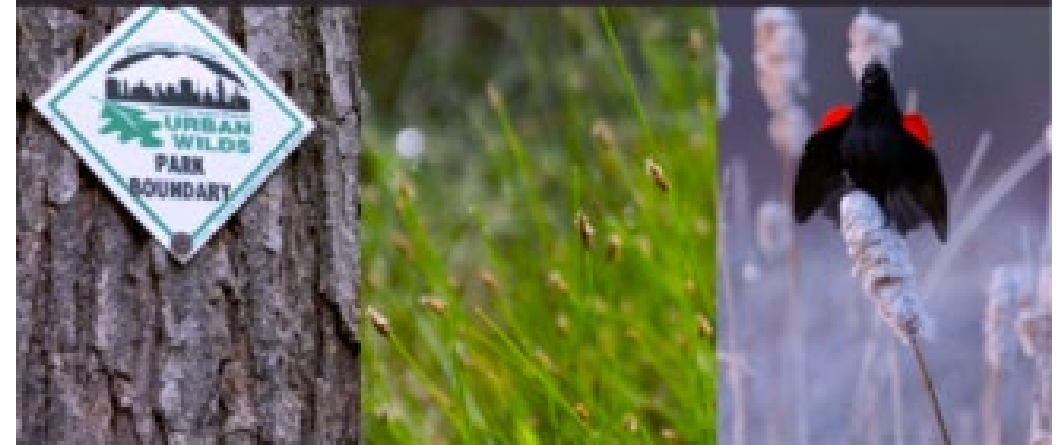
Equity, Inclusion and Relationships



NATURE-BASED CLIMATE SOLUTIONS

An Addendum to the Burlington Open Space Protection Plan

February 2022





	total CO2 sequestered annual	pounds CO2 sequestered	\$ value of lifetime CO2 sequestered
Plot #1	68.30	24.20	67,382
Plot #2	63.94	27.87	41,952
Plot #3	42.41	14.22	42,195
Plot #4	40.02	14.02	82,446
Plot #5	29.03	11.76	93,777
Plot #6	29.03	11.68	674,138
Plot #7	34.27	8.28	228,577
Plot #8	11.12	18.93	654.7
Plot #9	10.1	22.96	542.12
Plot #10	10.16	22.18	893.89
Plot #11	10.16	18.98	616.12
TOTAL	344.16	8.96	62,210
147 trees - total 10 pounds carbon		8,264	287,883
			8,300

Burlington area in m2
 forested area m2
 dollar value benefits per 1100m2
 total dollar value BTY forest ann
 pounds carbon sequestered ann
 total pounds carbon sequestered
 value of carbon sequestered ann
 value of carbon sequestered ann
 average lbs carbon emissions fr
 number of cars BTY forests can
 pounds of carbon emissions fror
 Total sequestered (lifetime) lbs c
 Total sequestered (lifetime) lbs c
 Value of total sequestered (lifetime)
 Value of total sequestered (lifetime)



FRIDAY
 Morning Meeting
 Urban trees
 Lunch
 Natural Science
 SDG/Dance
 CIRCLE
 Closing Meeting

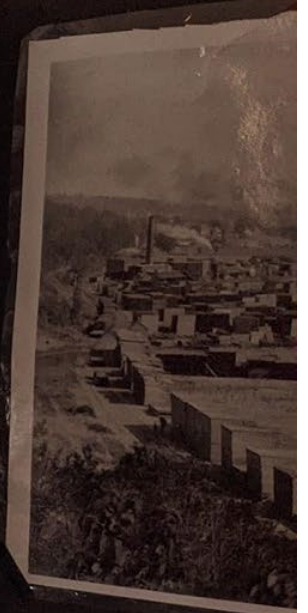
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100% \$ % .0 .00 123

	A	B	C	D	E	F	G
3		Total benefits \$	\$ value CO2 sequestered (annual)	pounds CO2 sequestered (annual)	pounds lifetime CO2 sequestered	\$ value of lifetime CO2 sequestered	Burlington area in m2
4	Plot #1	85.39	24.31	0.1	67,392	1,567.40	forested %
5	Plot #2	63.04	27.87	0.1	41,551	966.37	forested area m2
6	Plot #3	42.44	14.22	611.55	25,435	586.9	dollar value benefits per 1100m ²
7	Plot #4	40.62	14.01	602.49	22,783	529.87	total dollar value BTV forest ann
8	Plot #5	23.92	11.76	505.77	10,352	240.77	pounds carbon sequestered ann
9	Plot #6	26.53	15.68	674.19	16,750	389.56	total pounds carbon sequestered
10	Plot #7	16.37	5.25	225.57	4,095	95.23	value of carbon sequestered ann
11	Plot #8	62.13	18.93	814.7	68,175	1,608.82	value of carbon sequestered ann
12	Plot #9	33.7	12.58	541.12	13,577	315.77	average lbs carbon emissions fr
13	Plot #10	53.95	22.18	953.69	23,763	552.67	number of cars BTV forests can
14	Plot #11	68.06	18.96	815.12	62,210	1,446.84	pounds of carbon emissions from
15	TOTAL	516.15	186	5,744	357,083	8,300	Total sequestered (lifetime) lbs c
16							Total sequestered (lifetime) lbs c
17	0-2" trees - add 5 pounds carbon						Value of total sequestered (lifeti
18							Value of total sequestered (lifeti
19							
20							
21							
22							

Sheet1 - BCL tree plots

Explore



Ties to Economic Resilience

Existing Tree Canopy

50% Tree Canopy

Carbon Storage

96,446 tons \Rightarrow \$ 16,400,000

179,000 tons \Rightarrow \$ 27,000,000

Carbon Sequestration

2,000 tons annually \Rightarrow \$ 355,000 annually

5,200 tons annually \Rightarrow \$ 586,000 annually

Air Pollution Removal

5,700 pounds annually \Rightarrow \$ 223,000 annually

13,400 pounds annually \Rightarrow \$ 223,000 annually

Avoided Stormwater Runoff

43.8 million gallons annually \Rightarrow \$ 390,000 annually

123.3 million gallons annually \Rightarrow \$ 1,100,000 annually





