Connecting the **RIGHT SIDE** OF THE TRACKS

A Plan for Windsor's Riverfront

About this document

This plan is a product of the Better Connections multi-agency grant program.

The following individuals have been essential partners in this effort.

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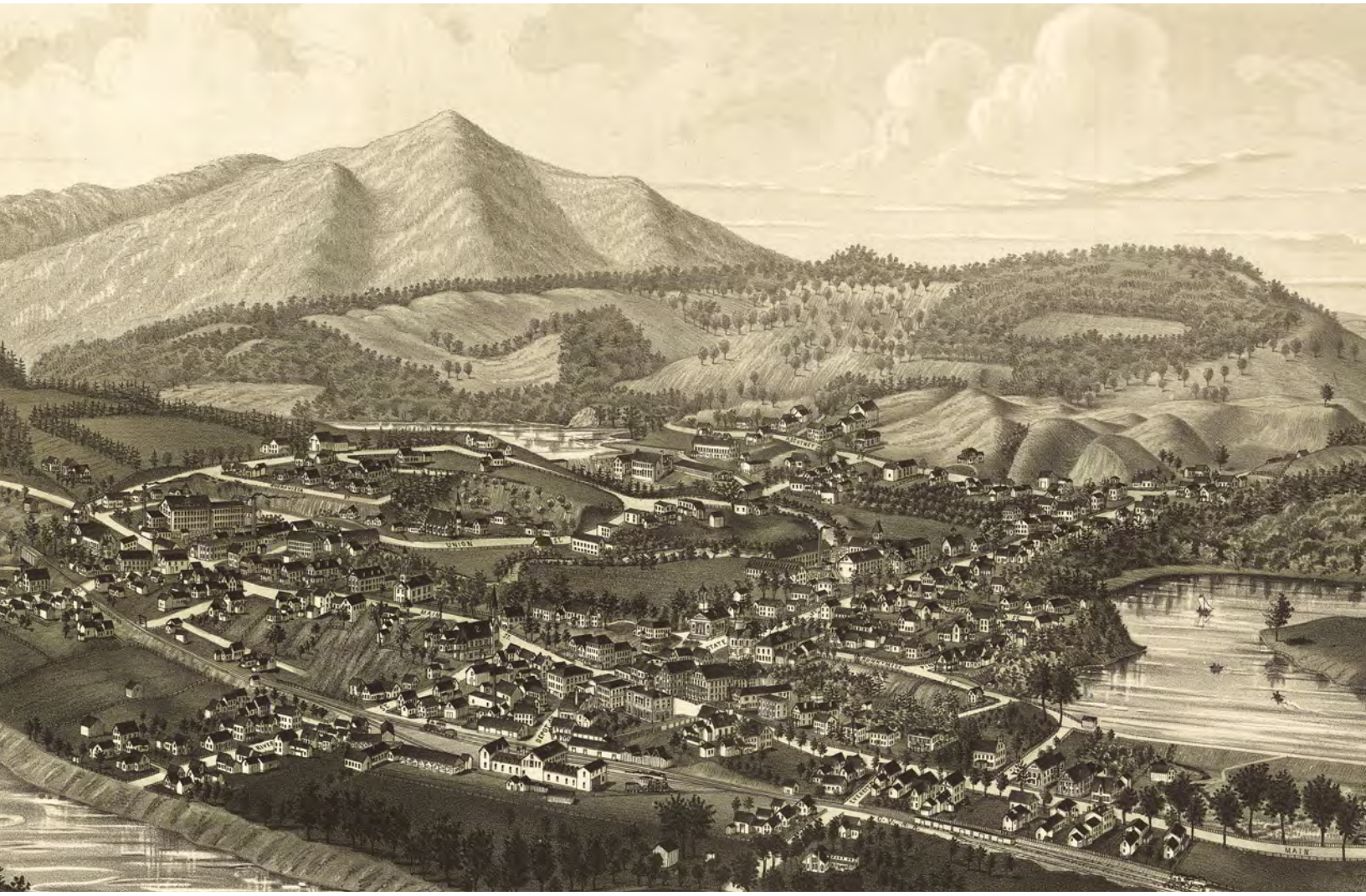


Riverfront Master Plan

This master plan describes a vision for the Windsor Riverfront (shown on map to the right) and defines opportunities to coordinate public and private investments and policies to bring this vision to reality. With an overarching goal of a healthy, and vibrant downtown, this plan has the following focuses:

Placemaking. The area has many assets including architecture, the Connecticut River, the Cornish-Windsor Covered Bridge and views of Mt Ascutney. By creating more welcoming and attractive places to enjoy these assets, the Riverfront will attract more visitors, residents, businesses and investment.

Access and circulation. The road and street network developed in an era when railroads and walking were the primary means of transportation. Today, it provides poor accessibility for both businesses and residents. For the next generation of redevelopment, the street network needs to be knitted together and rationalized to provide an accessible, safe and resilient street network.

A clean environment. The Town of Windsor is working to address the area's environmental contamination in ways that supports the vision defined in this plan of healthy place to live and work. Innovative options such as using plants to clean the soil and water, or manage public access, can be used to meet multiple goals.

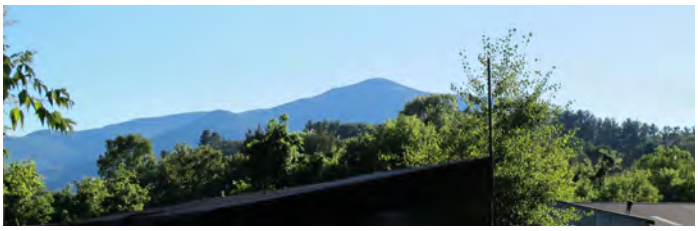
Clean and efficient energy. Several brownfield sites in the riverfront have high potential for solar generation, providing an economically productive use for marginal land and clean power for small scale manufacturing or growing enterprises, all with little visual impact.

Resiliency. Much of the riverfront is in the floodplain, and some is in the floodway. Creative approaches to adapting structures to be resilient to flooding are imperative for successful regeneration.

Regeneration. The relics of Windsor's industrial past present opportunities for revitalization and adaptive reuse. Encouraging new businesses and embracing the creative economy will bring more people into Windsor's downtown, increasing its economic vitality and vibrancy.

How this plan is organized

The plan is organized into the following sections:



Attachments

Market Analysis for the Town of Windsor, Vermont (*Camoin Associates*)
Brownfields Site Information (*DuBois & King*)
Wayfinding Plan (*DuBois & King*)
Zoning Recommendations (*DuBois & King*)

How to Use This Plan

The most important thing about this plan is that it describes a unified, coherent vision for the Riverfront area that responds to the realities of the environmental and economic conditions in Windsor today. As projects advance and implementation unfolds, there will no doubt be some adjustments to achieve the vision, but this plan provides a place to start.

Welcome to Windsor

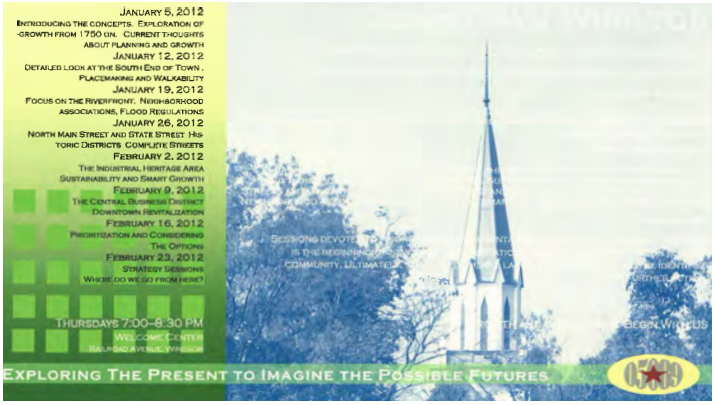
Windsor has a rich history, and been home to many things over the years:

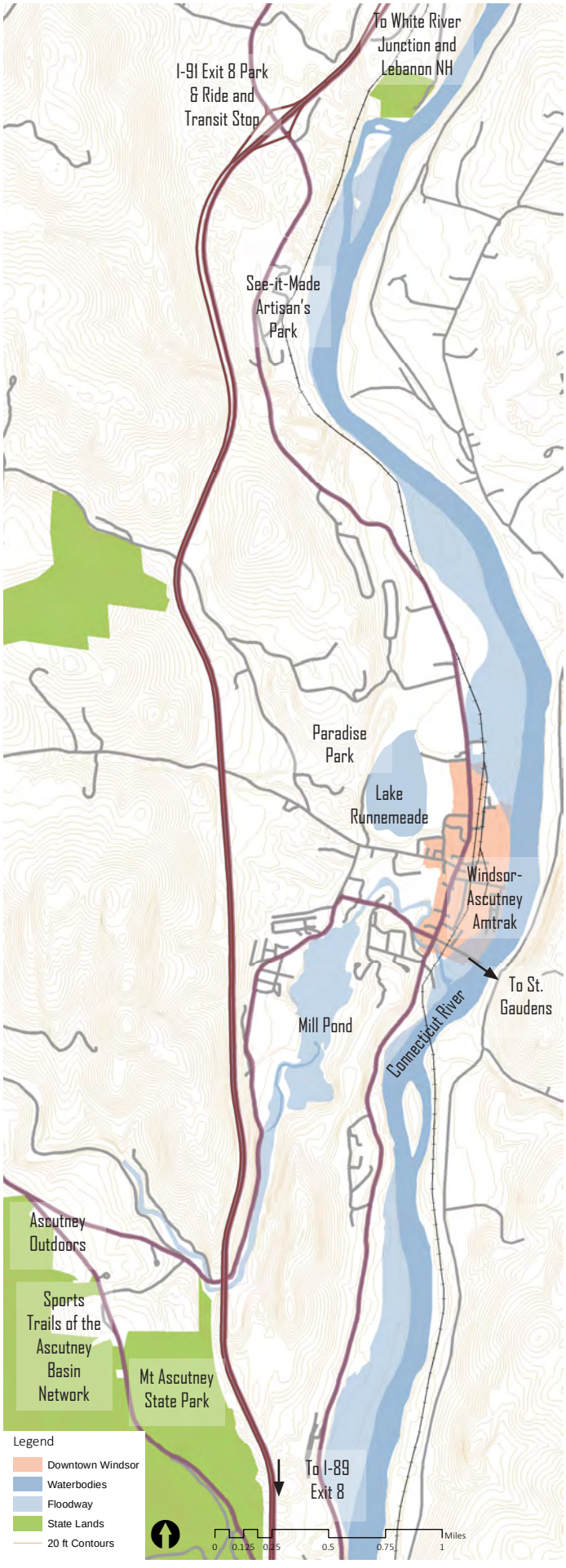
- The birthplace of Vermont
- The birthplace of the Central Vermont Railroad
- A hub of the Cornish Art Colony
- A hotbed of Precision technology

The town's proximity to the Upper Valley region of Vermont and New Hampshire, which has low unemployment and generally high real estate values in its core, makes Windsor ripe for investment and redevelopment due to its proximity and relative affordability. Its downtown is appealing and walkable, with many attractive historic buildings. Within a few miles of Windsor there are many locally and regionally significant places:

- Mt Ascutney State Park
- The Connecticut River
- St Gaudens Historic Site
- Mt Ascutney Hospital
- See-it-made Artisan's Park
- Lake Runnemeade
- Mill Pond
- Paradise Park
- Ascutney Outdoors
- Sports Trails of the Ascutney Basin network
- Windsor-Ascutney Amtrak Station

Windsor's designated downtown has had an active program for many years, providing a foundation for this plan. In 2012, a series of lectures and walking tours on *Reimagining Windsor* began this planning process, and led to the consideration of many ideas that are tied together and updated in this plan (see works-in-progress, next page).





Windsor Riverfront Master Plan

Works in Progress

There are many planned or proposed projects that need to be weaved together into the master plan.


Railyards Sculpture Park
Main Street Housing Opportunity
Park and Ride
River Street Sidewalk
Future Multi-use rail-with-trail
Floodproofing Demonstration
Future Solar Farm for Artisan's Park
Woodworkers Co-working Space
Goodyear Campus
POINT SHOP LN
RIVER ST
APOTHECARY LN
CENTRAL ST
FOSTER AVE
ACME ST
ETTA FRAISER DR
CROSS ST
MARCY CT
DURKEE ST
DURKEE ST EXT
UNION ST
MCCARTY AVE
NATIONAL ST
JARVIS ST
BRIDGE ST
Legend
buildings
Floodway
Waterbodies
Parcels
Contours (1 ft)
0
100
200
400
600
800
Feet

Assets

> . . . lively, diverse, intense cities contain the seeds of their own regeneration, with energy enough to carry over for problems and needs outside themselves.
> *Jane Jacobs, The Death and Life of Great American Cities*

A plan should build upon the community's strengths and assets so that it will be sustainable and have a solid foundation. The following are some of Riverfront's most significant assets:

Scenery
Windsor's Riverfront has a stunning backdrop of Mt Ascutney, the Connecticut River, and the Cornish-Windsor Covered Bridge.

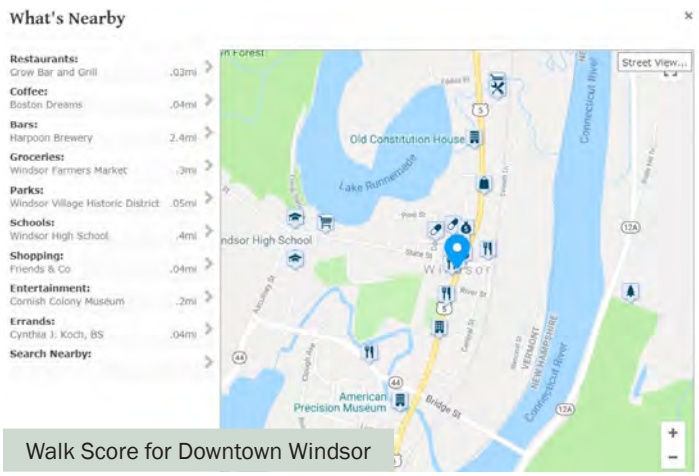
Walkability
Many things in walking distance of the Riverfront: schools, hospitals, grocery shopping, a hardware store and a train station. Many people are looking for a place to live or work where they can get around without a car, access and support local businesses, and have daily opportunities to connect with their neighbors.

Affordability
There are many underutilized buildings and properties in the Riverfront, providing a place ripe for creative adaptive reuse.

Utility Service
The Riverfront is served by multi-phase power, sewer and water. The immediate availability of this utility infrastructure is a benefit to future redevelopment and revitalization efforts.

Rail Service
Windsor has daily Amtrak passenger rail service right in the center of town, an unusual degree of access for a town of this size.

Can-Do Attitude
People in Windsor love their community, and are willing to invest time and money to bring the town forward. There is a strong network of civic organizations that are ready to meet the challenges and opportunities, epitomized by the Windsor Improvement Corporation.



Walk Score for Downtown Windsor

A New Economy

Industrial brownfield areas not unlike the Windsor Waterfront have utilized the arts to revitalize an underused former industrial site. For example a former brownfield, The Steel Yard, located in Providence's "Industrial Valley" has successfully revitalized such a location. When the 100-year Providence Iron and Steel Company closed in 2001, the property was seen as an opportunity for two young entrepreneurs. What began as an ad-hoc location for artists and designers, was eventually incorporated into an active non-profit organization that seeks foster the industrial arts and incubate small business within a creative environment of experimentation. The Steel Yard campus offers industrial arts classes for adults and area youth, a workforce training program, and fabrication space used by the organization and area artists. Windsor can similarly transform the Riverfront by welcoming and fostering creative enterprises.

Creative Economy

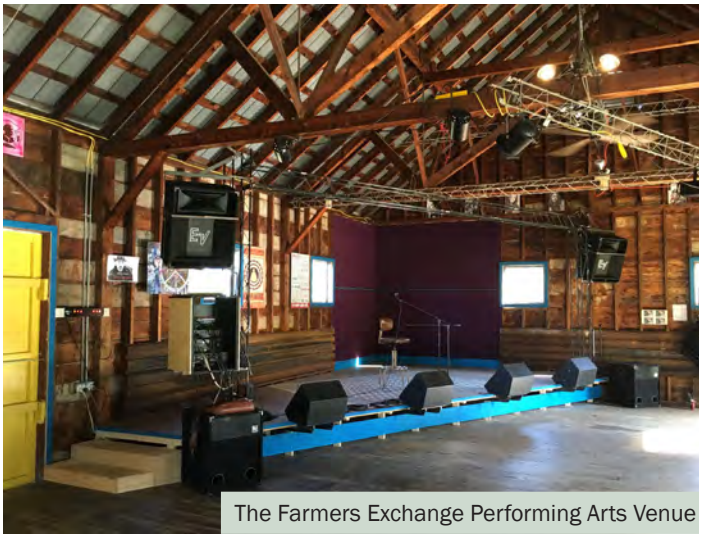
The East-Central Vermont (ECV) Creative Economy Report identifies the Creative Economy as including "commercial businesses, non profit organizations and individual creative entrepreneurs whose principal value is based on creative content and a relationship with the consumer." With the development of "Artisan Park," Windsor has played a role in the growth of the Upper Valley's Creative Economy. By focusing on the connection between creative, small-scale entrepreneurship and arts, Windsor can attract more businesses to the Riverfront.

Arts and Music

Enterprises in the Riverfront area are building on the many arts activities in the area and bringing people together. Performances and live music at the Farmers Exchange and the Windsor Station are bringing people to downtown. Building the local economy on a foundation of arts and music will make Windsor even more appealing place to live and work.

Small-Scale Manufacturing

With technological advancements and the emergence of a "maker" economy, the potential for entreprenurial small-scale manufacturing enterprises is significant. These businesses benefit from access to retail customers, and proximity to transit, housing and a diverse population of potential employees. Additionally, small manufacturing businesses benefit from being near each other. The successful Artisan's Park already brings people to the area. With large buildings, 3-phase power and utilities readily available, the Riverfront could be a place that provides an incubator for new enterprises, satellite locations for businesses have need more room and a place for related education and training.



The Farmers Exchange Performing Arts Venue

The Steel Yards, Providence, RI

Smelting Demonstration at The Steel Yards

Access and Circulation

Windsor's Riverfront has the potential to be a multimodal hub. Streets lined with sidewalks, Amtrak passenger rail service, and the potential for freight rail all exist. Plans for bicycle connections have been made, and projects are underway to fill in several gaps in the sidewalk network. Public transit services are available at exits 8 and 9 through *The Current.* Key circulation concepts in this plan include:

Preserve Railroad Access Connectivity

The Riverfront's past industrial uses evolved with railroad transport. While most smaller scale uses will rely on trucks for freight transport, rail access can provide a cost effective means of transporting bulk commodities, and should be preseved.

Repair the Street Network Connectivity

The streets in the Riverfront area evolved to serve specific needs of large industrial uses, when rail transportation was also a primary way to move both freight, and most employees walked to work.

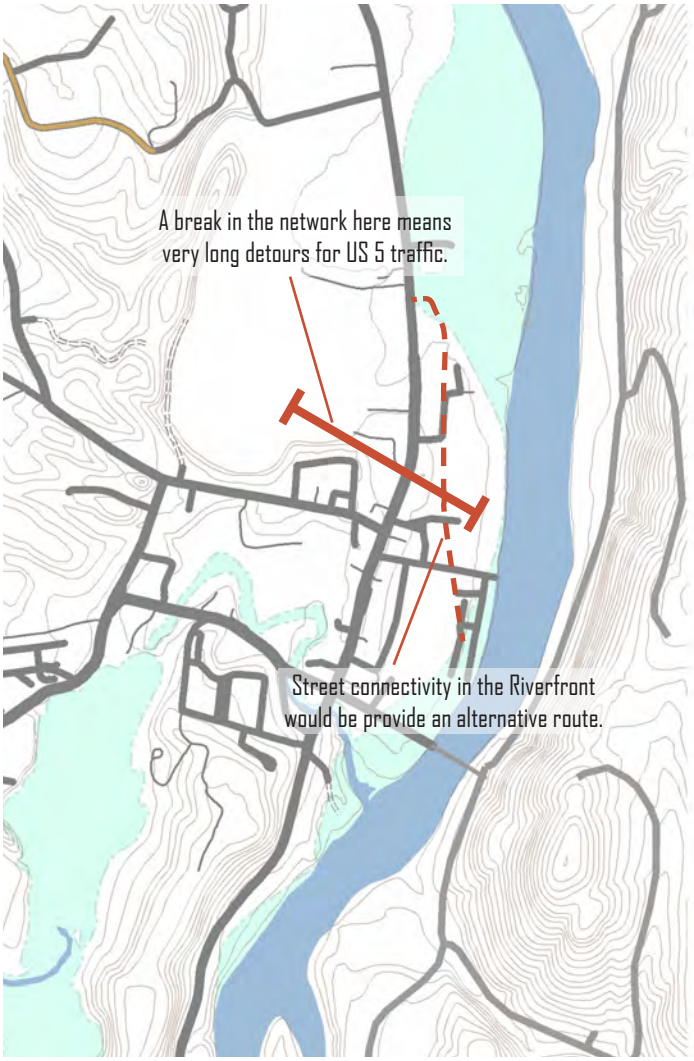
The existing accesses to many of the actively used buildings in the riverfront is highly circuitous (see first figure below), which hampers the visibility of and wayfinding to these businesses. A new connecting street can provide a single primary access to the Riverfront and knit these properties together. This new street should be designed to accomodate large trucks to ease access for freight movement.

Occupied commercial buildings (shown in pink) have circuitous and fragmented access routes, that makes these buildings difficult to find and challenging to access by truck.

The proposed connector from US 5 to the Goodyear Site would knit the Riverfront together with a coherent street network, and reduce impact of large trucks traveling through downtown.

Provide Redundancy

The proposed new connector through the Riverfront would also provide an alternate route in the event of a closure on US 5. The lack of redundancy in the heart of downtown means that an accident or road closure on Main St just north of State St could create would require a very long detour (see right).



Connect Dead End Streets

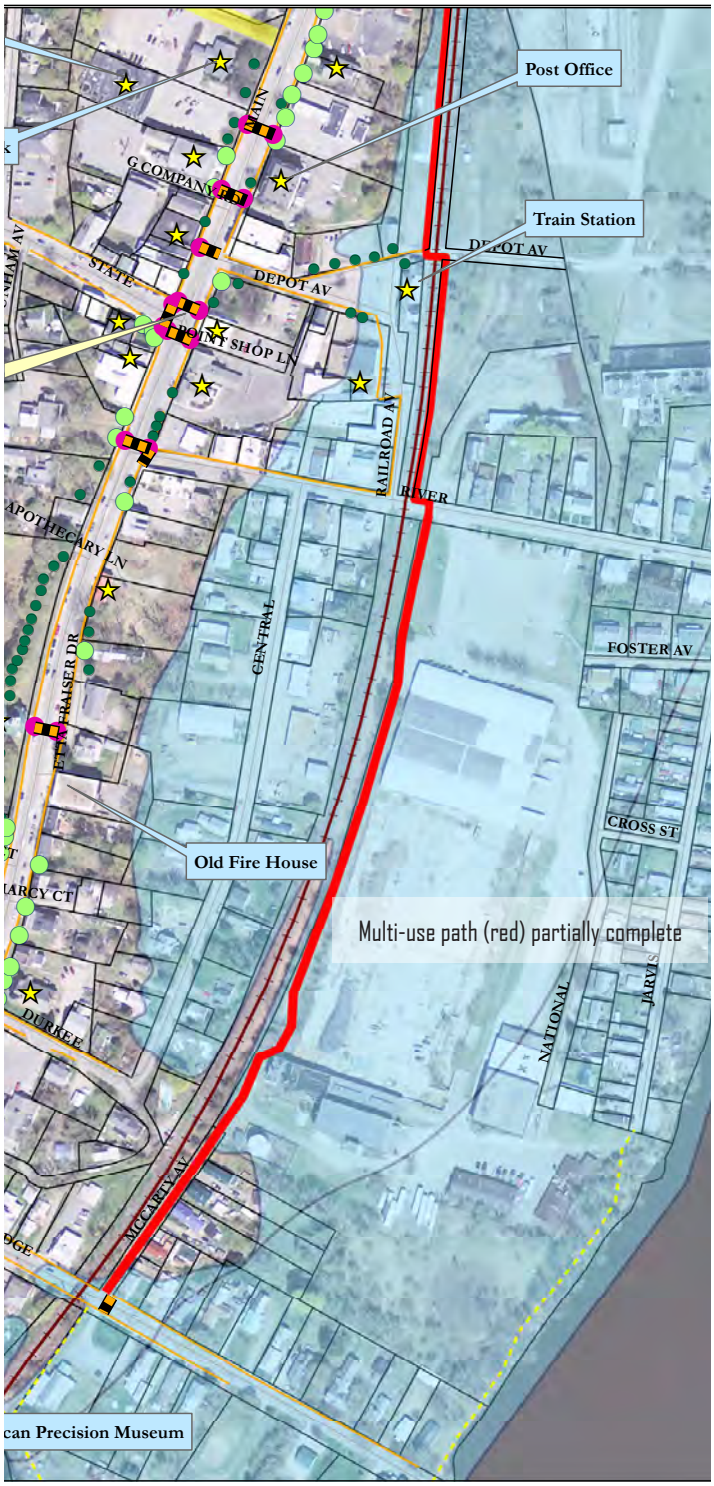
The majority of residents in the Jarvis and National Street neighborhood live on narrow, dead end streets (shown in red to the left). With the limited space for off-street parking, many residents must park on the street, creating a number of challenges:

- Emergency vehicle access is difficult with the combined narrow width and on-street parking.
- Larger vehicles cannot turn around after making deliveries.

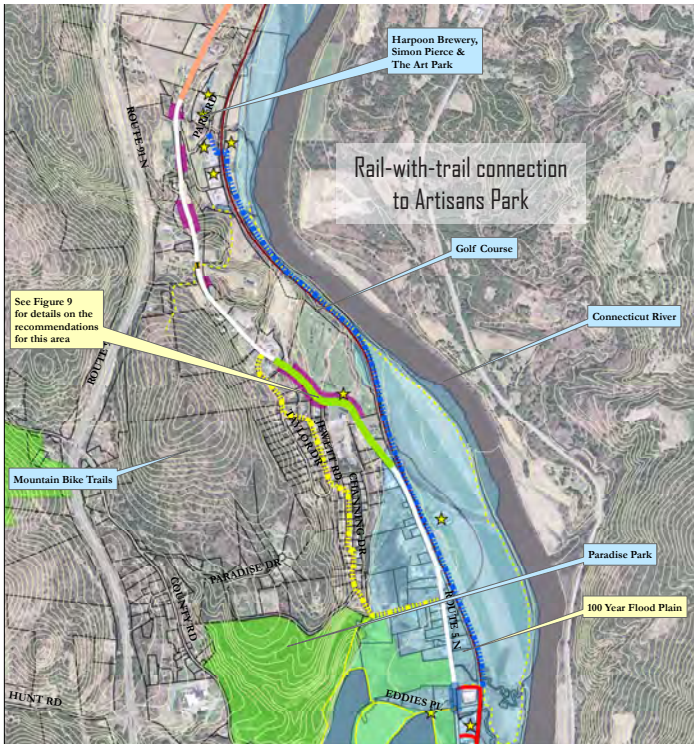
This plan presents street network concepts that will eliminate the residential dead-end streets by improving street connectivity.

Biking and Walking

In 2014, the Town of Windsor conducted a *Bicycle and Pedestrian Scoping Study* which lays out a plan for sidewalk improvements, pedestrian crossings, and bicycle infrastructure within downtown, and up to the Artisan's Park. Several projects have been implemented, and others are in process. Key elements of this plan include:



- Extending the sidewalk along River street (underway)
- Multi-use trail along the railroad, from Bridge Street to Artisans Park (partially completed)
- Streetscape and sidewalks to the northern gateway of downtown (future implementation project)



Public Transit

The Current provides commuter bus service to the Upper Valley from stops at the I-91 park and ride lots at exits 8 and 9. There are two runs to Hanover, and two to Lebanon each morning, returning in the afternoon.

Re-routing of *The Current* through downtown Windsor would bring regularly scheduled transit service within walking distance of many town residents, and could be possible if there is sufficient demand to justify the additional travel time.

The Connecticut River

"Seventeen percent of all structures in Windsor are located within the Special Flood Hazard Areas - the highest proportion of all Vermont Towns."

Community Flood Study, Windsor Vermont, 2014

The Connecticut River and its tributaries are the reason that Windsor developed here. Access to the river was historically a necessity for commerce, and to this day, the river continues to shape the community.

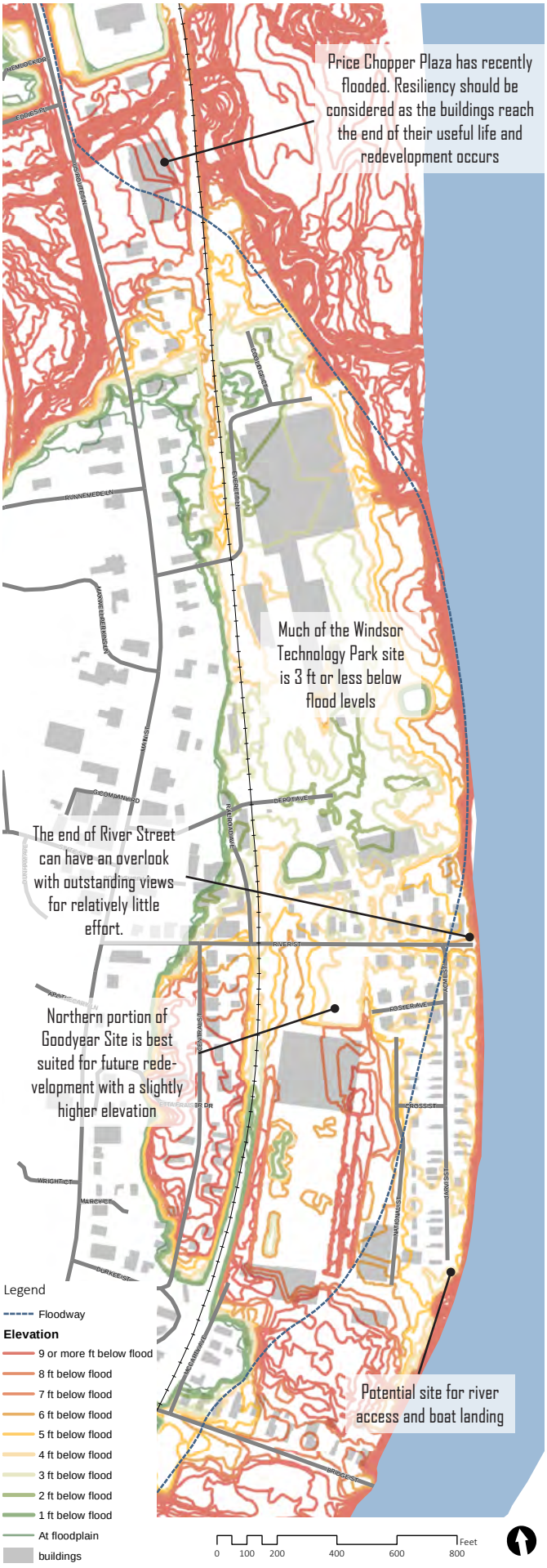
Flooding in Windsor has happened many times in the past - most significantly during the flood of 1927 - and will happen again, possibly with greater frequency and severity due to changing precipitation patterns. Much of the Riverfront area is located in the mapped (2007 FEMA, Flood Hazard Map) 100 year floodplain, and many structures are in the Floodway, greatly constraining the private investments that can be made without floodproofing.

The map to the right shows feet below base flood level (the estimated height of a 100-year flood), with the green contours being just below, and red contours being ten or more feet below flood levels. This means that permits are required to build or substantially improve a building, but development is possible.

View of River Street from flood (1927)

While the Connecticut River is close by, there are very few places for the public to get close to the river to enjoy its beauty or for recreation. There are two appealing opportunities described in this plan:

- The end of River Street provides outstanding views of the river, and can be configured to provide a viewing place for the public.
- At the south end of Jarvis St, remnant concrete structures could provide the foundation for a small boat access.



Riverfront Housing

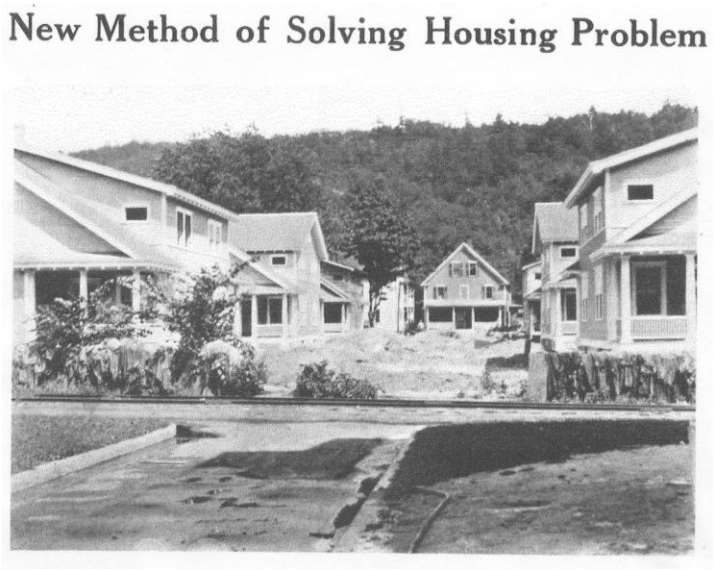
Some residents of the East Central Vermont region face extraordinary challenges finding housing that is both affordable and located near their jobs and needed services.

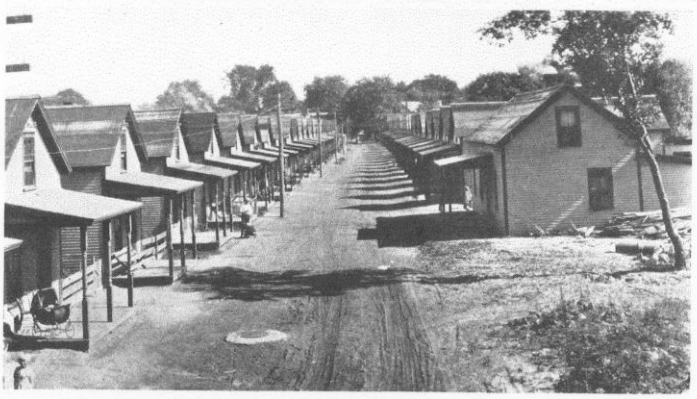
-Housing Needs in East-Central Vermont

Regionally, the need for housing is high due to the combined forces of low unemployment and few new housing units being constructed in the Upper Valley. Further, there is demand for senior-appropriate housing in locations that are accessible to transit, social opportunities, and services for down-sizing baby boomers. Windsor can market itself as a walkable, affordable, and vibrant community, appealing to both millennials and baby boomers seeking a close knit community. However, success will require improving the quality of Windsor's housing stock.

The Jarvis Street neighborhood has been an affordable and close knit community for over 100 years. These homes were constructed in an era when residents walked to work and very few families owned cars. Adapting to today's auto ownership patterns has created space issues with theneighborhood's narrow lots and streets. Off-street parking resources are needed so that the narrow streets are not blocked by parked cars.

This neighborhood has seen disinvestment due to the floodplain and floodway restrictions. Any signficant renovations must include floodproofing, which makes nearly any improvement project, even a kitchen renovation, unaffordable to residents. A recent demonstration project to elevate a Jarvis Street home above the flood level (see photo below) shows that there are affordable ways to achieve this. Plans are in the works for a financing mechanism that could provide assistance to homeowners seeking to floodproof and renovate their home.





Received this name when housing conditions first sounded the hurry-up call for more homes several years ago. About seventy houses have been built on the two streets, "National" and "Acme," and provide cozy though small homes for employes.

Brownfields

"Brownfield site" means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

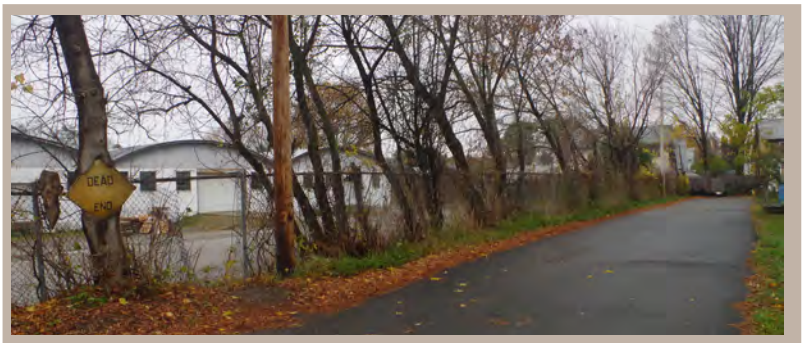
-USEPA

A History of Making Things

Windsor's riverfront was an active center of industry for decades, which contributed significantly to the community's historic identity. A history of innovation and industry leaves the downtown today with an array of resources including excellent opportunities for rail access and large buildings in walking distance to downtown, but also constraints such as soil contamination. The buildings are an asset to the community, but as with many industrial properties, there is the potential for environmental contamination.

While redevelopment of brownfields is more complicated and often more expensive than "greenfield" development, it is important to recognize that resources are available to contribute to the cost of cleanup if the owner is not directly responsible for contamination. There have been many examples of brownfields redevelopment projects that have provided significant benefits to communities in the form of job growth, enhanced economic vitality and a revitalized sense of community.

Several sites, including the Goodyear and Railyards, have already identified concerns that have been mitigated (see map above, right). With creative and context-appropriate remediation actions, these resources can have a future, economically productive life and continue to be an asset to the town. For public safety reasons, the land needs to be made clean and safe before redevelopment for new uses. Evaluation, permitting, cleanup and remediation will be ongoing efforts throughout the Riverfront. For any project involving public funds on the Windsor Technology Park site, a phase 1 environmental assessment will be required. More details on sites and opportunities is attached to this plan. Some implementation projects will require close coordination with the Agency of Natural Resources.



Fencing

The extend, appearance, and state of repair of fencing has an impact on the Riverfront. While active industrial uses require fencing for security and public safety, many fence lines have outlived their original purpose and create barriers and eyesores. Removing fencing that is no longer needed, and replacing necessary fencing with more attractive alternatives or through the use of vegetation is desirable.

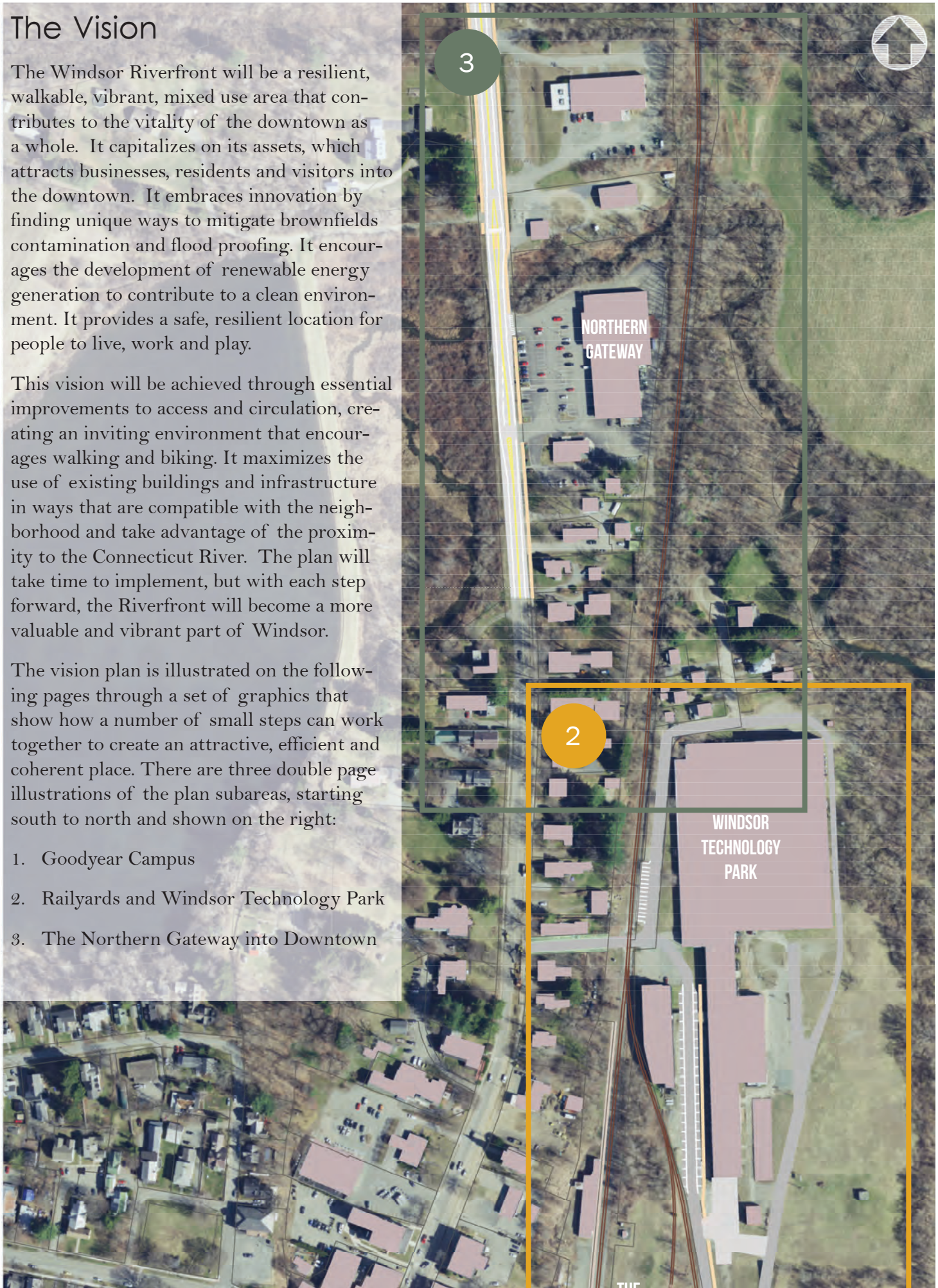
The Vision

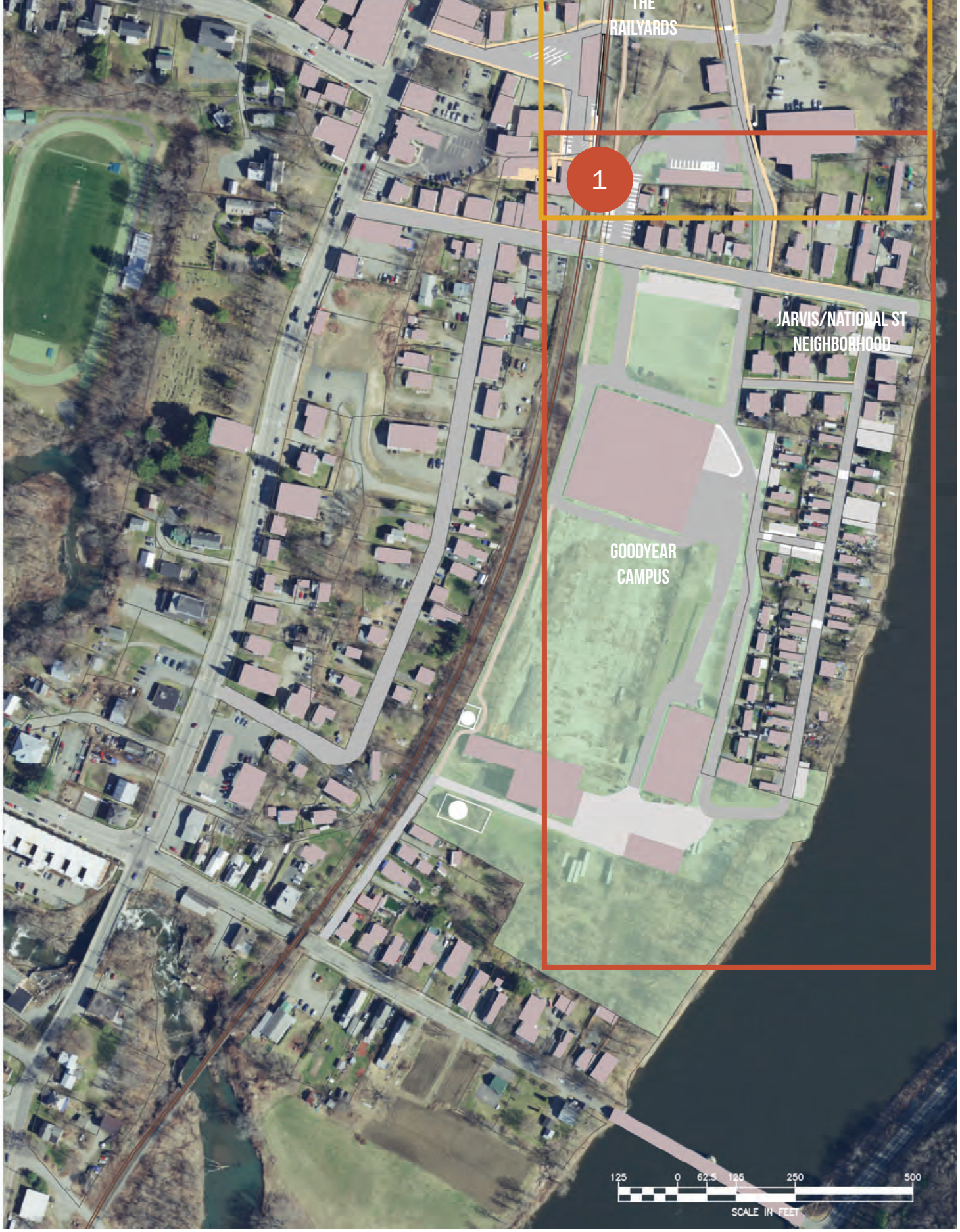
The Windsor Riverfront will be a resilient, walkable, vibrant, mixed use area that contributes to the vitality of the downtown as a whole. It capitalizes on its assets, which attracts businesses, residents and visitors into the downtown. It embraces innovation by finding unique ways to mitigate brownfields contamination and flood proofing. It encourages the development of renewable energy generation to contribute to a clean environment. It provides a safe, resilient location for people to live, work and play.

This vision will be achieved through essential improvements to access and circulation, creating an inviting environment that encourages walking and biking. It maximizes the use of existing buildings and infrastructure in ways that are compatible with the neighborhood and take advantage of the proximity to the Connecticut River. The plan will take time to implement, but with each step forward, the Riverfront will become a more valuable and vibrant part of Windsor.

The vision plan is illustrated on the following pages through a set of graphics that show how a number of small steps can work together to create an attractive, efficient and coherent place. There are three double page illustrations of the plan subareas, starting south to north and shown on the right:

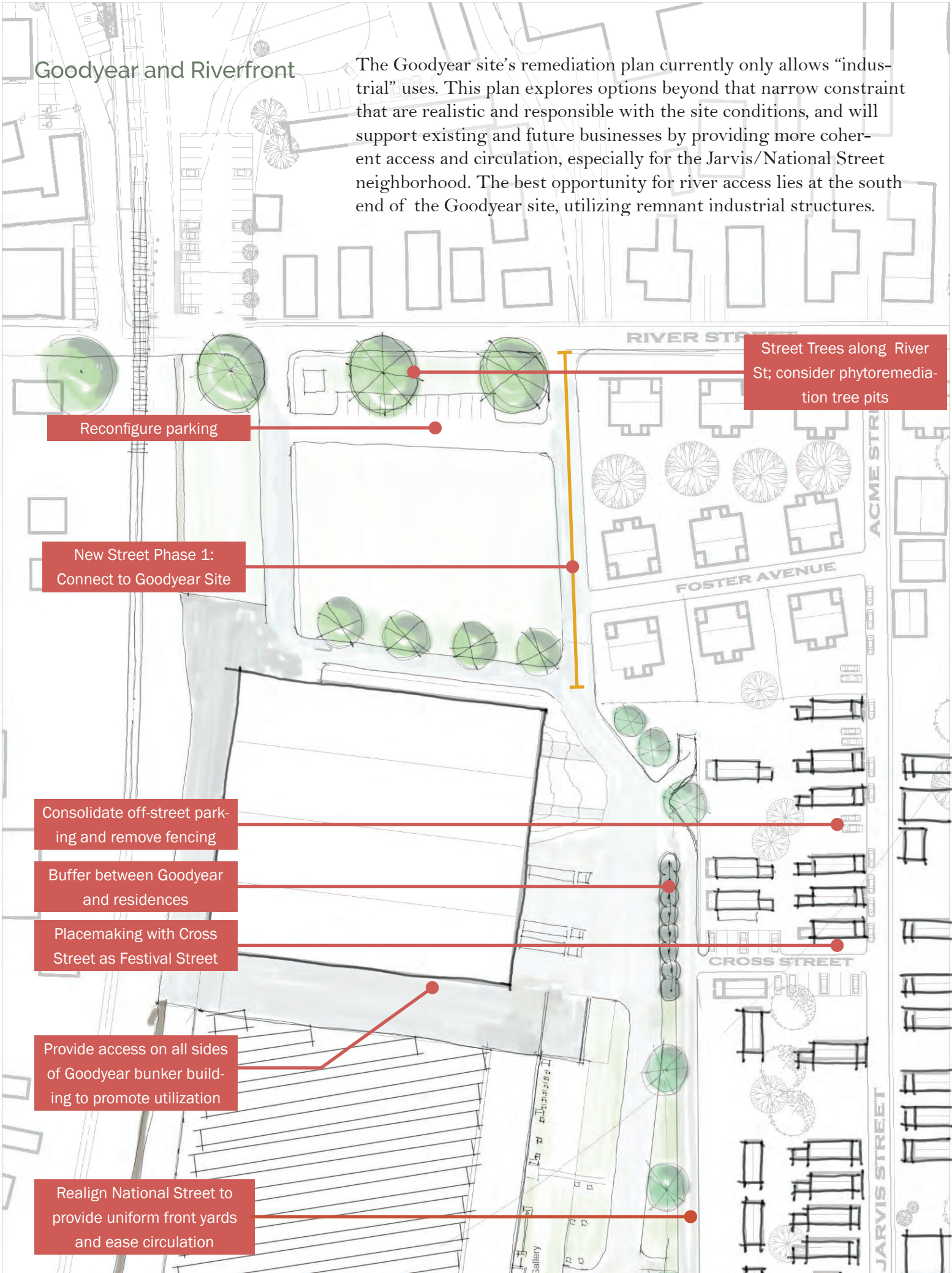
1. Goodyear Campus
2. Railyards and Windsor Technology Park
3. The Northern Gateway into Downtown

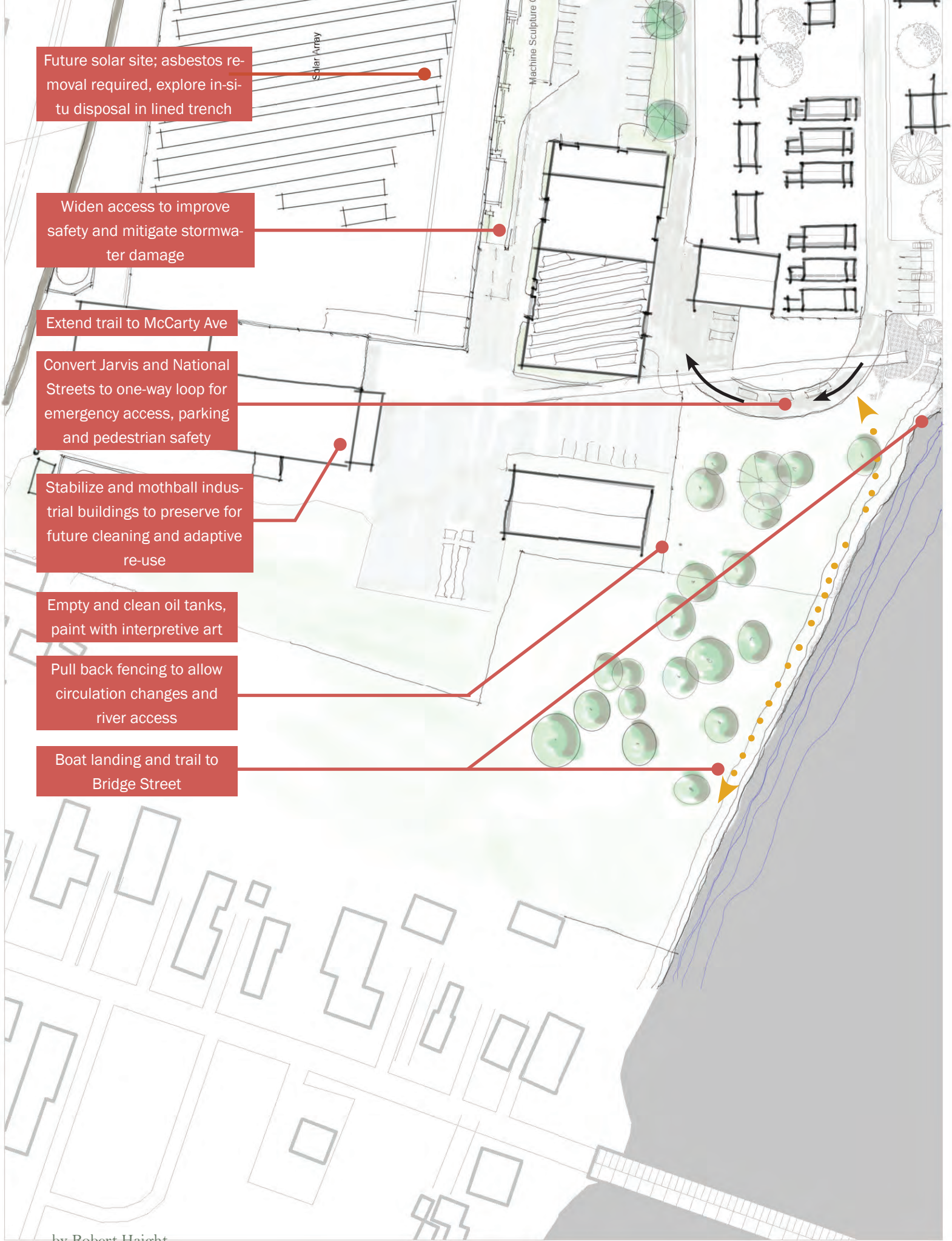



THE
RAILYARDS
1
JARVIS/NATIONAL ST
NEIGHBORHOOD
GOODYEAR
CAMPUS
125
0
62.5
125
250
500
SCALE IN FEET

Goodyear and Riverfront

The Goodyear site's remediation plan currently only allows "industrial" uses. This plan explores options beyond that narrow constraint that are realistic and responsible with the site conditions, and will support existing and future businesses by providing more coherent access and circulation, especially for the Jarvis/National Street neighborhood. The best opportunity for river access lies at the south end of the Goodyear site, utilizing remnant industrial structures.

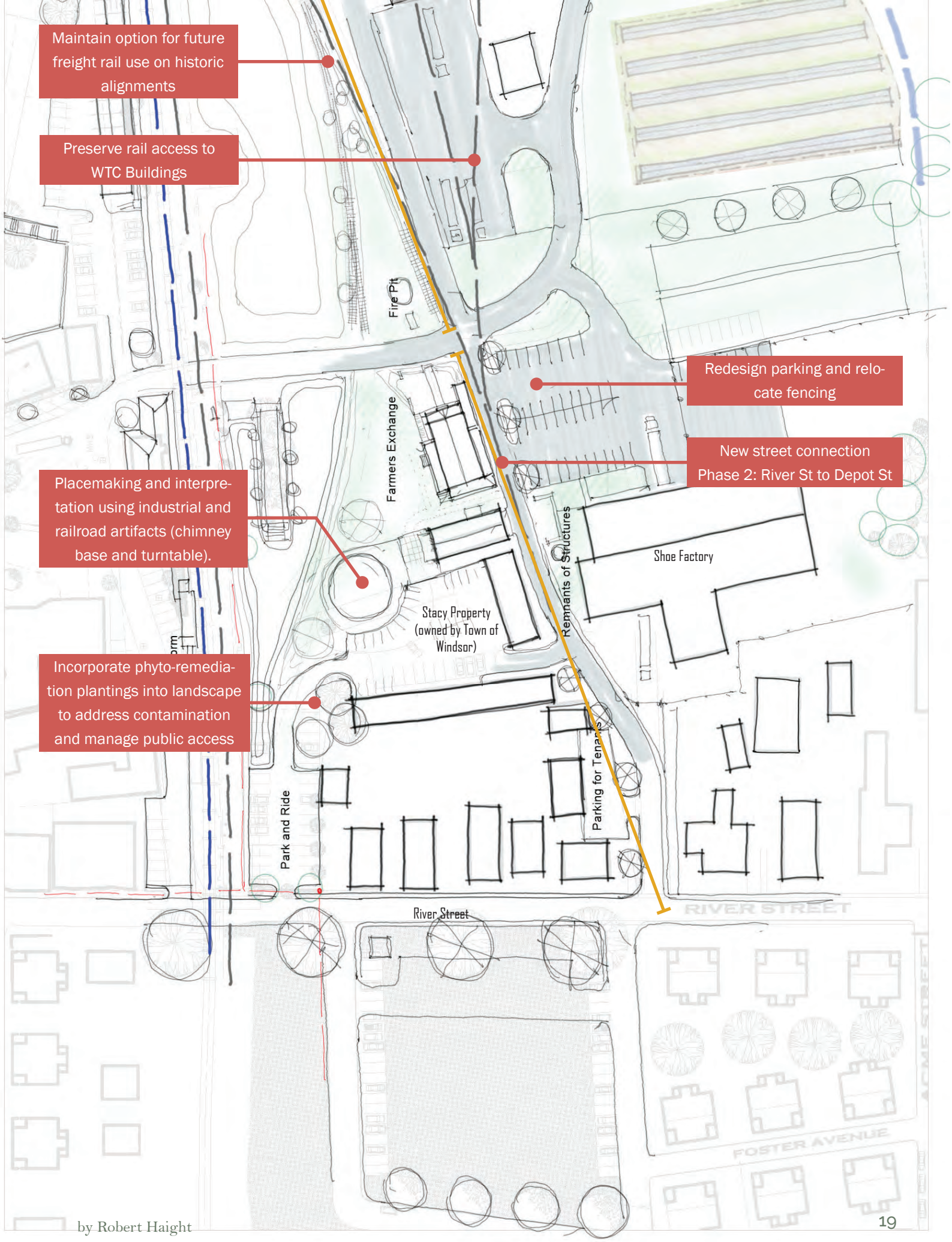




by Robert Haight

Railyards and Windsor Technology Park

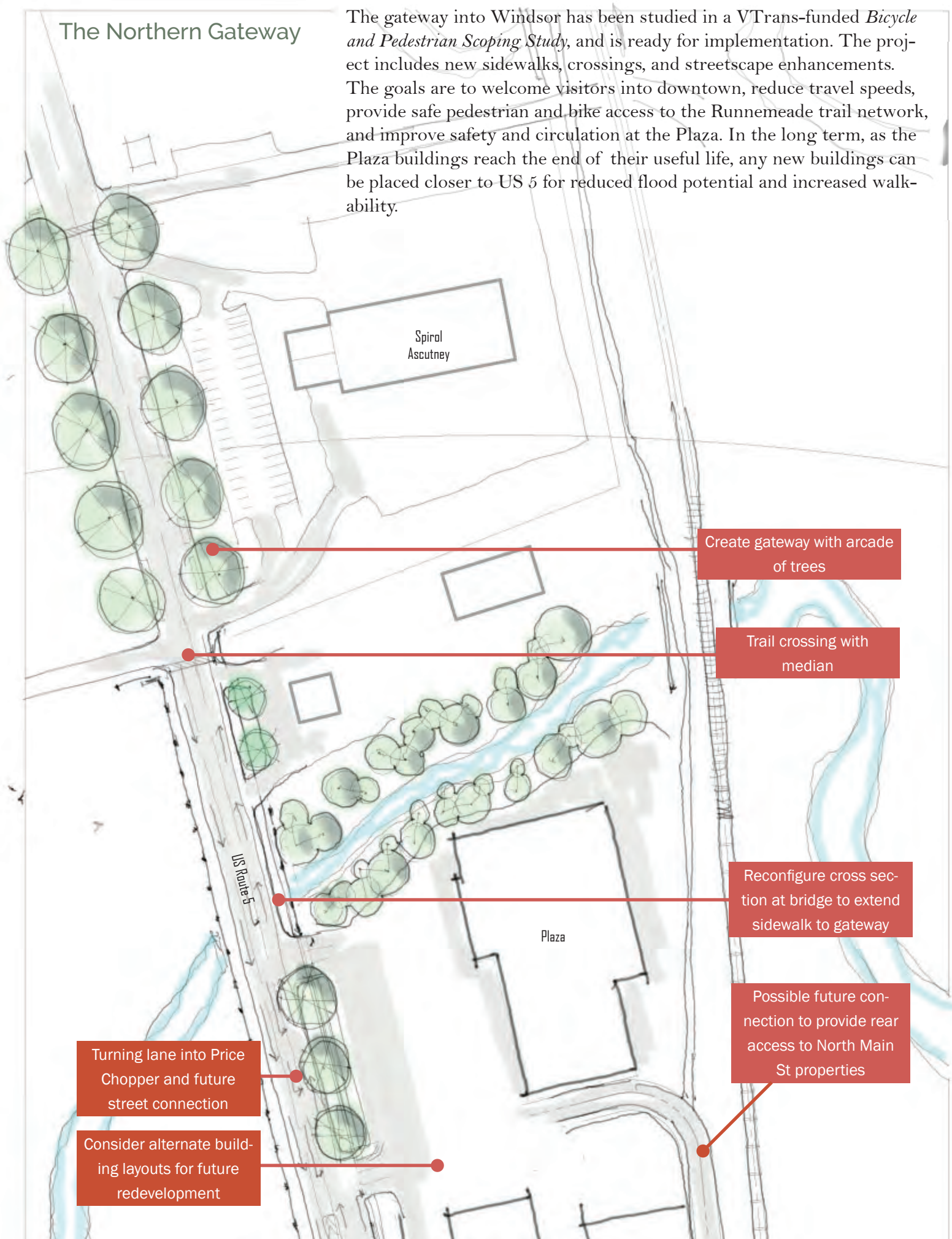
The Railyards are in transition and seeing positive change and investment, including a new Amtrak platform, park-and-ride lot, sidewalks on River Street, sculpture garden and performance space.The Windsor Technology Park site has outstanding building resources and solar potential, but a phase 1 environmental assessment will be needed before significant changes can be permitted.



by Robert Haight

The Northern Gateway

The gateway into Windsor has been studied in a VTrans-funded *Bicycle and Pedestrian Scoping Study*, and is ready for implementation. The project includes new sidewalks, crossings, and streetscape enhancements. The goals are to welcome visitors into downtown, reduce travel speeds, provide safe pedestrian and bike access to the Runnemeade trail network, and improve safety and circulation at the Plaza. In the long term, as the Plaza buildings reach the end of their useful life, any new buildings can be placed closer to US 5 for reduced flood potential and increased walkability.



Provide views and aesthetic railing at gateway

With some management of vegetation and replacing the guardrail with a more aesthetic alternative, a spectacular view of Lake Runnemeade and Mt Ascutney could form the gateway into downtown Windsor.

US Route 5

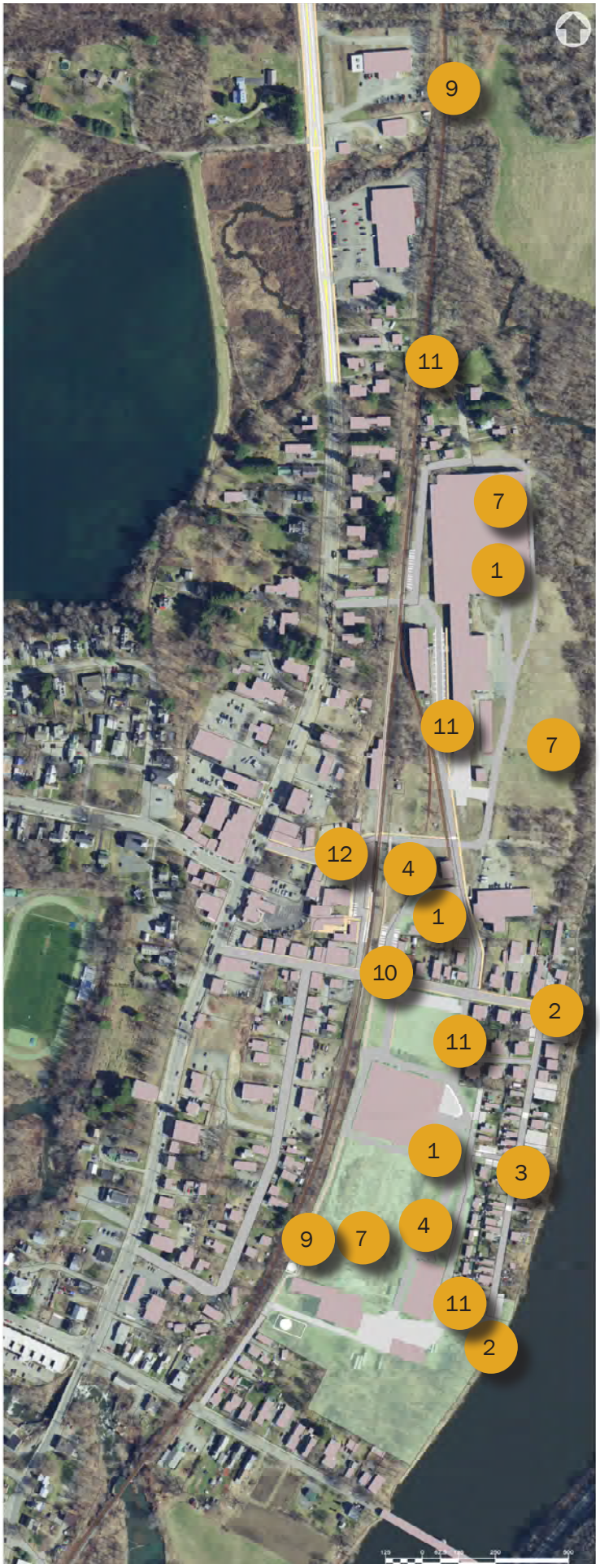
Everett Lane

by Robert Haight

Strategies

The following pages describe a wide variety of strategies that can be employed to achieve the vision, while addressing the Riverfront's many, and in some cases unique, opportunities and constraints.

1. Adaptive Reuse of Brownfield Sites - *Support appropriate uses such as small scale manufacturing or housing.*
2. River Access - *Views at the end of River St, Boat and pedestrian access at the end of Jarvis St.*
3. Floodproofing and Resiliency - *Continue floodproofing of Jarvis St homes; potential for other buildings to meet flood insurance requirements.*
4. Placemaking - *Provide opportunities to enjoy the unique sights, environment and history of the Riverfront.*
5. Arts and Culture - *Build on the success of the Farmers Exchange as venues for people to gather for music and performances.*
6. Phyto-remediation - *Take advantage of natural systems that can help improve the environment and health of the riverfront.*
7. Solar Energy and Power grid retrofit - *Several sites in the riverfront are ideal for solar power generation, and would provide an income stream that could support further property improvements*
8. Wayfinding - *Build on the system for showing people around downtown and the riverfront.*
9. Bicycle connectivity - *Complete bicycle connections already studied; explore options for getting to See-it-Made Artisan's Park by bicycle.*
10. Pedestrian connectivity - *Build on a great walkable environment by filling the gaps and creating more appealing streetscapes.*
11. Traffic circulation improvements - *provide new street connections in the Riverfront and Jarvis/National neighborhood to eliminate dead-end streets and improve safety and access.*
12. *Public transit and Passenger Rail - Enhance Amtrak station with a platform and shelter and bring bus transit downtown.*



Adaptive Reuse

There are numerous opportunities for adaptive reuse and redevelopment of former industrial sites and brownfields in Windsor's Riverfront.

Railyards

Windsor served as the starting point for The Central Vermont Railroad, which officially broke ground on December 15, 1846. It served the dual purposes of passenger rail and connecting the growing industries to points north and south. The presence of the rail system was significant to the growth of the machine tool industry in Windsor, as companies like Cone-Blanchard and Goodyear took advantage of rail to bring in raw materials and ship goods to other parts of the country.

There are still relics of the former railyard, including rail sidings that served industry along the Riverfront. Additionally, there are a number of smaller buildings that are in various states of use and redevelopment. Many sites have significant potential for redevelopment, including the historic Hebert Levesque properties that can be tied together with an elevator to bring them up to current codes.

A sculpture garden currently welcomes visitors arriving on Amtrak, and there are many additional opportunities to incorporate industrial archaeology into the landscape. The Town-owned buildings on the former Stacey Lumber property have potential as small scale manufacturing, and could be attractive outlets for locally made products.

Windsor Technology Park Site

Key assets of this site make it appealing for redevelopment.

- Compared to other Riverfront properites, it is mostly higher above flood elevations.
- There are several historic buildings with more potential for adaptive reuse.
- Freight rail access is a real option, which should be preserved as site improvements are undertaken. Rail access improvements are eligible for a 3-way funding split: state/federal/local. Rail service can provide much more cost effective shipping options for certain types of materials.

Everett Lane Building, Windsor Technology Park

Soft Targets

Two initiatives are currently underway at Windsor Technology Park:

The Everett Lane building this attractive is at the gateway to site on Everett Lane; and ready for adaptive reuse as an incubator space for see-it-made spinoff or other mixed uses.


Solar installation on concrete ballasts on brownfield site, Strafford, VT

Rooftop solar on larger building, once roof work is completed; is among the most realistic uses in the near term to generate funds for subsequent clean up, renovation and adaptive reuse projects.

Longer Term Ideas

The Shoe Factory could be a spectacular building for mixed uses, although the floor needs to be raised by about a foot to clear base flood elevation. The exterior of the building is covered by metal siding, underneath are full story windows with views of the river and Mt. Ascutney.


The Shoe Shop, Windsor, Vt.

A Solar Farm could be established on the former dump site, however, an assessment of contamination will be required before a project can receive a certificate of public good.

Constraints and issues

No significant investments in this property will be feasible until questions regarding possible site contamination have been investigated and, if necessary, remediated. It is often possible to redevelop brownfields properties into valuable economic assets, and the first step is a Phase 1 assessment (see appendix).


Former Shoe Factory Building, Windsor Technology Park

Goodyear Site

Limited opportunities primarily due to the flood elevations. The bunker building reuse is limited by poor access and its large footprint. The woodworker's shop is an example of successful adaptive reuse as small scale manufacturing; and could potentially offer space for retail or showroom for the resident woodworkers, although floodproofing will be required.

Soft Targets

Access improvements will make buildings more accessible and preserve the historic brick structure (see right).

Solar development on the concrete pad formerly occupied by the sawtooth building would provide an income stream for the site, but would require disposal of asbestos. This project is particularly important as the concrete pad is being broken up by trees; investment is needed to prevent new contamination issues. In September 2018, the SWCRPC board approved a grant and loan to help pay for the clean up of asbestos debris.

The Goodyear boat landing will require review and permitting by ANR for brownfields and river issues, but would create a way to enjoy the river and allow people to see this part of Windsor.

Long term opportunities

Industrial building on southwest of site has had its occupancy permit surrendered until remediation is complete, which at this time does not appear economical. However, it is an architecturally interesting structure with long term potential for adaptive reuse. For the near term, it should be stabilized and moth balled properly to preserve it for a time when remediation is economical

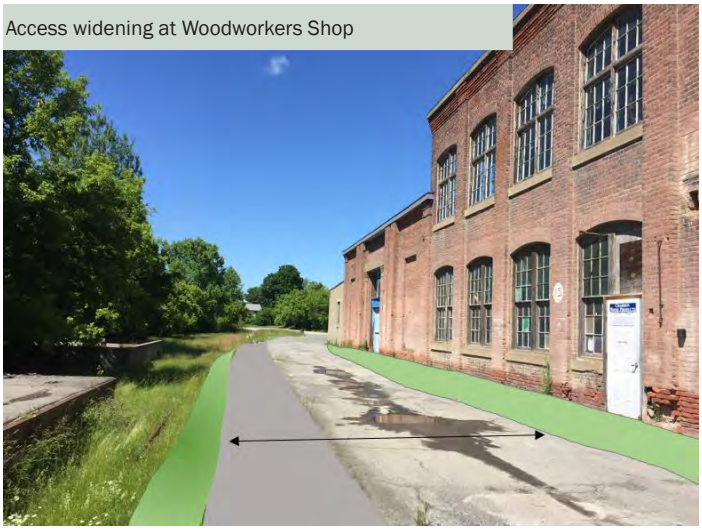
Several oil tanks on site need to be emptied and cleaned before the planned multiuse path extends south through this site to McCarty Ave.

Constraints and Issues

Any proposed changes in use or fencing will require review and consent of the brownfield program staff at the DEC Sites Management Section.

Floodway and high flood levels - 8 ft over surface on much of site - will require significant work to raise the building floors to clear floods.

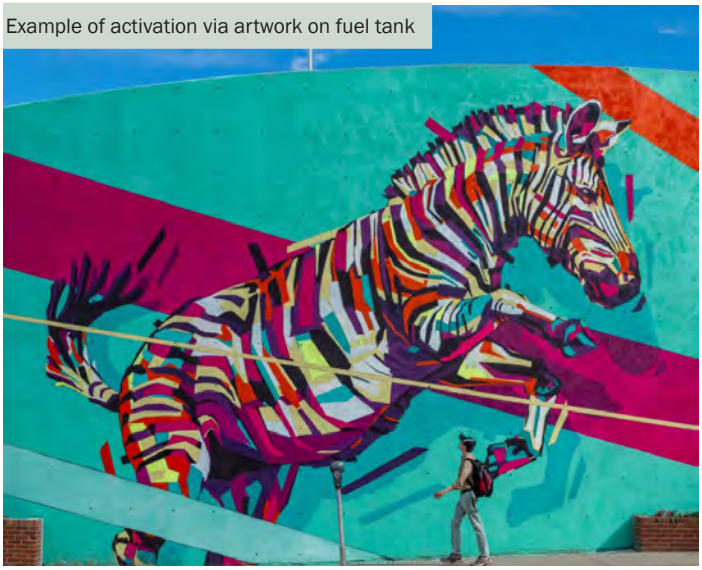
Access widening at Woodworkers Shop



Unoccupied concrete building on Goodyear Site

Oil tank on Goodyear Site

Example of activation via artwork on fuel tank



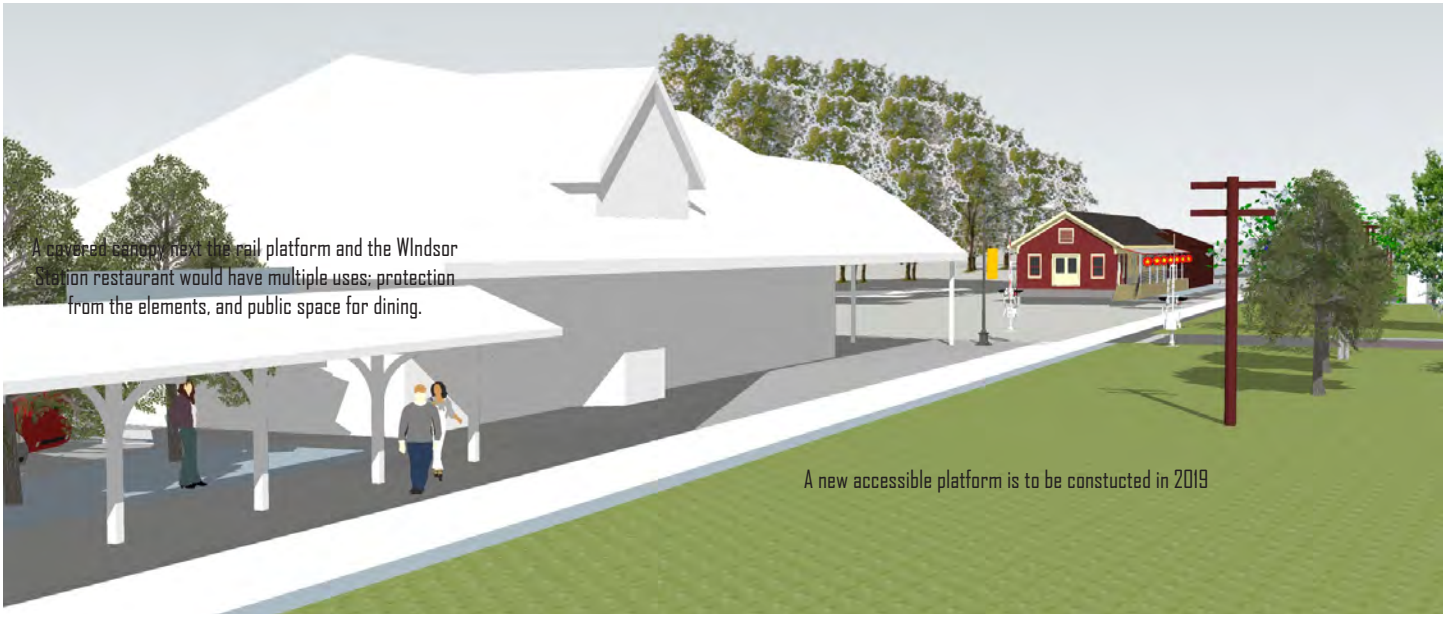
Amtrak

Windsor has an Amtrak stop with daily service in each direction on the Vermonter, running north to St Albans and south to Washington DC. Several projects are in the works that will make progress toward better rail service.

Accessible Platform. An accessible rail platform is planned for Windsor's Amtrak station, with some opportunities to address the platform design in a way that could improve its function and aesthetics by avoiding the need for a railing, by re-grading and stepping up to the platform.

Covered Waiting Area. An additional enhancement is to include a covered waiting area next to the platform, which could serve multiple uses for events at the Windsor Station resturant.

More Frequent Service. More frequent Vermonter service is a future possibility for Windsor. There are currently plans for several additional trains each day for the stations in Massachusetts, and these additional runs may eventually extend to White River Junction. Higher frequency of service would make rail travel far more appealing, and would provide Windsor with an unusally high level of passenger rail access for a community of its size.



Ideas to Consider

Official Street Network Map

State statute enables communities with an adopted Municipal Plan to adopt an Official Map. The Official Map is a tool that communities can use to control design by identifying locations of future public facilities. For example, an official map can include future streets, planned trails, sites reserved for public buildings, and areas reserved for stormwater or flood control. Through the official map, municipalities have the authority to require the reservation of easements or land to accomplish a public purpose, such as the creation of a new road or a public park. As part of the permitting process, applicants can use the official map to understand where public facilities like roads or trails are going to be developed and how their development must be designed to accommodate them.

The adoption of an official map identifies the areas where a community plans public facilities and establishes the procedure by which sites can be acquired (typically through financial compensation) before they are developed for other uses. At any point in that process, a municipality can opt not to acquire property and allow a proposed development to proceed. Adopting an official map does not commit the municipality to purchase properties on which future public infrastructure projects are shown.

On Site Asbestos Disposal

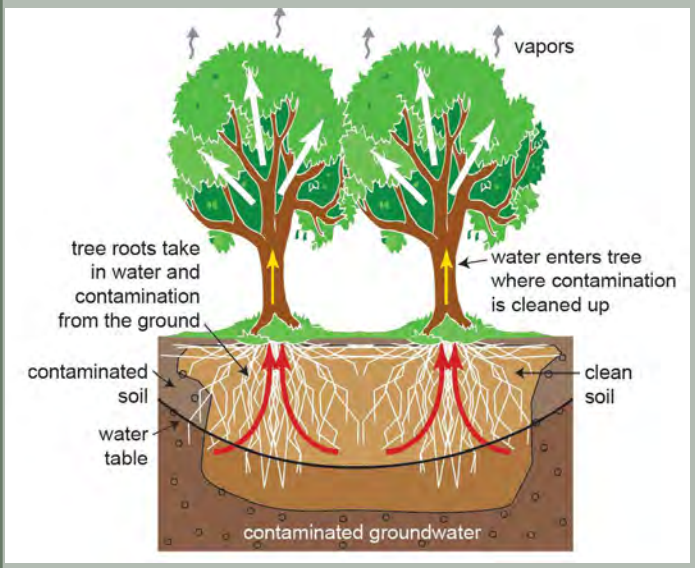
When the Sawtooth style building was demolished on the Goodyear site, it left a significant amount of asbestos contaminated brick that must be disposed of. Due to limitations in Vermont's Asbestos Control and Solid Waste regulations, the only means of safe disposal involves shipping the material to a site that is licensed to handle asbestos. The closest facility is located in Michigan. According to the Southern Windsor County Regional Commission, the estimated cost of removal will be approximately $300,000.

Asbestos is primarily a health concern when its particulates become airborne. With proper engineering, it can be disposed of on site in a manner that will not pose a health threat. In New Hampshire, the Broad Street Parkway project included construction of a roadway that necessitated the excavation and relocation of over 20,000 cubic yards of asbestos contaminated soils. The New Hampshire Asbestos Control rules allow for the utilization of on-site consolidation with an engineered final cover system. The Goodyear Campus has several locations that could accommodate the onsite storage of asbestos and final cover system.

The town of Windsor should work with the Regional Planning Commission, RDC and local legislative representatives to urge the State to revise its outdated (last revised in 1995) Asbestos Control regulations and Solid Waste rules that prohibit the safe onsite disposal of asbestos.

Incorporate phytoremdiation into streetscape and public space design

Phyto remediation is the concept of addressing soil contamination using plants, which can absorb pollution from groundwater or soil. The potential for this depends on the exact conditions, and is limited by a cold climate, but it could be a piece in the overall effort of remdiation combined with landscaping. Considerations include that the plant material itself may eventually require safe disposal, depending on the concentrations of pollutants; and that species that provide food to wildlife should be avoided in case it develops concentrations that rise to hazardous levels.



River Access

The river is so close to downtown Windsor, yet nearly invisible and inaccessible. There are several opportunities to connect people with the river:

River Street Overlook

The public right-of-way of River Street extends right to the Connecticut River, and can be reconfigured into an attractive public space to enjoy a view of the river. It can be combined into a single project. with street tree planting and the River St pedestrian of the railroad.

River Street right-of-way

Goodyear Boat Landing

The Goodyear Site extends to the rivers edge just south of Jarvis Street, and includes several concrete structures that could be repurposed into a place to view and access the river. The primary changes would be to provide railings, close gaps in the structure, and construct steps and a dock to get onto the river. Removal of invasive species along the river bank and revegetation with appropriate plant species will also be required.

Concrete structure at Goodyear Boat Landing

View of covered bridge from boat landing

Proposed boat landing project

Solar Energy and Power Grid Retrofit

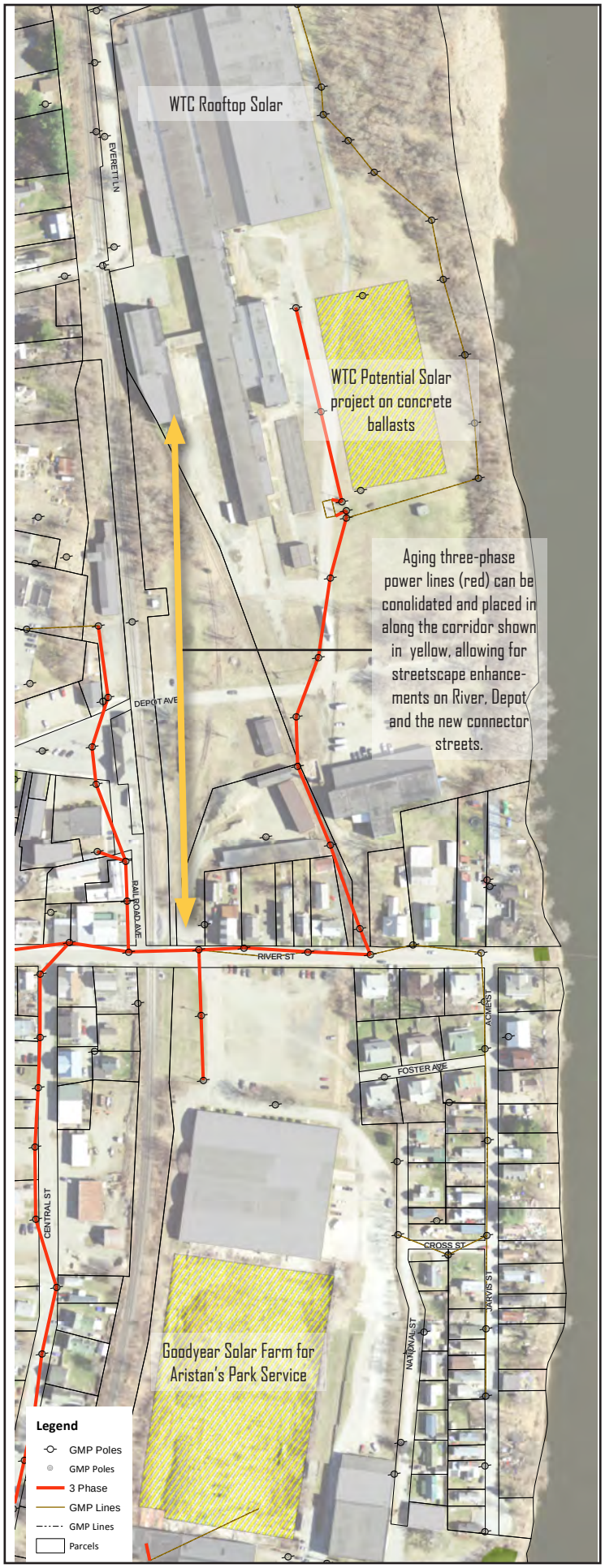
Windsor has proposals in various stages to generate up to 3.5MW of solar power, which can provide an economically helpful use of brownfields properties, funding further clean up and investments.

The power grid serving the riverfront was established in a piecemail basis to serve the individual industrial uses, and should be both modernized and rationalized as investments to the grid are made in support of solar power. The current power line configurations are both inefficient and complicate streetscape improvements along River Street and near the train station.

Solar power generation on brownfields can utilize concrete ballasts in order to avoid disturbance to the ground, similar to those used on the Elizabeth Mine superfund site in Strafford, in the event that contamination is found. Rooftop solar can also be installed on several of the larger buildings, providing a resilient and clean power to support new users.

Solar panels installed on concrete ballasts, Strafford, VT

Power line along River Street cannot be relocated without realignment of lines, and hamper providing a safe pedestrian crossing of the railroad tracks.



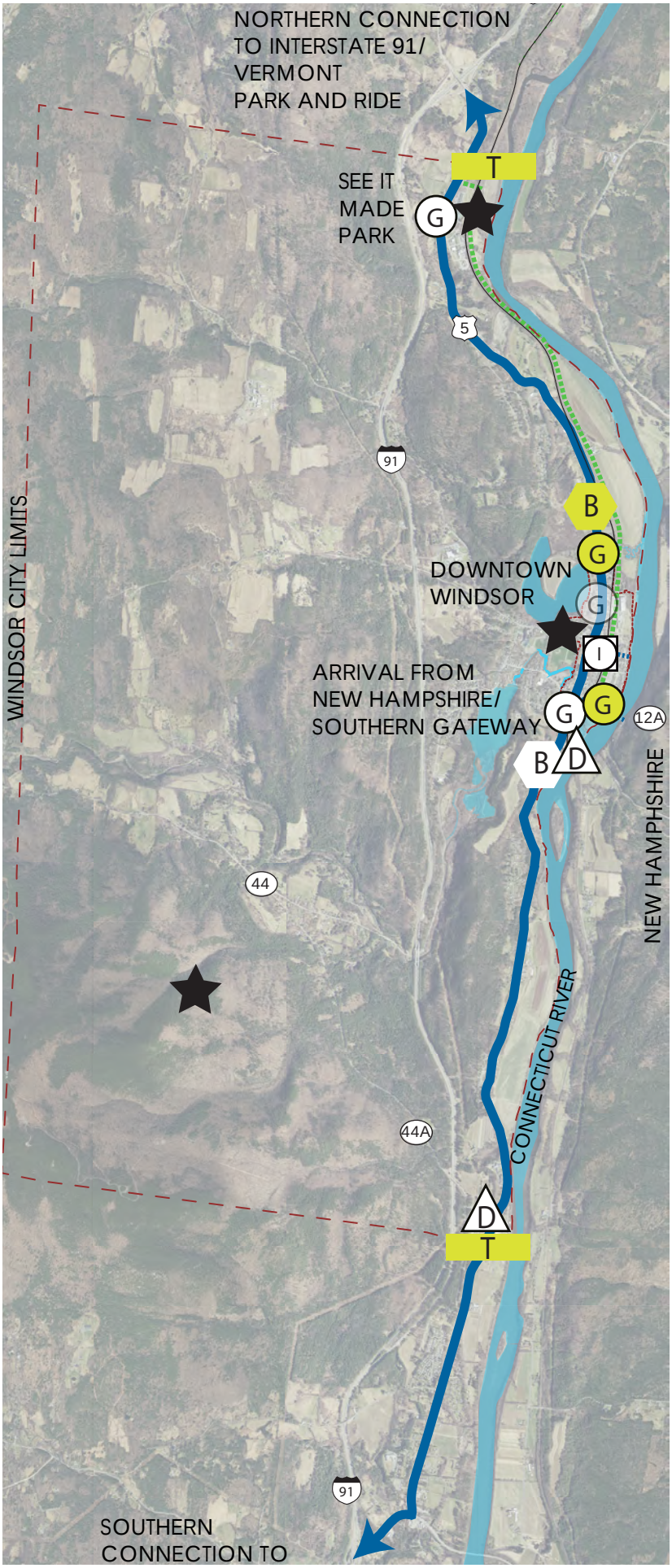
Wayfinding

Windsor has the beginnings of a wayfinding program initiated through the Connecticut River Scenic Byway, which provides a common graphic language and sign options. However, with the downtown well away from the interstate, and many well-visited destinations in the area, addressing wayfinding can be one of the steps taken to connect the right side of the tracks.

Existing wayfinding signs are not double-sided, and therefore invisible to pedestrians walking opposite the direction of traffic.

LEGEND

- G — Proposed Gateway Sign
- G — Gateway Sign
- D — Proposed Vehicular Directional Sign
- D — Vehicular Directional Sign
- K — Proposed Informational Kiosk
- K — Informational Kiosk
- T — Proposed Town Boundary Sign
- B — Proposed Connecticut River Byway Sign
- B — Connecticut River Byway Sign
- Future Windsor Destinations
- Windsor Destinations
- Designated Downtown Boundary



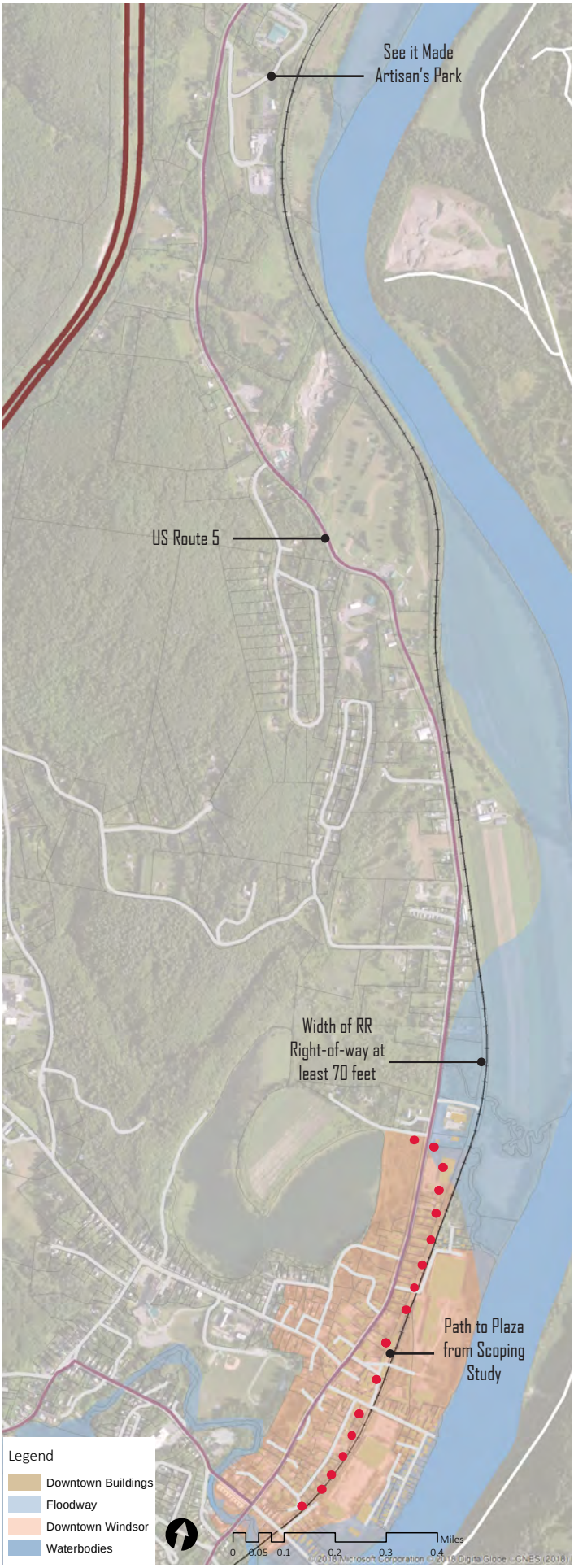
Bicycle Connectivity

The distance between downtown and the much visited Artisan's Park is less than 3 miles. An off-road bicycle connection between these two destinations would be accessible for all levels of users with the flat topography, and would be a highly scenic experience.

As noted in the 2014 *Bicycle Pedestrian Scoping Study*, the best opportunity to make this connection would be to share the railroad right-of-way as a rail-with-trail. The width of the right-of-way is mostly over 70 ft wide, more than ample to share with a trail- While this has not been achieved in Vermont, there are numerous examples across the country of successful rail corridors sharing the right-of-way with trails.

Orange Heritage Rail with Trail, NY

Cardinal Greenway Rail with Trail, IN



Lets Get Started

Actions needed to get things moving

1. Discuss with ANR what the requirements will be for Goodyear Site to allow broader uses, such as river access, Jarvis-National circulation, and the Goodyear access improvements at the two buildings. This is needed for projects that will need changes of land use (i.e. from industrial to recreation), changes in fencing to allow public access and new streets, and a future trail connecting River Street to McCarty Ave.

2. WTC owners should consider submitting an application to the BRELLA program. If eligible, then proceed with conduct a phase 1 study. (To be accepted into the BRELLA program, owners need to show that they did not "cause, contribute or worsen contamination on the site," and are not directly related to the owners that were responsible for contamination.)

5 year Implementation Projects

The following are projects that the Town of Windsor of the Windsor Improvement Corporation can begin within the next five years, with more details on the following pages.

Project	Lead	Partners	Cost
River Street Overlook and Streetscape	Town/WIC	DEC Sites Management Section; Floodplain Manager	$120,000
Northern Gateway and pedestrian crossing	Town	VTrans	$585,000
Neighborhood Street Circulation Project	Town/WIC	VT ACCD Downtown Program; DEC Sites Management Section	$200,000
Goodyear Boat Landing	Town/WIC	DEC Sites Management Section; Floodplain Manager	$50,000
Bicycle Connection to See-It-Made Artisans Park	Town	VTrans, NECR, Artisan's Park, landowners	$80,000 for project scoping
Wayfinding - first phase of the wayfinding concept plan	Town/WIC	VTrans	TBD; determine priorities
Building preservation - Mothball and stabilize Goodyear closed structures; clean oil tanks	Town/WIC	DEC Sites Management Section	TBD; cost estimates needed
Amtrak canopy and re-grading to improve platform design and eliminate need for railing	Town/Windsor Station	Amtrak, VTrans	$20,000
Zoning Changes	Town	See recommendations in appendix	n/a

The following pages provide more detail on some of the above projects, and then a listing of possible funding sources for implementation.

Goodyear Boat Landing

One of the unique features of the Goodyear Campus, is the former water intake/outflow area, which is immediately adjacent to the Connecticut River and provides river access and an attractive view of the Cornish-Windsor Covered bridge. Simple and inexpensive improvements would create an appealing and valuable space for the community.

Lead: WIC/Town
Partners: WIC/Town/VT DEC Sites Management Section/VT ANR Floodplain Manager
Cost: To be determined after design and determination of requirements; budget target of $50,000
Potential Funding: The potential improvements proposed in this alternative are low cost and could easily be implemented by the Town without seeking additional funding. It may be possible to reach out to local businesses or service providers who have an expertise that is relevant to the project (builders, lumberyards, etc.) to ask them to participate in a beautification project for little or no charge. AARP Placemaking Grants could also potentially fund this.

Next Steps: The first step in implementing the boat landing/river access will involve working directly with the Sites Management Section of DEC. The former Goodyear site Brownfield remediation agreement includes deed restrictions that limit uses on the property to Industrial only. While "Industrial" is not clearly defined, a proposed change of this section of the property to a recreational use would need to be cleared with SMS and may require an amendment to the deed. It is likely that SMS will require specific design standards to be able to determine how disturbed materials are handled. It is also important to note that SMS may require additional soil testing in this area.

Design Considerations. The Boat Landing/River Access area is located within the mapped FEMA Floodway and will require a zoning permit that meets Windsor's Flood Hazard Area regulations (and any other provisions) and is approved by the VT State Floodplain Manager. Within this area any landscaping or access improvements will be required to have no impact on flood elevations. Railings and other construction should be designed so as to allow water to pass through them completely. Stabilzation of the river bank in this area through natural planting would also be incorporated into the project.

River Street Placemaking

Several elements of the plan can be combined into this project, including the river overlook at the end of River Street, street tree planting of phytoremediation tree pits that could mitigate groundwater contamination, and complete the pedestrian connection across the railroad tracks. These elements can be done separately as funding allows, but the combination could provide more impact and greater efficiency.

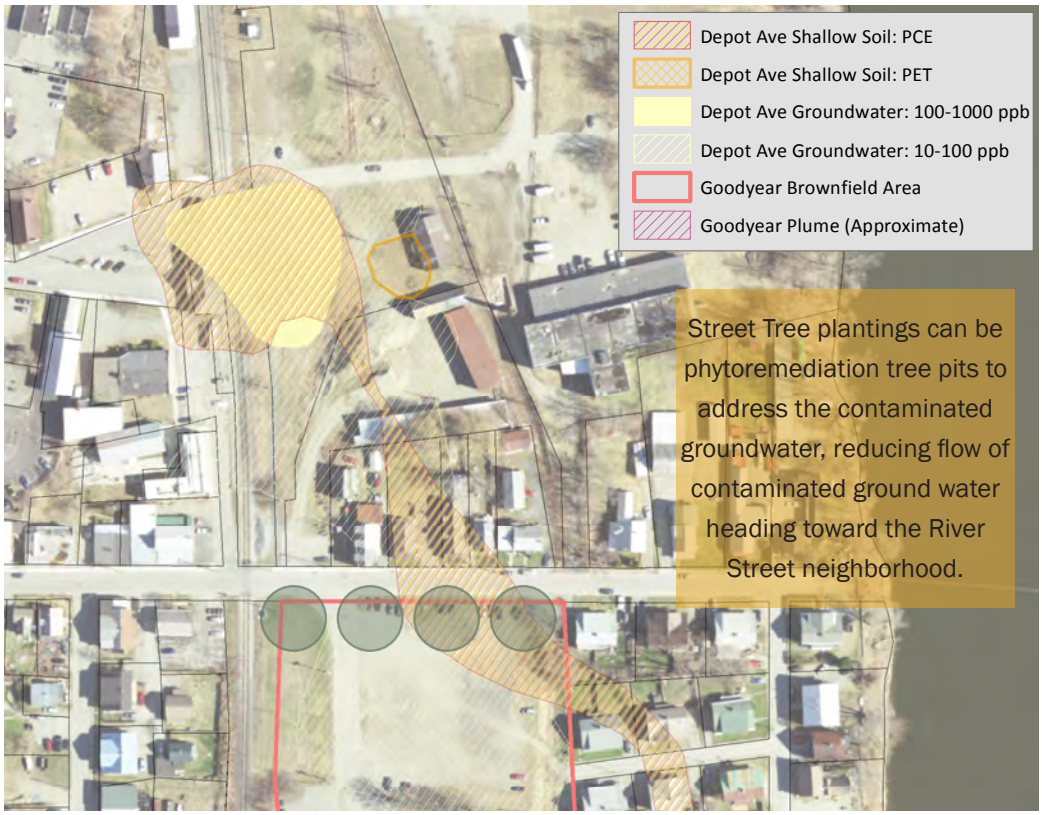
Lead: Town/WIC
Partners: WIC/Town/VT DEC Sites Management Section/VT ANR Floodplain Manager
Cost: To be determined; allow for budget of $120,000
Potential Funding: Several possible funding sources include AARP Placemaking Grants, grant funding for tree pit demonstration, and VTrans small scale bicycle and pedestrian program.

Next Steps:

Design and implementation of river overlook with AARP placemaking funds.

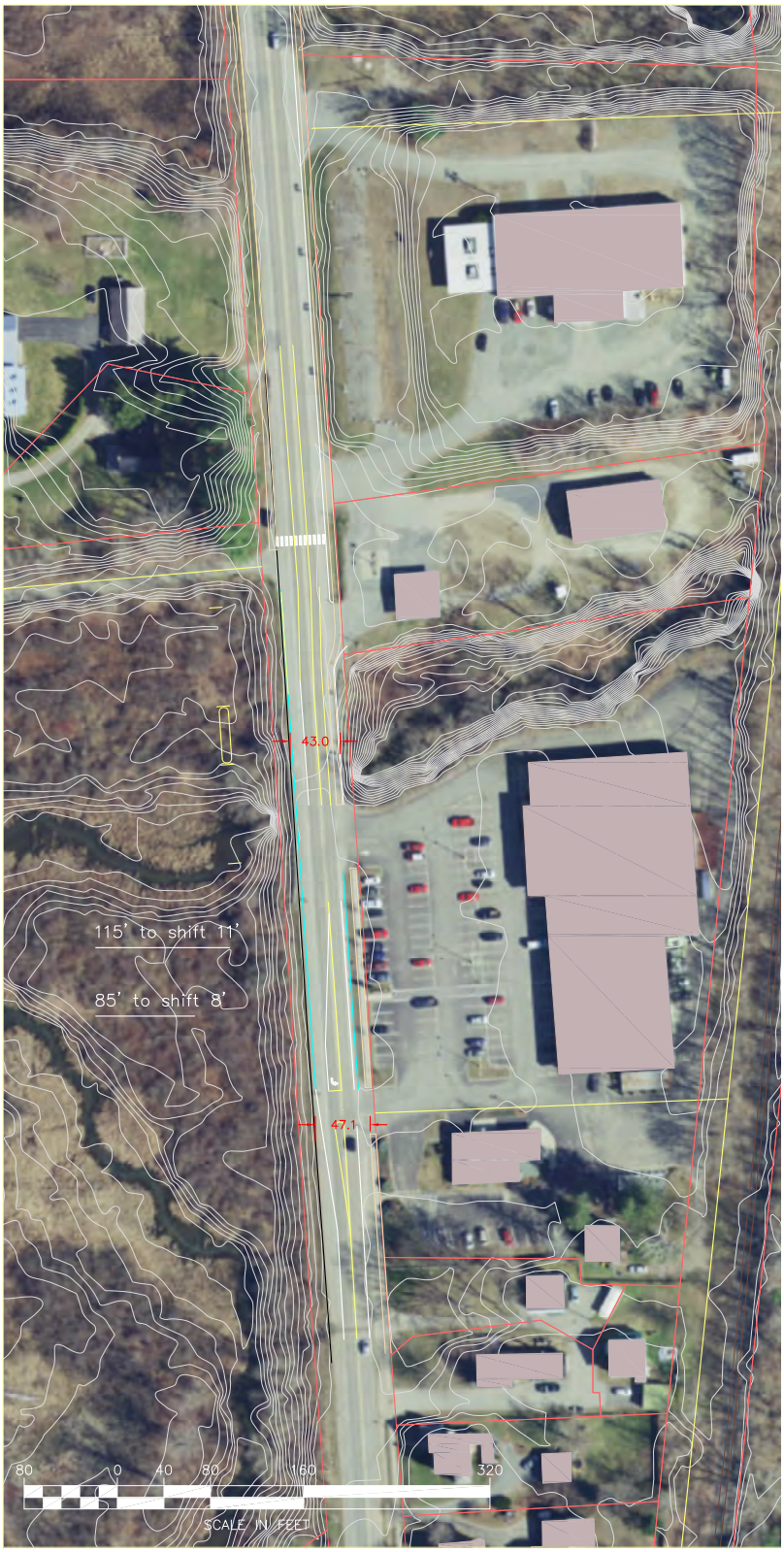
Coordination with ANR on potential tree pits or other types of tree planting on Goodyear frontage.

Continue coordination with railroad to develop safe pedestrian facilities across railroad tracks.



Northern Gateway Pedestrian Project - VTrans bicycle pedestrian grant - late spring 2019
Description: This project is defined in detail in the VTrans scoping study as "Downtown North."

Lead: Town
Partners: VTrans
Cost: $585,000 (from 2014 study; needs to be updated to 2019 dollars)
Potential Funding: VTrans Bicycle Pedestrian Program, spring of 2019 application
Next Steps: Develop application for funding through this program; update cost information.



Neighborhood Street Circulation Project

This project is an excellent candidate for the Downtown Transportation Program grant, and will address long standing issues of safety and circulation in the Riverfront residential neighborhood.

Lead: Town/WIC
Partners: Vermont ACCD/Downtown Program
Cost: $200,000
Potential Funding: Downtown Transportation Program
Next Steps: Coordination with ANR about Goodyear Site Changes; refine design based on ANR and other stakeholder input.

Scoping study for rail-with-trail bicycle and walking connection to See-It-Made Artisans Park

The proximity between downtown and the Artisan's Park is about 3 miles, ideal distance and terrain for bicycling. This trail would provide an exceptional experience through scenic landscapes, and provide a unique connection between the Riverfront and the Artisan's Park. Project scoping is needed to evaluate the environmental and right-of-way constraints. This concept of a rail with trail merits further study as the most appealing and feasible option for a trail, as environmental resources forestall other alignments.

Lead: Town
Partners: VTrans
Cost: $80,000
Potential Funding: VTrans Bicycle and Pedestrian Program
Next Steps: Apply for funding of a scoping study

Downtown Wayfinding

The attached Wayfinding report and provides recommendations for implementation.

Lead: Town
Partners: WIC/VTrans
Cost: TBD, depending on specific desired/priority elements to implement.
Potential Funding: Local or private

Mothball and stabilize Goodyear closed structures / Clean Oil Tanks

Several actions to continue remediation of contamination at the Goodyear site would be beneficial in terms of preserving architecturally significant structures for long term future adaptive reuse, and addressing several oil tanks, one still containing old fuel, so that future public access and trail development may be feasible. Proper "mothballing" of these buildings, such as with fitted plywood to protect the window openings, would have multiple benefits, including public safety, appearance, and preservation.

Lead: Town/WIC
Partners: VT ANR SMS
Cost: TBD
Potential Funding: TBD
Next Steps: TBD

Funding Sources

There are many places to look for funds for implementation of the projects in this plan. The following sections describe funds available to municipalities through state and federal programs.

Local Option Taxes

Communities are enabled by statute to impose a 1% local option tax on sales, meals, alcoholic beverages and rooms. These funds are a way to generate additional tax revenue to fund the upkeep and development of infrastructure. This is a particularly valuable option if a community has a significant tourist population that uses infrastructure but does not pay property taxes to cover their use. Twenty-one communities in VT use the local option tax. In order to levy a local option tax, a community must vote to do so.

Impact Fees

Impact fees are authorized under state law (24 V.S.A. §§5200, et. Seq.), for the purposes of enabling "municipalities to require the beneficiaries of new development to pay their proportionate share of the cost of municipal and school capital projects which benefit them and to require them to pay for or mitigate the negative effects of construction."

Typically, Impact Fees are instituted in response to very rapid growth. The process for developing impact fees begins with identifying the facilities and services affected by the sudden growth. This is followed by the identification of capital projects that are needed to bring the level of service to "acceptable standards." These standards could be determined from existing levels of service, accepted state or federal standards, or a standard that is part of an adopted municipal plan or capital budget and program. Capital projects that are needed to support anticipated development are candidates for impact fees. It is important to note that impact fees cannot be used to cover operation or maintenance costs, or to address any existing deficiencies with infrastructure. Communities develop an impact fee formula that connects the capital costs of new facilities or facility capacity to the demand for that capacity generated by new growth. This formula must rely on a "rational nexus" to serve as the logical and legal foundation for the impact fee. Typically, studies are utilized to develop and document impact fee formulae and to support adopted fee schedules. Once the formulae and fee schedules are developed, communities must adopt them via an ordinance or as part of a bylaw.

Communities with impact fees are required to account for revenues collected through impact fees on a yearly basis. State law requires that impact fee revenues must be expended for designated capital projects within six years of the date they are collected or be refunded at the request of the property owner.

The pros and cons of impact fees are varied. Proponents often argue that impact fees are a way to have "developers pay" for the impacts of their development. However, in strong property markets, the developer will typically pass on the cost of the fee to the new occupant in the form of a higher purchase price or increased rent. Or, the developer may be less willing to pay top dollar for a property due to the added cost of impact fees. And yet, with impact fees in place, developers can be fairly certain that necessary infrastructure and facilities that are needed by their development will be provided. Impact Fees are commonly a reaction to significant development growth.

Tax Increment Financing

24 V.S.A. §§1891 et. seq., enables communities to utilize Tax Increment Financing (TIF) as a tool to finance public infrastructure improvements that are necessary to ensure development of an area. Using the "build it and they will come" theory of development and growth, communities are able to borrow funds against future tax revenue within a designated TIF District. This assumes that with infrastructure investments, additional development will occur and more tax revenue will be developed. As part of the TIF development process, the municipality designates the area which requires redevelopment as the TIF district and freezes the base tax of the District. Property taxes increase with new development and a portion of that increment is utilized to help retire the debt incurred to fund the infrastructure improvements. The TIF is particularly useful when there are parties interested in developing the real property within the District if necessary infrastructure is built.

Unlike the Impact Fee, a TIF District must be

approved by the State. Prior to filing an application with the Vermont Economic Progress Council (VEPC), communities must undergo a process of local planning (including an appropriate level of public process) to develop and adopt a TIF District Plan and Finance Plan. Communities pledge a minimum of 85% of the municipal incremental property tax revenue within the TIF District will go toward TIF District debt. State Statute outlines the criteria under which VEPC can approve an application for a TIFF district. This includes a close look at the public process utilized at the municipal level including an assessment of the District's compatibility with local and regional plans.

A TIFF District is considered an appropriate financing tool when:

- There is a need for substantial real property development or redevelopment to improve the economic viability of a defined area.
- The development/redevelopment requires a substantial scale of new public infrastructure or infrastructure improvements.
- Normal and available financing mechanisms are not available or are insufficient to ensure the public infrastructure improvements.
- The development/redevelopment will generate incremental real property taxes sufficient to help finance infrastructure debt.
- There are parties interested in developing the real property within the District if the infrastructure is built/improved.
- There is commitment of municipality to champion project through process.
- Project can meet statutory approval criteria and outcomes will meet statutory purposes:
    - Stimulate development
    - Provide employment opportunities
    - Improve/Broaden tax base
    - Enhance general economic vitality of municipality, region, state

An application for a TIF District will need to include an analysis of infrastructure cost and debt assumptions, real property development and property tax revenue generation assumptions. Also necessary, is an analysis of revenues including property taxes, grants and other sources of funding, and the ability to service debt.

The laws the govern TIF districts had previously set a limit of no more than two districts per county. In 2017, legislation was passed that grandfathered existing TIF districts, allowing for two additional TIFs in Chittenden County. If there is interest in creating a TIF district in Windsor, the Community should be engaged in discussions about the process with VEPC and the Regional Planning Commission in the near term.

Loans, Grants and Bonds

Loans and/or bonding are common components of a major infrastructure investments at the municipal level. While loans and bonds can be the primary source of funding for a project, they are often utilized in addition to state or federal grants. In Vermont, there are far more diverse funding opportunities for Water and Wastewater projects than Transportation projects.

Vermont Municipal Bond Bank

The Vermont Municipal Bond Bank (VMBB) provides low-interest, tax exempt, taxable and tax credit bonds for municipal projects. General obligation bonds are generally considered relatively safe, as municipalities can utilize any source of revenue available to them, such as tax revenues, fees, etc. Projects VMBB will finance using general obligation bonds include "infrastructure installation and repairs," and "water supply systems and wastewater systems." Revenue bonds are backed by the revenue generated by the specific project being financed. As such, VMBB limits the types of projects that can be implemented using revenue bonds to those that will generate income through fees, such as water supply and wastewater systems and TIF districts.

Vermont State Infrastructure Bank

The Vermont Economic Development Authority (VEDA) works with VTrans and the Federal Highway Administration to provide funding assistance with construction of highways, roads, bridges, pedestrian facilities, construction and/or installation of electric vehicle charging stations and natural gas refueling stations available for public use. Like bonds, interest rates are generally very low. The programs loan terms are as follows:

- 3% fixed for loans to private-sector borrowers;
- 1% fixed for loans to municipal-type borrowers and for electric vehicle charging stations;
- Loan term may not exceed 30 years with repayment commencing no later than five years after completion of project; loan terms for electric vehicle charging stations will depend on available cash flow; and
- Required borrower equity contribution to project is 10-20%.

Community Development Block Grants

Vermont Community Development Program (VCDP) assists communities on a competitive basis by providing financial and technical assistance to identify and address local needs, including the development of public facilities and services. Projects funded through CDBG must meet the Low-Moderate Income (LMI) Area Wide benefit criteria. In order to meet the LMI criteria a projected funded through VCDP at least 51% of the service area residents would need to be LMI. If the development to be funded was going to directly benefit a business by creating jobs available to LMI persons or housing units that will meet the required 51% LMI area benefit, then it would be worth contacting VCDP staff for further discussion. Specific CDBG programs include:

CDBG Accessibility Modification Grants

Used to bring municipally-owned buildings and libraries into compliance with state and federal accessibility requirements. Grant amounts can range from $5,000 to $75,000.

CDBG Implementation Grants

Used to assist businesses to create or retain jobs, create or rehabilitate housing units, build infrastructure, create or assist childcare and senior centers etc. Grant awards can range from $50,000 to $1,000,000.

CDBG Planning Grants

CDBG Planning grants are typically used to conduct feasibility studies and marketing plans, produce architectural and engineering plans, etc. for Implementation projects. Planning Grants can be as little as $3,000 to as much as $40,000.

Transportation Alternatives Program

The VTrans Transportation Alternatives Program has, in the past, been utilized to fund pedestrian, bicycle and vehicular improvements. However, in 2017 the program was significantly revised to focus on projects relating to storm water and highways in part to address statewide stormwater runoff concerns.

Bicycle and Pedestrian Program

The VTrans Bicycle and Pedestrian Program is intended to provide safe and convenient facilities for alternative transportation. The program is highly competitive with a limited amount of available funding on a yearly basis. Funding has been focused on implementation vs. scoping over the past several years.

HUD Section 108 Loan Guarantee

Section 108 of the Housing and Community Development Act of 1974 provides for a loan guarantee component of the Community Development Block Grant (CDBG) Program. The Section 108 Loan Guarantee Program (Section 108) provides communities with a source of financing for economic development, housing rehabilitation, public facilities, and other physical development projects, including improvements to increase their resilience against natural disasters. The funds can be used by a designated public entity to undertake eligible projects, or, alternatively, can be loaned to a third-party developer to undertake the projects. Loans typically range from $500,000 to $140 million, depending on the scale of the project or program. All projects and activities must either principally benefit low- and moderate-income persons, aid in the elimination or prevention of slums and blight, or meet urgent needs of the community.

Eligible activities include:

- Acquisition of real property;
- Rehabilitation of publicly-owned real property;
- Housing rehabilitation eligible under CDBG;
- Construction, reconstruction, or installation of public facilities, including street, sidewalk, and other site improvements; and
- Related relocation, clearance, and site improvements.

USDA – Rural Development

United States Department of Agriculture (USDA) Rural Development maintains a wide range of economic development grants that offer assistance to cities and towns that are smaller than 50,000 people. Different grant sources can be used to aid in the development of residential housing developments, telecommunications and utility improvements, to support business development and community facilities. This is a valuable grant source as the funds can be used in such a diverse manner. The amount available to communities is subject to specifications of the individual grant program, but can range from $10,000-$500,000.

Vermont BGS Regional Economic Development Grant Program

This grant program is open to municipalities and non-profit organizations that provide regional economic development in an individual community or recognized community service area. Awards can be up to $25,000 per project, with a 50/50 match requirement.

Vermont Community Foundation Grants

Since 1986, the Vermont Community Foundation has been committed to building philanthropic resources that sustain healthy and vital Vermont communities. One part of that work involves making grants. The Foundation awards more than $12 million annually to nonprofit organizations in Vermont and beyond. These grants support a breadth of issues such as hunger, housing, arts, cultural heritage, social justice, animal welfare, and environmental sustainability. Award amounts vary depending on the project.

Vermont Arts Council (VAC) Cultural Facilities Grant

VAC grants help Vermont nonprofit organizations and municipalities create or expand the capacity of an existing building to provide cultural activities for the public. Funding awards range from $1000 to $30,000 with a 1:1 match requirement (at least 50% of which must be in cash). Examples of projects eligible for funding include:

- Improvements to wiring, heating, lighting, and plumbing;
- Accessibility features, such as elevators, lifts, assistive listening systems, ramps, and bathrooms;
- Stage improvements, such as curtains, lighting, and rigging;
- Permanent display panels or exhibit cases;
- Fixed equipment expenses; and
- Wireless/broadband for enhancing programming capacity.

State Revolving Loan Fund

The State Revolving Fund (SRF) provides loans and grants to municipalities for approved drinking water, wastewater and storm water projects. The SRF is co-managed by the Department of Environmental Conservation (DEC) and the Vermont Municipal Bond Bank (VMBB). The SRF program is funded with appropriations from the US Environmental Protection Agency/State of Vermont and revolving loan repayments. Eligible Projects include:

- Wastewater collection system and treatment facility construction, upgrade, or refurbishment;
- Combined Sewer Overflow abatement, monitoring, or elimination;
- Stormwater and wastewater separation;
- Stormwater conveyance and/or treatment;
- Community decentralized wastewater disposal systems;
- Asset management plans, resiliency plans, Total Maximum Daily Load (TMDL)-related planning and optimization efforts;
- Watershed projects; and
- Solid waste projects and brownfields projects where they relate to water quality.

Agency of Commerce and Community Development Programs

The following programs are all administered by the Vermont Agency of Commerce and Community Development:

Vermont Historic Preservation Grant

The Historic Preservation Grant Program helps municipalities and non-profit organizations rehabilitate the historic buildings that are a vital part of Vermont's downtowns, villages, and rural communities, as well as its iconic landscape. The program offers 50/50 matching grants of up to $20,000

Federal Rehabilitation Investment Tax Credits

Tax credits are available for eligible historic commercial buildings, meaning income- producing buildings, listed in the National Register of Historic Places. Windsor's designated downtown is listed and pre-qualified for federal credits.

State Downtown & Village Center Tax Credits

Tax credits are available for eligible commercial buildings and non-profit owned buildings constructed before 1983 (no private residences, but rental properties are eligible) located within designated downtown or village centers.

Vermont Community Loan Fund

VCLF is a mission-driven, community-focused alternative lender. It makes loans to local businesses, community organizations & nonprofits, child care providers and developers of affordable housing who don't qualify for a loan from a traditional lender. It combines its loans with financial consulting and business development services to make sure our borrowers have access to all the tools they need to succeed.

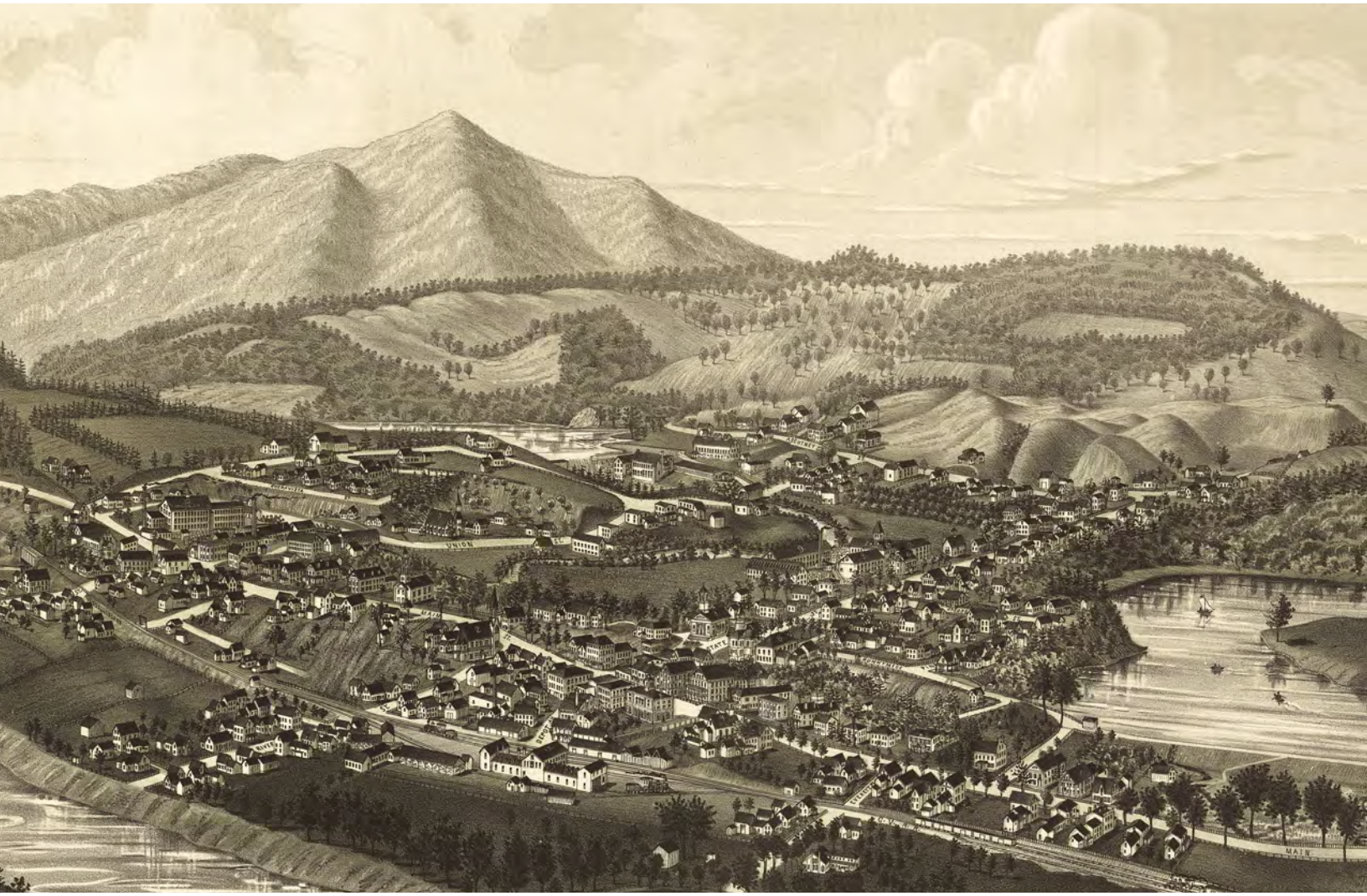
Attachments

Market Analysis Report

Brownfields Site Information White Paper

Wayfinding Implementation Plan

Zoning Recommendations



Market Analysis for the Town of Windsor, Vermont

December 2018

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ECONOMIC DEVELOPMENT

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About Camoin Associates

Camoin Associates has provided economic development consulting services to municipalities, economic development agencies, and private enterprises since 1999. Through the services offered, Camoin Associates has had the opportunity to serve EDOs and local and state governments from Maine to California; corporations and organizations that include Lowes Home Improvement, FedEx, Volvo (Nova Bus) and the New York Islanders; as well as private developers proposing projects in excess of $600 million. Our reputation for detailed, place-specific, and accurate analysis has led to projects in 30 states and garnered attention from national media outlets including *Marketplace* (NPR), *Forbes* magazine, and *The Wall Street Journal*. Additionally, our marketing strategies have helped our clients gain both national and local media coverage for their projects in order to build public support and leverage additional funding. We are based in Saratoga Springs, NY, with regional offices in Portland, ME; Boston, MA; and Brattleboro, VT. To learn more about our experience and projects in all of our service lines, please visit our website at www.camoinassociates.com. You can also find us on Twitter @camoinassociate and on Facebook.

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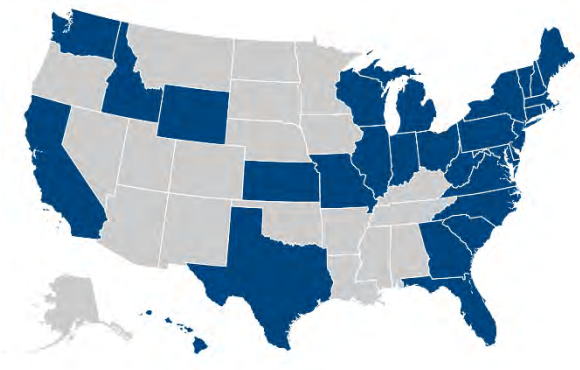

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Executive Summary

As a subconsultant to DuBois and King, Camoin Associates completed a limited housing and economic market analysis and general economic development policy review for the Town of Windsor, VT to inform a greater strategic planning effort in the town. Based on findings derived from the data, Camoin compiled a list of strategic recommendations for the Town to guide future economic development efforts. The following report consists of:

- Strategic Economic Development Recommendations;
- Demographic and Socioeconomic Overview;
- Industry Overview;
- Housing Market Analysis; and
- Funding Opportunities.

The recommendations in this report are based on the findings outlined in the aforementioned sections, as well as interviews with key stakeholders in the local economy. Our recommendations are also informed by extensive experience working with similar communities throughout the State of Vermont and nation.

Strategic Recommendations

Business Development

Beyond identifying gaps in service offerings, the Town must create defined and targeted initiatives to instigate business attraction and development. Though Windsor inherently offers benefits to potential business owners, not all businesses are aware of its resources. Making businesses aware that the Town will support entrepreneurs and growing businesses through tangible programs and resources will enable further business development.

Business Attraction and Retention

- **Build upon the networking opportunities in the community for existing businesses.** Encourage collaboration among local business owners to combat issues facing the community. Sharing challenges and solutions will allow owners to learn from each other. Establish a quarterly meet-up that includes training on a particular topic along with open networking and discussion time. These events should be open to businesses in Windsor but also regionally to create a larger group of participants and generate some regional momentum around solving challenges and working collaboratively. The Southern Windsor County Regional Commission may be a good partner to help organize these events.
- **Create targeted programs in the high school, including focusing on entrepreneurship and local employer needs.** Connect students with existing business owners and allow them to learn locally to encourage young people to stay in the area to create and operate local businesses. Encourage local business owners to take on mentorship roles through the establishment of a business club or afterschool activity where students can learn what it means to run and operate a business and start to work out potential business ideas. Host a large end of the year event where business ideas are presented and there could be a business plan contest with seed funding awarded. The Windsor Improvement Corporation could take a lead role.
- **Research the strategies of similar communities relating to flood plain management.** A large part of Windsor's taxable base and industrial property is located within the flood plain; examine best practices of other communities and implement accordingly.

- **Improve access to major industrial properties.** Research the ways to improve access to the industrial properties to make them more attractive to potential users. Implement recommendations using state and federal funds as available.
- **Keep a close eye on the development of the Prison Property.** Remain actively engaged in the planning process and be prepared to act if an opportunity arises for the Town to participate in its redevelopment.

Workforce

- **Further promote workforce development programs in the high school.** Potential opportunities include identifying career opportunities, teaching work ethic, resume writing, networking, etc. Partner with local employers to do "a day in the life" activities.
- **Consider downtown location for Precision Museum workforce development program.** This program could be more accessible for Windsor's young adults and have a higher level of integration with the larger regional community.

Specific Businesses to Attract

The following are potential business opportunities identified by key stakeholders within the Town of Windsor and confirmed through key findings from the data analysis. There are certain steps that the Town can take to make Windsor attractive to these types of establishments, including making sure the zoning allows for them in designated areas, offering tax incentives to offset the cost of building improvements, identifying grant programs to assist with construction or equipment purchasing, training a workforce to serve new businesses, and demonstrating that the Town and residents are aligned with the vision. Making it clear to potential new business owners or developers that they will not get any undue pushback on their efforts and that the town supports them makes it more likely that a new business will locate.

- **Restaurants** - Interviewees expressed the need for additional dining options, particularly within the downtown. A new eatery should take advantage of the scenery and waterfront access, providing outdoor seating. Review zoning in key areas that would be a good location for a restaurant and make sure restaurants are allowable uses. Look to see if there are ways to create a public-private partnerships where there is water access managed and operated by the Town but that is collocated with a private restaurant to create synergies and a unique setting.
- **Lodging -** Windsor provides few options for visitors in terms of lodging, which could discourage new visitors. The Town should consider incentivizing new lodging establishments in the area. One option could be to help residents or second home owners take part in the AirBnB movement and other home sharing applications through training, guidance, and marketing help. Increasing the number of Bed and Breakfasts and AirBnB's would increase opportunities for people to stay over and make use of the recreation amenities and local establishments.
- **Health services** - The need for additional health services, such as a dentist office, was suggested by interviewees. Access to these services is critical to attracting new residents and workers. Review existing zoning and focus the efforts around finding rural solutions which may include offices that are only open part time and coordinating with larger providers.
- **Recreational gear rentals -** Consider options to increase the Town of Windsor's recognition as a recreation destination and building off the existing opportunities. A collaborative bike repair shop, a space for people to come work on their own bike or other equipment and take classes, and equipment rental shops will make it possible for more people to participate and build the brand of Windsor.

Art/Music/Recreation

The Town of Windsor is rich with arts, culture, and recreational opportunities. However, current arts and recreation activities are segmented and do not capture the visitation they have the potential to attract. Finding ways to bring all of the assets together into a coordinated visitor experience through marketing, branding, messaging, and collaborative efforts will serve as a catalyst for additional visitation and activity.

- **Build up recreation opportunities and market the existing assets.** Maps, signage, and interpretive features should be combined to promote the town's history, food and beverage, art, and recreation options. Coordinate a meeting of all relevant trail, history, and business groups to identify an approach to this type of wayfinding and begin to inventory the resources to be included. Focus on both hard copy maps/signage but also digital applications and online review sites to build up recognition for existing assets. Work with existing businesses to help them better use online platforms for customer attraction including Yelp, Google, and other search engine optimization approaches so that when people search "Windsor, VT" or "Artisan Park" the assets and establishments in town pop up as well. Provide this type of training to local businesses in coordination with the regional economic development organizations.
- **Continue work to develop a bike path.** A bike path that connects Artisan Park to downtown and Mt. Ascutney and ties into the regional biking networks would be a tremendous draw. The path should consider the history and unique aspects of Windsor, incorporate public art, and build off the success of Artisan Park. The Town should continue to apply for appropriate funds as available. Before the bike path is built, look into the feasibility of a bike sharing or bike loan program that starts at Artisan Park and that people can use to get into town. Work with local bike shops, second-hand stores, and grant sources to get this program off the ground and make sure downtown businesses are welcoming and accommodating to bikers (benches, bike racks, etc.).
- **Attract Artisan Park-related establishments**. The Town should build off the existing success of Artisan Park by focusing on food, beverage, and recreation customer attraction. Start this process by first helping producers do "pop-up" locations throughout the community to build buzz and excitement over the idea with limited overhead or risk for the town or business. This could be local producers, makers, rental shops, and/or collaboratives that have products that coincide with what the existing visitors to Artisan Park like. Collaborate with Artisan Park to direct people into town on special days where the pop-up shops will be happening. Capitalize on local events such as Windsor's Autumn Moon Festival to build excitement and community involvement.

  Starting to get people into downtown Windsor and creating more vibrancy in the community through increasing residents and events will create the momentum for more producers and makers to locate. The first steps are to make it easy, streamlined, predictable, and affordable for the initial businesses/producers to locate. Currently, there is not enough of a critical mass in Windsor to draw people from Artisan Park, so it will be critical to create specific experiences and reasons for people to make the trip.
- **Enhance experiences associated with water features.** Capitalize on river access and views by attracting water-enhanced development, such as restaurants, residences, as well as recreation and event spaces. Review all zoning to make sure the water-enhanced uses are allowable along the waterfront and allow for public access as appropriate. Work with the Connecticut River Conservancy to identify funding sources and technical assistance to protect the river while at the same time using it as a visitor and resident amenity.
- **Acknowledge Windsor's History through Art and Incorporate art throughout the town.** Take advantage of Windsor's deep industrial history by integrating art with Windsor's past. Examples of opportunities include murals, public installations of pieces that include or feature themes related to the machine tool industry by local artists, and promoting a music series for entertainment. Look into the

feasibility of establishing a regional arts event that is connected to Windsor's History to build community spirit, engage citizens of all ages and create an attraction that would bring people down from Artisan Park to see what Windsor has to offer. This would be a productive use for the space near the Station.

Housing

- **Diversify the housing inventory.** Data and interviews suggest that Windsor lacks adequate housing to sustain the current workforce, causing a shortage of workers. Steps need to be taken to ensure that families desiring to live in the area have adequate and affordable options. Specifically, the Town should address the following:
    - *Lack of available multi-unit offerings*. Young adults, namely, the working population, often seek rental housing in multi-unit settings. Nearly 60% of Windsor's housing stock is single-unit and only 40% of housing is renter-occupied. According to ACS 2016 data, the rental vacancy rate for the Windsor county subdivision was 3.6%, equating to less than 10 vacant rental units. Increasing the number of units available will make it more attractive to potential residents (more options means they will be able to find something that suits them) and will also encourage existing property owners to maintain their buildings.
    - *Older population*. With an older median age in Windsor and a market wide shortage of housing for older people in New England, Windsor likely has a strong market for age restricted housing. Key considerations of age restricted housing include proximity to health care facilities and walkability or connectivity to services (grocery stores, doctors, pharmacies, restaurants, etc.). There is a wide variety of age restricted housing, ranging from independent living all the way through memory care facilities with a variety of services provided. A potential target market for age restricted housing in downtown Windsor is independent living for older adults who still want to be active and take advantage of the recreational resources within the region. To best understand the market for Windsor, a more focused real estate market analysis may need to be completed as well as communication with developers familiar with the regional market to identify a potential niche for the town.
- **Take advantage of bang-for-buck in Windsor.** Costs of living tend to be more manageable in Windsor compared to surrounding communities, which presents an opportunity to attract residents.
- **Conduct a residential specific market analysis.** Use this analysis to determine type, size, and amount of residential demand in more detail. Perform a financial feasibility analysis of the determined use(s) and issue a developer request for proposals that outlines the opportunities that exist.
    - Identify un- or under-utilized parcels in the Town of Windsor that would be ideal for housing when considering the current residential market trend of desire for walkability, higher density, access to amenities, community outdoor space, and other changing demands.
    - Consider how the development of parcel will impact the overall economic development goal and identify locations that will support the growth of the economy and increased vibrancy by bringing it close to town.
    - Work closely with a developer to ensure that the vision of the community is included in the final development plans – before a developer begins the community should be clear about what they want to see so that the development process is predictable and streamlined. Host visioning sessions

and community input sessions about visual impacts, density levels, and other key factors to ensure the vision is well thought out to provide the developer with guidance.

- **Review zoning regulations and land use policy.** Ensure that the land use regulations and zoning match the desires of the community. For example, if the community is looking to increase density of housing units in close proximity to downtown, make sure the regulations allow for that as a right without requiring significant site plan review or variances. Enact regulations that allow for higher building heights, smaller parcel sizes, and more accessory units. Make sure home businesses are allowed within targeted areas where there is desire for increased activity and overall vibrancy within the town.

Marketing

- **Address reputation and perception.** Many stakeholders mentioned that Windsor has a negative stigma due to its status as a "prison town." Many perceive Windsor as a declining area riddled with crime, drug issues, and low employment. However, recent efforts by the Town to combat these issues have been successful and these successes should be marketed, both internally and externally. Addressing these perception issues should include the following:
    - Windsor needs to redefine its identity as an industrial town. Without a strong manufacturing presence, the town needs to recognize where its current strengths lie and understand what its distinguishing characteristics are in order to move forward with strategic initiatives.
    - Windsor High School has an alumni base with passionate and prideful graduates, who would be strong advocates for the Windsor area. Use this network for distribution of marketing efforts and ask for their support.
- **Embrace dichotomy of historic and future assets.** Windsor's history as an industrial hub provides the area with unique character. This, coupled with the intrigue of the town's growing artistic culture, gives Windsor an eclectic personality that should be reflected in marketing efforts.
- **Incorporate Paradise Park and heritage tourism into marketing campaign.** Windsor has a mix of natural and historic amenities, including hiking trails, the Precision Museum, and the Constitution House. These amenities should all be marketed towards potential visitors so they are aware of all the opportunities.
- **Target marketing efforts to potential residents.** Focus on attracting residents as much as potential businesses, employers, and tourists. Marketing efforts should incorporate affordable costs of living, accessibility to nearby employment, as well as the quality of the school system. Look regionally to identify people who may be looking to move into the area and identify what it would take for them to choose Windsor. Work with local real estate agents to better understand who is moving to the area, what they are looking for, and what steps need to be taken to enhance Windsor's identity.
- **Update the current marketing plan.** Use the findings of this study to update and implement the marketing plan created in coordination with the Springfield Economic Development Corporation.

Community Improvements

- **Continue support for infrastructure improvements.** Windsor has made great strides in improving town sidewalks, roads, and streetscape. Ensure that these efforts continue as other elements of the downtown evolve.
- **Increase social service offerings.** Stakeholders mentioned positive change stemming from the Town's focus on improving the police and fire resources for residents. Continue to augment these improvements, as effective social services will have an impact on the perception of the town.

- **Facilitate business resources with Windsor Improvement Corporation.** Expand business planning consulting and entrepreneurship resources to serve local businesses who are in need for support and technical assistance. Consider trainings around social media, selling online, finance/payroll tools, human resource procedures, and other challenges that small businesses face. Increase marketing of existing programming and future programming to improve attendance and reach a larger audience. Coordinate with the regional economic development organizations to share resources, knowledge, and costs.
- **Create a targeted and active downtown association/committee.** The organization would be charged with overseeing improvements and marketing efforts for the downtown.

Introduction

Data Sources

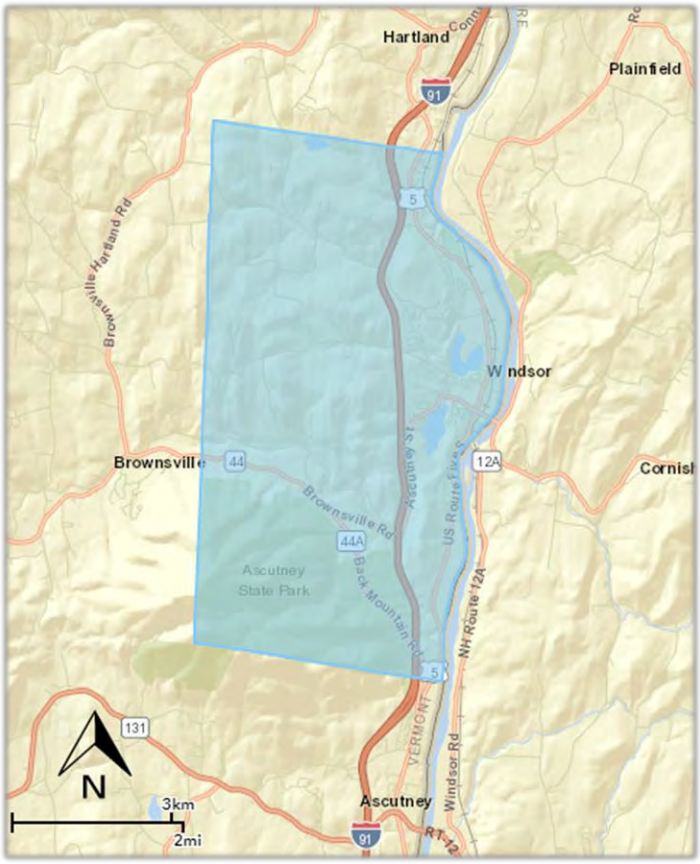
Much of the data outlined in this report was extracted from Environmental Systems Research Institute Inc. Business Analyst Online (Esri). Esri's base data is the US Census. It uses proprietary statistical models and updated data from the US Census Bureau, the US Postal Service, and various other sources to project current statistics and future trends. Esri data is often used for economic development, marketing, site selection, and strategic decision making. For more information on Esri, visit www.esri.com.

To analyze the industrial makeup of a study area, industry data organized by the North American Industrial Classification System (NAICS) is assessed. Camoin Associates subscribes to Economic Modeling Specialists, Intl. (EMSI), a proprietary data provider that aggregates economic data from approximately 90 sources. EMSI industry data, in our experience, is more complete than most, or perhaps all local data sources (for more information on EMSI, please see www.economicmodeling.com). This is because local data sources typically miss significant employment counts by industry because data on sole proprietorships and contractual employment (i.e. 1099 contractor positions) are not included and because certain employment counts are suppressed from BLS/BEA figures for confidentiality reasons when too few establishments exist within a single NAICS code.

Geographies Studied

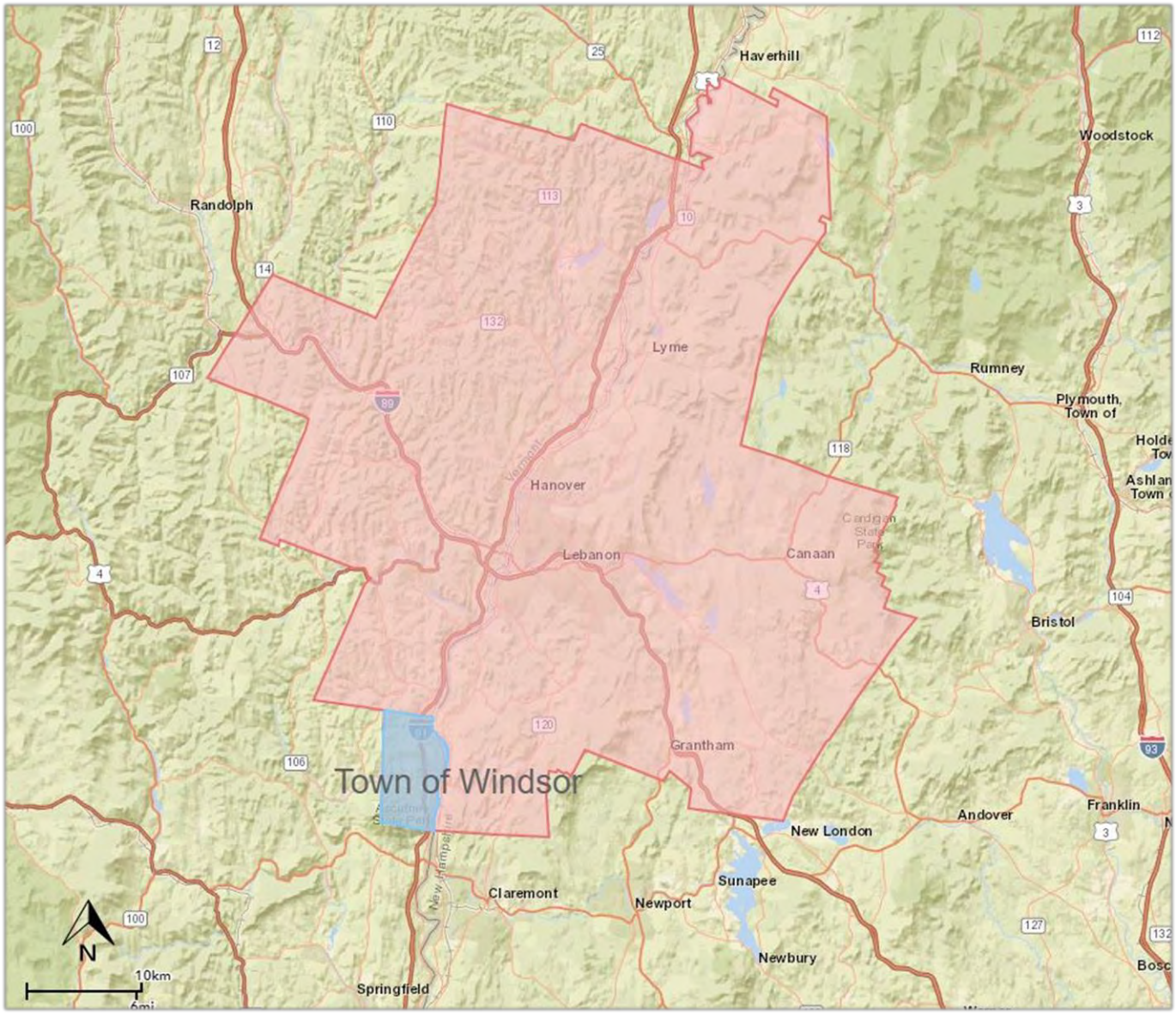
- **The Town of Windsor, VT.** The county subdivision area was utilized to gather demographic, socioeconomic, and housing information for comparison. County subdivisions tend to encompass a wider area surrounding the town, versus CDPs, which focus on the most densely populated portion of the town. See Figure 1 for more detail on the county subdivision area.
- **The Economic Region.** The "Economic Region" includes the immediate surrounding towns to Windsor. This region is where Windsor residents will conduct most of their spending. The region includes 25 county subdivisions: Vershire, VT; West Fairlee, VT; Fairlee, VT; Piermont, NH; Orford, NH; Strafford, VT; Thetford, VT; Lyme, NH; Royalton, VT; Sharon, VT; Norwich, VT; Hanover, NH; Canaan, NH; Orange, NH; Promfret, VT; Hartford, VT; Lebanon City, NH; Enfield, NH; Grafton, NH; Hartland, VT; Plainfield, NH; Grantham, NH; Springfield, NH; Cornish, VT; and Windsor, VT. Demographics, industry, and housing data were analyzed for the economic region. See Figure 2 for more detail on the economic region.
- **The State of Vermont.** State data was collected throughout to offer context for the economy surrounding the town and the economic region.
- **The United States.** National information was collected to again offer trends as comparison.

Figure 1: Map of Town of Windsor County Subdivision



Source: Esri

Figure 2: Map of Windsor Economic Region



Source: Esri

Demographic and Socioeconomic Overview

To inform our market analyses, Camoin compiled a general overview of demographic and socioeconomic data indicators to gain an understanding of past trends, existing conditions, and projections. This information was collected for the Town of Windsor, VT, the economic region surrounding the town, the State of Vermont, and the United States as a whole.

Population Trends

As shown in Table 1 below, the Town of Windsor maintained its population throughout the 2010 to 2017 period, only increasing by 4, or 0.1%. Population growth rates increase as the geographical study area expands. The economic region saw 2.1% growth in the same period, while Vermont saw 2.6% growth, and 6.1% at the national level. Looking at projected population rates, the Town of Windsor is the only geography showing a negative projected growth rate, at -1.2%, a population loss of 44.

Table 1: Population Trends Comparison

Population Trends Comparison					
	Population (2010)	Population (2017)	Population (2022)	% Change (2010-2017)	% Change (2017-2022)
Town of Windsor	3,553	3,557	3,513	0.1%	-1.2%
Economic Region	78,152	79,827	80,559	2.1%	0.9%
State of Vermont	625,741	642,128	651,684	2.6%	1.5%
US	308,745,538	327,514,334	341,323,594	6.1%	4.2%

Source: Esri

Age Distribution

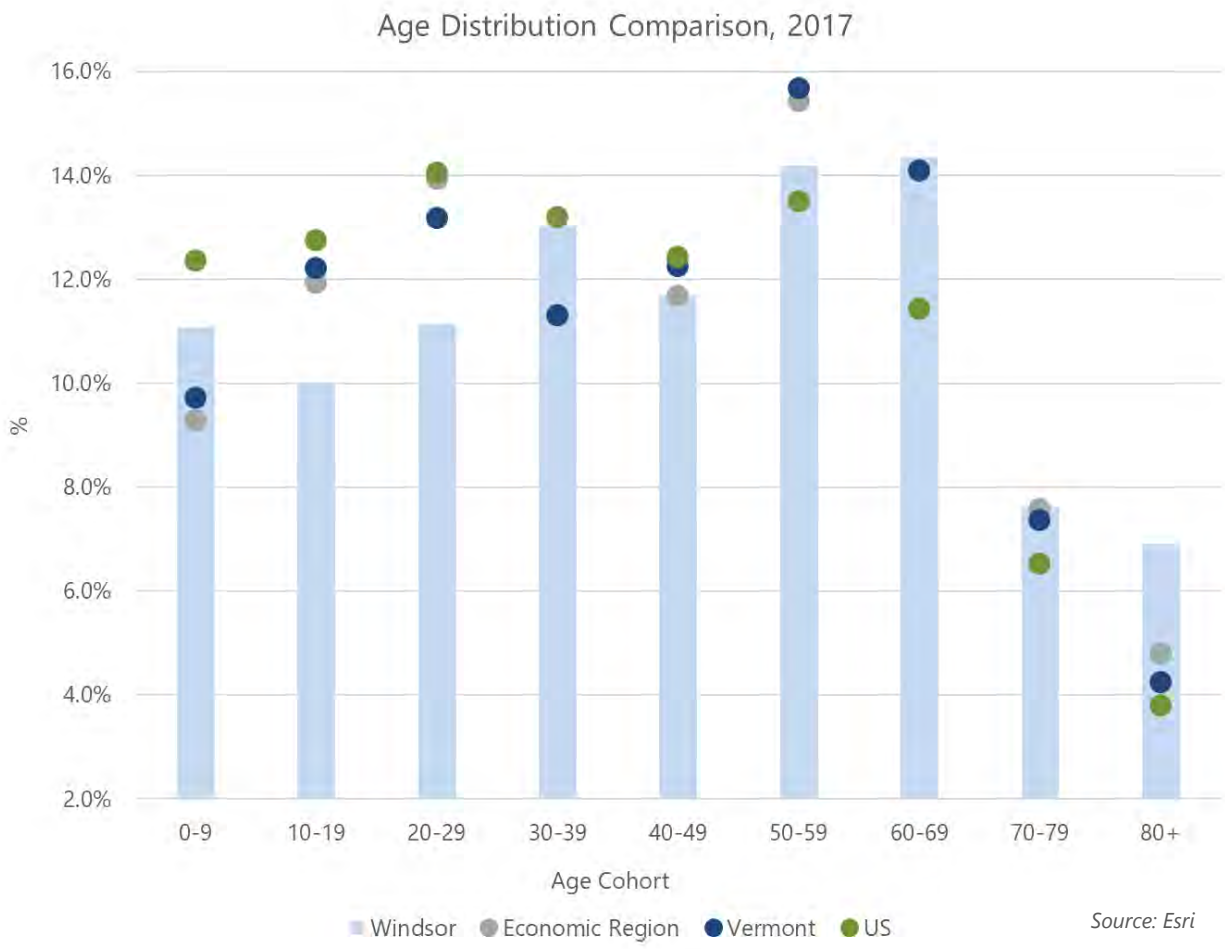
The figure below compares age distribution across the four geographies. With a median age of 44.2, Windsor's population is slightly older than that of the economic region and state. Overall, the nation has the youngest population, with a median age of 38.2. Windsor's population is most concentrated in the age cohorts between 50 and 69 years, with 28.5% of the population falling within these ages. The Town of Windsor's population has a smaller percentage of individuals in the 10 to 29 age cohorts than the economic region, state, and nation. Conversely, the Town has a greater percentage of individuals 80 years old and older than the comparison geographies. Together, this suggests that the Town of Windsor's population is skewed towards an older demographic.

Table 2: Median Age, 2017

Median Age, 2017	
Town of Windsor	44.2
Economic Region	43.2
State of Vermont	43.1
US	38.2

Source: Esri

Figure 3: Age Distribution Comparison



Source: Esri

Income Metrics

Table 3 below displays median household income trends within the town, region, state, and nation. As of 2017, the median household income within the town was $45,708, which was over $20,000 lower than that of the surrounding economic region. The state and nation displayed median household incomes in the $56,000 range, approximately $10,000 greater than that of the town. The economic region is projected to see the largest income growth over the period of 2017 to 2022, growing by $8,162 to $73,912, a growth of 12.4%. The town is projected to see the smallest growth, with a rate of 8%, equating to an increase of $3,677 to $49,385 by 2022.

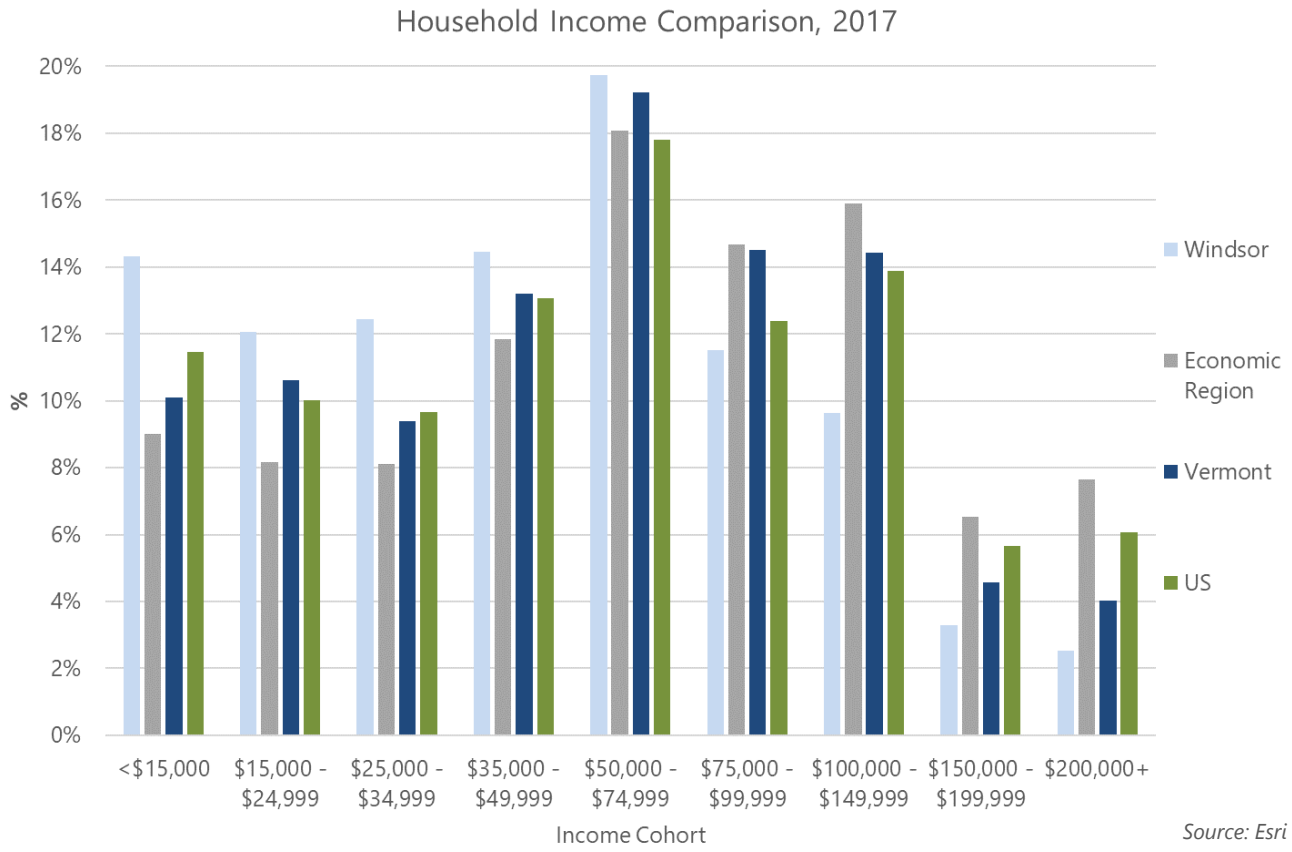
Table 3: Median Household Income Comparison

Median Household Income Comparison				
	Median Household Income (2017)	Median Household Income (2022)	# Change (2017-2022)	% Change (2017-2022)
Town of Windsor	$ 45,708	$ 49,385	$ 3,677	8.0%
Economic Region	$ 65,750	$ 73,912	$ 8,162	12.4%
State of Vermont	$ 56,578	$ 62,882	$ 6,304	11.1%
US	$ 56,124	$ 62,316	$ 6,192	11.0%

Source: Esri

The figure below demonstrates household income distribution for the four geographies. All four geographies are consistent in that they are most concentrated in the $50,000-$74,999 cohort. However, Windsor has higher concentrations of its population in the cohorts below $50,000, particularly in the <$15,000 income range. Conversely, Windsor has fewer households in the cohorts above $75,000.

Figure 4: Household Income Distribution



Source: Esri

Industry Overview

This section of the report provides insight on the economic situation in the Town of Windsor and the surrounding area. Industry data is sourced from Economic Modeling Specialists, Intl (EMSI), which reports data at the zip code, county, metropolitan statistical area (MSA), state, and national level. Industry data provided for the economic region consists of the 37 zip codes that most closely resemble the geographical area of the economic region.

Below is a summary of employment growth for the town, economic region, state, and nation. This summary provides both historical and projected outlooks on the job market for these geographies. The Town of Windsor incurred job growth over the previous five years of 70 jobs, a growth rate of 3.0%. The economic region experienced a lower growth rate than the town, but higher than the state, at 2.4% and 1.7%, respectively. The nation saw a 7.2% growth, almost double the town's growth.

Looking ahead to the next five years to 2022, growth is projected to slow for the Town of Windsor adding only 39 new jobs, a 2.1% growth rate. Job numbers for the economic region are projected to remain stagnant, with a growth rate of 0.0% through 2022. The United States is predicted to grow by 6.0% over the upcoming five-year period, while Vermont is projected to add jobs at a rate of 2.9%.

In examining earnings across the four geographies, the Town of Windsor showed average earnings of approximately $58,000 in 2017. Average earnings were lowest at the state level, at approximately $53,000, and highest at the regional level, at approximately $65,000. Vermont's average earnings are about $10,000 less than those of the nation. The economic region displays the highest average earnings in 2017, at $64,567.

Table 4: Employment Growth Summary

Employment Growth Summary								
Region	2012 Jobs	2017 Jobs	2022 Jobs	2012-2017 Change	2012-2017 % Change	2017-2022 Change	2017-2022 % Change	Average 2017 Earnings
Town of Windsor	1,775	1,845	1,884	70	3.9%	39	2.1%	$ 57,847
Economic Region	47,008	48,153	48,136	1,145	2.4%	(17)	0.0%	$ 64,567
Vermont	351,402	357,302	367,491	5,900	1.7%	10,189	2.9%	$ 53,045
US	148,464,262	159,180,936	168,672,959	10,716,674	7.2%	9,492,023	6.0%	$ 63,122

Source: EMSI

The table below summarizes the Town of Windsor's industries at the broadest level, 2-digit NAICS code. While some industries provide little to no employment, there are a few 2-digit industries that have upwards of 100 jobs. The top two industries by 2017 job figures are Health Care and Social Assistance and Government, with 388 and 509 jobs, respectively. Together these two industries hold nearly half of the total jobs in the town. Other significant industries include Construction; Retail Trade; and Manufacturing with 203; 158; and 116 jobs, respectively. Looking at the last five years, Health Care has declined in growth and is projected to continue to decline over the next five years. This trait is unique to the town, as health care is projected to grow rapidly in comparison geographies. In contrast, the other largest employing industries have grown marginally. Looking at projected growth, Retail Trade is projected to gain one job, while Government is projected to add five jobs through 2022.

Real Estate experienced the largest growth rate over the previous five-year period, adding 24 jobs for a growth rate of 83% between 2012 and 2017. However, growth in this industry is projected to slow over the next five years, adding 13 more jobs through 2022. Management of Companies is projected to become the fastest growing industry with growth of 33% into 2022.

It should be noted that five 2-digit industries demonstrate location quotients above 1.2, which denotes significant concentration of an industry.[1] These industries are: Construction; Real Estate and Rental and Leasing; Management of Companies and Enterprises; Health Care and Social Assistance; and Government.

The highest paying industries in the Town of Windsor are Management of Companies and Enterprises ($90,352); Professional, Scientific, and Technical Services ($79,681); and Government ($77,593). In contrast, four industries display average earnings per job of less than $30,000: Other Services (except Public Administration) ($23,079); Accommodation and Food Services ($24,463); Arts, Entertainment, and Recreation ($24,814); and Educational Services ($29,614).

Table 5: Town of Windsor, All Industries

Town of Windsor, All Industries										
NAICS (2-digit)	Description	2012 Jobs	2017 Jobs	2022 Jobs	2012 - 2017 Change	2012 - 2017 % Change	2017 - 2022 Change	2017 - 2022 % Change	Avg. Earnings Per Job (2017)	2017 Location Quotient
11	Crop and Animal Production	0	0	0	0	0%	0	0%	$0	0.00
21	Mining, Quarrying, and Oil and Gas Extraction	0	0	0	0	0%	0	0%	$0	0.00
22	Utilities	0	0	0	0	0%	0	0%	$0	0.00
23	Construction	196	203	190	7	4%	(13)	(6%)	$49,167	2.04
31	Manufacturing	116	129	144	13	11%	15	12%	$54,304	0.89
42	Wholesale Trade	17	14	16	(3)	(18%)	2	14%	$67,848	0.21
44	Retail Trade	146	157	158	11	8%	1	1%	$31,595	0.82
48	Transportation and Warehousing	19	16	16	(3)	(16%)	0	0%	$43,148	0.26
51	Information	13	15	16	2	15%	1	7%	$39,949	0.44
52	Finance and Insurance	27	30	32	3	11%	2	7%	$61,268	0.42
53	Real Estate and Rental and Leasing	29	53	66	24	83%	13	25%	$42,896	1.71
54	Professional, Scientific, and Technical Services	103	98	94	(5)	(5%)	(4)	(4%)	$79,681	0.83
55	Management of Companies and Enterprises	40	52	69	12	30%	17	33%	$90,352	2.02
56	Administrative and Support and Waste Management and Remediation Services	27	38	44	11	41%	6	16%	$40,253	0.33
61	Educational Services	<10	11	11	Insf. Data	Insf. Data	0	0%	$29,614	0.23
62	Health Care and Social Assistance	412	388	386	(24)	(6%)	(2)	(1%)	$55,113	1.67
71	Arts, Entertainment, and Recreation	33	31	30	(2)	(6%)	(1)	(3%)	$24,814	0.98
72	Accommodation and Food Services	29	32	32	3	10%	0	0%	$24,463	0.21
81	Other Services (except Public Administration)	66	68	66	2	3%	(2)	(3%)	$23,079	0.76
90	Government	493	509	514	16	3%	5	1%	$77,593	1.80
99	Unclassified Industry	0	0	0	0	0%	0	0%	$0	0.00
	Total	**1,775**	**1,845**	**1,884**	**70**	**4%**	**39**	**2%**	**$57,847**	

Source: EMSI

[1] EMSI defines Location Quotient as: "…a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region "unique" in comparison to the national average. Many economists consider an area's industry to be concentrated if its LQ is above 1.2."

Table 6, below, shows similar data at the 2-digit level for the economic region. Recall that the economic region in this case is defined by the 37 zip codes that most closely resemble the economic region discussed in the *Demographic and Socioeconomic Overview* and *Housing Market Analysis* sections. The industry analysis for the economic region demonstrates job loss in many areas over the 2012 to 2017 period. Largest losses occurred in the Retail Trade; Manufacturing; Wholesale Trade; and Finance and Insurance industries. However, these losses were mitigated by significant gains in the Health Care and Social Assistance; Educational Services; and Accommodation and Food Services industries. Health Care and Education Services both display high location quotients of 1.57 and 6.93, respectively.

Projected figures show that growth rates, both positive and negative, are projected to slow through 2022. Industries that experienced significant loss are projected to continue seeing decline, but on a smaller scale. Retail Trade is projected to lose 151 more jobs, the second largest projected decline. Educational Services is projected to see a large shift from its past trends, with a projected 11% loss through 2022, equating to 946 jobs. On the contrary, Health Care is projected to continue growing at a rate of 8%, adding 725 jobs.

Industries in the economic region offer higher wages than those of the town. While the region does have three industries with average earnings per job less than $30,000 (Other Services (except Public Administration); Accommodation and Food Services; and Arts, Entertainment, and Recreation), the region has many industries with average earnings around $100,000. These industries are: Management of Companies and Enterprises ($251,782); Utilities ($134,771); Finance and Insurance ($99,752); Information ($98,776); Professional, Scientific, and Technical Services ($96,828); and Mining, Quarrying, and Oil and Gas Extraction ($96,559).

Table 6: Economic Region, All Industries

Economic Region, All Industries										
NAICS (2-digit)	Description	2012 Jobs	2017 Jobs	2022 Jobs	2012 - 2017 Change	2012 - 2017 % Change	2017 - 2022 Change	2017 - 2022 % Change	Avg. Earnings Per Job (2017)	2017 Location Quotient
11	Crop and Animal Production	277	310	312	33	12%	2	1%	$49,458	0.53
21	Mining, Quarrying, and Oil and Gas Extraction	54	53	57	(1)	(2%)	4	8%	$96,559	0.28
22	Utilities	44	49	49	5	11%	0	0%	$134,771	0.29
23	Construction	2,157	2,125	2,051	(32)	(1%)	(74)	(3%)	$42,320	0.82
31	Manufacturing	2,826	2,724	2,641	(102)	(4%)	(83)	(3%)	$67,356	0.72
42	Wholesale Trade	1,159	1,033	1,086	(126)	(11%)	53	5%	$93,576	0.57
44	Retail Trade	5,008	4,784	4,633	(224)	(4%)	(151)	(3%)	$34,932	0.96
48	Transportation and Warehousing	934	923	917	(11)	(1%)	(6)	(1%)	$46,039	0.55
51	Information	773	765	763	(8)	(1%)	(2)	(0%)	$98,776	0.85
52	Finance and Insurance	927	844	856	(83)	(9%)	12	1%	$99,752	0.45
53	Real Estate and Rental and Leasing	437	486	515	49	11%	29	6%	$44,447	0.61
54	Professional, Scientific, and Technical Services	2,557	2,533	2,591	(24)	(1%)	58	2%	$96,828	0.82
55	Management of Companies and Enterprises	441	497	531	56	13%	34	7%	$251,782	0.73
56	Administrative and Support and Waste Management and Remediation Services	1,304	1,361	1,449	57	4%	88	6%	$39,342	0.45
61	Educational Services	8,037	8,460	7,514	423	5%	(946)	(11%)	$73,703	6.83
62	Health Care and Social Assistance	8,793	9,479	10,204	686	8%	725	8%	$76,662	1.57
71	Arts, Entertainment, and Recreation	718	814	863	96	13%	49	6%	$24,905	0.99
72	Accommodation and Food Services	3,044	3,263	3,359	219	7%	96	3%	$25,781	0.79
81	Other Services (except Public Administration)	2,156	2,191	2,231	35	2%	40	2%	$26,399	0.95
90	Government	5,358	5,456	5,510	98	2%	54	1%	$70,449	0.74
99	Unclassified Industry	<10	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.03
	Total	**47,008**	**48,153**	**48,136**	**1145**	**2%**	**-17**	**0%**	**$64,567**	

Source: EMSI

Overall, Vermont has grown by 2% since 2012 and is projected to grow an additional 3% by 2022. Similar to the economic region, Vermont has also seen recent decline in the Manufacturing industry, losing almost 2,000 jobs over the 2012 to 2017 period. Large job growth has been exhibited in Health Care and Social Assistance; Accommodation and Food Services; and Educational Services, gaining nearly 3,300, 3,600, and 1,100 jobs, respectively over the five-year period. Health Care is projected to continue strong growth, with a projected increase of another 4,672 jobs through 2022. Management of Companies and Enterprises is projected to experience notable growth, adding 556 jobs for a growth rate of 27% through 2022. Three industries show significant concentration at the state level: Crop and Animal Production; Educational Services; and Health Care and Social Assistance, with location quotients of 1.44; 1.87; and 1.24, respectively.

Table 7: State of Vermont, All Industries

Vermont, All Industries										
NAICS (2-digit)	Description	2012 Jobs	2017 Jobs	2022 Jobs	2012 - 2017 Change	2012 - 2017 % Change	2017 - 2022 Change	2017 - 2022 % Change	Avg. Earnings Per Job (2017)	2017 Location Quotient
11	Crop and Animal Production	6,030	6,232	6,296	202	3%	64	1%	$31,416	1.44
21	Mining, Quarrying, and Oil and Gas Extraction	655	663	670	8	1%	7	1%	$75,012	0.48
22	Utilities	1,836	1,322	1,294	(514)	(28%)	(28)	(2%)	$134,585	1.05
23	Construction	21,966	22,205	22,191	239	1%	(14)	(0%)	$49,474	1.15
31	Manufacturing	32,792	30,936	30,454	(1,856)	(6%)	(482)	(2%)	$70,650	1.10
42	Wholesale Trade	9,691	9,886	10,393	195	2%	507	5%	$74,891	0.73
44	Retail Trade	39,500	39,678	39,604	178	0%	(74)	(0%)	$35,601	1.07
48	Transportation and Warehousing	7,678	7,379	7,460	(299)	(4%)	81	1%	$48,481	0.60
51	Information	5,159	4,846	4,643	(313)	(6%)	(203)	(4%)	$70,912	0.73
52	Finance and Insurance	9,420	8,994	8,982	(426)	(5%)	(12)	(0%)	$91,185	0.65
53	Real Estate and Rental and Leasing	4,306	4,562	4,636	256	6%	74	2%	$45,823	0.77
54	Professional, Scientific, and Technical Services	18,625	18,890	19,871	265	1%	981	5%	$80,346	0.83
55	Management of Companies and Enterprises	1,960	2,073	2,629	113	6%	556	27%	$114,298	0.41
56	Administrative and Support and Waste Management and Remediation Services	12,344	13,223	14,219	879	7%	996	8%	$43,131	0.59
61	Educational Services	16,140	17,198	18,450	1,058	7%	1,252	7%	$41,860	1.87
62	Health Care and Social Assistance	52,599	55,881	60,553	3,282	6%	4,672	8%	$53,115	1.24
71	Arts, Entertainment, and Recreation	5,701	5,580	5,569	(121)	(2%)	(11)	(0%)	$26,621	0.91
72	Accommodation and Food Services	30,229	32,877	33,894	2,648	9%	1,017	3%	$25,719	1.08
81	Other Services (except Public Administration)	15,124	14,538	14,631	(586)	(4%)	93	1%	$30,714	0.85
90	Government	59,648	60,337	61,052	689	1%	715	1%	$64,774	1.10
99	Unclassified Industry	0	0	0	0	0%	0	0%	$0	0.00
	Total	**351,402**	**357,302**	**367,491**	**5,900**	**2%**	**10,189**	**3%**	**$53,045**	

Source: EMSI

National data displayed positive growth in all 2-digit industries over the 2012 to 2017 period. Looking forward to 2022, two industries are projected to decline: Mining, Quarrying, and Oil and Gas Extraction, and Other Services (except Public Administration). While Other Services (except Public Administration) is expected to decline marginally, Mining, Quarrying, and Oil and Gas Extraction is anticipated to decline by 25%. Large growth over the 2012 to 2017 period was observed in several industries, including Construction; Professional, Scientific, and Technical Services; Administrative and Support and Waste Management and Remediation Services; Health Care and Social Assistance; and Accommodation and Food Services industries, adding over a million jobs each. In terms of projected growth, Health Care is projected to experience the largest job gains, adding over 2 million jobs through 2022 for a growth of 12%.

Table 8: United States, All Industries

United States, All Industries									
NAICS (2-digit)	Description	2012 Jobs	2017 Jobs	2022 Jobs	2012 - 2017 Change	2012 - 2017 % Change	2017 - 2022 Change	2017 - 2022 % Change	Avg. Earnings Per Job (2017)
11	Crop and Animal Production	1,876,725	1,925,732	1,959,952	49,007	3%	34,220	2%	$35,713
21	Mining, Quarrying, and Oil and Gas Extraction	814,718	614,802	631,001	(199,916)	(25%)	16,199	3%	$121,603
22	Utilities	550,588	559,638	573,923	9,050	2%	14,285	3%	$140,133
23	Construction	7,518,471	8,615,100	9,080,954	1,096,629	15%	465,854	5%	$62,025
31	Manufacturing	12,125,219	12,539,810	12,654,335	414,591	3%	114,525	1%	$81,248
42	Wholesale Trade	5,810,175	6,001,364	6,286,292	191,189	3%	284,928	5%	$85,951
44	Retail Trade	15,517,330	16,477,342	17,206,086	960,012	6%	728,744	4%	$36,166
48	Transportation and Warehousing	4,770,574	5,518,589	5,915,594	748,015	16%	397,005	7%	$60,727
51	Information	2,817,415	2,970,119	3,060,897	152,704	5%	90,778	3%	$115,294
52	Finance and Insurance	5,907,213	6,164,025	6,478,087	256,812	4%	314,062	5%	$118,535
53	Real Estate and Rental and Leasing	2,413,107	2,643,888	2,772,111	230,781	10%	128,223	5%	$59,361
54	Professional, Scientific, and Technical Services	9,115,918	10,165,948	11,080,767	1,050,030	12%	914,819	9%	$97,885
55	Management of Companies and Enterprises	2,003,075	2,243,703	2,389,459	240,628	12%	145,756	6%	$137,092
56	Administrative and Support and Waste Management and Remediation Services	8,917,829	9,933,729	10,692,274	1,015,900	11%	758,545	8%	$43,088
61	Educational Services	3,774,603	4,093,179	4,484,820	318,576	8%	391,641	10%	$47,727
62	Health Care and Social Assistance	18,200,054	20,022,798	22,410,646	1,822,744	10%	2,387,848	12%	$57,933
71	Arts, Entertainment, and Recreation	2,406,789	2,722,042	2,933,807	315,253	13%	211,765	8%	$38,806
72	Accommodation and Food Services	11,979,504	13,609,436	14,595,280	1,629,932	14%	985,844	7%	$23,606
81	Other Services (except Public Administration)	7,679,885	7,652,941	8,038,626	(26,944)	(0%)	385,685	5%	$32,425
90	Government	24,093,134	24,404,880	25,045,663	311,746	1%	640,783	3%	$74,415
99	Unclassified Industry	171,936	301,872	382,384	129,936	76%	80,512	27%	$61,582
	Total	**148,464,262**	**159,180,936**	**168,672,959**	**10,716,674**	**7%**	**9,492,023**	**6%**	**$63,122**

Source: EMSI

Table 9 below displays the top 25 3-digit industries by 2017 jobs in the Town of Windsor. The top two industries are within the Government sector, followed by two health care-related sectors, Hospitals and Nursing and Residential Care Facilities. Five of the top 6 industries experienced job loss over the 2012 to 2017 period. Significant gains were experienced in the Heavy and Civil Engineering Construction; Real Estate; and Federal Government sectors, each adding between 20 and 25 jobs since 2012. Management of Companies and Enterprises and Real Estate are projected to see the largest job gains through 2022, adding 17 and 13 jobs, respectively.

Many of the nongovernment-related top employing industries directly relate to downtown revitalization and visitor experience. In particular, the strong presence of Food and Beverage Stores; Beverage and Tobacco Product Manufacturing; Food Services and Drinking Places; and Amusement, Gambling, and Recreation Industries cannot be ignored. The facilitation of future growth in these industries and connecting these existing resources to the downtown will be critical in attracting future visitors and inducing spending.

Table 9: Town of Windsor, Top 25 3-Digit Industries by 2017 Jobs

Town of Windsor, Top 25 3-Digit Industries by 2017 Jobs										
NAICS (3-digit)	Description	2012 Jobs	2017 Jobs	2022 Jobs	2012 - 2017 Change	2012 - 2017 % Change	2017 - 2022 Change	2017 - 2022 % Change	Avg. Earnings Per Job (2017)	2017 Location Quotient
903	Local Government	258	251	250	(7)	(3%)	(1)	0%	$60,583	1.52
901	Federal Government	173	198	207	25	14%	9	5%	$99,175	3.50
622	Hospitals	204	197	191	(7)	(3%)	(6)	(3%)	$68,953	3.42
623	Nursing and Residential Care Facilities	158	151	157	(7)	(4%)	6	4%	$33,671	3.91
541	Professional, Scientific, and Technical Services	103	98	94	(5)	(5%)	(4)	(4%)	$79,681	0.83
238	Specialty Trade Contractors	110	97	83	(13)	(12%)	(14)	(14%)	$40,377	1.49
445	Food and Beverage Stores	74	80	81	6	8%	1	1%	$29,892	2.19
312	Beverage and Tobacco Product Manufacturing	64	66	72	2	3%	6	9%	$50,393	22.47
902	State Government	63	60	57	(3)	(5%)	(3)	(5%)	$77,504	0.98
237	Heavy and Civil Engineering Construction	37	60	63	23	62%	3	5%	$66,858	5.10
551	Management of Companies and Enterprises	40	52	69	12	30%	17	33%	$90,352	2.02
531	Real Estate	27	50	63	23	85%	13	26%	$42,571	2.08
236	Construction of Buildings	49	47	44	(2)	(4%)	(3)	(6%)	$44,816	2.02
621	Ambulatory Health Care Services	48	38	37	(10)	(21%)	(1)	(3%)	$69,611	0.43
321	Wood Product Manufacturing	18	37	45	19	106%	8	22%	$53,929	7.70
722	Food Services and Drinking Places	29	32	32	3	10%	0	0%	$24,463	0.24
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	25	28	28	3	12%	0	0%	$24,328	0.82
561	Administrative and Support Services	17	26	31	9	53%	5	19%	$34,594	0.24
812	Personal and Laundry Services	21	20	19	(1)	(5%)	(1)	(5%)	$26,177	0.80
522	Credit Intermediation and Related Activities	17	20	22	3	18%	2	10%	$56,384	0.65
441	Motor Vehicle and Parts Dealers	11	17	20	6	55%	3	18%	$32,995	0.73
814	Private Households	17	17	16	0	0%	(1)	(6%)	$14,461	1.64
713	Amusement, Gambling, and Recreation Industries	13	15	16	2	15%	1	7%	$28,061	0.74
447	Gasoline Stations	15	15	14	0	0%	(1)	(7%)	$24,572	1.35
424	Merchant Wholesalers, Nondurable Goods	15	13	14	(2)	(13%)	1	8%	$72,048	0.54
	Total	**1,606**	**1,684**	**1,725**	**79**	**5%**	**40**	**2%**		

Source: EMSI

Data were examined at the 6-digit level to display the most detail on prevalent industries within the Town of Windsor. The table below shows the top 10 6-digit industries by 2017 jobs. Four of the top industries are concentrated in government-related subsectors, with Elementary and Secondary Schools (Local Government); Federal Government, Civilian, Excluding Postal Service; Local Government, Excluding Education and Hospitals; and State Government, Excluding Education and Hospitals appearing in the top 10 employing subsectors. General Medical and Surgical Hospitals employed the most people in 2017, supplying nearly 200 jobs. Despite the cluster of government-related industries in these data, Breweries is the 6th largest employing sector, with 65 jobs in 2017. Breweries also displays significant projected growth, as it is projected to add 13 jobs through 2022. Breweries also shows the highest location quotient of these top 10 6-digit industries, at 156.42. This indicates that Breweries in the Town of Windsor are approximately 156 times more concentrated than the national average.

Table 10: Town of Windsor, Top 10 6-Digit Industries by 2017 Jobs

Town of Windsor, Top 10 6-Digit Industries by 2017 Jobs							
NAICS (6-digit)	Description	2012 Jobs	2017 Jobs	2012 - 2017 Change	2012 - 2017 % Change	Avg. Earnings Per Job (2017)	2017 Location Quotient
622110	General Medical and Surgical Hospitals	204	197	(7)	(3%)	$68,953	3.87
903611	Elementary and Secondary Schools (Local Government)	171	160	(11)	(6%)	$61,146	2.04
901199	Federal Government, Civilian, Excluding Postal Service	128	156	28	22%	$113,409	4.67
903999	Local Government, Excluding Education and Hospitals	86	90	4	5%	$59,637	1.31
623311	Continuing Care Retirement Communities	81	82	1	1%	$32,856	16.01
312120	Breweries	55	65	10	18%	$49,550	156.42
445110	Supermarkets and Other Grocery (except Convenience) Stores	49	62	13	27%	$26,904	1.71
237310	Highway, Street, and Bridge Construction	35	59	24	69%	$67,235	9.80
551114	Corporate, Subsidiary, and Regional Managing Offices	39	52	13	33%	$90,352	1.71
902999	State Government, Excluding Education and Hospitals	55	52	(3)	(5%)	$83,490	2.01

Source: EMSI

Housing Market Analysis

Housing Stock

The Windsor housing stock primarily consists of single-family, detached homes, with 884 single-family, detached homes, equating to 51.3% of Windsor's housing. Aside from the large concentration of single-family houses, the existing multiunit offerings are diverse, ranging from 2-unit structures to structures with 50 units or more. The composition of 3 to 4-unit housing has decreased dramatically since 2010, dropping from 315 units to 148 units in 2015. This loss has been met with increases in 5 to 9-unit, 10 to 19-unit, and 50 or more-unit structures. Overall, the town housing inventory has decreased by a total of 33 units since 2010. Housing stock in the economic region displays a higher concentration of single-family, detached homes at 66.3%, indicating further need for multiunit housing within the region.

Table 11: Housing Units by Structure

Housing Units by Structure						
Structure Type	Town of Windsor				Economic Region	
	2010		2015		2015	
	#	%	#	%	#	%
1, Detached	884	52.4%	848	51.3%	25,354	66.3%
1, Attached	10	0.6%	14	8.0%	1,123	2.9%
2 Units	140	8.3%	148	8.9%	1,852	4.8%
3 to 4	315	18.7%	148	8.9%	2,205	5.8%
5 to 9	86	5.1%	137	8.3%	2,212	5.8%
10 to 19	30	1.8%	60	3.6%	1,046	2.7%
20 to 49	65	3.9%	59	3.6%	599	1.6%
50 or more	40	2.4%	140	8.5%	1,192	3.1%
Mobile Home	117	6.9%	100	6.0%	2,666	7.0%
Boat, RV, Van, etc.	-	0.0%	0	0.0%	14	0.0%
Total	1,687	100%	1,654	100%	38,263	100%

Source: Esri, ACS 2015 5-year estimates

The following table provides a detailed historical look at occupancy and vacancy trends in both the town and economic region over the last seven years. Of occupied units, about 60%, or 899, were owner-occupied, while 40%, or 595, were renter-occupied, as of 2017 data. Since 2010, there has been a marginal increase in total occupied units and a shift from owner-occupied to rental units. Currently, the vacancy rate is approximately 14.9%, a 2% increase since 2010. Over the same period, 43 housing units were added to total housing stock. It should also be noted that, according to 2016 ACS data, the vacancy rate in Windsor specific to rental units was 3.6%, further pointing towards a need for multiunit, rental housing options.

Vacancy rates are higher at the economic regional level compared to the town level, at 17.3% in 2017, a slight increase from 16.2% in 2010. From 2010 to 2017, the economic region saw an increase in total housing units of 1,536. The economic region contains a larger percentage of owner-occupied units than the town. Sixty-seven percent of occupied units are owned, while 33% are renter-occupied.

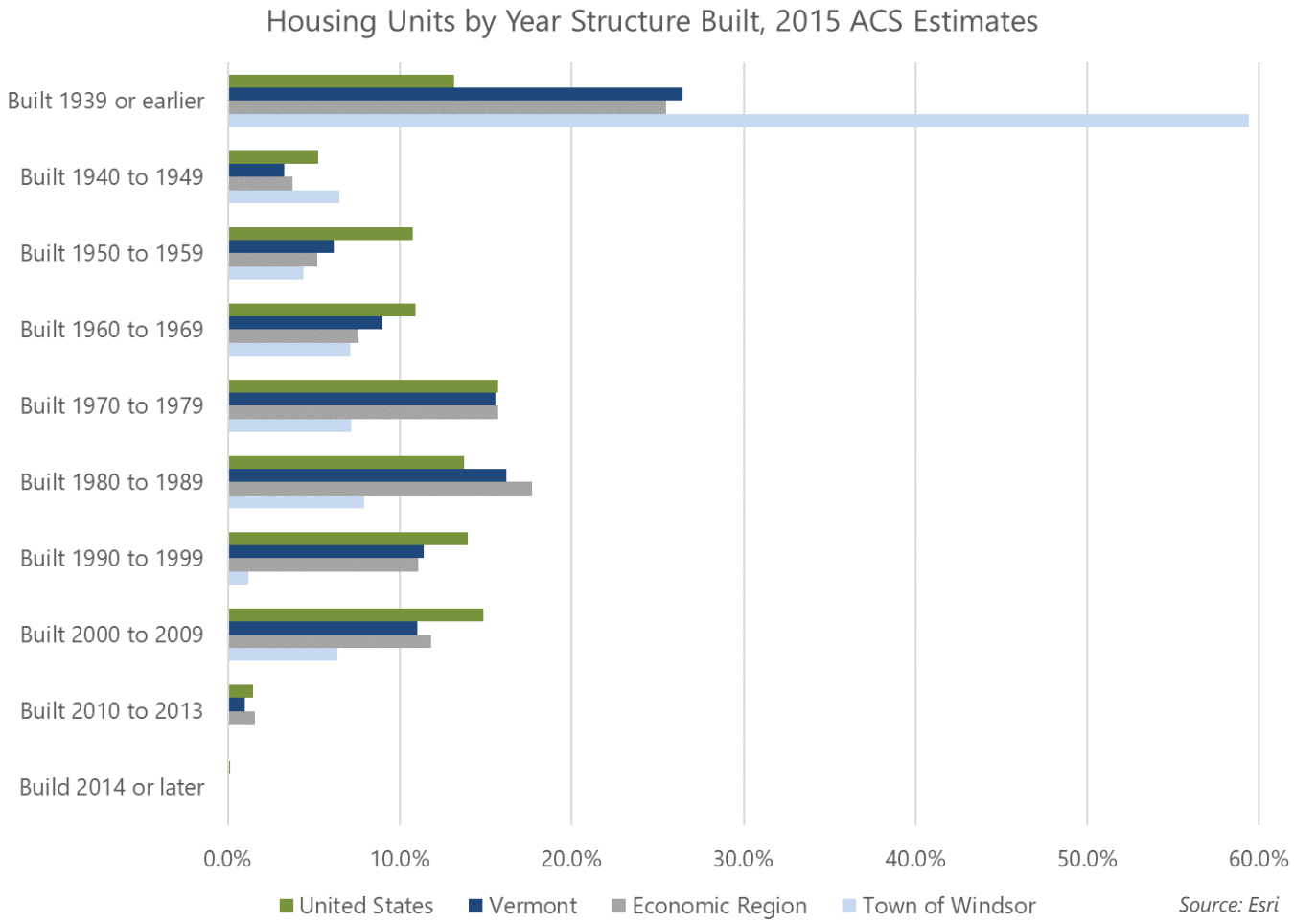
Table 12: Occupancy Trends Comparison

Occupancy Trends Comparison				
	Town of Windsor		Economic Region	
	2010	2017	2010	2017
Total Housing Units	1,712	1,755	38,401	39,937
Occupied	1,492	1,494	32,175	33,042
Owner	920	899	22,153	22,176
Renter	572	595	10,022	10,866
Vacant	220	261	6,226	6,895
Vacancy Rate	12.9%	14.9%	16.2%	17.3%

Source: Esri, American Fact Finder

Figure 5 below displays the composition of housing by year built. Nearly 60% of the housing units located in Windsor were built in 1939 or earlier, with only 6.4% of units being built within the last 17 years. This indicates a much older housing stock compared to that of the economic region, state, and nation. This is reflected in the geography's median year of structure built; Windsor's median year of structure built is 1939, compared to 1975, 1973, and 1976 for the region, state, and nation, respectively.

Figure 5: Housing Units by Year Structure Built



Affordability

The tables below provide data regarding the housing affordability in the Town of Windsor, compared to the surrounding study areas. Of the four geographies, the Town of Windsor has the lowest median home value at $170,742. Median home values were about $65,000 higher in the State of Vermont, and over $36,000 higher in the United States as a whole.

Table 13: Median Home Value, 2017

Median Home Value, 2017			
Town of Windsor	Economic Region	Vermont	United States
$ 170,242	$ 262,026	$ 236,077	$ 207,344

Source: Esri

Table 14 illustrates the percentage of owner-occupied housing units by value in 2017 for the Town of Windsor, economic region, Vermont, and nation. The largest cohort of owner-occupied homes in Windsor are valued between $150,000 and $199,999, at 34.5%. This data is consistent with the highest percentage of occupants in the state as well as the country; however, the largest concentration of homes in the region are valued between $300,000 and $399,999. Nearly 87% of Windsor's homes were valued between $50,000 and $299,999 in 2017.

Table 14: Owner-Occupied Housing Units by Value, 2017

Owner-Occupied Housing Units by Value, 2017					
Value	Town of Windsor		Economic Region	Vermont	United States
	#	%	%	%	%
<$50,000	49	5.5%	3.5%	4.2%	7.3%
$50,000-$99,999	85	9.5%	4.6%	6.5%	13.0%
$100,000-$149,999	190	21.1%	8.6%	11.2%	14.0%
$150,000-$199,999	310	34.5%	14.8%	16.7%	14.1%
$200,000-$249,999	95	10.6%	15.3%	15.6%	10.6%
$250,000-$299,999	99	11.0%	13.8%	13.6%	8.4%
$300,000-$399,999	34	3.8%	17.5%	15.7%	11.7%
$400,000-$499,999	13	1.4%	8.7%	7.2%	6.9%
$500,000-$749,999	1	0.1%	7.8%	6.0%	7.7%
$750,000-$999,999	1	0.1%	3.5%	1.8%	3.2%
$1,000,000+	22	2.4%	2.1%	1.4%	3.0%

Source: Esri

The following table shows rental rates for renter-occupied housing units using 2015 American Community Survey estimates. Based on this data, the highest concentration of Windsor's renters paid between $650 and $699 per month for rent. Windsor rents are concentrated between $600 and $900 (58.1%), with no rents costing more than $1,500. In contrast, the largest cohorts of renters in the region (16.3%), the State of Vermont (12.6%), and the nation (11.9%) paid between $1000 to $1,249 per month. Median contract rent was highest in the economic region, at $884.

Table 15: Renter Occupied Housing Units by Monthly Contract Rent, 2015

Renter Occupied Housing Units by Monthly Contract Rent, 2015 Estimates					
Contract Rent	Town of Windsor		Economic Region	Vermont	United States
	#	%	%	%	%
Less than $100	0	0.0%	0.8%	0.8%	1.1%
$100 to $149	0	0.0%	1.0%	0.7%	1.1%
$150 to $199	24	3.9%	0.7%	1.4%	1.3%
$200 to $249	47	7.6%	2.3%	3.1%	2.0%
$250 to $299	11	1.8%	2.3%	1.7%	1.6%
$300 to $349	0	0.0%	2.6%	2.2%	2.3%
$350 to $399	33	5.3%	1.4%	1.9%	2.6%
$400 to $449	0	0.0%	1.4%	2.6%	3.8%
$450 to $499	0	0.0%	0.1%	2.1%	3.6%
$500 to $549	28	4.5%	2.6%	4.8%	5.3%
$550 to $599	25	4.0%	2.2%	3.3%	4.5%
$600 to $649	83	13.3%	3.5%	6.1%	5.6%
$650 to $699	99	15.9%	5.3%	6.2%	5.0%
$700 to $749	45	7.2%	4.1%	6.3%	5.1%
$750 to $799	96	15.4%	6.0%	6.4%	4.4%
$800 to $899	39	6.3%	13.3%	11.5%	8.7%
$900 to $999	18	2.9%	8.5%	8.2%	6.5%
$1,000 to $1,249	49	7.9%	16.3%	12.6%	11.9%
$1,250 to $1,499	7	1.1%	7.5%	5.3%	6.9%
$1,500 to $1,999	0	0.0%	9.2%	4.7%	6.7%
$2,000 to $2,499	0	0.0%	1.8%	1.1%	2.5%
$2,500 to $2,999	0	0.0%	1.0%	0.2%	1.0%
$3,000 to $3,499	0	0.0%	0.3%	0.1%	0.6%
$3,500 +	0	0.0%	0.6%	0.1%	0.4%
Median Contract Rent	$ 676		$ 884	$ 778	$ 776

Source: Esri

The median home value was used to calculate the annual household income threshold that is required to own or rent a home in the town and economic region. The annual household income threshold for Windsor is $37,600, while the threshold required to own a home in the economic region is $57,880, more than $20,000 higher than the town. This indicates that housing is more affordable within the Town of Windsor than the surrounding area.

Table 16: Estimated Mortgage Payment

Estimated Mortgage Payment				
	Town of Windsor		Economic Region	
Median Price of Home	$	170,242	$	262,026
Down Payment @ 10%	$	17,024	$	26,203
Loan Amount	$	153,218	$	235,823
Average Mtg Payment 30 Years @ 4%	$	731	$	1,126
Average Tax Payments, Monthly	$	209	$	321
Total Monthly Payment	$	940	$	1,447
Annual HH Income Threshold	$	37,600	$	57,880

Source: Esri, Camoin Associates

Similarly, median rental rates were used to calculate the required income threshold for renters. Median rent in Windsor is approximately $200 less per month than the economic region. As a result, the income required to rent in Windsor is approximately $27,000, over $8,000 less than income needed to rent within the economic region.

Table 17: Rent as Percentage of Income

Rent as a Percentage of Income				
	Town of Windsor		Economic Region	
Median Rent	$	676	$	884
Annual HH Income Threshold	$	27,040	$	35,360

Source: Esri, Camoin Associates

Attachment A: Data Sources

Economic Modeling Specialists International (EMSI)

To analyze the industrial makeup of a study area, industry data organized by the North American Industrial Classification System (NAICS) is assessed. Camoin Associates subscribes to Economic Modeling Specialists Intl. (EMSI), a proprietary data provider that aggregates economic data from approximately 90 sources. EMSI industry data, in our experience, is more complete than most or perhaps all local data sources (for more information on EMSI, please see www.economicmodeling.com). This is because local data sources typically miss significant employment counts by industry because data on sole proprietorships and contractual employment (i.e. 1099 contractor positions) is not included and because certain employment counts are suppressed from BLS/BEA figures for confidentiality reasons when too few establishments exist within a single NAICS code.

Esri Business Analyst Online (BAO)

ESRI is the leading provider of location-driven market insights. It combines demographic, lifestyle, and spending data with map-based analytics to provide market intelligence for strategic decision-making. ESRI uses proprietary statistical models and data from the U.S. Census Bureau, the U.S. Postal Service, and various other sources to present current conditions and project future trends. Esri data are used by developers to maximize their portfolio, retailers to understand growth opportunities, and by economic developers to attract business that fit their community. For more information, visit www.esri.com.

Attachment B: Interview Participants

We would like to thank all of our interview participants and community stakeholders for devoting time to assisting the Camoin Team in the completion of this Project. We gained valuable first-hand knowledge and important suggestions from these interviews that enhanced the outcome of our final product.

- Stacy Capurso
- Bob Flint
- Tom Marsh
- Terry McDonnell
- Jeff White

Attachment C: Funding Opportunities

Below is a list of potential funding opportunities to aid the Town of Windsor in the implementation of the above recommendations.

Federal Funding Sources

1. **New Market Tax Credits (NMTC)**

   Summary: Through the NMTC Program, the Community Development Financial Institutions (CDFI) Fund allocates tax credit authority to Community Development Entities (CDEs) through a competitive application process. CDEs are financial intermediaries through which private capital flows from an investor to a qualified business located in an eligible community. CDEs use their authority to offer tax credits to investors in exchange for equity in the CDE. Using the capital from these equity investments, CDEs can make loans and investments to businesses operating in low-income communities on better rates and terms and more flexible features than the market.

   Award: 39% of the investment paid out (5% in each of the first three years, then 6% in the final four years, for a total of 39%).

   Eligibility: NMTC Program applicants must be certified as CDEs by the CDFI Fund.

   Organization Phone: (202) 653-0421

   Organization Email: cdfihelp@cdfi.treas.gov

   Website: http://nmtccoalition.org/

2. **HUD Section 108 Loan Guarantee Program**

   Summary: Section 108 of the Housing and Community Development Act of 1974 provides for a loan guarantee component of the Community Development Block Grant (CDBG) Program. The Section 108 Loan Guarantee Program (Section 108) provides communities with a source of financing for economic development, housing rehabilitation, public facilities, and other physical development projects, including improvements to increase their resilience against natural disasters. The funds can be used by a designated public entity to undertake eligible projects, or, alternatively, can be loaned to a third-party developer to undertake the projects.

   Loan Terms: Loans typically range from $500,000 to $140 million, depending on the scale of the project or program.

   Eligibility: All projects and activities must either principally benefit low- and moderate-income persons, aid in the elimination or prevention of slums and blight, or meet urgent needs of the community.

   Eligible activities include:

   - Acquisition of real property;
   - Rehabilitation of publicly-owned real property;
   - Housing rehabilitation eligible under CDBG;
   - Construction, reconstruction, or installation of public facilities, including street, sidewalk, and other site improvements; and
   - Related relocation, clearance, and site improvements.

   Website: https://www.hudexchange.info/programs/section-108/

3. **United States Department of Agriculture (USDA) – Rural Development**

   Summary: USDA Rural Development maintains a wide range of economic development grants that offer assistance to cities and towns that are smaller than 50,000 people.[2] Different grant sources can be used to aid in the development of residential housing developments, telecommunications and utility improvements, to support business development and community facilities. This is a valuable grant source as the funds can be used in such a diverse manner.

   Award: Subject to specifications of grant, can range from $10,000-$500,000.

   Regional USDA Contact: Jon-Michael Muise, Acting State Director

   Contact Phone: 802-828-6000

   Website: https://www.rd.usda.gov/programs-services/all-programs

State Funding Sources

1. **Vermont Department of Buildings and General Services Regional Economic Development Grant Program**

   Summary: This grant program is open to municipalities and non-profit organizations that provide regional economic development in an individual community or recognized community service area.

   Award: Up to $25,000 per project, with a 50/50 match.

   Contact Name: Judy Bruneau

   Contact Phone: (802) 828-3519

   Contact Email: Judy.Bruneau@vermont.gov

   Website:
   http://bgs.vermont.gov/sites/bgs/files/FY2018%20Regional%20Economic%20Development%20Grant%20Application%20Instructions.pdf

2. **Vermont Economic Development Authority (VEDA) State Infrastructure Bank (SIB)**

   Summary: The State Infrastructure Bank (SIB) program, operated by the Vermont Economic Development Authority in conjunction with the Vermont Agency of Transportation and the Federal Highway Administration, is available to assist in the construction or reconstruction of highways, roads and bridges, as well as certain facilities related to rail transit. Also, in certain cases, electric vehicle charging stations and natural gas refueling stations available for public use are eligible for SIB financing.

   Loan Terms:

   - 3% fixed for loans to private-sector borrowers;
   - 1% fixed for loans to municipal-type borrowers and for electric vehicle charging stations;
   - Loan term may not exceed 30 years with repayment commencing no later than five years after completion of project; loan terms for electric vehicle charging stations will depend on available cash flow; and
   - Required borrower equity contribution to project is 10-20%.

[2] Specific grants may have more thorough eligibility requirements.

Eligible Projects:

- Construction or reconstruction of highways, roads and bridges, and pedestrian facilities;
- Construction of certain rail transit or public transit facilities; and
- Construction and/or installation of electric vehicle charging stations and natural gas refueling stations available for public use.

Organization Phone: (802) 828-5627

Website: https://www.veda.org/financing-options/other-financing-option/state-infrastructure-bank-program/

3. **Vermont Community Foundation Grants**

Summary: Since 1986, the Vermont Community Foundation has been committed to building philanthropic resources that sustain healthy and vital Vermont communities. One part of that work involves making grants. The Foundation awards more than $12 million annually to nonprofit organizations in Vermont and beyond. These grants support a breadth of issues such as hunger, housing, arts, cultural heritage, social justice, animal welfare, and environmental sustainability.

Awards: Various, depending on the specific grant.

Contact Name: Lauren Bruno

Contact Phone: (802) 388 3355 x222

Contact Email: lbrun@vermongcf.org

Website: https://www.vermontcf.org/NonprofitsGrants/AvailableGrants.aspx

4. **Community Development Block Grants (CDBG)**

Summary: The Community Development Block Grant (CDBG) program is a flexible program that provides communities with resources to address a wide range of unique community development needs. Beginning in 1974, the CDBG program is one of the longest continuously run programs at HUD. The CDBG program provides annual grants on a formula basis to 1,209 general units of local government and States. Within Vermont, there are four grant types available:

CDBG Accessibility Modification Grants

- Used to bring municipally-owned buildings and libraries into compliance with state and federal accessibility requirements.
- **Awards:** $5,000 to $75,000

CDBG Implementation Grants

- Used to assist businesses to create or retain jobs, create or rehabilitate housing units, build infrastructure, create or assist childcare and senior centers etc.
- **Awards:** $50,000 to $1,000,000

CDBG Planning Grants

- Used to conduct feasibility studies and marketing plans, produce architectural and engineering plans, etc. for IG projects.
- **Awards:** $3,000 to $40,000

CDBG Scattered Site Grants

- Used to rehabilitate scattered site housing projects.
- **Awards:** $50,000 to $1,000,000

Contact Names: Patrick Scheld, Nathan Cleveland, Annina Seiler

Contact Emails: patrick.scheld@vermont.gov; nathan.cleveland@vermont.gov; annina.seiler@vermont.gov

Website: http://accd.vermont.gov/community-development/funding-incentives/vcdp

5. **Vermont Arts Council Cultural Facilities Grant**

Summary: These grants help Vermont nonprofit organizations and municipalities create or expand the capacity of an existing building to provide cultural activities for the public. Examples of projects eligible for funding include:

- Improvements to wiring, heating, lighting, and plumbing;
- Accessibility features, such as elevators, lifts, assistive listening systems, ramps, and bathrooms;
- Stage improvements, such as curtains, lighting, and rigging;
- Permanent display panels or exhibit cases;
- Fixed equipment expenses; and
- Wireless/broadband for enhancing programming capacity.

Awards: Awards range from $1,000 to $30,000 and must be matched on a 1:1 basis. At least 50% of the match must be in cash.

Contact Name: Michele Bailey

Contact Phone: (802) 828-3294

Contact Email: mbailey@vermontartscouncil.org

Website: http://www.vermontartscouncil.org/grants-and-services/organizations/cultural-facilities

6. **State Revolving Loan Fund**

Summary: The State Revolving Fund (SRF) provides loans and grants to municipalities for approved drinking water, wastewater and storm water projects. The SRF is co-managed by the Department of Environmental Conservation (DEC) and the Vermont Municipal Bond Bank (VMBB). The SRF program is funded with appropriations from the US Environmental Protection Agency/State of Vermont and revolving loan repayments.

Loan Terms:

- Planning loans: Term of 5 to 15 years with 0% interest
- Final Design Loans: Term of 5 to 15 years with 0% interest
- Construction Loans: Term of 20 to 30 years with 2% administrative fee, annually. Terms need to be less than or equal to asset life

Eligible Projects:

- Wastewater collection system and treatment facility construction, upgrade, or refurbishment;

- Combined Sewer Overflow abatement, monitoring, or elimination;
- Stormwater and wastewater separation;
- Stormwater conveyance and/or treatment;
- Community decentralized wastewater disposal systems;
- Asset management plans, resiliency plans, Total Maximum Daily Load (TMDL)-related planning and optimization efforts;
- Watershed projects; and
- Solid waste projects and brownfields projects where they relate to water quality.

Website: http://dec.vermont.gov/facilities-engineering/water-financing/cwsrf

7. **Vermont Recreational Trails Program Grant**

Summary: The Recreational Trails Program (RTP) is a federal assistance program of the United States Department of Transportation's Federal Highway Administration (FHWA), administered at the State level, providing funding for the development and maintenance of recreational trail projects. Both motorized and non-motorized trail projects may qualify for assistance.

Awards: Grants up to $50,000 are awarded to provide eligible applicants with a reimbursement of 80% of a project's cost. This cap allows fund to be distributed for a variety of projects around the State. A 20% sponsor match is required, 20% of the total estimated project cost - also referred to as the sponsor's "share."

Eligibility: Municipalities, non-profit organizations, and other governmental entities may apply. Eligible projects include:

- Construction of new recreational trails or trail linkages;
- Construction of new trailhead areas/parking facilities;
- Construction of trailside facilities directly associated with the recreational trail;
- Maintenance, renovation, or restoration of recreational trails;
- Improvements to signage, or trail structures along the trail;
- Assessment of existing trail conditions for accessibility and trail improvements to better accessibility;
- Professional project management for project oversight;
- Equipment purchases; and
- Acquisition of trail easements or fee simple title to property with trails or recreational trail corridors in conformance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, P.L. 91-646.

Contact Name: Sherry Smecker Winnie

Contact Telephone: 802-760-8450

Contact Email: sherry.winnie@vermont.gov

Website: http://fpr.vermont.gov/recreation/grants/rtp

8. **Agency of Commerce and Community Development Programs**

   The following programs are all administered by the Vermont Agency of Commerce and Community Development. Thus, they share the same program contact. Additional programs and discussion of traditional funding programs like tax reallocation and TIF can be found at: http://accd.vermont.gov/community-development/funding-incentives

   Vermont Historic Preservation Grant

   - **Summary:** Established in 1986, the State-funded Historic Preservation Grant Program helps municipalities and non-profit organizations rehabilitate the historic buildings that are a vital part of Vermont's downtowns, villages, and rural communities, as well as its iconic landscape.
   - **Awards:** 50/50 matching grants of up to $20,000

   Federal Rehabilitation Investment Tax Credits

   - **Summary:** Tax credits made available for eligible historic commercial buildings, meaning income-producing buildings, listed in the National Register of Historic Places. Many of Vermont's designated downtowns and villages are listed and pre-qualified for federal credits.

   State Downtown & Village Center Tax Credits

   - **Summary:** Tax credits made available for eligible commercial buildings and non-profit owned buildings constructed before 1983 (no private residences, but rental properties are eligible) located within designated downtown or village centers.

   Contact Name: Caitlin Corkins

   Contact Phone: (802) 828-3047

   Contact Email: Caitlin.corkins@vermont.gov

9. **Vermont Community Loan Fund**

   Summary: VCLF is a mission-driven, community-focused alternative lender. It makes loans to local businesses, community organizations & nonprofits, child care providers and developers of affordable housing who don't qualify for a loan from a traditional lender. It combines its loans with financial consulting and business development services to make sure our borrowers have access to all the tools they need to succeed.

   Organization Phone: (802) 223-1448

   Website: http://www.investinvermont.org/borrowers

Traditional Funding Sources

In addition to the sources listed above, there are also traditional revenue generating streams available to municipal entities:

- Local Parking Tax Funds;
- City Bond Funds;
- Bank Loans;
- Land Sales;
- Tax Increment Financing (TIF); and
- Redevelopment Bond Issue.

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ECONOMIC DEVELOPMENT

Brownfields Redevelopment in Windsor

Windsor's riverside property was an active center of industry for decades, which contributed significantly to the community's historic identity. As industrial models changed over time, companies along the riverside closed their doors or moved to other places outside of Vermont or the US.

This has left Windsor with a number of potential assets that could provide new locations for economic development, incubators, arts, etc. However, virtually all of the properties in the project area are identified or potential brownfields. "Brownfields" are defined by the Environmental Protection Agency as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

While redevelopment of brownfields is more complicated and often more expensive than "greenfield" development, it is important to recognize that redevelopment is often possible and that resources are available to contribute to the cost of cleanup if the owner is not directly responsible for contamination. There have been many examples of brownfields redevelopment projects that have provided significant benefits to communities in the form of job growth, enhanced economic vitality and a revitalized sense of community.

The process of brownfields redevelopment is commonly divided into six steps:

- **Develop a Community Vision** – The community develops a collective understanding that leads to broad agreement about a preferred future for the brownfield. *Windsor has spent a significant amount of time discussing and developing various visions for the Riverfront Area.*
- **Identify Brownfield Sites** – Identify potential sites for redevelopment. *A general inventory of potentially redevelopable sites has been developed for the Riverfront Area.*
- **Assess Level of Contamination** – Assess the level of contamination (Phase I and Phase II

Phase One Environmental Site Assessment

During a phase one assessment, a certified environmental professional conducts an investigation of the current and past history and uses of the property in question. They attempt to identify what was previously on the site, what impacts previous uses might have had and whether any past or current uses may have contaminated soil or groundwater underlying the site. They also determine whether petroleum, hazardous materials or chemicals are or have been in use at the site, and whether or not they may been released to the air, soil or groundwater at or near the site. Typically this process is done through a review of records, a site inspection, and interviews with owners, occupants, neighbors and local government officials.

Phase II

If a Phase II ESA determines that contamination or contaminants may be present, the next step is a Phase II assessment. Depending on the results of the Phase I ESA, Phase II work might include surficial and sub-surficial soil analysis, or groundwater analysis, or installing monitoring wells, or indoor air sampling, mold sampling, asbestos sampling, lead sampling, etc. The need for any sampling or testing in Phase II Environmental Site Assessments is based purely on the findings of the Phase I. Depending on the results of the samples, the Phase II ESA should outline additional site investigation needs, and potential remedial actions that may be required to clean up the property.

assessments – see sidebar). *Some, but not all of the properties in the Riverfront Area have been assessed for contamination.*

- **Determine Reuse Options** – Perform a reuse assessment to see which redevelopment scenarios may be compatible with a given brownfield property. *This has been done for several brownfields properties in the Riverfront Area.*
- **Evaluate Cleanup Options** – Depending on the results of environmental investigations and intended reuse, there may be a range of cleanup options. This involves an analysis of legal liability, available financing and compatibility with the end use of the property. *This has been done for several brownfields properties in the Riverfront Area, some of which have been cleaned.*
- **Implement a Redevelopment Plan** – Identify the reuse and cleanup option that best satisfies the community's needs given the market potential of the site and the opportunities and challenges previously identified. *This has been done for several brownfields properties in the Riverfront Area.*

Optimally, brownfields redevelopment involves a wide range of stakeholders including public and private entities. The most successful projects involve a strong public-private partnership that benefits all parties. Stakeholders often include:

- **Public Sector** – This includes local governments, community groups and local non-profit organizations. For the public, benefits of a successful brownfield include the redevelopment of "blighted" or underutilized properties, generating economic or community growth.
- **Private Sector** – This includes investors, lenders, developers and insurers who provide many of the resources needed to redevelop the property. For the private sector, stakeholders want to see improved economic vitality that allows them to make an appropriate return on investment.
- **Other Parties** – This includes state and federal regulators and other environmental stakeholders. These parties want to ensure that the property is cleaned up and safe for appropriate levels of use.

Impact of Brownfields on Current and Future Development

With the presence of contaminants on a property comes the need for cleanup and remediation, all of which necessitate active participation from the property owner and the Agency of Natural Resources (ANR) Sites Management Section (SMS). The SMS is responsible for working with landowners to assess potential impacts and possible contamination, and to authorize a remediation plan. Typically, the owner of the property is a "Potentially Responsible Party" (PRP), which means they must bear the costs of remediation and clean up. Cleanup costs depend on the type and extent of contamination, the standards used to determine how much remediation is required at the site, the intended future use of the site and weather cleanup focuses on removing or containing contamination. It is important to note that the requirements for cleanup are stricter if the intended use is residential in nature. There are some avenues for the PRP to seek assistance with these costs through the Vermont Brownfields Program. If funds are available, they can potentially be used to conduct Phase 1 & II assessments.

Any property that has been through the Brownfield Program will be required to adhere to restrictions identified as part of a remediation plan. In some cases, once contaminants have been identified and

removed, there are no further limitations on the property. In other cases, contamination is so significant that deed restrictions are applied that limit the types of use or development altogether.

Any future development proposed on a Brownfield, or potential Brownfield (as identified by ANR), will need to work with the Sites Management Section directly from the outset. Prior to investing in significant planning, potential developers or property owners should discuss concepts with the SMS to determine if there are any obvious barriers (such as deed restrictions) to future development. Even if a development is possible, it is important to recognize that any disturbance of the ground or alterations to existing contaminated structures or surfaces will require special consideration and special treatment. Many things can be done with Brownfield properties, but there are added expenses associated with working in and around contaminated areas.

There are three general areas of previous and current industrial activity in the Windsor Riverside project area that have existing or potential Brownfields. Each of these areas have sites that are in various phases of the brownfields redevelopment process.

Windsor Technology Park

History: Cone Blanchard

Cone Automatic Machine Co. began operating in Windsor in 1926 when Frank L. Cone founded it. It later merged became Cone-Blanchard (1972) and at that time made Cone automatic screw machines and Springfield vertical grinders. The company went into bankruptcy in the late 1990s and was purchased by the Park Corp, which sold the Cone Blanchard Product line to another company in 2002. The facilities were sold in 2006, and the site was eventually rebranded as the Windsor Technology Park. At its peak, the Cone Blanchard Corp employed more than 500 people.

Phase of Redevelopment Process

- Vision (complete)
- Identify Sites (complete)
- Assess Level of Contamination (incomplete)
- Determine Reuse Options (incomplete)
- Evaluate Cleanup Options: (incomplete)
- Implement a Redevelopment Plan (incomplete)

Today, Windsor Technology Park provides storage space for several companies including Stern Ruger. There is additional office space in one of the many buildings in WTP that has been rented in the past. As with any former industrial site, there is the potential for environmental contamination. Unlike other parts of the Windsor Riverside area, no formal investigation has yet been made to identify potential hazardous materials.

Any efforts to redevelop the property beyond existing allowed uses will be required by the Agency of Natural Resources to conduct a Phase 1 and, if warranted, a Phase 2 Environmental Site Assessment (ESA). Property owners should work directly with the SMS. Enrolling in Brownfields Reuse and Environmental Liability Limitation Program (BRELLA) is a way to reduce potential liability for cleanup of contamination and gain access to financial assistance through state and federal Brownfields programs[1].

[1] To be accepted into the BRELLA program, owners need to show that they did not "cause, contribute or worsen contamination on the site," and are not directly related to the owners that were responsible for contamination.

Any disturbance of soil on the property or renovation of existing structures that may have potential contaminants will require consultation with ANR.

Significant Existing Structures

The following significant existing structures in the Windsor Technology Park represent potential opportunities for redevelopment. They offer interesting possibilities outside of their most obvious uses (which are largely industrial or office based). However, no significant investments in this property will be feasible until questions regarding possible site contamination have been investigated and, if necessary, remediated. That said, with enough investment, it is often possible to redevelop Brownfields properties into valuable economic assets.

WTP #1: Multi-Use Industrial Building

- **Owner**: Windsor Technology Park
- **Point of Contact**: Hunter Banbury
- **Use Notes**: Part is rented by Stern Ruger for warehousing metal for guns. Materials come in often by truck. There is some long term storage happening.
- **Structure Notes**: The building is essentially three sections – a long aisle section, a manufacturing section and a high bay section. The high-bay building has ceilings roughly 18'-20' tall. The manufacturing building has ceilings roughly 12-16' high. The facility has a relatively new crane system.
- **Brownfields Status**: Likely a Brownfield. Status unknown.
- **Floodplain Status**: 100yr FHA. Flood elevation requirements may only be 16"-18".

Description: This building is the largest building in Windsor Technology Park, which formerly housed the Cone Blanchard Manufacturing Facility. At its tallest, the building is nearly 28' in height. The long extension on the southern end of the building is a former rail access. It is rented by Stern Ruger for warehousing metal for guns. Materials come in often by truck. There is also some long-term storage happening in the building.

Best Potential Use: Given the style of building, the most obvious use for this building is to remain industrial in nature, however the building's size makes it a possible location for a large event space if thoroughly renovated and any potential hazards were remediated[2]. Other possible uses could be related to some form of art studio that required large spaces for sculpture, etc.

WTP #2: East Brick Office Building

- **Owner**: Windsor Technology Park
- **Point of Contact**: Hunter Banbury
- **Use Notes**: Has been rented for offices in the past.
- **Structure Notes**: The East Brick Office Building was renovated to accommodate offices. Has new glass windows.

[2] The WTP property has not been investigated for potential industrial contaminants. Any identified uses would require a Phase 1 environmental assessment at a minimum, and if contaminants were identified, cleanup would be needed to allow for safe use of the property.

- **Brownfields Status**: Likely a Brownfield. Status unknown. Owner is a PRP.
- **Floodplain Status**: 100yr FHA

Description: This building is partially attached to the former rail entry. There has been some renovation of the structure, including new glass windows. The space has been utilized as rental office space in the past.

Best Potential Use: The configuration and condition of this building lends itself to continued use for offices, particularly if tied to the use of the larger building for industrial purposes.

WTP #3: 7 Everett Lane Office Building

- **Owner**: Windsor Technology Park, Hunter Banbury
- **Use Notes**: Utilized as offices.
- **Structure Notes**: Has had new windows installed. Ceiling height is two and a half story. Structure is brick.
- **Brownfields Status**: Likely a Brownfield. Status unknown. Owner is a PRP.
- **Floodplain Status**: 100yr FHA. Could fill basement and be out of the floodplain.

D&K has historic photo on file.

Description: Located along the main rail line, this building has a unique shape that was designed to accommodate rail access to the Cone facility. The building is made of brick and is quite sound. New windows have been installed.

Best Potential Use: The configuration and condition of this building lends itself to continued use for offices, particularly if tied to the use of the larger building for industrial purposes.

WTP #4: **K&W Tires** (former shoe factory)

- **Owner** Windsor Technology Park, Hunter Banbury
- **Use Notes**: Currently serving as a warehouse for K&W tires. Tire storage might be better suited for the Goodyear building. Bob has a great old postcard photo of the building before it was sided. Might be a good candidate for apartments or office space.
- **Structure Notes**: Type 3 construction. Significant windows are covered up by metal siding.
- **Brownfields Status**: Unknown. Phase 1 assessment might be warranted due to past uses.
- **Floodplain Status**: 100yr FHA. Close to BFE (maybe 18”).

Description: The former shoe factory that is located on the Windsor Technology Park parcel is one of the most potentially intriguing buildings in the Windsor Riverside area. In its current state it is being used as a storage warehouse for K&W tires. The exterior of the building is covered by metal siding, but underneath are full story windows around a majority of the building.

Best Potential Use: Although this building has the potential for significant contaminants[3], if remediation is feasible, the character of this building could represent an exceptional opportunity. The construction of the building is type 3, brick-and-joist. With masonry-bearing walls, wood floors and structural beams, the interior aesthetic of the former shoe factory building could be leveraged to be very appealing. With the large historic windows, and views of the river to the east and Mt. Ascutney to the west, the second floor could be a suitable location for high-end condo-type housing[4]. The first floor could be utilized for offices or other commercial uses.

The Railyard

History – Railyards

Windsor, VT served as the starting point for The Central Vermont Railroad, which officially broke ground on December 15, 1846. It served the dual purposes of passenger rail service and also served growing industry as the line was connected to points north and south. The presence of the rail system was significant to the growth of the machine tool industry in Windsor, as companies like Cone-Blanchard and Goodyear took advantage of rail to bring in raw materials and ship goods to other parts of the country.

There are still relics of the former railyard, including former rail sidings that served industry along the Riverfront. Additionally, there are a number of smaller buildings that are in various states of use and redevelopment, including a former barn that is now being utilized as a venue for live music and arts entertainment.

Identified Issues

Much of the soil in the Railyard contains some form of contaminant related to its former use as a rail center. Fortunately, unlike other parts of the Riverside area, these Brownfields issues are reasonable to remediate, although not without cost to the developer. The most significant contamination is shallow soil PCE and PET contamination from properties around 9 Depot Ave.

[3] The Agency of Natural Resources Sites Management Section identified likely contaminants based on prior uses.
[4] It is important to note that housing of any type will require more significant remediation of contaminants than other uses due to the potential length of exposure for residents.

Significant Existing Structures

The following significant existing structures in the Railyard Area have either been through remediation and have been renovated for use, or are good candidates for such. The buildings in the Railyard are all smaller than the larger industrial buildings at WTP or Goodyear, but they are perhaps less likely to require extremely expensive investments and remediation for future development.

Phase of Redevelopment Process

- Vision (complete)
- Identify Sites (complete)
- Assess Level of Contamination (Complete for most locations)
- Determine Reuse Options (Complete for most locations)
- Evaluate Cleanup Options: (Complete for most locations)
- Implement a Redevelopment Plan (In process)

RY #1: Former Machine Shop

- **Owner**: Bob Haight
- **Use Notes**: Currently Bob's shop. WIll hopefully become a makers place or multiple shops similar to "See It Made Park". Possibly 2-4 users of 600-1200 square feet.
- **Structure Notes**: None.
- **Brownfields Status**: Chlorinated solvent contamination in groundwater has been previously identified on this property.
- **Floodplain Status**: 100yr FHA. Bob thinks it's above BFE. Needs an elevation certificate.

Description: This building was at one time a machine shop, it has since been purchased and is used for personal storage and as a shop.

Best Potential Use: The former machine shop building could continue to be utilized as a private workshop, or could be renovated (assuming any contamination, if it exists, has been remediated) and developed into a small "maker space."

RY #2: Farmer's Exchange

- **Owner**: Robert Haight
- **Use Notes**: Currently used as a community arts and public events space.
- **Structure Notes**: Renovated as events space. Will continue to see more improvements. No wastewater service.
- **Brownfields Status**: Railyard site is contaminated with lead and arsenic from old train use.
- **Floodplain Status**: 100yr FHA. Bob believes it is close to or above BFE.

Description: Known as the Farmer's Exchange, this building was purchased by a local developer who is seeking to bring arts to the Riverfront area. The Exchange is serving as a small hall for live music and arts performances. It lacks wastewater facilities.

Best Potential Use: The value of the arts to a location like Windsor's Riverfront area can be significant. Locations like the Farmer's Exchange bring people into the area, and create energy that has the potential to encourage new investments in property. This example can be seen in nearby White River Junction that has experienced a renaissance due to the growth of the creative economy (see sidebar on creative economy). The Farmer's Exchange should continue to grow its arts influence in the area.

RY #3: Former freight building

- **Owner**: Town of Windsor
- **Use Notes**: Used for storage. Bob has been attempting to get Silo Distilling to use the building.
- **Structure Notes**: 1200 sqft. In the 1960's a second floor was framed in.
- **Brownfields Status**: Railyard site is contaminated with lead and arsenic from old train use. Presence of chlorinated solvent contamination has been identified.
- **Floodplain Status**: 100yr FHA. Bob things that floor is probably above BFE.

Description: This building once served as a freight storage building for industrial activities along the Waterfront. As part of the Railyard, it may have some potential lead arsenic contamination in the soil, and there is the

Creative Economy

Creative enterprises – commercial businesses, nonprofit organizations, and individual creative entrepreneurs whose principal value is based on creative content and relationship to the consumer – can be a catalyst for redevelopment and economic vitality in a community. Communities like White River Junction and Johnson, VT have each experienced a resurgence due to art based educational programs. The arts attract people and bring new energy to a community in the form of creative and artistic minds and the people who want to enjoy and experience the arts.

Industrial areas not unlike the Windsor Waterfront have utilized the arts to revitalize an underused former industrial site. For example, The Steel Yard, located in Providence's "Industrial Valley" has successfully revitalized such a location. When the 100-year Providence Iron and Steel Company closed in 2001, the property was seen as an opportunity for two young entrepreneurs. What began as an ad-hoc location for artists and designers, was eventually incorporated into an active non-profit organization that seeks foster the industrial arts and incubate small business within a creative environment of experimentation. The Steel Yard campus offers industrial arts classes for adults and area youth, a workforce training program, and fabrication space used by the organization and area artists.

potential that hazardous materials were once stored within, although none have been specifically identified. It is currently being used for storage by the Town of Windsor.

Best Potential Use: There is the potential that the former Freight Building could be renovated to accommodate a commercial use, and there have been attempts by the Town to find a business that might be interested in utilizing the building.

RY #4: **Former Stacy Lumber Barn**

- **Owner**: Town of Windsor
- **Use Notes**: Currently used for storage
- **Structure Notes**: Former barn. Has concrete block foundations.
- **Brownfields Status**: Railyard site is contaminated with lead and arsenic from old train use. Presence of chlorinated solvent contamination has been identified.
- **Floodplain Status**: 100yr FHA. Floor could be raised to be at BFE.

Description: This former barn served as a storage area for Stacy Lumber while it was operating in the Waterfront Area.

Best Potential Use: There is the potential that the former Freight Building could be renovated to accommodate a commercial use.

Goodyear Campus

During the early 1900's what would eventually become known as the "Goodyear Campus" was developed and occupied by the National Acme Company. The Goodyear Tire and Rubber Company, which manufactur4ed rubber soles, heels and tubes, took over the campus in the early 1950's and occupied the site until 1986. The industrial uses on this property resulted in the release of a number of significant contaminants into the environment, which ultimately required remediation.

Phase of Redevelopment Process

- Vision (complete)
- Identify Sites (complete)
- Assess Level of Contamination (complete)
- Determine Reuse Options (complete)
- Evaluate Cleanup Options: (complete)
- Implement a Redevelopment Plan (In process)

The building was taken over by the Connecticut River Development Corporation, one of Vermont's Regional Development Corporations, which was formed with the purpose of managing the goodyear campus. The CRDC has rented the remaining buildings as commercial warehouse and light manufacturing space at reduced rates to new and growing businesses.

Identified Issues

Identified a number of specific areas with soil contaminants including volatile organic compounds, chlorinated solvents, acids, phthalates, dithylhexyl adipate and others. Also, a West/Northwest

Petroleum Hydrocarbon Plume was identified. This is in addition to the plume identified at 9 Depot Avenue that crosses into the Goodyear property.

[include image of project area map from corrective action plan]

Significant Existing Structures

The following significant existing structures on the Goodyear Campus. Development on this property is significantly limited due to existing contaminants. As of the writing of this report, deed restrictions had been developed that would allow only industrial development. However, "industrial development" is not clearly defined, so it is possible that other types of development might be acceptable, but any such proposal would need to adequately address any deterioration in site conditions and essentially meet all requirements of the deed restrictions. All development on this parcel will require consultation and authorization from SMS and any disturbed soils will need to be appropriately handled and disposed of.

GY #1: **Former Goodyear Factory**

- **Owner**: SCDC/WIC
- **Use Notes**: Mixed use, Fine Paints of Europe, Harpoon, Jim's equipment, All storage.
- **Structure Notes**: 68,000 sqft of cold storage space. Quality of building is low. Quonset hut valleys leak.
- **Brownfields Status**: Significant soil and water contamination. Corrective Action Plan in place.
- **Floodplain Status**: 100yr FHA. Might be possible to raise floor above BFE and still has clearance for ceiling. BFE would be roughly 7 feet. Trusses might be eight feet from raised floor.

Description: This Quonset-style warehouse all that remains of the largest facility on the Goodyear campus. It remains in regular use for storage and several other light industrial purposes. The quality of the building is not exceptional, and due to the nature of its design, it is not a candidate for significant reinvestment.

Best Potential Use: There is a significant amount of space in the structure that is best utilized for cold storage.

GY #2: **Former Goodyear Shop**

- **Owner**: SCDC/WIC
- **Use Notes**: Occupied by businesses, Wilson woodworking, Sharon woodworking, Steve Clay Young (yestermorow connection), Don Griswold's (Goodyear campus caretaker) shop, Controls Technology, Mark Beaudette (artist) renting studio space)
- **Structure Notes**: Bob considers this the best building on the Goodyear Campus
- **Brownfields Status**: Significant soil and water contamination. Corrective Action Plan in place.
- **Floodplain Status**: FLOODWAY. Floor could be elevated above BFE and still have decent ceiling height. Bob wonders if it might be suitable to be a woodworkers incubator

Description: This all brick building served as the campus shop for woodworking and electrical as well as offices. Of the buildings on the Goodyear Campus, this is the most sound and most useable. It is currently being used as shop space for several woodworkers, an artist and small technology businesses.

Best Potential Use: There is enough potential in this building that renovations that might increase its value or usefulness for light industrial purposes should be considered.

GY #3: Former Storage Building

- **Owner**: SCDC/WIC
- **Use Notes**: Currently used as a shop/storage.
- **Structure Notes**: Timber frame design could be renovated if purchased at the right price.
- **Brownfields Status**: Some contamination likely.
- **Floodplain Status**: FLOODWAY. Floor could be elevated above BFE. Bob speculates it could be a reasonable location for mini warehouse or seasonal restaurant.

Description: This timber-frame structure was used for storage purposes under Goodyear's ownership, including the storage of hazardous materials.

Best Potential Use: While it is likely that this building could be purchased inexpensively, it would be limited to industrial types of uses.

Building #22: Former Goodyear building.

- **Owner**: SCDC/WIC
- **Use Notes**: Vacant. Unusable due to Brownfields and internal contamination.
- **Structure Notes**: Deteriorating. There is a "no occupancy" permit on the building. Building needs to be permanently closed.
- **Brownfields Status**: Significant soil and water contamination. Corrective Action Plan in place.
- **Floodplain Status**: 100yr FHA.

Description: The multi-story factory building is currently unused do to conditions, including internal contamination.

Best Potential Use: While it may be possible for this building to be renovated for industrial use with remediation of any identified contaminants, it is likely that any such investments would be cost prohibitive.

Funding Brownfield Redevelopment

Successful Brownfield Redevelopment projects typically involve a mix of funding sources from multiple public and private resources. Common sources of funding include:

- **Revolving Loan Funds** – Windsor has a revolving loan fund which offers funding for local businesses or local development. If an application can demonstrate that it will result in significant job creation or an address an important community development need, loans over $25,000 can be made at very fair interest rates.
- **Trust Funds** – Funds of this nature are often maintained through taxes or fees, and are used to provide low-cost loans. Windsor does not have a trust fund established at this time.
- **Tax Increment Financing** – State statute enables communities to utilize Tax Increment Financing (TIF) as a tool to finance public infrastructure improvements that are necessary to ensure

development of an area. TIF Districts are approved by the state, and require an extensive municipal planning process to apply.

- **Tax incentives** – Public taxation tools are used to encourage brownfield redevelopment. Typically, these programs include crediting and deferring taxes that are paid on property income or sale.
- **Public Grant Programs** – There are programs available through regional, state and federal brownfield programs for assessment, remediation and construction on brownfield sites. The EPA provides a majority of funding and resources at the federal level. Plus, there are other programs can be used for for financing economic development, such as the Community Development Block Grant program.

The most important step for any developer considering the redevelopment of a brownfield is to communicate directly with the Vermont Agency of Natural Resources and enroll in the BRELLA program to reduce potential liability for cleanup of contamination and gain access to financial assistance through state and federal Brownfields programs. There are specialized insurance products that can be used as tools to reduce the financial uncertainty of remediation. These include cost-cap insurance, finite risk insurance, pollution liability insurance and secured lender protection.

Case Studies

The following pages describe case study examples of brownfields revitalization that provide some common elements and conditions as the Windsor Riverfront. These include:

- The Steelyards, Providence, RI
- Harvester Artist Lofts, Council Bluffs, IA
- Lamar Street Station, Lakewood, CO
- Roundhouse Redevelopment, Evanston, WY
- Kendall Yards, Spokane, WA

Land & Community Revitalization

BROWNFIELDS SUCCESS IN NEW ENGLAND

THE STEEL YARD

PROVIDENCE, RHODE ISLAND

PROPERTY DETAILS

Address:	27 Sims Avenue, Providence, RI
Size:	3.5 acres
Former Use:	Steel fabrication facility
Contaminants:	Lead
Current Use:	Artist studios, education and job-training facilities focused on industrial arts
Owner:	Woonasquatucket Valley Community Build

PARTNERS

Rhode Island Department of Environmental Management (RIDEM), Rhode Island Economic Development Corporation (RIEDC), Rhode Island Council on the Arts, Coastal Resources Management Council, Woonasquatucket River Watershed Council, Narragansett Bay Commission, City of Providence, Olneyville Collaborative

FUNDING DETAILS

EPA Brownfields Cleanup Grant:	$400,000
EPA Section 128(a) funding (from RIDEM)**:**	$199,000
Urban Revitalization Fund of Rhode Island loan (from RIEDC)**:**	$100,000
Fundraising:	$137,000
Donated materials and labor:	$118,000

HIGHLIGHTS

- Converted steel factory into artist workspaces and educational facilities that help catalyze community and economic development in distressed neighborhood.
- Innovative site design embraces urban industrial character while providing flexible open spaces and onsite storm water management.

Motivation for Redevelopment: The Steel Yard is located in the Olneyville neighborhood of Providence, Rhode Island. Olneyville borders the Woonasquatucket River and is part of Providence's Industrial Valley district, once a flourishing industrial center home to textile, jewelry, and metal manufacturers. For the past 20 years, however, the area has been in economic and physical decline as factories have closed or moved away, taking jobs with them. Olneyville is now one of the most distressed areas of Providence with extremely high rates of poverty and unemployment. Physically, the neighborhood is characterized by abandoned and contaminated industrial lots, lack of green space, and dilapidated housing stock.

Remediating and redeveloping brownfields in Providence's Industrial Valley is an essential strategy outlined in the City's Master Plan to revitalize these depressed communities. Projects such as the Steel Yard redevelopment are rebuilding community pride, enhancing access to open space and the river, and providing economic and educational opportunities.

Property History: In 1902 the Providence Steel and Iron Company built a structural steel shop on the 27 Sims Avenue site. The complex expanded over the next 40 years, eventually featuring two brick buildings and a network of overhead gantry cranes. Providence Steel applied lead-based paint to steel beams as part of their operations. Overspray from this activity resulted in elevated levels of lead in the property's soils.

After being in business for over 100 years, the steel fabrication facility closed in the early 21st century. The complex was purchased by a developer who conducted environmental site assessments. In 2002, two local artists and entrepreneurs purchased the property. The owners formed the nonprofit Woonasquatucket Valley Community Build (WVCB, which operates as the Steel Yard) and began to actively rehabilitate the facility. From the beginning, the owners' vision was for the complex to remain a working industrial site, offering space for and education in industrial arts. While the Steel Yard was able to quickly develop and expand its programming to feature youth programs and classes in ceramics, glass, jewelry, blacksmithing, and welding, its progress was hindered by the environmental contamination that remained on the property and would be costly to clean up.

Project Results: Initial site cleanup efforts conducted by the Steel Yard involved removing soils with the highest concentrations of lead while excavating and stabilizing soils with lower levels of contamination. In 2007, WVCB received a $400,000 EPA Brownfields Cleanup Grant to finish cleanup work at the two parcels that comprise the Steel Yard complex. The grant was used to cap the onsite contaminated soils with a combination of clean soil and permeable pavement, initiating the site's physical rehabilitation.

The old Providence Steel buildings have been converted into over 9,000 square feet of workspaces for artists, classrooms for education and job training in the industrial arts, and office space. The site design embraces the property's urban industrial history while incorporating innovative approaches to sustainability such as the use of uncommon recycled materials and an onsite storm water management system that features permeable pavement and bioswales. The property also includes nearly 12,000 square feet of flexible open space used for events, classes, and artist workspace.

The Steel Yard redevelopment project has had rich rewards for the local community and the city as a whole. The redevelopment has eliminated blight, reduced an immediate health threat, and helped to establish a sense of place in the community. Through its training programs, career development opportunities, small business incubation, and frequent public events, the complex, which employs over 170 people, serves as a catalyst for community and economic development. The Steel Yard's success has reinforced Providence's commitment to the creative arts as economic drivers while paving the way for nonconventional, noncommercial reuse of industrial properties.

TIMELINE

1902	Steel fabrication facility built
Early 2000s	Facility closes
Early 2001	Phase I Assessment
Nov. 2001	Phase II Assessment
2002	Site purchased by founders of WVCB
2003 - 2010	Design, cleanup, and construction
Sept. 2010	Ribbon cutting

Local Contact: Drake Patten, Executive Director, The Steel Yard ● (401) 273-7101 ● drake@thesteelyard.org

The Steel Yard
Providence, Rhode Island, U.S.A.

Once a significant industrial center, Providence, Rhode Island's "Industrial Valley" began to suffer in the 1970's and 1980's as investment became increasingly focused on downtown commercial districts and residential neighborhoods, rather than in areas for industrial production. Olneyville, one of Providence's oldest and poorest neighborhoods, has many abandoned industrial buildings where informal artist "squatters" congregate.

When Olneyville's Providence Steel and Iron went out of business in 2001, the property was purchased by Nick Bauta and Clay Rockefeller who formed a new non-profit called The Steel Yard. The new owners believed that rather than demolishing the existing structures, the property could be re-purposed as a community space for local artists. The renovated Steel Yard draws on the neighborhood's history, embracing the grittiness inherent to the abandoned property, while providing a model for sustainable re-development.

The park, which is a community hub for industrial arts education, workforce training, small-scale manufacturing, contains different kinds of spaces. A large central space, known as "the carpet," is for large events such as car rallies and farmer's markets. This space is framed by secondary metalwork spaces which include a foundry and an artist studio. Other smaller spaces include storage for materials and art pieces.

The site was classified as a brownfield because of lead paint found on site. Highly contaminated soil was extracted as required by environmental remediation standards. The remaining contaminated soil was treated on-site with a binder to reduce soil disturbance. A cap of 12 inches of clean fill or pavement was then used across the entire site.

While the park needed some paved spaces for metalwork, permeable surfaces were also woven into the design where possible. The central paved plane, "the carpet," is woven with heavy and light-duty pavements, impermeable and pervious materials, and built over the existing soil.

Given the park is part of the Narragansett Bay watershed, storing and filtering stormwater locally was a priority. Through a system of bio-swales and permeable surfaces, the new Steel Yard infiltrates 90 percent of annual rainfall, more or less eliminating the need for a new connection to the community's sewers.

To sustainably manage stormwater while also ensuring that contaminated soil did not leach into the neighborhood, the team needed to build a series of "moats" that direct infiltration and control the volume of stormwater being held. These moats are found at the edge of the carpet and help to reconcile the grade changes. They are filled with water-loving plants that filter stormwater and prevent erosion of the swales.

Sustainable materials were incorporated throughout. In contrast to many toxic materials used in conventional playground, Woodland Discovery Playground uses recycled athletic shoe material as a surface for several play areas and recycled boot material as a soft landing under several playrooms. These surface materials are not only recycled, but they are also permeable and allow stormwater to soak into the ground, feeding the surrounding tree groves.

Native pioneer and volunteer species were introduced across the Steel Yard with the expectation that they would re-colonize the industrial site while also preserving the previously abandoned site's gritty look and feel – that of a natural oasis in a primarily industrial context. This planting strategy also established vegetation across much of the previously-impermeable site without conflicting with new metalworking areas or

The Steel Yard

event spaces.

Project Resources

LANDSCAPE ARCHITECT
Klopher Martin Design Group

CLIENT
The Steel Yard
Executive Director: Drake Patton
Co Founders: Nick Bauta and Clay Rockefeller
Board Chair: Peter Gill Case

CIVIL ENGINEERING + PERMITTING
Morris Beacon Design
EA Engineering, Science & Technology

STRUCTURAL ENGINEERING
Structures Workshop, Inc.

GENERAL CONTRACTOR
Catalano Construction

LANDSCAPE CONTRACTOR
MON

VOLUNTEER PLANTING DAY PARTNER
Groundwork Providence + 2020 Trees Program

brownfields
at-a-glance
EPA United States Environmental Protection Agency
EPA 560-F-12-009
April 2012

HARVESTER ARTIST LOFTS

Council Bluffs, IA
Assessment and Section 128(a) State & Tribal Grants

Former Warehouse Creates Downtown Art Space

Address:	1000 S. Main St. Council Bluffs, Iowa 51503
Property Size:	1.1 Acres
Former Use:	Industrial Warehouse
Current Use:	Residential lofts, artists' studios, and retail space

EPA Grant Recipient:	**Project Partners:**
The City of Council Bluffs, Iowa received a $200,000 EPA Brownfields Assessment grant in 2005 and Pottawattamie County Development Corporation (PCDC) utilized $23,000 in EPA Brownfields Section 128(a) State & Tribal funding awarded to Iowa Department of Natural Resources (DNR).	Iowa West Foundation, Iowa Finance Agency, Iowa DNR, Pottawattamie County Development Corporation, City of Council Bluffs

The former International Harvester warehouse

Project Background:

Council Bluffs, Iowa was once a thriving center of agricultural product sales and distribution for almost one hundred years. As the area fell into decline, many buildings—including the International Harvester warehouse—became vacant and abandoned. The city designated this blighted area as the "South Main Brownfield Project Area" and sought resources to help spur redevelopment. In 2005, the city received two EPA Brownfields Assessment grants to conduct Phase I and Phase II environmental assessments of targeted properties. One of the assessed properties was the International Harvester Warehouse – an historic building that the city hoped to preserve. The assessments, completed in 2006 and 2007, revealed Polycyclic Aromatic Hydrocarbons (PAHs) in the warehouse property's soil due to old railroad spurs crossing the property. Pottawattamie County Development Corporation (PCDC) supported the city's revitalization effort by purchasing the property, which included the warehouse, in 2003 and marketing it to developers.

Key Accomplishments:

- Leveraged more than $7 million in redevelopment funding or tax credits
- Created housing for households with incomes between 40 and 60 percent of the median income of Council Bluffs
- Developed a mixed-use art and residential space
- Catalyzing an area-wide revitalization of downtown

Outcome:

Artspace USA, a nonprofit real estate developer dedicated to creating affordable space for artists and arts organizations, expressed interest in purchasing the property, but was concerned about the existence of the PAH soil contamination. To address these concerns, PCDC enrolled the property in the Iowa DNR voluntary cleanup program, known as the Land Recycling Program. Through this program, PCDC was able to access $23,000 in funding through DNR's brownfields redevelopment program and complete soil cleanup in the fall of 2008; PCDC received a Certificate of No Further Action in July 2009. That same month, Artspace USA began renovating the building. The renovated warehouse project was completed in July 2010 and includes 36 residential lofts. Each unit has additional square footage for an artist's studio, and the building has over 5,000 square feet of non-residential space designated for art-related uses, such as working studios, art galleries and showrooms, and office space.

Brownfields
Success Story

Housing and the Arts at Lamar Street Station
Lakewood, Colorado

Just 15 minutes outside downtown Denver, a renaissance is underway. The pioneering spirit that once drove early settlers to explore the western frontier is now emboldening a rebirth in the Two Creeks neighborhood of Lakewood. Where abandoned buildings and contaminated properties once sat idle, today a transit-oriented arts district and a brand-new residential development have taken root.

At 1560 Teller Street, the nonprofit 40 West Arts now anchors a state-designated creative district working to stimulate the local economy through the arts and cultural activities. And at 6150 W. 13th Avenue, just half a block from the Lamar Street light rail station, the new Lamar Station Crossing offers 110 sustainably designed housing units, including live-work studios.

Located along West Colfax Avenue, a historically critical artery in the region, and the West Rail Line, these two new developments at the historic heart of Lakewood are helping this community reemerge after decades of economic challenges.

The Opportunity

In 2004, Colorado voters approved a plan to increase transit services in the Denver metropolitan region. Known as FasTracks, the plan authorized the westward expansion of light rail service. The new West Rail Line, completed in 2013, added 12 miles of rail from Denver's Union Station through Lakewood and beyond to Golden.

"Once FasTracks passed and we saw that they'd be repurposing the old railroad right-of-way, our development director began looking at land along the corridor," says Ryan McCaw, sustainability and grant programs manager at Metro West Housing Solutions, developer of Lamar Station Crossing.

The company identified a roughly 6-acre unused parcel with a history of agricultural, residential and commercial uses. "We bought the property in 2006 and demolished the old buildings on the site in 2007," McCaw says. "The project started gaining steam from there."

This colorful mural by Bobby MaGee Lopez called "Hear the Rail a Hummin'" welcomes visitors to Lamar Station.

Photo credit: Alexis Moore.

EPA Grant Recipient:
City of Lakewood
Metro West Housing Solutions

Grant Type:
EPA Brownfield Cleanup Grant
EPA Brownfield Assessment Grant

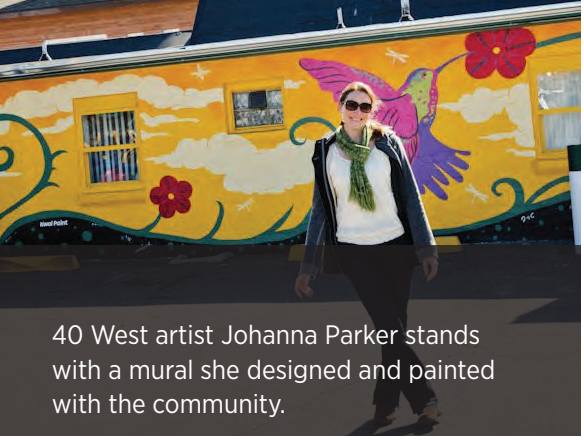
Former Uses:
Housing, light manufacturing, automobile impound, office and storage

Current Uses:
Lamar Station Crossing and 40 West Arts District

The new apartments at Lamar Station Crossing provide easy access to the light rail station.

Photo credit: Paul Brokering.

EPA
United States Environmental Protection Agency



40 West artist Johanna Parker stands with a mural she designed and painted with the community.

Photo credit: JP d'Andrimont.

> **"It's a real success story when looking at the area's needs and how together these projects are making a huge impact on the community and are transforming the area."**
>
> *William Rothenmeyer*
> *Brownfields Project Manager*
> *EPA Region 8*

The new Lamar Station Crossing provides affordable, energy-efficient housing for Lakewood residents.

Photo credit: Ryan McCaw.

Meanwhile, the City of Lakewood too was preparing for the arrival of light rail. City and community leaders recognized the need for higher density residential and commercial development near the new rail stations. Plans and flexible zoning regulations were developed with community input and were adopted by the city for the station areas. The Lamar Station Area Plan specifically called for land uses that include residential, live-work, limited office, neighborhood-serving retail, as well as art, dance and music studios.

"With the Rocky Mountain College of Art + Design and some creative businesses already nearby, we knew this would be a fantastic area for the arts," says Alexis Moore, associate planner with the Lakewood Planning Department.

Birth of an Arts District

A number of vacant buildings in the Two Creeks area already were being adaptively reused for art when, in 2010, the city used a grant from the U.S. Environmental Protection Agency (EPA) to explore developing an arts district in the neighborhood. The grant enabled the city to hire a consultant to conduct public outreach and develop a plan for the district.

The city's planning department appointed a task force consisting of residents, local businesses and representatives from the college and the city council and planning office. The task force held planning workshops and hosted open houses to solicit community input. These efforts culminated in the 40 West Arts District Urban Design and Mobility Concepts plan, adopted by the city in 2012. The plan recommended improvements for pedestrian and bicycle mobility, public art and an arts loop. The effort also spurred formation of the nonprofit 40 West Arts, which oversees management of the arts district.

According to Moore, "the EPA money helped solidify the vision and spur grassroots efforts," including formation of 40 West Arts, which is headquartered in a building that was vacant for years. A feather in the cap for everyone's efforts, in 2014, just 2 years after its inception, the 40 West Arts district was designated a Certified Creative District by the state, providing 40 West Arts with access to grants and statewide marketing and social media opportunities.

Building Lamar Station Crossing

While the city was investigating the feasibility of creating an arts district, Metro West Housing Solutions kicked off an outreach campaign of its own to better understand the neighborhood's housing needs. "The community expressed concern about our initial plan to make 100 percent of the units low income," McCaw says, "so we made 20 percent of the units market rate. We also started looking at the idea of offering live-work units to help the arts district get going."

Before Metro West Housing Solutions could get its plans for Lamar Station Crossing off the ground, however, environmental contamination on the site had to be addressed. Over the years, homes on the property had been demolished and buried there, leaving behind asbestos-containing materials. Later periods of light manufacturing and automobile impounding had released petroleum and polycyclic aromatic hydrocarbons into the soil.

Through a cooperative agreement with Metro West Housing Solutions, EPA provided a $189,000 Brownfield Cleanup Grant for the site remediation. Cleanup took place between August and November 2012, with 2.36 acres ultimately remediated and a total of 4,200 cubic yards of contaminated soil excavated and hauled away from the site. Construction began shortly thereafter, and the residential units opened for business in late 2013.

Not only does the Lamar Station Crossing fill a need for affordable housing in the area, but it also contains a variety of features that make it a leader in advancing sustainability. Both the site and the building have earned certification through the U.S. Green Building Council's Leadership in Energy & Environmental Design program. "The big thing was energy-efficient appliances, windows—the whole building envelope was designed to be as efficient as possible," McCaw says. "There's also a 78-kilowatt photovoltaic solar array. The cost of energy is 45 percent lower than for comparable buildings built to code in that timeframe."

Other sustainability-minded features include a pedestrian bridge built over a drainage way, providing access to a new Head Start center and connection to the nearby multimodal transportation network. The Lamar Station light rail platform is a few hundred feet away, as are bus stops and a bike trail.

The Benefits

The new housing development resulted in cleanup of an abandoned site where contamination was impeding reuse. "It's an infill urban area development instead of building on the rural fringe," says William Rothenmeyer, a brownfields project manager with EPA Region 8. Because of the transit-oriented development, residents can choose to drive less, walk to transit or bicycle to get around. So far, only 80 percent of the available parking spaces are accounted for. The project also created about 100 jobs during construction and 4.5 full-time equivalent permanent positions to staff the complex.

Although the arts district and Lamar Station Crossing emerged independently, the projects have had synergistic support for one another. The Artist in Residence Program at Lamar Station Crossing, sponsored by 40 West Arts and the Rocky Mountain College of Art + Design, "has been a huge success," Moore says, "and delivers creative and engaging arts programming for adults and children. Many 40 West member artists also live in the development. And there's an amazing community room that hosts arts-related functions. It's been a really positive win-win."

McCaw agrees. "We were hoping to get at least one artist to move in," he says. "Now we have five live-work units filled with artists. The property is even more modern and eclectic than we initially planned."

Both projects also appear to be bringing economic development opportunities to the area. According to data collected by the Lakewood-West Colfax Business Improvement District and Lakewood Planning Department, the number of creative enterprises in the neighborhood grew nearly 100% from 36 in 2012 to 71 in 2014. Jobs in the creative sector too have mushroomed over the same period from 199 to 288.

Moore points to the grassroots support as critical to the success achieved to date in the 40 West Arts district. "Because we had those individuals in the community championing the plan and creating the nonprofit organization, we were able to come so far in such a short amount of time," she says. "It was an amazingly collaborative process."

This pedestrian bridge connects Lamar Station Crossing to the Head Start center.

Photo credit: William Rothenmeyer.

Residents chat in the bright, open community room.

Photo credit: Paul Brokering.

Shown here is one of the five live-work units.

Photo credit: Renae Pick.

For more information:

Visit the EPA Brownfields website at www.epa.gov/brownfields or contact William Rothenmeyer at (303) 312-6045 or rothenmeyer.william@epa.gov.

EPA 560-F-15-044
May 2015

EPA Region 8 Brownfields Program

Evanston, Wyoming Redevelops an Historical Former Rail Yard into Multipurpose Event Space

EPA Brownfields Assessment funding helped the City of Evanston, Wyoming redevelop its historic Roundhouse Complex into a centerpiece for the city that has increased its tourism economy. This project now serves as a model for restoring historic buildings on formerly contaminated lands.

Railroad Boom Comes to Evanston

Since 1868, Evanston has been a hub of railroad activity as a stop on the transcontinental railroad. Located just 80 miles from Salt Lake City, Utah, Evanston offered a convenient location to fill up on coal and water as steam locomotives could only travel about 100 miles before refueling. In the early 1900s the Union Pacific Railroad opened a repair and maintenance facility in Evanston, providing approximately 125 jobs for residents. In 1971, due to the increasing use of diesel locomotives, the Union Pacific Railroad shut down its operations in Evanston and donated its 290-acre property and buildings to the city. The Roundhouse Complex, a 22-acre portion of the donated property, included a Machine Shop, Roundhouse, and other auxiliary buildings. For the next 27 years, the city leased the Roundhouse Complex to various rail companies. Though the city was interested in eventually redeveloping the property for other uses, it recognized the importance of preserving and restoring the historic Roundhouse Complex.

The Machine Shop has been converted to a premier event space.

Environmental Assessment Lays Tracks for Redevelopment

Through the early 1990s, as the demand for rail maintenance decreased, the city considered historic restoration options for the Roundhouse Complex. Because the property had been used as a maintenance and repair facility, the city was concerned about environmental contamination. In addition, the site's buildings were in dire need of repair. In 1994, the city funded a preliminary environmental assessment and an architectural study to better understand potential restoration and reuse opportunities. Additional environmental assessments were necessary and in 1998, Evanston received the funding it needed through a $200,000 EPA Brownfields Assessment Grant. An additional $200,000 in supplemental and greenspace funding was also provided by EPA. The assessments were completed in the summer of 2001 and identified asbestos, lead, benzene, and arsenic. Cleanup began on the Machine Shop in October 2002, at an estimated cost of $140,000. Investigation and cleanup activities were conducted under Wyoming Department of Environmental Quality's Voluntary Remediation Program, with $200,000 provided by WYDEQ for cleanup and construction of the Machine Shop parking lot. Groundwater on the property continues to be monitored to ensure the cleanup's integrity.

Key Accomplishments

- Developed partnerships with more than 15 federal, state, and local agencies/organizations
- Redeveloped a portion of the 22 acre Roundhouse Complex, leading the way for full redevelopment
- Leveraged more than 200 new jobs

Redevelopment of the Machine Shop Spurs Tourism through New Event Space

With assessments and cleanup finished, the Machine Shop underwent a $2.5 million redevelopment and restoration that included extensive efforts to maintain its historical integrity. Since its opening in February 2004 as premier event space, the Machine Shop's 500 person capacity and large kitchen has greatly enhanced the City of Evanston's ability to host events and increase tourism. The space has been used for events such as the annual Urban Renewal Ball, the annual Roundhouse Festival, special event dinners, junior proms, and the Cowboy Day Spring Fling.

Additional Redevelopment Efforts are Underway at the Roundhouse

With restoration of the former Machine Shop complete, redevelopment efforts are now underway at the 65,000 square-foot roundhouse. To aid restoration efforts, the property was split into four roughly equal sections; the first section is scheduled to open in April of 2009 as a state-of-the-art conference center to compliment the Machine Shop. Though plans for the remaining parts of the Roundhouse have not been finalized, many city officials would like to see these last three sections used as City Hall, bringing various city offices into one building.

Leveraged Resources

- $400,000 from an EPA Brownfields Assessment Demonstration Pilot (includes Supplemental and Greenspace funding)
- $200,000 from the Wyoming Department of Environmental Quality in Brownfields Cleanup Assistance
- $1.5 million from the Wyoming Business Council
- More than $1 million from a Wyoming DOT Transportation Enhancement Activities Local (TEAL) Grant
- More than $50,000 annually from Urban Renewal Ball proceeds
- $50,000 grant from the Union Pacific Railroad
- $30,000 from Preserve America
- Technical assistance from the National Trust for Historic Preservation
- Technical assistance from the Lincoln-Uinta County Association of Governments (LUAG)

Partnerships are Key to Redevelopment Success

Assessment, cleanup and redevelopment would not have been possible without significant leveraged resources. The city has developed more than 15 partnerships with local, state, and federal agencies representing areas such as historical preservation, environmental cleanup and economic development. One such partnership was with the Wyoming Business Council, which gave the city a $1.5 million grant that was used to replace thousands of windows at the Roundhouse and restore the building's masonry.

Historical Restoration Spurs Tourism Reuse

Through redevelopment of the Roundhouse Complex, Evanston has increased its tourism economy by converting an under-utilized property to a premier events center and future state-of-the-art conference center. Since redevelopment began, over 200 jobs have been leveraged. Of primary importance, Evanston has redeveloped and preserved a classic piece of Americana that future generations will learn from and enjoy.

For additional information, please contact:

City of Evanston, Office of Economic Development: (307) 783-6309 • www.evanstonwy.org
EPA Region 8 Brownfields Program: (303) 312-7074 • www.epa.gov/region8/brownfields

United States Environmental Protection Agency
Region 8 Brownfields
EPA 908-A-09-002 February 2009

brownfields at-a-glance

EPA-560-F-06-227
August 2006

Washington Department of Community, Trade, and Economic Development, WA
Revolving Loan Fund Grant

KENDALL YARDS

Former Rail Yard Property Ready for Reuse in One Year

Address:	Located generally between Monroe Street to the east and Summit Boulevard to the west, north of Ohio Avenue and south of Bridge Avenue, Spokane, Washington
Property Size:	77 acres
Former Use:	Rail maintenance yard
Current Use:	Vacant

EPA Grant Recipient:	**Project Partners:**
The Washington Department of Community, Trade, and Economic Development (CTED) provided $3.4 million in EPA Brownfields Revolving Loan Fund funding to River Front Properties, LLC.	City of Spokane, Spokane-Area Economic Development Council, The Downtown Partnership, Washington Department of Ecology, Spokane Tribe of Indians

For additional data and geographic information for this and other Brownfields Grants, please visit EPA's:
Envirofacts - www.epa.gov/enviro/html/bms/bms_query.html
Enviromapper - www.epa.gov/enviro/bf

Project Background:
The Kendall Yards property, located in the heart of Spokane, Washington next to the World's Fair site, was riddled with contamination from years of use as a locomotive repair and refueling site. The property spans 77 acres on the north side of the Spokane River and connects with the downtown area. Past onsite operations resulted in contamination of the property with carcinogenic polycyclic aromatic hydrocarbons, petroleum hydrocarbons, metals, and other chemicals. Having sat idle for more than 50 years, the property was used as a dumping ground for refuse until a private developer expressed interest in securing a brownfields revolving loan fund (RLF) loan to clean up the site and approached CTED for a loan. In August 2005, CTED awarded a $2.4 million RLF loan to River Front Properties, LLC, at the time the largest of its kind in the nation for a brownfields project. CTED also awarded a $1 million supplemental loan in February 2006 for a total of $3.4 million in RLF funding for the project.


Construction underway at Kendall Yards.

Key Accomplishments:

- Property made ready for reuse in one year.
- More than 223,000 tons of contaminated soil were removed, allowing for unrestricted use.
- Recipient of the national 2006 Outstanding Brownfields Team Award, an EPA award that recognizes excellence in regional waste management and emergency response programs.

Outcome:
In March 2006—just over a year since cleanup planning activities began—the Washington Department of Ecology determined that no further action was needed on the former rail yard property and deemed cleanup complete. This effective cleanup was made possible through close coordination of team members which resulted in an expedited planning and cleanup process. Cleanup costing approximately $6.4 million, including the removal of more than 200,000 tons of contaminated soil, allows for unrestricted land use. Plans for the property include a mixed use project of 2,600 residential units and one million square feet of commercial space to include restaurants, shops, businesses, and professional offices. The project is estimated to leverage 500 jobs during construction and up to 2,500 permanent jobs in the commercial space, with a projected long-term investment of more than $750 million.

Way Showing in Windsor

Why Wayfinding?

- Wayfinding is a spatial problem solving process: how do we get from "a to b"
- Wayfinding is accomplished by way showing. Way showing is accomplished by signage and visual messages presented in the natural and human-made environment; spatial instructions that are placed where needed to function together with other sources of information such as landmarks, place-names and verbal instructions.
- Moving is an integral part of wayfinding: if there are not enough way showing 'cues' in the landscape, we cannot move towards our destination.
- Reading navigational information, whether simply where one is or the intentional cues in the environment and making decision while moving is the core business of wayfinding.
- How we conceive of our environment in memory is aided in great part by the 'clues' that figure intentionally in the landscape.
- Looking at a map at home is planning.

*The terms 'signs' and 'tools' are used interchangeably in this report to encompass all methods used to make outdoor public space legible and its navigation accessible to all users.

Wayfinding in a city is dependent on various 'signs' - whether the grocery store sign or directional signs to the museum - to communicate how to navigate sometimes complex network of roads, sidewalks, alleys and other connecting features on the groundplane to its visitors. Without a clear system of way showing, wayfinding can be unnecessarily frustrating.

Intentional way showing can lead visitors of one destination within Windsor to spontaneously extend their stay and explore other parts of what the Town has to offer. While many people who travel pre-plan their journey to places unfamiliar to them, others prefer to find their way around new places based exclusively on sensory experiences, or are open to the intrigue of exploration; wayfinding cues can help both types of visitors lengthen their time in a place and encourage wandering. To do so, a thoughtful and intentional wayfinding system must help users 'connect the dots' as they depend on way showing tools to 'read' their environment. While signs are traditionally relied upon in a town's Wayfinding system, other non-graphic information in the landscape, such as landmarks like churches, can help inform users of their current location, supporting an ease of reference to their desired destination.

To carefully plan a wayfinding system, it is essential to keep in mind that how we interact with the landscape differs and depends on whether one is in a vehicle (and whether one is the driver or the navigator), walking, or cycling and how the system needs to address each differently. This does not mean that three different signs are needed for each way showing 'cue', but that consideration for each mode of transportation is central to a coordinated wayfinding system.

Per America Walks, a national non-profit that aims to empower communities to create walking conditions for all, a pedestrian wayfinding system:

Helps pedestrians overcome the hurdle of distance perception;
Increases foot traffic;
Increases tourism;
Increases commerce; and
Helps encourage different transportation choices.

Why does Windsor need Wayfinding?

The Town of Windsor has several unique destinations that should not depend on 'luck' to be found by visitors, or frequented by locals. A wayfinding plan can unite destinations without making them uniform. As part of a wayfinding system, destinations retain their own identity but become part of a "whole" as they are connected and support each other through way showing techniques and tools.

Official signs and gateway features give visitors and locals a sense of arrival. Key way showing tools along the way confirm location, leaving the senses ready to observe and internalize new information while the body continues to move towards a destination or wander confidently without feeling lost.

Windsor's Town Plan and Zoning refer to wayfinding, but mainly with regards to regulating. Included is directive that informational signs need to be erected in accordance to the Connecticut River Byway Signage Program. Adequate signage needs to be provided to clearly direct visitors to public parking areas. This project seeks to address more than these basic wayfinding needs in Windsor.

The need to accomplish these goals is universal in an urban environment wishing to support its commercial businesses, maintain its cultural and recreational institutions and connect people to it.

Wayfinding Priorities & Goals for Windsor

- Guide locals and visitors to 'must see' destinations
- Orient locals and visitors between Downtown Windsor and the See-It-Made Park
- Recommendations for changes, corrections, and additions to the current wayfinding system

Wayfinding Plan Statement

Windsor's Wayfinding and Signage Plan, part of the Connecting the Right Side of the Tracks Project, builds upon Design Guidelines completed for the Connecticut River Byway System in 2001, signage that was installed in Windsor as part of that project and other wayfinding tools found throughout both the project area and the larger Windsor context. This plan identifies sign locations, evaluates existing sign effectiveness in providing navigation assistance to key destinations and makes recommendations for future improvements to wayfinding in Windsor. While the majority of wayfinding that exists in Windsor is comprised of signage focused on vehicular navigation, a key objective of this plan is to address way showing needs of pedestrians and cyclists to be able to connect them to key destinations throughout Downtown Windsor and to the surrounding area. The system needs to be flexible to accommodate future developments and changes within Windsor that will need wayfinding.

The steps of the wayfinding piece of the Connecting the Right Side of the Tracks Project are to:

Identify Connections: identify existing corridors, nodes and connectivity at both the meso/ regional scale and the micro scale/ localized scale and where key decision-making points exist.

Inventory: document location of existing wayfinding tools and key destinations that need to be included as part of a wayfinding system.

Analyze: review existing wayfinding tools in Windsor and identify strategies for improving the system.

Plan and Design: Plan for changes in wayfinding in Windsor through proposed short and long term strategies to bridge gaps identified as part of the inventory and analysis of the current system.

Identifying Connections in Windsor and Beyond

As part of this study, key decision-making nodes within Windsor and with major connecting hubs were documented through multiple site visits.

The adjacent plan illustrates Windsor's key north-south corridors that connect the Town of Windsor to the towns beyond via the interstate and railway, as well as the west-east connecting bridge into New Hampshire. There are additional connecting roads from the west into Windsor, and possibilities of connections from the east along the river, but the focus of this wayfinding program is to make connections between existing major corridors and decision-making points (or nodes) of travel outside of the Downtown. The selected connections focus on a desire to attract people into the Downtown, entice them to explore destinations, discover businesses, and then, to provide them with information on the most convenient way to confidently leave (and return to) Windsor.

The five major nodes identified include:

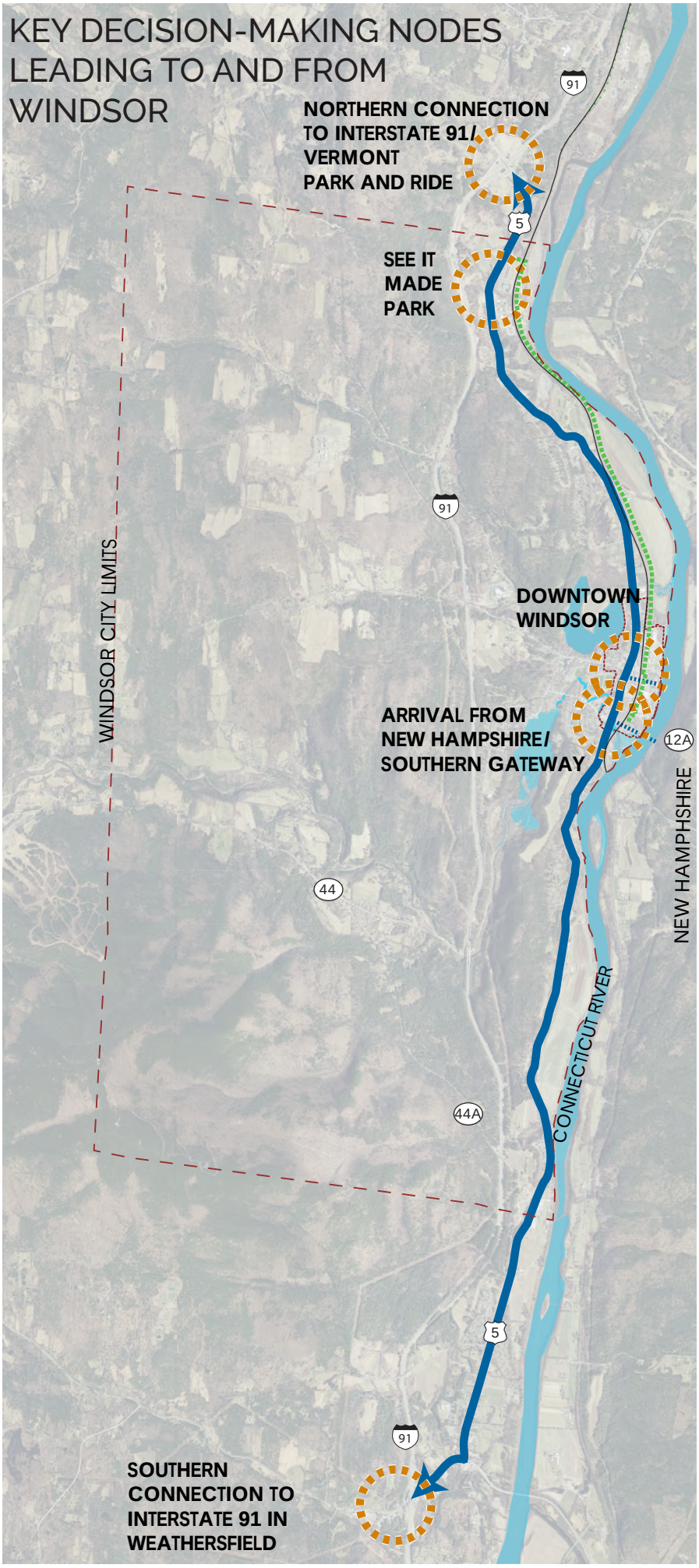
Northern connection from Interstate 91 onto Route 5 which leads into Windsor.

See-It-Made Park Intersection with Route 5.

Downtown Windsor: the intersection of Main Street/Route 5 with Depot Street

Arrival from New Hampshire: the intersection of Main Street/Route 5 with Bridge Street, which connects Vermont to New Hampshire

Southern connection: Route 5's access to Interstate 91 in Weathersfield.



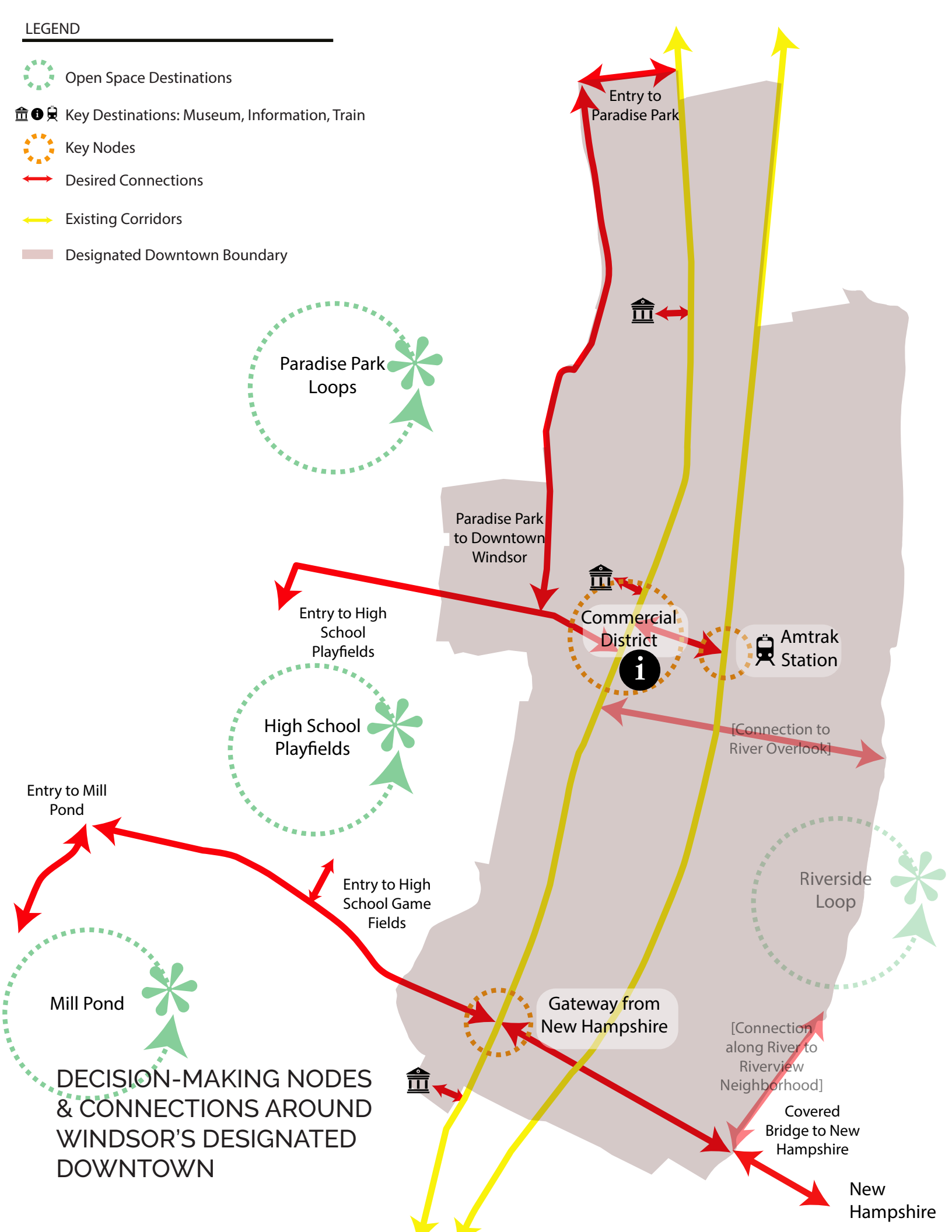
Identifying Connections within Windsor's Designated Downtown

The following diagram is a simplified depiction of the existing connections and 'decision nodes' within Windsor's Designated Downtown. It highlights areas that need representation in a wayfinding program to encourage accessibility for walking and cycling within downtown and to the surrounding context and to also orient those traveling in a motorized vehicle.

There are several recreational and cultural destinations within Windsor that are in close proximity to the downtown core. These include: Paradise Park, Mill Pond, the High School Playfields and the covered bridge over the Connecticut River. Similarly, there are several museums or historic buildings that are promoted as key tourist destinations within Windsor, including: the Precision Museum, Old Constitution House, and Windsor House. Future connections include access to the Connecticut River through an overlook and/or boat access point in the Riverview neighborhood.

Due to the importance placed on wayfinding to connections such as: the interstate, the railway, the river, public parking and the visitor's center in any Town, these have been inventoried and analyzed individually. There are several sign 'families' in use in Windsor and these are addressed in the next section to highlight the distinction between them on subsequent plans.

Based on the key connections and decision-making nodes, an inventory was documented of the existing wayfinding tools throughout Windsor. Although not fully reliant on signs, the majority of wayfinding in Windsor is currently reliant on conventional signage.


LEGEND
Open Space Destinations
Key Destinations: Museum, Information, Train
Key Nodes
Desired Connections
Existing Corridors
Designated Downtown Boundary
Entry to Paradise Park
Paradise Park Loops
Paradise Park to Downtown Windsor
Entry to High School Playfields
Commercial District
Amtrak Station
High School Playfields
[Connection to River Overlook]
Entry to Mill Pond
Entry to High School Game Fields
Riverside Loop
Mill Pond
Gateway from New Hampshire
[Connection along River to Riverview Neighborhood]
Covered Bridge to New Hampshire
New Hampshire
DECISION-MAKING NODES & CONNECTIONS AROUND WINDSOR'S DESIGNATED DOWNTOWN

Wayfinding Inventory

As a starting point for the inventory and analysis of wayfinding in Windsor, DuBois & King documented existing wayfinding signs found throughout the Town, with a concentration in the Downtown core/ project area.

Wayfinding Systems

There are several sign systems at work within Windsor; the majority of which are aimed at vehicular travel. Below are some of the sign 'families' found throughout the Town.

- **VTrans Official Business Directional Signs (OBDS):** Brown panel-signs found throughout Vermont along state highways indicate local businesses, are signs that are designed to MUTCD standard with mileage indicated, include directional arrows, and are limited to three destinations per post. It is one of the traffic control signs allows within the highway right-of-way and requires coordination with VTrans. Businesses can include food, lodging, crafts/ antiques, recreation and goods and services.

- **Connecticut River Byway Directional Signs** aimed at motorists, have a blue top panel with the Connecticut River Byway logo and the America Rivers logo. Beneath are three brown blade signs with nearby destinations listed with stacked directional arrows.

- **Connecticut River Byway Informational Signs** at key destinations describing key points of interest and are located on or near the subject. These are larger signs with black and blue backgrounds, include photos with captions and descriptive text.

VTrans Official Business Directional Signs (OBDS)Recreation/ Cultural Interest Signs

Connecticut River Byway Directional Signs

Connecticut River Byway Informational Sign

- **Kiosks:** The Town of Windsor has one kiosk located on the edge of Veteran's Park and has bulletin-board panels that post current events.

- **Parking signs** are varied and will be discussed in a separate section.

- **Connecticut River Byway Sign**: As part of the Connecticut River Byway, there is a CRB sign with logo located south of Windsor's Designated Downtown.

- **VTrans Standard Directional Signs** are located in key areas throughout Windsor and include mileage and directional arrows to nearby towns, as well as interstate or state road numbers and symbols and cardinal directions

- **Town Boundary Signs:** Windsor does not currently have any town boundary signs.

Windsor 'About Town' Kiosk

Connecticut River Byway Sign South of Windsor's Designated Downtown

Connecticut River Byway Logo

Standard VTrans Directional Signs

Town Boundary Sign

Wayfinding Inventory Locations

The next plan inventories existing wayfinding within Windsor's context. Based on the decision-making nodes and connections desired within Windsor illustrated above (p.8), suggestions for additional sign locations (or the relocation of signs) are included after the inventory and analysis.

Following the plan is an analysis on specific contextual wayfinding tools that are located in and around Windsor. Included is an analysis of Gateways into Windsor, directions to Interstate 91, and connections between Windsor's Designated Downtown and the See-It-Made Park.

Existing Wayfinding - Windsor Context

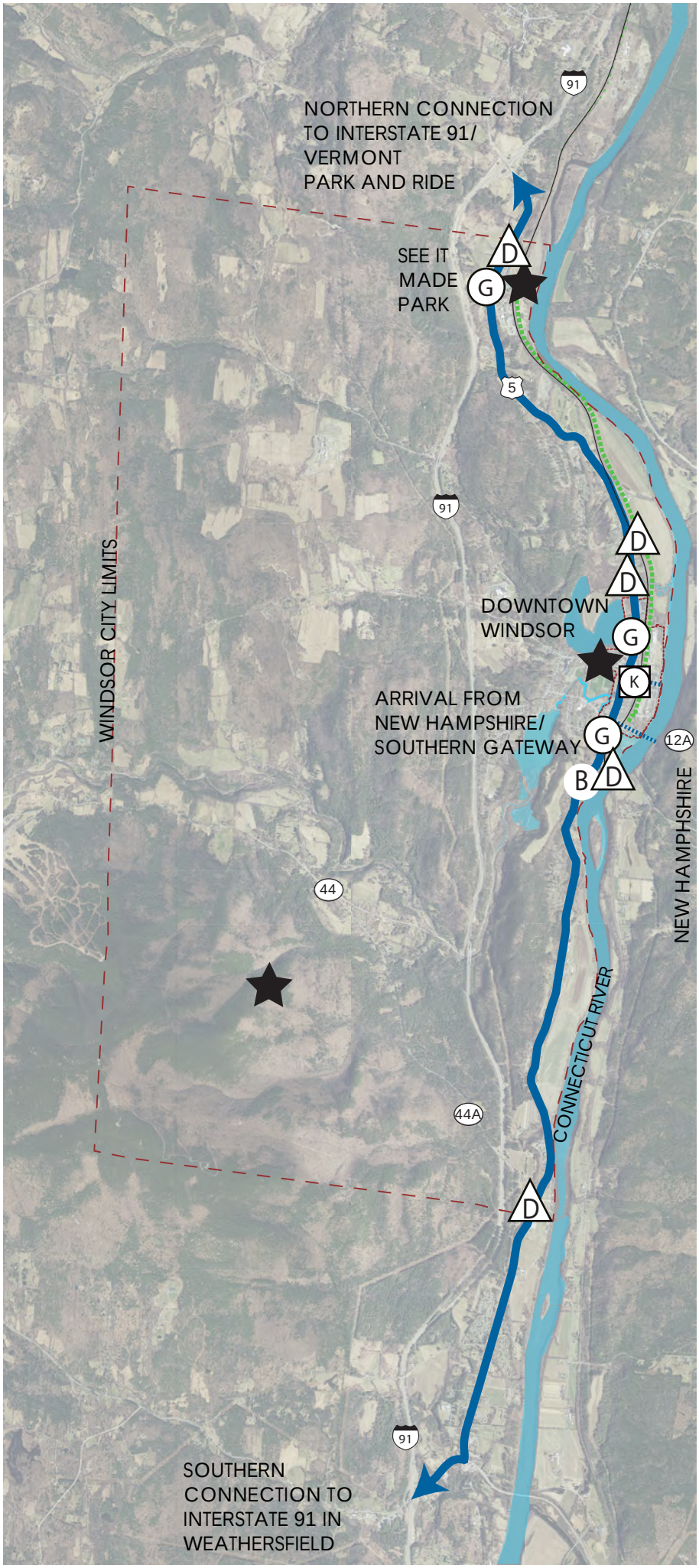
Within Windsor's context, it is important to note that there are three key gateway locations to the Designated Downtown: North of Town, South of Town and entering Vermont from New Hampshire over the Windsor-Cornish Covered Bridge. Currently, there are three gateway-like signs within Windsor: At the See-It-Made Park, north of the designated downtown and south of the designated downtown. There is not any sign of a gateway as one traverses the Connecticut River from New Hampshire.

Destinations within Windsor/ Windsor's Context include: Mt. Ascutney, See-It-Make Park and Downtown Windsor.

Vehicular directional signs are located on Windsor's boundaries to the north and south, as well as one approaches the Designated Downtown from either direction.

LEGEND

- G — Gateway Sign
- D — Vehicular Directional Sign
- K — Information Kiosk
- B — Connecticut River Byway Sign
- ★ — Windsor Destinations
- Designated Downtown Boundary
- Windsor Town Boundary



EXISTING WAYFINDING WINDSOR CONTEXT

Specific Wayfinding Analysis

The following section evaluates existing wayfinding gateway tools within Windsor and, where needed, provides suggestions for improvements. Key wayfinding tools inventoried and analyzed as part of the meso scale include: gateway signs, signs to and from Interstate 91, and signs from the covered bridge.

Gateway

Gateway signs are usually road signs that welcome visitors to a community or downtown district. Gateway signs can contribute to a sense of arrival into a place, especially if the surrounding landscape and/or topography does not visibly change; for example: from distinctly rural with open fields to urban with taller buildings located much closer to the road.

Gateways are also enhanced by points of visual interest such as structures (archway, framing, etc) that can signal entry into a different place. Physical gateways can be erected to draw people in, to brand a community and/or to create a destination (in terms of monuments). In smaller-scaled areas, such as Windsor, gateways can be enhanced by smaller gestures such as curb extensions, to signal the narrowing of the street and arrival into an area with a lower speed (more urbanized). As an added benefit to curb extensions, pedestrian visibility can be improved if it is located in an area that would benefit from a crosswalk, while delineating on-street parking availability from that point forward. Curb extensions allow for additional space for streetscape enhancements such as seating or greenery, stormwater treatment, or locating gateway signs in a more prominent location.

Southbound into Windsor

Leaving interstate 91 and traveling south four miles along Route 5, which becomes Windsor's Main Street, there are few cues to confirm the direction and the point where one crosses into Windsor; the Town is devoid of a town boundary sign.

Continuing south, when arriving within the Designated Downtown, there is a 'Windsor' sign, but it is partially obstructed by other signs and

Southbound into Windsor

Gateway Sign on Route 5/ Main Street: partially obstructed by Rotary Club and Winter Parking Ban Sign; cluttered with other signs in the background and flags.

Close up of Gateway Sign: well-kept landscaping and lack of overhead distractions let the sign eventually come into view.

Northbound into Windsor

First glimpse of Gateway Sign under shading of mature trees.

vegetation, in addition to visibility challenges imposed by the posted speed as it change from 40mph to 25m in the sign's vicinity.

However, there is visible change in the landscape as one passes the Price Chopper plaza on the left: flags are mounted on the utility poles on the west side of the street as the landscape transitions from rural to a more urban form where building density increases. This is a notable shift that creates a sense of arrival. The flags continue into Downtown Windsor until they shift to the east side utility poles of Main Street after the Old South Church cemetary until Bridge Street.

Northbound into Windsor

When arriving from the south and traveling north along Route 5 into Downtown Windsor, there is a 'Windsor' sign at the Main Street/ Maple Street intersection which is located on the opposite side of the road from the travelway. The sign is not directly obstructed, but is located under mature trees which shade the sign when leaves are out, compromising its visibility. However, the shift from rural to a more urban landscape occurs before the sign is visible - at Pasco Way. The Rotary sign's location in this area might be a better location for the Windsor sign - before the Designated Downtown southern border and before other urban infrastructure clutters the overall visibility of the 'Windsor' sign. In addition, it would be on the same side as the travelway and before the bend in the roadway which also affects motorist attention.

Unlike entry from the north into Windsor where flags help symbolize arrival, flag within the Designated Downtown begin north of Bridge Street, further north from the gateway sign. It would be beneficial to extend the flags south to begin at the gateway sign.

Westbound into Windsor from New Hampshire

The transition from New Hampshire into Vermont is unsigned by wayfinding. Although crossing the river through the Cornish-Windsor Covered Bridge helps highlight the crossing, there is nothing on the Windsor/ Vermont side that indicates arrival into a different town or state.

Close up of Gateway Sign: well-kept landscaping and lack of foreground distractions let the sign eventually come into view

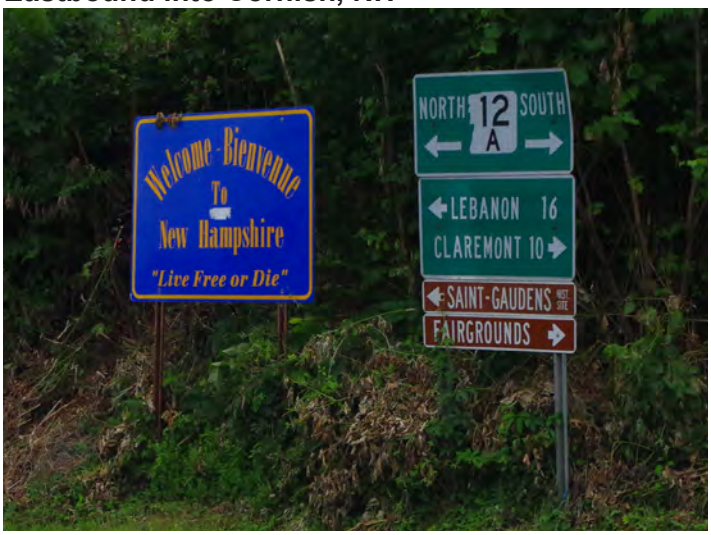
Westbound into Windsor

First glimpse of Vermont upon exit of Windsor-Cornish Bridge.

Arrival at first intersection from Windsor-Cornish Bridge with Connecticut River Byway Vehicular Directional Sign in view.

Arrival into New Hampshire over the bridge is clearly marked due in part to the T-intersection once exiting the bridge. Facing travelers upon exiting the bridge is a "Welcome to New Hampshire" sign, as well as vehicular directional signs and recreation/ cultural interest signs. There is also a gateway sign for Cornish physically separated by the state signs/ directional signs with simple landscaping in front of it.

Eastbound into Cornish, NH

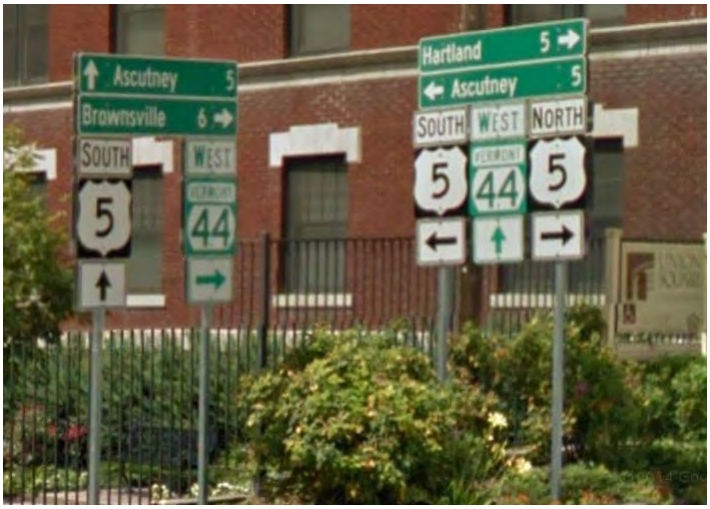


Gateway/ wayfinding signs on the opposite side of the Cornish-Windsor Covered Bridge upon exiting the bridge.

Gateway Sign in Cornish, NH opposite the Cornish-Windsor Covered Bridge as one exits the bridge, the sign is immediately visible.

Windsor and Interstate 91

Once in Windsor, signs indicating how to connect to Interstate 91 are infrequent and incomplete. For example, the typical VTrans sign at the Bridge Street and Main Street intersection, which is the first area of VTrans directional signs seen when traveling from New Hampshire, lack any indication that Interstate 91 is found nearby. Although this gap may seem standard as the next on-ramp to 91 is south in Weathersfield, the sign at the See-It-Made Park (discussed below) which indicates that 91 is in this direction, creates a gap in wayfinding information with regards to interstate 91.



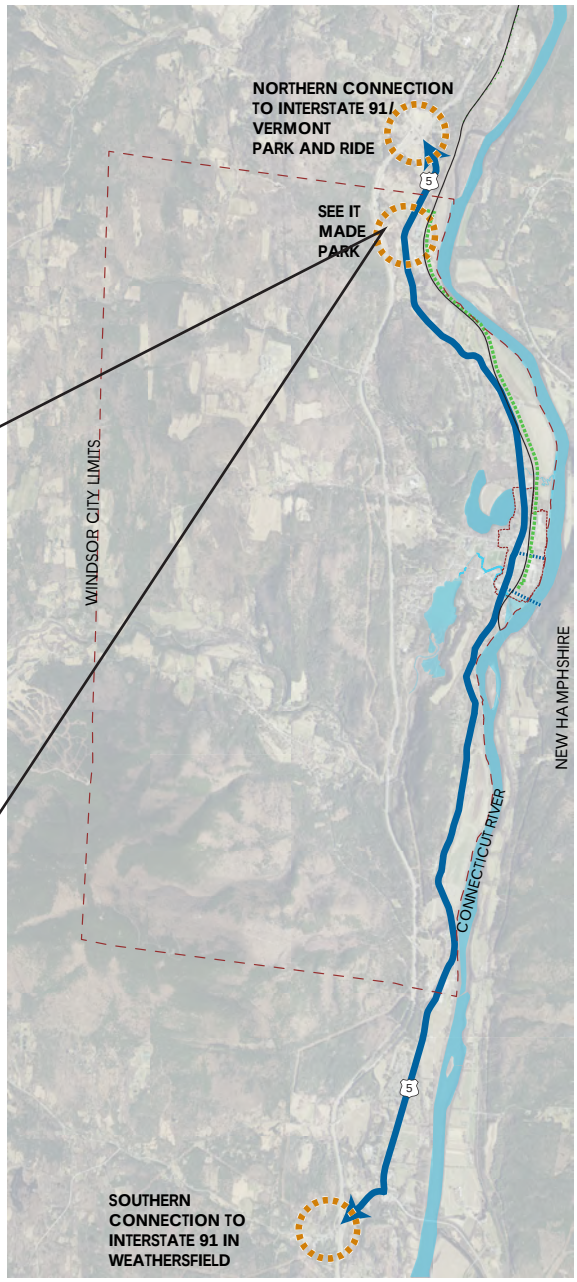
Standard VTrans Directional Signs at Main Street/ Bridge Street Intersection.

See-It-Made and Windsor

The most descriptive gateway sign into Windsor is located parallel to Main Street/ Route 5 facing the exit of the "See -It-Made" Park on Ruth Carney Drive.

This gateway sign is one of two 'Welcome to Windsor' signs which also features the names of key cultural destinations found downtown, including: the Old Constitution House, American Precision Museum, Historical Landmarks and Walking Tours and one of the longest covered bridges in the United States.

Welcome to Windsor gateway sign found opposite Ruth Carney Drive as one exits the 'See-It-Made' Park.

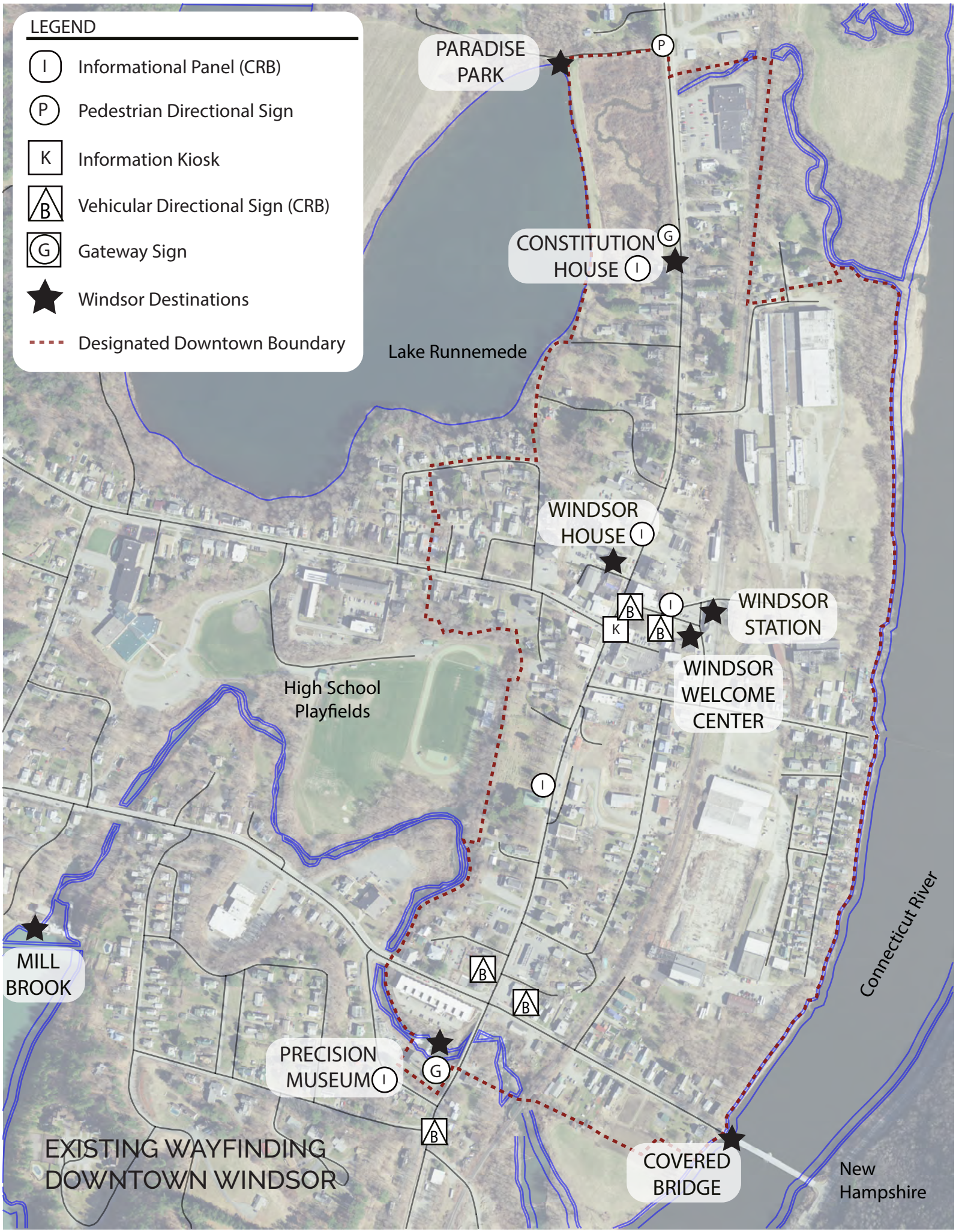


A sign was installed recently to direct motorists from the See-It-Made Park to the southern connection to Interstate 91, even though the northern connection is much closer. As previously mentioned, there is a gap in additional wayfinding to Interstate 91 beyond this sign.

Wayfinding Inventory Locations - Micro Scale

The following plan inventories existing wayfinding within Downtown Windsor and its immediate surroundings (micro scale). Based on the decision-making nodes and connections desired within Windsor illustrated on page 7, suggestions for additional locations for signs (or the relocation of signs) are included after the inventory.

A more detailed inventory and analysis of wayfinding to/from the Windsor train station, Waypoint Welcome Center, Free Public Parking, Vehicular Directional Signs and suggestions on pedestrians signs/ wayfinding follows.


LEGEND
Informational Panel (CRB)
Pedestrian Directional Sign
Information Kiosk
Vehicular Directional Sign (CRB)
Gateway Sign
Windsor Destinations
Designated Downtown Boundary
PARADISE PARK
CONSTITUTION HOUSE
Lake Runnemede
WINDSOR HOUSE
WINDSOR STATION
WINDSOR WELCOME CENTER
High School Playfields
MILL BROOK
PRECISION MUSEUM
COVERED BRIDGE
Connecticut River
New Hampshire
EXISTING WAYFINDING
DOWNTOWN WINDSOR

Central Landmarks: Windsor Station; Waypoint Welcome Center

Windsor Station and the Waypoint Welcome Center are key examples of how landmarks are underutilized as wayfinding tools within Windsor. Both are located east of Main Street in Downtown and would benefit from better wayfinding to locate them and also, to help navigation to other destinations in the area.

The Windsor Station is a significant landmark for both travel and history, and can help boost Windsor's identity as a memorable destination near the center of town and orientation within the Town. The Waypoint Welcome Center (visitor's center) can increase visitor knowledge of Windsor and of surrounding attractions with numerous flyers, historical information and public restrooms provided inside. Additionally, both destinations provide free surface parking, including Americans with Disabilities Act (ADA) designated parking stalls in front of the Waypoint Welcome Center. However, inadequate wayfinding at key decision nodes within Windsor make finding them challenging.

Windsor Station

Currently, finding one's way to the train station is not intuitive. Aside from the train station's location on Depot Street (first clue), there are not any other signs of the station along Main Street. There is a train symbol beneath a railroad track sign just a few feet from the train station's doors, next to existing parking and in front of overgrown vegetation. Moving the sign to Main Street, beneath the existing Parking sign (as illustrated below) would help connect the landmark along the main corridor and support orientation.

Duplication of destination information within a few feet.

The Train Station should also be viewed as a Gateway into Windsor. Leaving the station, it is not immediately obvious where one should go or what connections to the town exist in this location. Windsor would benefit from a redesign of the parking area/ travelways in front of the Station that celebrate this landmark and make it a key touchstone for orientation within the town. This could include moving the Connecticut River Byways Information Panel near Windsor Station's main entrance - which would also provide an additional visual clue in the sight line from Main Street highlighting the Station's importance within the Town.

Moving the typical train station symbol would increase visibility of the location of Windsor Station from Main Street: a key Windsor corridor and decision-making node.

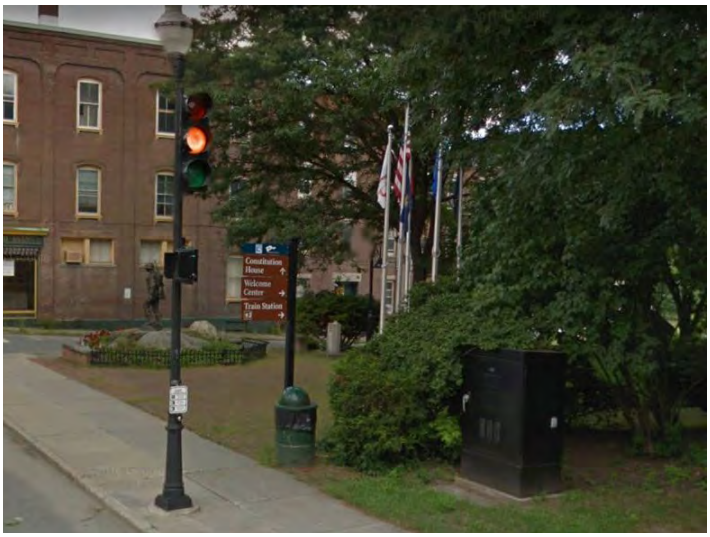
View from Windsor Station towards Windsor's Downtown/ Main Street. Yellow box highlights the location of a Connecticut River Byway sign which is blank on the side facing the Train Station. The [Waypoint] Welcome Center figures on the opposite side of the blade.

Waypoint Welcome Center

Another example of a landmark that needs visibility is Windsor's Waypoint Welcome Center.

From the intersection of Main Street and Depot Avenue, there is only one indicator of the Welcome Center: on a Connecticut River Byway Directional Sign that only has destinations on the side facing south.

There is a single blade sign post by the Connecticut River Byway located near Windsor Station indicating the direction of the Welcome Center, but it is too far from the intersection to be visible. In addition, it is very small and blends in with the background of trees/ overgrowth of vegetation around it. If one walks towards Windsor Station down Depot Street, it may be possible to see the sign, but unlikely if traveling by motorized vehicle. Then, arriving at the end of Depot Street, it is not clear where to find the Welcome Center; there are no further indicators at this key juncture. The Welcome Center's building is setback from the road, is nestled among several other buildings, which contribute to obscuring its location.

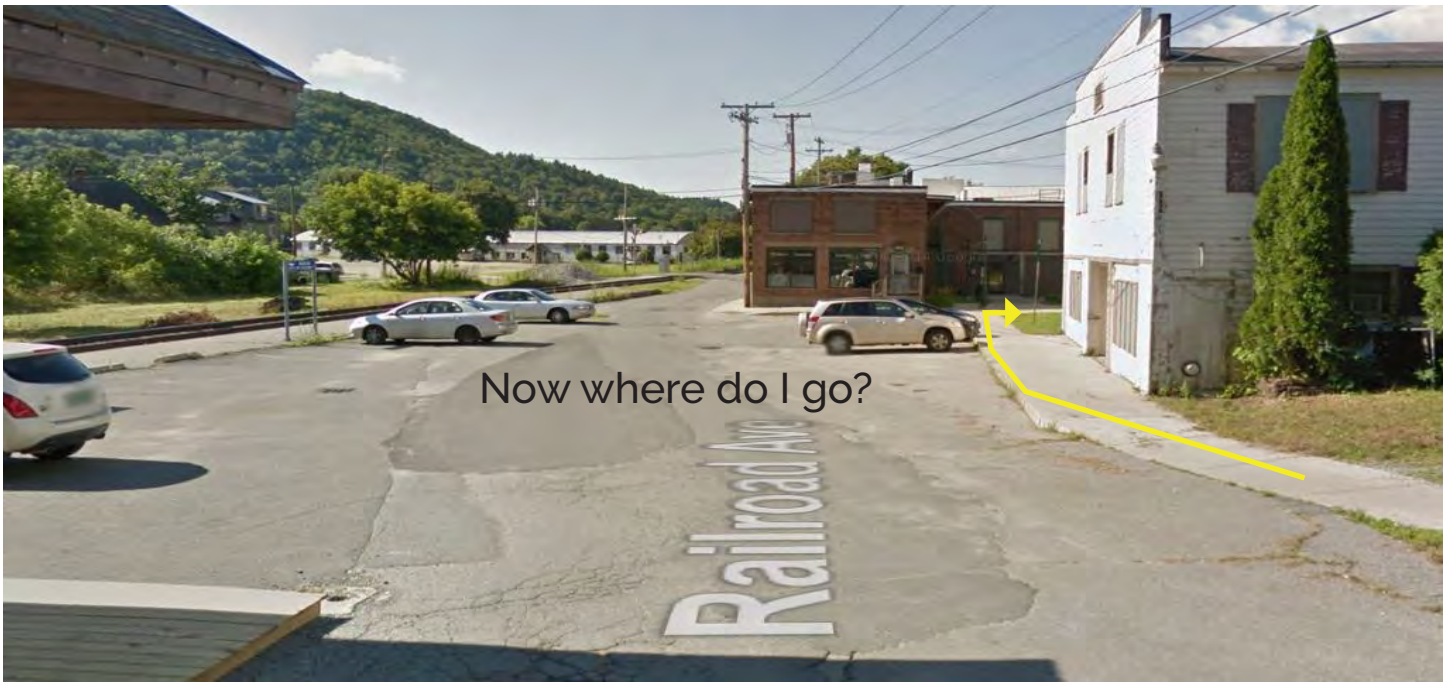


Connecticut River Byway Blade Sign indicating direction to Waypoint Welcome Center. Visibility is hindered by several vertical elements in the foreground and background.

View of Connecticut River Byway Sign is obscured by background trees and the mute colors of the sign. The sign is also quite far from the intersection to see/ read.

Approach to Windsor Station with Connecticut River Byway sign coming (somewhat) into view. Public Parking Surface Lot on the right is also obstructed by mature vegetation.

Close-up of Connecticut River Byway sign indicating the Welcome Center. The sign is very small and visibility is compromised by its location in the foreground of mature vegetation.



The photo above is the view after one turns the corner from the previous CRB sign indicating the Welcome Center to the right. As can be seen, there are not any additional indicators to the Waypoint Welcome Center's location. Because the building is not located along the road and really tucked into the back of other buildings, additional wayfinding would benefit this key destination for wayfinding withing Windsor.

Another way to arrive at the Welcome Center is through Point Shop Lane or the Public Surface Parking lot off of Depot Street. There is a back entrance to the Waypoint Welcome Visitor Center, but there are not any signs directing to this alternative entrance and therefore, arrival from this direction is dependent on chance. The entry to the alternative exit is obscured by mature vegetation and large waste bins. This way to the center is also not universally accessible, but provides an alternative path to the visitor center for those able to use stairs.

A sign indicating the Waypoint Welcome Center on the back of the building would be beneficial to confirm location.

Knowing that there is an alternative entrance to the Waypoint Center, one can find the opening in the vegetation at the back of the parking lot that leads down into the courtyard. However, this is not evident to visitors, unless they have already been to the Waypoint Center and are willing to take a chance to find this alternate route.

Parking Wayfinding

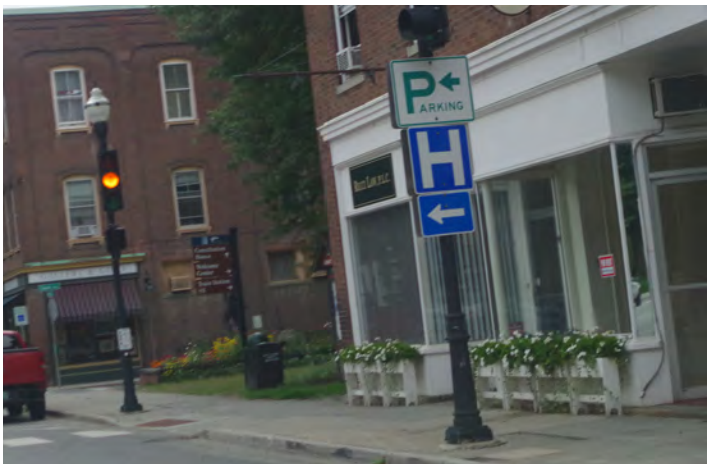
The Town of Windsor offers free two-hour parking along Main Street. Windsor's Town Plan states that the Town should "[p]rovide adequate signage to clearly direct visitors to public parking areas" (42) Signage indicating free two-hour parking in the Designated Downtown is found irregularly. Three types of signs for two hour parking are discussed here.

On Main Street, two instances of the standard "P and arrow" parking symbol/sign are found near the intersection of Depot Street. One on the east side directs motorists towards a surface parking area off of Depot Street, which is designated with another sign (Image top right) with the recognizable "P" and Public Parking beneath. Upon entering this surface lot, restrictions for parking in the lot area listed on a standard regulatory sign. The restriction for winter parking on Wednesdays is assumed to be for snow clearance of the parking area.

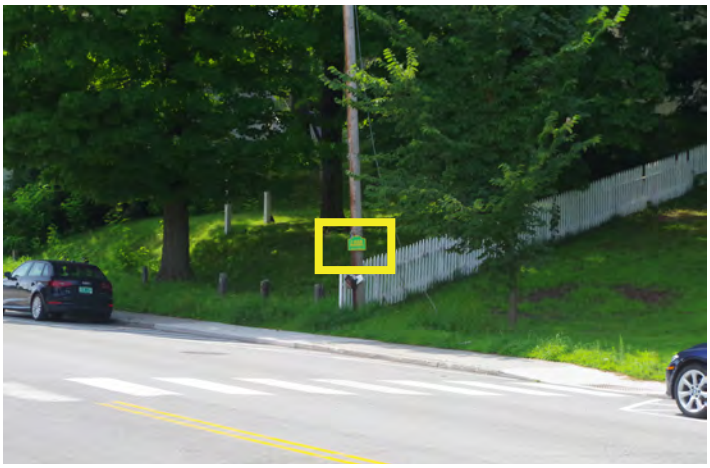
The second standard "P and arrow" parking symbol/sign which directs motorists to the west is to an unclear parking area.

Another type of sign has been installed along Main Street to designated 2-Hour parallel parking in the commercial area. One assumes that the small stature of the sign was selected to reduce sign clutter downtown. Unfortunately, these signs are difficult to perceive by motorists. The sign blends into its background during summer months when trees have leaves. Due to the reduced noticeability of the sign, it is possible that the sign is missed altogether. Signage legibility is also limited due to the lack of stark contrast between the lettering and background. Color is instrumental to most kinds of visual signage; where color can be seen from longer distances than other graphic elements on a sign (Wayshowing, Mollerup, 161). The inability to differentiate between the letters and the sign background greatly reduces legibility .

Standard CRB Public Parking signs are easy to recognize with the high-contrast white lettering on dark green background. This parking sign to the lot on Depot Street was visible. The sign for the lot was less visible due to mature trees.



While this standard parking sign is easy to recognize, the location of the public parking in this area is not obvious. Is it at the hospital?



Discreet Free Two-Hour Parking Signs are located along Main Street. Their small stature, lack of contrasting colors and color scheme blend into the background during non-winter months..

During the winter months, the sign is more visible, but the lack of contrast between the two colors does not support visibility.

Opportunities

Based on how well parking is currently utilized in Windsor, there may be an opportunity to re-imagine the two-hour parking sign to be clearly visible. Whether this is utilizing more standard signs as shown on the previous page (white background, green P and arrow), or making them more playful such as the image to the right, it is possible to transform current signs to heighten the public's awareness of parking areas, while also adding a flavor of the Town's character to way showing.

Opportunities to make parking signs more visible are plentiful. Sign style can help convey Town Character. Whimsy if desired!

Town of Windsor Kiosk

Windsor's "About Town" Kiosk is a prime opportunity for wayfinding downtown. Although the kiosk's location is muted between objects in the foreground and vegetation in the background, it can be a great tool for orientation in Windsor.

Currently, the front panel is used for posters of upcoming events. They are neatly arranged and easily legible for a pedestrian walking by. On the side panel, there is a map of the trail of Paradise Park, which is located below eye-level of the average person.

Windsor's 'About Town' Kiosk is located on the edge of the Veteran's Park at Main Street and Depot Street.

Opportunities

Wayfinding in Windsor would benefit from changes to the Windsor Kiosk. Shifting the coming events to the side panel and including a large-scale map of Windsor in this location would be a cost effective gesture to include wayfinding in the kiosk. Maps are powerful wayfinding tools, as they are mainly comprised of graphics that support any words and are thus, accessible to those unfamiliar with the language. Maps can also be complex storytelling tools of a place, and/or provide orientation to explain location and how to arrive at other destinations: a key orientation tool that is currently missing in Windsor's wayfinding system. If space permits in the front panel, including the trail map of Paradise Park as an extension of the core map, would help individuals devise how to get there "from here".

In addition, the kiosk could include a small sign indicating that the Welcome Center is around the corner, and clear directions on the main Windsor map on where the center (and other Windsor Destinations) are located.

Detroit's Wayfinding Map/ Directions in the Historic District is more complex than Windsor's wayfinding needs, but is an example on how different wayfinding tools can be combined into a single object.

Connecticut River Byway Directional Signage

There are several key "decision points" in Windsor where Connecticut River Byway (CRB) Vehicular Destination Signs have been installed. The following section evaluates existing Directional Signage in Windsor installed as part of the CRB System and identifies opportunities to improve the system. Directional CRB signs found throughout Windsor are all the same proportions and material: black metal post, blue welcome band with Connecticut River Byway and American Rivers logos in white. Directional information is indicated on brown aluminum panels with white writing and stacked directional arrows.

There are not any CRB signs north of the Main Street/ Depot Street intersection.

Main Street at Depot Street- Northbound

The CRB directional sign located in the Veterans' Park visually blends in with the four flagpoles, traffic signal and 'About Town' kiosk. It is difficult to distinguish this sign when traveling by motorized vehicle with the other elements present, in addition to paying attention to vehicular circulation. The sign would benefit from being moved to a different location.

Additionally, two shortcomings with this and all CRB signs in Windsor are found on this sign. One, the sign system is single-sided. Signs are costly to produce and erect and it would be ideal that when these signs are replaced due to maintenance or other, that they be created to be double-sided. The directional arrows would benefit from being in the direction of intended travel instead of stacked (see example on p.25).

The reverse of this sign could include directions to the Windsor-Cornish Covered Bridge, the Precision Museum and St. Gaudens Historical Site in New Hampshire.

Relocating the sign is an opportunity to improve visibility and garner attention for the destinations.

Relocating the signs from the park would reduce overall clutter in this location.

As a short-term option, there is an opportunity to use both sides of the blades to provide directions to destinations south of downtown.

Westbound on Bridge Street

One of the CRB directional signs is located on the north side of Bridge Street, seen by motorists traveling west into Vermont from the Windsor-Cornish Covered Bridge. Specifically, this sign is mounted in the landscape buffer between the sidewalk and the road and has sufficient contrast to be visible.

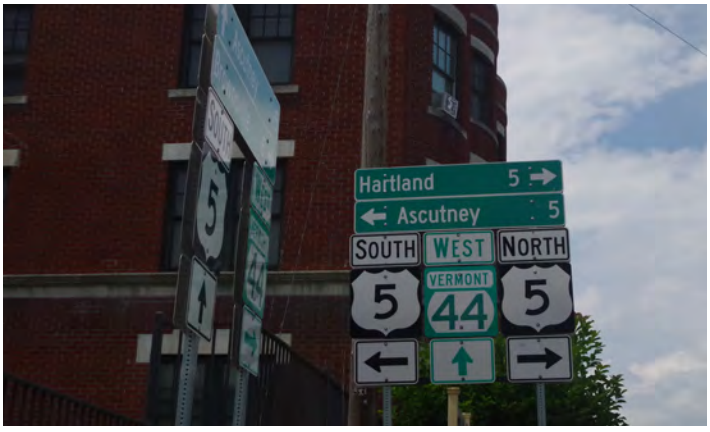
The same two issues found with other CRB signs examined in Windsor are found on this sign. The sign system is single-sided. The reverse of this specific sign could at minimum, indicate that the Covered Bridge is, indeed, ahead (to confirm wayfinding). Indicating that New Hampshire/ Cornish is ahead would also be recommended, as well as St. Gaudens Historical Site, for example. Two, the arrows would benefit from being on the side of the text of the direction they are indicating, if the signs were to be replaced. Legibility of directions is improved when the arrows are not stacked, but based on actual directions in relation to the text (see example below).

Within view of the sign is the intersection of Bridge Street with Main Street. At this intersection, there are several State roads indicated and proximity to neighboring Vermont Towns. However, as mentioned above about signs for Interstate 91, for the visitor to the area, there lacks a sign indicating in which direction VT Route 91 can be found, whether if one is traveling west from the covered bridge or south out of Town. The lack of signs indicating where 91 can be found from Downtown Windsor was raised by the project steering committee and confirmed with site visits.

Use of both sides of the blades to confirm wayfinding towards the Windsor-Cornish Covered Bridge is recommended.

The order of the blades would benefit from a hierarchy of the nearest destination.

Example of vehicular directional wayfinding in Phoenix, Arizona. Photo credit: MERJE Design.



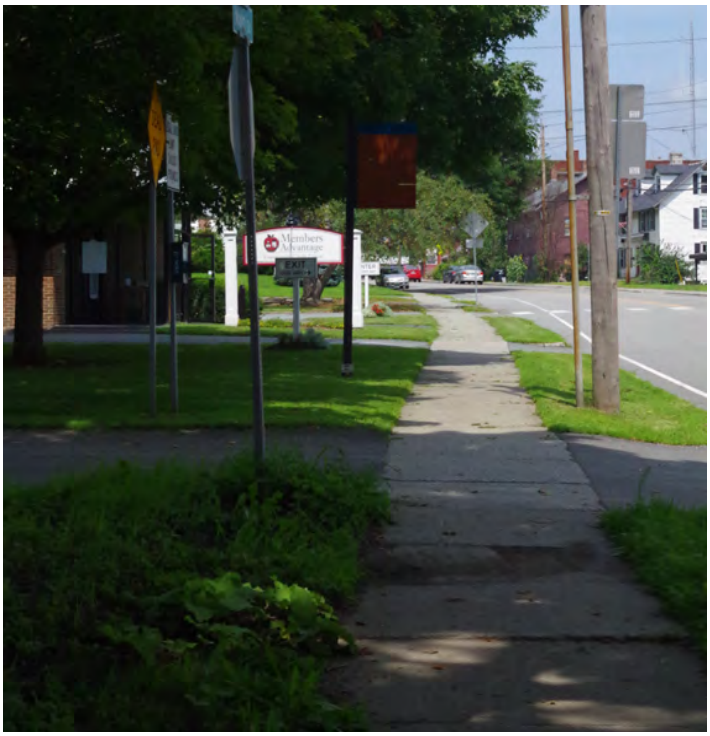
While evaluating VTrans signage is out of the scope of this program, it is worth mentioning that interstate 91 is not part of this main intersection (and cluttered sign grouping)'s wayfinding.

Main Street before Bridge Street - Southbound

One of the CRB directional signs is located on the west side of Main Street, seen by motorists traveling south out of Windsor. This sign is mounted behind the sidewalk and is less visible to the traveling public as it has less contrast with its background. The width of the road is noticeably larger here than downtown and moving the sign closer to the travelway is recommended.

The same two issues found with other CRB signs examined in Windsor are found on this sign. The sign system is single-sided. The reverse of this specific sign could at minimum, indicate that Windsor Station, the Visitor Center and Constitution House are ahead (to confirm wayfinding). Two, the arrows would benefit from being on the side of the text of the direction they are indicating, if the signs were to be replaced (see previous page for example)

If the CRB sign at Depot Street were double-sided, this group of blades would help confirm orientation.

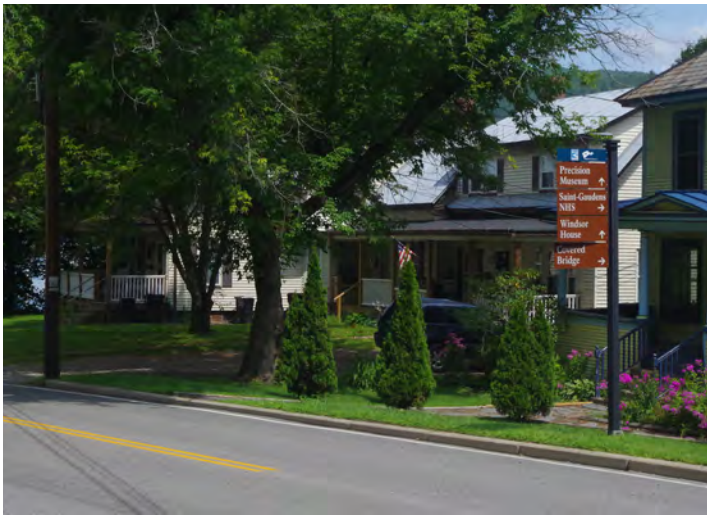


Would be ideal to add the following to the back of the blades:
Windsor Station
Welcome Center

Main Street before Bridge Street - Northbound

One of the CRB directional signs is located on the east side of Main Street, seen by motorists traveling north into Windsor. This sign is mounted across from the intersection with Lowell Street (but due to its orientation, the information is not visible from Lowell Street).

The same two issues found with other CRB signs examined in Windsor are found on this sign. The sign system is single-sided. The reverse of this specific sign could at minimum, indicate that Weathersfield is the next town heading south. It could also indicate that Mt. Ascutney is ahead, but would require additional wayfinding signs and tools to continue wayfinding further ahead. Two, the arrows would benefit from being on the side of the text of the direction they are indicating, if the signs were to be replaced (see previous page for example)



The sign's location is challenged by the "T" intersection created with Lowell Street opposite the sign, which opens up the road's views and challenges focusing on the sign for wayfinding.

It would be ideal to add destinations that are beyond Windsor's Downtown to the 'blank' side of the blades at this location. It would enable additional connections between Windsor and its context including: Weathersfield and Mt. Ascutney or connections beyond that are part of the Connecticut River Byway.

Windsor and Windsor's Designated Downtown Wayfinding Opportunities

Based on the inventory and analysis documented of existing wayfinding in Windsor, from gateway signs, to identifying challenges and opportunities with the existing Connecticut River Byway signs, to addressing a need for a central map and better connections throughout the existing system, the following plans were developed to identify where signs could either move to, or be added to, the current wayfinding system. The first plan is of Windsor at the meso scale and the second is a close-up of Downtown Windsor or the micro scale.

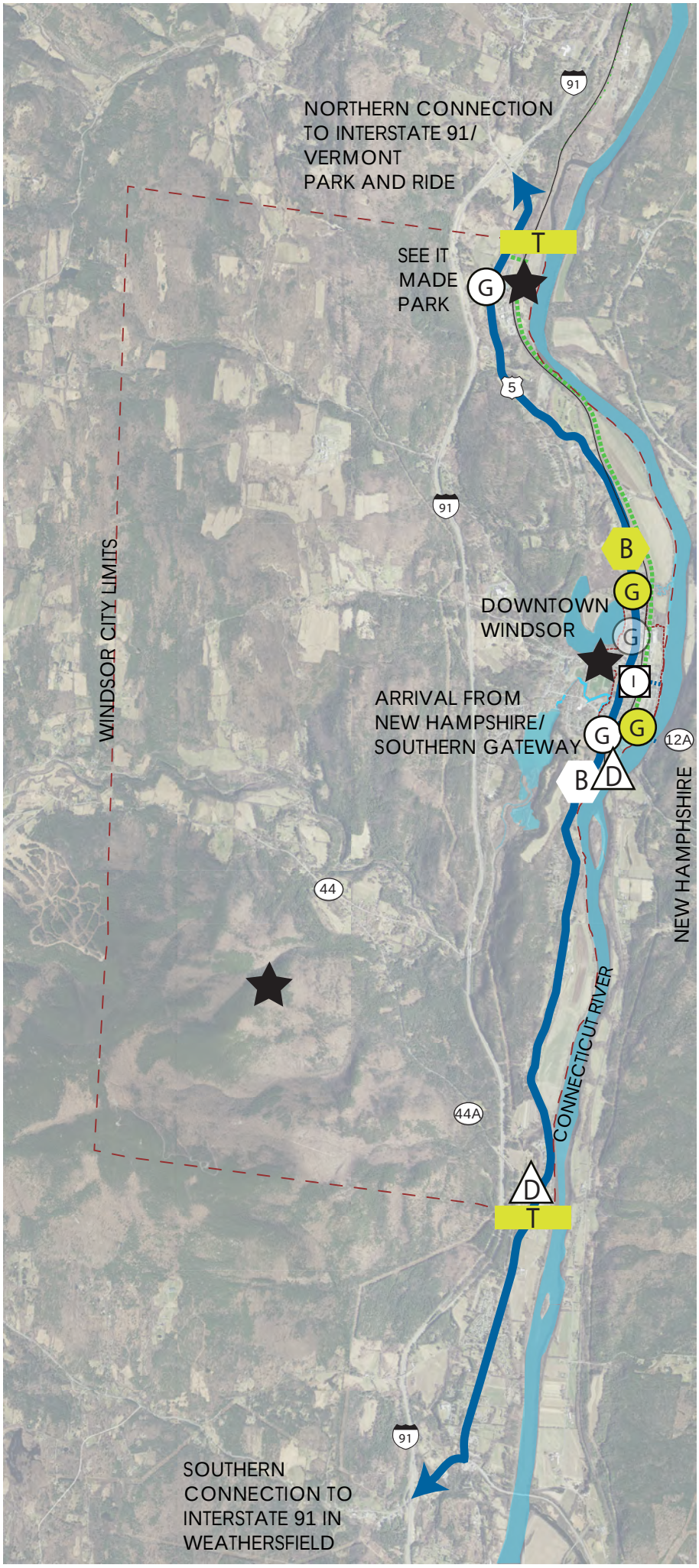
Proposed Wayfinding in the context of Windsor includes adding town boundary signs along Route 5 on both the northern and southern borders. Additional measures include moving the northern gateway sign a bit further north to the actual Designated Downtown Boundary, or at the very least, before the signs for various organizations as one arrives in town. Identifying options for adding a gateway sign to the entry into Vermont from New Hampshire from the Windsor-Cornish Covered Bridge is also recommended to call attention to this border change.

In the Designated Downtown, opportunities to contribute to a more comprehensive wayfinding system includes adding pedestrian-scaled directional signs at key intersections to encourage pedestrian mobility and cyclists to expand their explorations within Windsor. Several adjustments have been proposed for the CRB vehicular signs above, as well as adjustments to the existing kiosk. Due to the mentioned cacophony of vertical elements in the Veteran's Park where the Kiosk, CRB and other signs are located, it is recommended that options for improving visibility of these wayfinding tools be explored without compromising the memorial located there. An option may be the park/ vacant lot located at the south-west corner of Main Street and State Street.

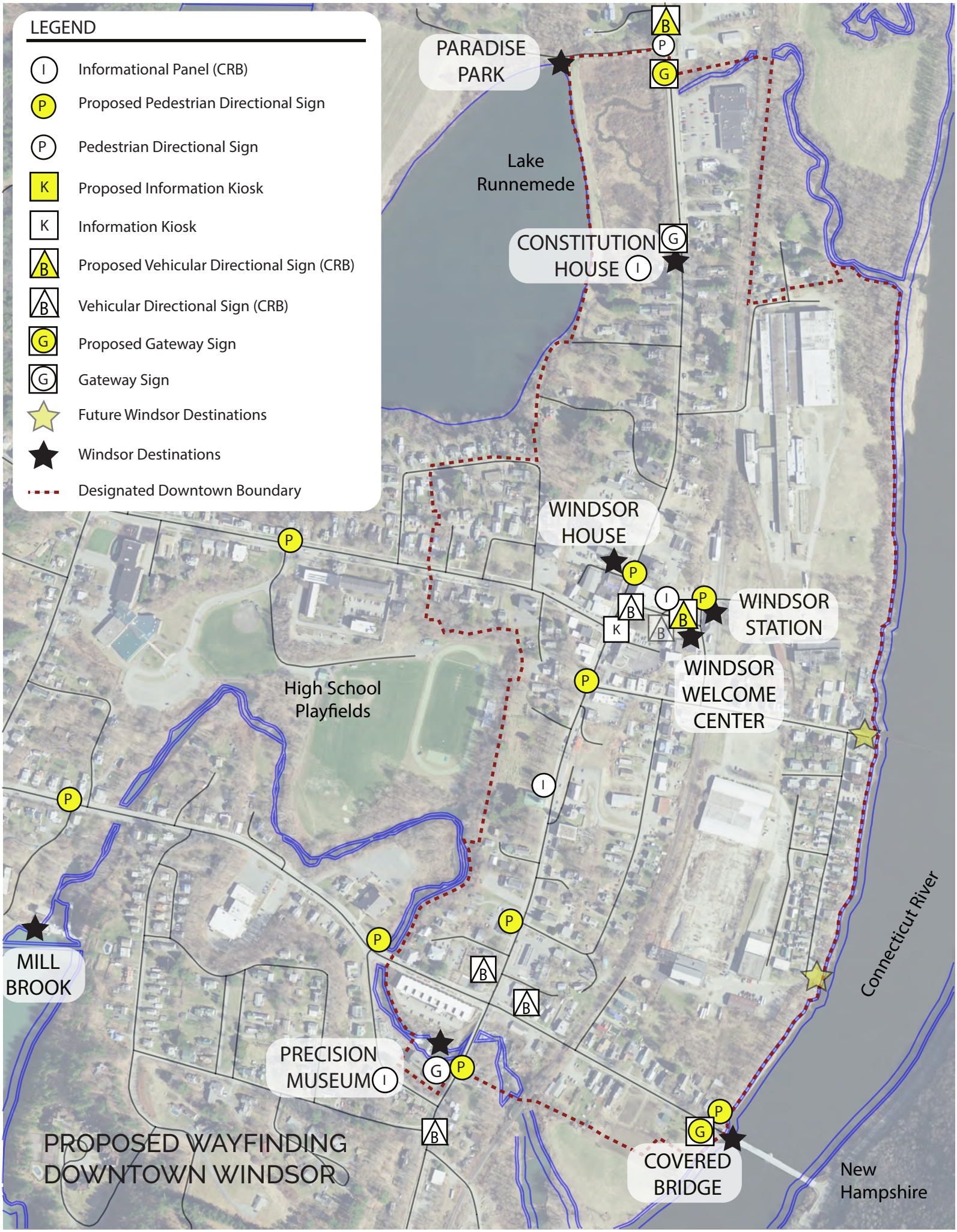
Any wayfinding implementation program in the future will need to include destinations that are currently envisioned for Windsor, including the lookout at the end of River Street and a potential boat dock at the end of Jarvis Street.

LEGEND

- Proposed Gateway Sign
- Gateway Sign
- Proposed Vehicular Directional Sign
- Vehicular Directional Sign
- Proposed Informational Kiosk
- Informational Kiosk
- Proposed Town Boundary Sign
- Proposed Connecticut River Byway Sign
- Connecticut River Byway Sign
- Future Windsor Destinations
- Windsor Destinations
- Designated Downtown Boundary
- Windsor Town Boundary



PROPOSED WAYFINDING WINDSOR CONTEXT


LEGEND
Informational Panel (CRB)
Proposed Pedestrian Directional Sign
Pedestrian Directional Sign
Proposed Information Kiosk
Information Kiosk
Proposed Vehicular Directional Sign (CRB)
Vehicular Directional Sign (CRB)
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Gateway Sign
Future Windsor Destinations
Windsor Destinations
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WINDSOR HOUSE
WINDSOR STATION
WINDSOR WELCOME CENTER
High School Playfields
MILL BROOK
PRECISION MUSEUM
COVERED BRIDGE
Connecticut River
New Hampshire
PROPOSED WAYFINDING
DOWNTOWN WINDSOR

Deep Diving into Windsor: Connecticut River Byway Informational Signs and Historic Windsor Audio Tour

One type of wayfinding that has not yet been included as part of this study are informational signs and the Historic Windsor Audio Tour. There are two types of informational signs that exist in Windsor: historical description signs that exist throughout Vermont and Connecticut River Byway Informational Signs. In addition to the information provided on the CRB signs are "Quick Response or QR" codes that connect visitors to an Historic Windsor Audio Tour.

CRB Informational Signs are found near existing destinations throughout Windsor including: Windsor House, Constitution House, the Precision Museum, at Windsor Station, and in the cemetary next to Old South Church. CRB Informational signs are of a standard CRB format: Blue and Black background with white text. Each includes a short description of the destination, as well as historic photos or maps. The CRB logo is also included. In addition, the informational panels include a QR Code that connects to an audio tour of Windsor.

Example of CRB Informational Sign for Windsor House.

Opportunities

There are several historic areas that are currently fenced-off from the public including the Goodyear Site and Windsor Technology Park. Intertwined with Windsor's more recent history, areas such as these that may be transformed in the future as public monuments, will benefit from Informational Signs.

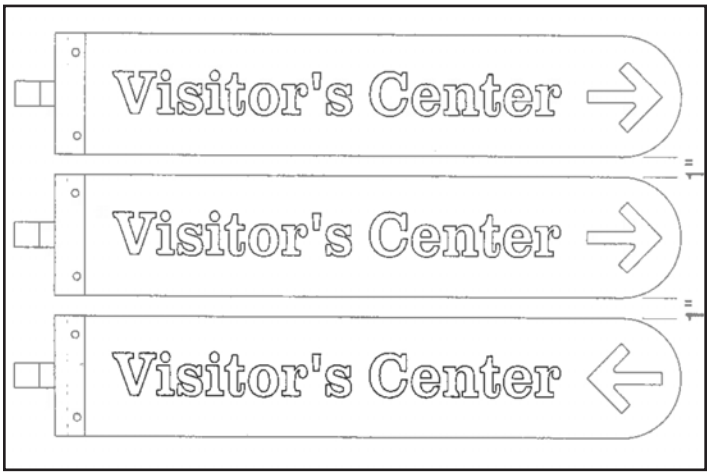
Historic Windsor's Audio tour needs visibility in Downtown Windsor. Without knowing about the audio tour (or not having the habit of scanning QR codes), it is not possible to know of its existence simply by wandering throughout Windsor.

Showing the way around Windsor through an existing audio tour is a great addition to wayfinding in the Designated Downtown and beyond. Windsor would benefit greatly by promoting the tour Downtown through artwork such as the example to the right from Birmingham, Alabama which discusses the civil rights walking trail. The park at Main Street and State Street would be a central location where a connection to the Historic Windsor Audio Tour could be made, setting visitors about throughout Downtown.

Example of art intertwined with historical information. Birmingham Civil Rights Heritage Trail marking several locations downtown.

Pedestrian Wayfinding in Windsor's Designated Downtown

While the CRB directional signs can be changed to include information on both sides and their directions are accessible to pedestrians for the most part, additional wayfinding tools should be added to help pedestrians navigate between destinations that exist as part of the current CRB wayfinding system, as well as navigate to other points of interest that have not been included. These destinations were identified as part of the overall connectivity analysis presented in the proposed wayfinding plan. These include (but are not limited to): open spaces such as Paradise Park, High School Playfields, Mill Pond, and the Connecticut River. Other additional areas to visit in the future may include: Riverview neighborhood, river trail, river overlook, boat launch, sculpture garden and internal bike path.



Connecticut River Byway Pedestrian Sign Standard 6.02.2

Pedestrian directional wayfinding would benefit from building upon the standards developed by the Connecticut River Byway (right), to add cohesion to the overall system. However, several adjustments to the pedestrian signs found in the CRB report at 6.02.2 are suggested. One suggestion is that walking minutes be included as part of the panels (below right), including directional arrows on the side of the direction they are pointing towards (instead of stacked) and utilizing both sides of the blades for directions.

In addition, key way showing tools such as landmarks need to be more visible, such as discussed for Windsor Station and its parking area. Visibility of key CRB informational signs would benefit from facing pedestrian traffic (rather than being parallel to the street) so that they can easily be identified in sight lines.

'Discover the City' Wayfinding in Las Palmas directs visitors to attractions, with time estimates for reaching them.

Philadelphia uses simple words and symbols to confirm pedestrian navigation to key destinations.

Opportunities

Several opportunities exist to 'test' out the location of pedestrian directional wayfinding throughout Windsor. One of these is Walk [Your City], which can help a community plan, design and install quick and light street signs for pedestrians/ cyclists. Walk [Your City] supports the fabrication and installation of signs and a service to help pedestrians navigate a city digitally. It would be an ideal test-run for pedestrian wayfinding throughout Windsor's Designated Downtown and nearby destinations for a long-run.

For shorter term options (that could be permanent), other towns and cities have used the pavement as a

surface upon which wayfinding can be installed rather than add more signs. The example below is from Las Palmas, Canary Islands and includes clear directions to destinations, as well as the city's website for digital connectivity. Similarly, Philadelphia uses sidewalk symbols with minimal words and arrows to confirm that one is going in the right direction.

Additional Wayfinding Techniques

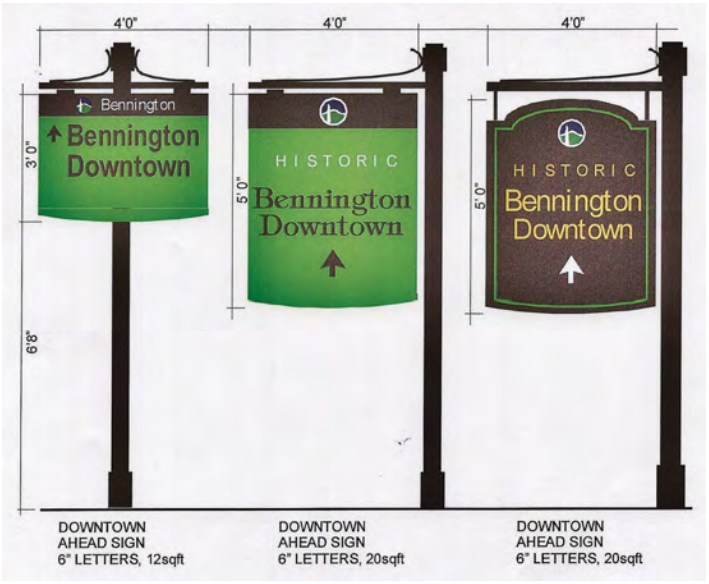
It is important to recognize that several other options exist for enhancing Windsor's wayfinding system. Once several of the Connecting the Right Side of the Tracks projects move forward and additional destinations become part of the needs of a wayfinding system in the town, it may be beneficial to add distinct area markers to street signs to elaborate upon Windsor's history, such as the image to the right.

Example of historical character street signs designed for Georgetown. Image from City of Georgetown.

Other communities, such as Bennington, have added a hierarchy of signs to lead towards the Downtown. This may be beneficial to consider between the See-It-Made Park and Windsor's Designated Downtown to confirm navigation.

Wayfinding Project Prioritization and Funding

Through the documentation and analysis of Windsor's existing wayfinding tools, including: the Connecticut River Byway vehicular directional signs as well as informational signs, landmarks and other existing wayfinding tools in Windsor's landscape, it was possible to identify several instances where the signs or landmarks could be improved for connectivity and readability aiding in showing the way around and within Windsor.



Example of sign family designed for Bennington.

On the following pages are three tables breaking down the different strategies that were identified throughout this study to improve and build upon Windsor's Wayfinding program.

Finding funding for modifications or installations of a wayfinding program in Windsor will be one of the challenges to improving the system. However, when revitalization projects can benefit from additional wayfinding, it will be beneficial to include wayfinding as part of any improvements that can benefit both the economic vitality and livability of Windsor into the future.

Current funding sources that could financially support a wayfinding program in Windsor include: the State of Vermont's Downtown Transportation Fund, which grants funding to municipalities to finance transportation-

related capital improvements in support of economic development, within or serving a state designated downtown, including construction or alteration of roads and highways, parking facilities, pedestrian and streetscape improvement. Future funding sources may include the Northern Borders Regional Commission (NBRC) Grants. The NBRC has granted funding to towns in northern Vermont for wayfinding programs including Wolcott, Hyde Park and Cambridge. Future funding rounds for this grant may be available to the entire state of Vermont.

Short Term Wayfinding Projects in Windsor

Project	Priority Level (Low-High)	Cost ($-$$$)	Challenges
Move train symbol sign to Main Street	High	$	Any sign installed on a state highway will need review by the Travel Information Council
Re-arrange About Town Kiosk to include a map of Windsor in the front with "you are here" information	High	$	A clear map of Windsor would be ideal in the long-term, but a simple map with key areas highlighted in the short term would provide much-needed improvement
Northern Gateway: remove sign clutter in front of Gateway Sign	High	$	Long term: move Gateway sign more north/ closer to Designated Downtown Border
Relocate CRB Sign for Welcome Center	High	$	In the short term - relocate the sign closer to main street; in the long term (and more cost): redesign the Windsor Station, including moving the CRB Sign into the median
Provide additional signage to the Welcome Center on Railroad Avenue	High	$/$$ Long term	In the short-term: utilize sandwich-board at sidewalk junctures away from building and in the sight-line of pedestrians/ motorists traveling from Depot Street onto Railroad Avenue. In the long-term, install CRB Informational Panel facing oncoming travel to help identify the location.
Comprehensive Windsor Map	High	$	Windsor already has the cartoonist-map found throughout Vermont. There may be conflict with developing a second map.
Install information about the Historic Windsor Audio Walking Tour	High	$/$$	Include information about the Historic Windsor Audio Walking Tour in the About Town Kiosk. Include printed version of the tour as a hand-out at the kiosk for the hearing impaired (or those without 'smart' phones.

Medium Term Wayfinding Projects in Windsor

Project	Priority Level (Low-High)	Cost ($-$$$)	Challenges/ Opportunities
Install pedestrian-scale directional signs at key intersections for less-known destinations within Windsor	High	$$	Run a trial version with the Walk [My City] service. It will allow documentation of feedback and identifying any redundant or necessary signs.
Extend flags to Southern Gateway	Medium	$	Identifying locations or coordinating with utility companies

Long Term Wayfinding Projects in Windsor

Project	Priority Level (Low-High)	Cost ($-$$$)	Challenges
As projects are completed (boat landing, river overlook, etc), integrate them into the wayfinding system, first into the overall Windsor map	High	$/$$	Coordinate project implementation and funding opportunities with expanding the wayfinding system as projects are completed.
Add wayfinding text to reverse side of existing CRB directional signs	High	$$	Will require removal and re-installation of signs; would be ideal to combine with relocation of several of the signs into more visible locations.
Add a gateway sign on Bridge Street after the Covered Bridge	Medium	$$	Narrow ROW in this location and existing buildings will make finding the ideal location potentially challenging. Additional wayfinding in this area to connect the river trail to the bridge may be needed in the future.
Relocate the Southern entry sign prior to Pasco Way. Include simple landscaping at base.	Medium	$	Finding space in the ROW or on private property to host the sign may be challenging.
Provide pedestrian directional sign to cut-through to Waypoint Welcome Center at Point Shop Lane	Low	$$	May require permission to affix sign to side of building; would benefit from pedestrian circulation delineation through the parking lot as well.
Convert existing 2-hour parking along Main Street (Yellow lettering on green background) to CRB standard parking signs or customize for Windsor per the example	Low	$$	May require discussions with Travel Information Council
Relocate CRB signs which are challenging to read into more visible locations	Low	$$	Will require agreements with landowners if more appropriate spaces are not found within the ROW.
Install Town Boundary Signs	Low	$$	Will require coordination and possibly funding with adjacent town.

Resources

Gibson, David. 2009. The Wayfinding Handbook: Information Design for Public Places. NJ: Princeton University Press.

Landworks. 2001. New England's Rivers: Design Guidelines.

Mollerup, Per. 2005. Wayshowing: A Guide to Environmental Signage Principles & Practices. Zurich: Lars Müller.

Town of Windsor. 2001. Zoning Regulations for the Town of Windsor. Amended by the Windsor Selectboard 2007.

Windsor Planning Commission and Southern Windsor County Regional Planning Commission. 2014. Windsor Town Plan. Adopted by the Selectboard on September 30, 2014.

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Zoning - A Municipal Role in the Revitalization Process

Background

Windsor's former Industrial areas present complex and unique opportunities for redevelopment and growth. Any planning for redevelopment or new development along the Riverfront in Windsor will need to account for existing Flood Hazard Areas and, if present, Brownfields. However, it is essential to acknowledge that these constraints can be overcome through good planning and engineering. For example, a substantial redevelopment of a property located in the 100-year floodplain might be required to become compliant with flood regulations. Depending on the proposed use, a building could be floodproofed, or the first floor of the building could be elevated above Base Flood Elevation. Brownfield development will require actively working with the Department of Environmental Conservation to identify solutions that reduce the potential for further contamination or health impacts, but nonetheless - development in these areas is possible.

Very few small Vermont communities have large industrial buildings located immediately adjacent to their village. Even fewer have these buildings also located next to a major environmental and recreational resource like the Connecticut River. Mixed use development, including small-scale manufacturing, can contribute to the vitality of a downtown by bringing in new employees and customers to Windsor.

The Riverfront Area offers the following assets:

- **Location** – Windsor's former industrial area is located immediately adjacent to the downtown and to the scenic Connecticut River.
- **Walkability** – The direct connection to the Downtown and its network of sidewalks provides opportunities to expand walkability downtown, giving the community safe pedestrian access to the river.
- **Infrastructure** – The Riverside area is served by public sewer and water, and essential need for many commercial and small-scale industrial operations.
- **Existing Buildings** – The diversity of underutilized buildings in the Riverside Area could provide locations for a diverse mix of uses, including residential, small-scale manufacturing, arts and offices.
- **Existing Businesses** – Many of the former industrial buildings in the Riverfront are currently being used. This provides an advantage to future owners in that there is a steady stream of income being generated to support future improvements.
- **Existing Residential** - The River Street residential area includes a number of small homes that provide a good, high-density base of housing along the river.

One of Windsor's key roles in the future of the Riverfront area and its revitalization is how the community approaches land use planning and regulation. The 2007 Windsor Zoning Regulations (which are currently under revision) identify most of the Riverfront area as a "Village Mixed Use District.' The purpose of this district is to:

"Provide for the redevelopment of historic, industrial and residential structures; to promote light manufacturing in an area where industry has historically been intermixed with commercial and residential uses; and to encourage a mix of commercial, civic and residential uses that will enhance and expand upon the historic character and economic vitality of the downtown."

Alternative Approach to Zoning Districts

As an alternative to a single district, or even districts that separate industrial and residential uses (which is being considered as part of a current initiative to revise the bylaws), It may be useful to refine the existing zoning approach by dividing what is currently Village Mixed Use into several smaller zoning districts. The purpose for this approach is to accommodate the unique characteristics of existing and potential uses within the area.

Industrial/Office District

Located on the Northern end of Windsor Technology Park, includes the large manufacturing buildings, east brick office building and 7 Everett ln.

Background

Formerly the Cone Blanchard Machine co., this property is now known as the Windsor Technology Park. It provides storage space for several companies, and includes additional office space in one of the smaller connected buildings. As with any former industrial site, there is the potential for environmental contamination. Unlike other parts of the Windsor Riverside area, no formal investigation has yet been made to identify potential hazardous materials. The area is largely located within the mapped 100-year FEMA floodplain.

Zoning District Approach

The purpose of this district should be to continue to maximize existing industrial buildings and office spaces, provide for growth of small-scale manufacturing and locations for offices that are immediately adjacent to Windsor's downtown. Uses should include industrial, solar energy generation, small-scale manufacturing, offices and related businesses.

Performance standards, if utilized for this district, should balance the zones proximity to the downtown with the types of disturbances that are common with industrial facilities.

Character keywords

- Industrial
- Office
- Mixed-use

Railyard Mixed-Use/Arts District

The railyards area includes properties just east of the Railroad tracks including the Windsor Station restaurant, south to the Welcome Center, and east including the Farmer's Exchange and former shoe factory building (currently occupied by K&W tires).

Background

Formerly the Central Vermont Railroad's starting point, this area has long been part of the rail system. The location of the railroad contributed significantly to industrial development in the Riverside area. There are still several pieces of the former railyard, which includes the former railroad station (which is now a restaurant) and several old rail sidings. Nearby buildings include the Windsor Welcome Center and the Farmer's Exchange building, which is serving as a focal point for live entertainment. Given the value of the creative economy to the region, it makes good economic sense to encourage further development of arts in this area. Some hazardous materials were identified as part of contamination from a nearby dry cleaner (since remediated), and portions of the area are within the mapped floodplain.

Zoning District Approach

The purpose of the Railyard Mixed-Use Arts district is to provide a location for a multiple types of uses including offices, arts, event spaces and small-scale manufacturing or value added product development. Uses should be designed to encourage more vitality in the downtown, including event spaces for live music/performances, small-scale manufacturing spaces, makerspaces, restaurants, residential and offices.

Development in this area should be designed so as to fit in well with residential properties immediately adjacent. Hours of operation should not exceed those common to restaurants or performance centers. Likewise, any small-scale manufacturing should take place during regular business hours. Nuisances generated by any businesses should be minimized.

Character keywords

- Mixed-use
- Arts and Events
- Small-scale manufacturing/value added products

Industrial/small-scale manufacturing District

This district encompasses the former Goodyear property and its existing building infrastructure (excluding land abutting the CT River).

Background

The Goodyear campus has two significant buildings that are currently being used for a diverse mix of small-scale manufacturing, industry and storage. Small-scale manufacturing is particularly appropriate for the location. With the growth of online marketplaces, the ability to process sales on mobile devices, and affordable access to tools for smaller production runs, manufacturing at the small scale is very viable. Operations of this type tend to be more compatible with mixed use development that includes retail, office and residential; which fits well into the downtown.

Zoning District Approach

The purpose of this district should be to provide a location for a mix of uses, primarily focused on industrial and small-scale manufacturing that will boost the local economy, provide the potential for technical careers and bring new visitors downtown. Uses in this district might include Industrial, small-

scale manufacturing, accessory retail, maker spaces, manufacturing incubators, solar energy generation, etc.

Performance standards, if utilized for this district, should balance the zones proximity to the downtown with the types of disturbances that are common with industrial facilities.

Character keywords

- Industrial
- Small-scale manufacturing
- Accessory retail
- Incubators

Riverfront Residential

This district includes residential properties along the riverfront on River, Jarvis, Acme and National Streets, and Foster Avenue. It also includes the portion of the Goodyear property that abuts the Connecticut River.

Background

The Riverfront Residential district is a well-established high density residential area with a large number of single and multi-family dwellings. The character of the area is unique, with narrow roads and limited sidewalks, as well as a close connection to the River. Development in this area is not without its challenges. The vast majority of homes on Jarvis, Cross and National streets are located within the FEMA floodway (the remainder are in the 100-year floodplain). However, it is possible to elevate homes outside the floodway and make them compliant with flood regulations as has been demonstrated by the project on Jarvis st.

Zoning District Approach

The purpose of the Riverside Residential district should be to continue to provide a location for a walkable, small-scale, dense residential community with some mixed-use development as is appropriate. Uses should include residential and appropriate home or cottage businesses. Where appropriate, public recreation should be allowed as well, as it will contribute to the greater sense of community in the district.

Character keywords

- Compact
- Village-scale residential
- Cottage-scale business
- Riverfront recreation