



Capital District Master Plan

Montpelier, Vermont 2000



For The City/State Commission

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Capital District Master Plan

The State of Vermont and the City of Montpelier, acting through the City/State Commission, are developing a Capital District Master Plan. The project was officially initiated by a March 17, 1997 RFP, drafted by James Richardson, Director of Facilities of the Vermont Department of Buildings and General Services. The report has been funded by the City of Montpelier, the State of Vermont, and the Central Vermont Regional Planning Commission.

The purpose of this study is to identify, encourage and coordinate mutually beneficial future development plans for the Capitol Complex, City of Montpelier and the Winooski River Corridor. This report shall primarily address the projected space needs for the Vermont state offices and determine appropriate new state office locations; create a greenway plan for the Winooski Riverfront Corridor; determine the feasibility of a multi-modal transportation center, and the possibility of a Montpelier Visitor Center.

The study area is bounded by Main Street to the east, Memorial Drive to the south, Bailey Avenue to the west, and Court Street/Baldwin Street to the north.

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I. Introduction

Acknowledgment

In 1995, a joint committee between the State of Vermont and the Capital City of Montpelier was formed to study issues and make recommendations relating to the harmonious co-existence of State and City. The City-State Commission was the result of many people's efforts and recognition that the two entities must jointly work together planning growth, development and conservation. In large part, this Commission was made possible by the efforts of the late Thomas E. Carey, Montpelier City Councilor. Montpelier residents and state government, through the work of this Commission, will reap the benefit of Tom's vision for our city for generations to come. This Capital District Master Plan is dedicated in his memory.

EXECUTIVE SUMMARY

Master plans are among the oldest and most useful urban design tools. Master plans have been recorded everywhere in the world as a method of balancing the effects of a concentrated population of citizens with the physical environment. The primary goals and motivations of a comprehensive master plan can stem from civic ideals, economics, and cultural/religious visions. In any case, a city's desired physical form is in some part an expression of how that city perceives itself and wants to be perceived by the outside world.

The City of Montpelier and the State Capitol Complex are part of this building tradition. Embraced by a natural bowl of tree covered ridges, the city has a clear organization of development that is a counterpoint to the dynamic natural setting. At the middle scale, the Winooski and North Branch Rivers create axes which crisscross the city, distinguishing various city districts from one another. Finally, there is the built form of the city, a densely grained urban cluster of buildings that is in sharp contrast to the open countryside beyond. Over time, social and activity patterns have pushed and pulled at this structure, but the physical geography and building patterns have proven both stable and adaptable for 150 years.

Recognizing the strength of these existing patterns, the Capital District Master Plan (CDMP) seeks to employ new layers of infrastructure, physical connections, and public spaces within this landscape. The CDMP seeks to preserve the best of Montpelier's historic character while enhancing areas in need of improvement. A primary example of this notion is a public greenway in the Winooski River Corridor. Once a vital area of commerce, the riverfront is currently under utilized. A bikepath, park areas and linkages to the surrounding city are now proposed. Within the greenway is the proposed site for a Capital City Visitor Center and a Multi-modal Transit Center. This complex is centrally located to the Capitol, state offices and the downtown. New pedestrian and vehicular links will lead from the greenway to the State House Green, State Street, and new multiuse parking garages on either Court Street or behind Main Street. Inserted within this new framework are additional state offices and commercial buildings. The existing Capital District Heating Plant, or possibly a new off-site plant, may serve the community with a district energy system. The Capital District Master Plan addresses economic growth, development pressures, transportation, the natural environment, and the dynamics of a Capital City.

Central to this vision is the desire to serve multiple interests. The CDMP is a physical manifestation of the collaborative efforts of the State of Vermont and public/private interests within the City of Montpelier. The CDMP coordinates not only plans for the Capitol Complex, but also the City of Montpelier Master Plan, a development plan sponsored by Montpelier Downtown Community Association and public interests encountered throughout the design process. The intent of this cooperative effort is to maximize the benefits of future development for multiple scales of government as well as the local residents.

II. Goals

Goals of the Capital District Master Plan

The Capital District Master Plan has four general areas of focus:

- linkages from the Capital District proper to the downtown;
- increased state office space;
- a greenway along the Winooski River;
- a Transit Center located at the intersection of the Winooski River and the Taylor Street Bridge.

While each area of concentration contains its own programmatic demands the central intent of the Capital District Master Plan is to make a cohesive and unified plan of urban development that transcends the division between state and city municipal properties.

The general program for each design zone is summarized below:

A. Strengthen linkage from the Capital District to the Downtown and Winooski River

There are many positive relationships between the State Capital District and the downtown business district that can be enhanced through integrated planning and urban design. As both a State Capital and a regional business district, the Montpelier's Capital District and the downtown business district have a commensal relationship. Some important aspects that can be developed are:

1. Leveraging of the economic benefits received from state employees, legislators, and Capital District visitors to local businesses and local property values.
2. The Downtown and the Capital District are connected as a whole but made up of distinct parts.
3. Integrated planning for transportation access into the city and public parking.
4. Coordinated public transportation.
5. Bring together various access points to the Winooski River and enhancement of the river ecology and aesthetics.

On Court Street, a new state facility has been planned for parking and additional state and commercial offices. Currently, the area between Court street and buildings facing State Street is entirely programmed as on-grade parking. The primary linkage from the Court Street Parking Complex will be Langdon Street. Langdon Street affords a direct physical and visual connection to and from the Montpelier downtown business district. The future design of the Court Street Parking Complex should include a below-grade parking garage, for 450 cars, placed into the side of the hill, with both state and commercial office space set on top

with on-grade access to Court Street. Pedestrian access points will, at minimum, be located at each corner of the new structure for access to the CBD, State Street, the Capitol building, and the Winooski Greenway via Governor Aiken Blvd/Taylor Street and Elm Street. New and existing pedestrian paths will emphasize easy access and safety.

Pedestrian linkages connecting the CBD and Capital District will be integrated with a new Taylor Street Transit Center. The transit center will act as the transportation hub for tourist buses, state employee off-site parking shuttles, and the local Wheels bus loop.

B. Capitol Complex Growth Needs:

There are two types of state office space reorganization that are needed to allow the efficient flow of State operations. The first is the incremental expansion of existing buildings and departments in the Capital District to accommodate additional staff and support space demands.

- Approximately 35,000 SF has been identified by various departments within the Capitol Complex as anticipated future expansion needs in the next 15 years.

The second response to Capitol Complex growth is to relocate a number of state departments that are currently occupying isolated rental spaces outside the Capital District but within the City of Montpelier. Currently, there are no plans to relocate state departments from Waterbury to Montpelier.

- Currently, the State leases or rents 103,000 SF of office space.

The State of Vermont, dedicated to the concept of concentrated growth rather than sprawl, would prefer to grow within the existing downtown. As a policy, the State intends to remain within the existing Capital Complex and not expand outside of these boundaries into other areas currently under private ownership.

Where possible, the retention of existing historic structures will be included in the CDMP for new State offices, particularly along State Street. New Buildings that face the Winooski River should have a "front" face to the south. Such development should be visually and programmatically "connected" to the riverfront area with public access along that corridor and Memorial Drive. While a range of building scales is possible, floorplates of new buildings should be capable of adapting to a range of different department needs, sizes, and configurations (10,000 SF - 35,000 SF on 2-4 stories).

Connections between state offices and the State House should be improved. Better pedestrian access, parking and transit are all part of that solution. With the relocation of many state employees to the National Life

office spaces, the historic demand for Capital District state employee parking has decreased. Therefore the present parking policy should be revised, reversing reliance upon one central parking location. The long standing desire to promote state employee public transit along popular commuting corridors (Rt. 2, Rte. 302, I-89), via public bus, AMTRAK, cars, and van pools, can finally be implemented via the CDMP's transit center. This plan places parking on the outside of the city with public transit being the mode of entry and distribution. Location of parking and transit should support the major state office centers of employment and be within 5 minutes walking distance.

C. Winooski River Greenway

The Winooski River, and its companion, the North Branch, are a subtle but significant controller of Montpelier's physical size and shape. Historically, the river's path would occasionally touch the feet of the surrounding hills as it meandered in its floodplain. Impatient with the serendipity of the river, the river was gradually channelized. At its peak period of use, industrial warehouses, storage sheds and granite manufacturers bordered the Winooski River, forming a secondary path of circulation behind Main Street and State Street. Today, most of these buildings are gone, replaced by a sea of parking spaces that serve state employees and downtown businesses. The result is a residual sliver of land that is predominantly isolated from the river and the city. This plan attempts to remedy this condition by reconnecting the Winooski River and North Branch with the downtown and Capital District. The programmatic changes include a combination of "soft" and "hard" spaces along the river for recreation, as well as a viable pedestrian connection between the Capital District and the downtown. Some of the proposals included are:

1. Continuation of the planned bikepath east end west along the Winooski River.
2. Reconnection of the river with the Capital Lawn.
3. Reestablishment of natural buffers of vegetation along the riverbank in selective locations; creation of vest-pocket parks, overlooks and interpretive and recreation nodes along the greenway; access to the water's edge.
4. Creation of a "public front door" between new riverfront buildings and the greenway.
5. Relocation of roads and parking that fall too close to the riverbanks to improve water quality and habitats.

D. Transit Center

To its benefit, the physical pattern of Montpelier's downtown buildings was implemented before the age of the automobile. Unlike many American cities today, the automobile has not dictated the design of Montpelier's streets and sidewalks. One can still imagine a tangle of horse drawn carriages from sur-

rounding farms entering town for their weekly business ventures. As a result, Montpelier's streetscape remains at the scale of the pedestrian. The downtown street dimensions are narrower than contemporary street design standards. Traffic is slower, perhaps to a pace that is appropriate for enjoying the historical architecture.

However, Montpelier is not an anachronism. It is a modern city with modern city concerns and the site of the State Capitol building. As such, Montpelier must address our culture's use of the car. State employee commuters, tourists, and local residents all share and compete for road space and parking spaces. The introduction of a new Transit Center can address this vehicular confluence. By locating a Transit Center at Taylor Street, interstate bus lines, tourist buses, and local commuter buses shuttling to and from satellite parking lots can be brought to a central location that is within walking distance of downtown and the Capital Complex. The following is a summary of the possible Transit Center functions:

- Inter - city, intra - city and tourism busses should have access to the local system. Transit facility is centrally located within the city on the east side of Taylor Street.
- Service hub will serve VT Transit, Wheels, local taxi's, shuttle to AMTRAK, touring busses (with links to off-site parking), rental cars, and van pool services.
- Center will provide a full service and sheltered bus station, and a "drop-off" drive-through.
- Satellite or structured parking depending upon the high value of land in the downtown and Capital District. Parking should be relocated as garage structures or as satellite parking sites for long term parking. All parking sites will be integrated into the topography or downtown building fabric.
- A pedestrian friendly loop between the Capital District and the Downtown between Main Street and State Street.
- Use by the Washington County RR line for potential commuter line from Barre to Berlin.
- A city/state visitors center.
- Potential site for a 30,000 to 50,000 SF Vermont Historical Society Museum.

E. Private Development:

While Montpelier is essentially approaching build-out in its downtown core, the city has strongly supported appropriate new development to further the economic vitality of the downtown. City Master Plans, planning studies and other efforts have identified areas where future development could occur either as site-specific infill projects or larger redevelopment zones. In the past 5 years, the city has taken a leadership role to prompt new development or acted in a supporting role to address needed policy changes. The recent plans for the Winooski East redevelopment, where the city has created a commission to oversee development planning and review of larger scale mixed-use development is a good example of city-state-private developer cooperation.

The city recognizes that additional development in the downtown can be part of a positive future for the downtown economy, and if properly guided, can be a positive asset from the perspective of public interests, public space, economic well being, and environmental health. This position has a positive application to the City-State Master Plan. There is a considerable area of riverfront and other private property that has long been deemed appropriate for new development, but a vision for how it might be accomplished has not fully been shaped until recently.

Review of the plan by city officials has indicated support for new commercial and office uses. It is predicted that this development will add economic growth and a greater tax base to the downtown. There was general agreement that additional public infrastructure would be required to accommodate new development and that the provision of that infrastructure would be a city-state effort with private developer contributions.

New commercial development should be complementary to the existing scale and mix of retail uses: smaller scale shops, attractive office space, taking advantage of public parking and the walkable character of the downtown. The plan outlines the parcels of new private development opportunity. All private development projects are subject to city approvals, and in some cases may require zoning and other policy refinements or clarifications.

III. Design Process

A. Public Involvement

The Capital District Master Plan was developed with the active involvement of many parties. These include representatives from the State of Vermont, the City of Montpelier, and many other public and private organizations.

Whereas previous master plans for the Capital District laid out visions of a large self-contained “modern” state complex, the current iteration of the plan calls for a smaller scale, more integrated approach. The State does not envision having the financial resources, nor the desire, to create a massive state complex. Rather, there is a clearer sense that a moderately scaled Capitol Complex can integrate better with downtown Montpelier, and that mutually beneficial designs for the river corridor, parking access, and public transportation can make for a more attractive, efficient city.

Public involvement has been significant throughout the planning process. Initial meetings focused upon both general and specific concerns, and tried to evaluate the existing public policies for the downtown and the Capital District. Later, presentations were held to review the gathered information. During these events, a great deal of time was spent with each and every public/private body that might be directly affected by the new master plan. Each step of the design process was accompanied by coordination and review meetings with the City/State Commission. Invested parties include, but are not limited to, the following:

Parties Involved in the Capital District Master Plan:

- VT Department of Buildings and General Services
- City/State Commission
- City/State Steering Committee subcommittee
- VT Agency of Transportation
- Central VT Regional Planning Commission: Transportation Advisory Committee (TAC)
- Montpelier City Council
- Montpelier Planning Commission and Planning Department Staff
- Montpelier Conservation Commission
- Montpelier Tourism Council
- Montpelier Economic Development Committee
- Montpelier Chamber of Commerce
- VT Historical Society
- Private landowners
- Developers
- US Government
- Washington County Supreme Court

Private land and business owners were consulted throughout the entire process. Many areas of the proposed plan involve private land holdings either through the potential need for their land or via substantial impacts on their current uses. In all cases, the private landowners were active participants in the design process, and enthusiastic about the potential opportunities for their businesses or holdings.

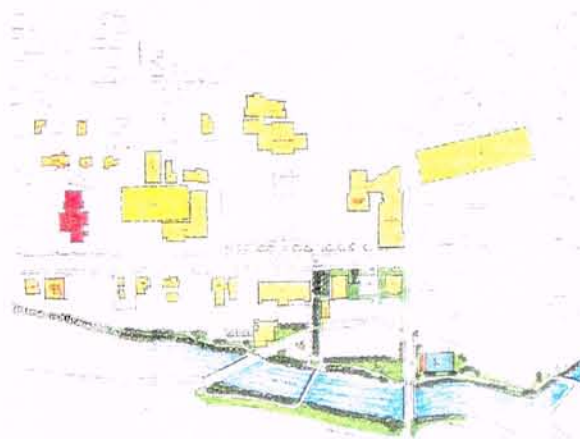
B. The Planning Process

The planning process began by interviewing members of the Vermont Department of Buildings and General Services and the City of Montpelier. These sessions reviewed all past planning work for both the Capitol Complex and City of Montpelier. These meetings and plan reviews helped determine significant issues, opportunities and goals for the planning process. A public workshop was then held to add and refine these concerns. During the entire public input process the planning team completed detailed assessments of state office needs, transportation needs, environmental issues along the Winooski Riverfront, and a general infrastructure review of the planning area.

C. Five Master Plan Options leading to a Final Plan

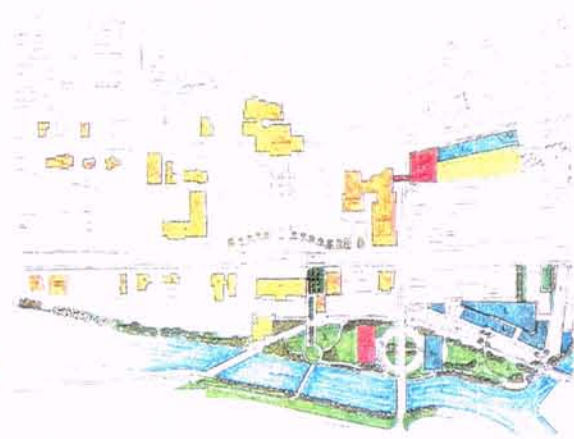
From the information assessment and public input phase, the planning team generated five alternative Master Plan schemes. These schemes, shown on the following page, were presented to the City/State Commission, general public, city and state administrations, city and state review bodies, civic groups, clubs and individual private land owners. The review of the five schemes took place over a six-month time period to allow for maximum analysis and feedback from all interested parties. The planning team compiled and responded to all comments to generate a single master plan. This plan then went through the same process as described above. The final plan underwent a second review period of four-months to finally take the form presented in this document.

Five Master Plan Options



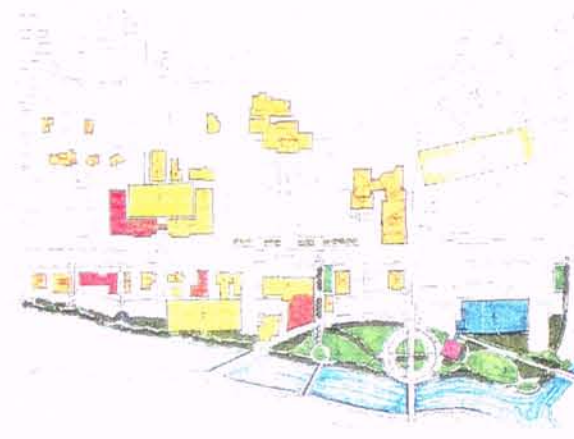
1. Status Quo - Minimal new building

New State Offices are accomplished primarily through the acquisition of buildings in or near the current Capital District. The State will buy currently leased space in National Life, the Union Mutual and other buildings, lands adjacent to the Capital District, and renovates them to suit state offices. Existing Capital District lands are land banked, while parking and the river frontage are aesthetically improved for the greenway. Many, but not all, of the existing surface parking spaces are retained or reorganized. Parking displaced by the greenway will be located in structures on Court Street or behind 133 State Street.



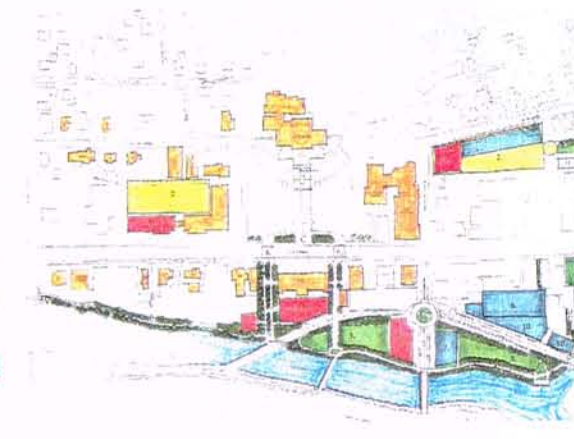
2. Downtown Linkages

Existing downtown buildings are used to partially serve the state building space needs, requiring less space to be built in the Capital District. Greenspace is maximized with less building coverage, and parking for both the downtown and the Capital District is distributed through a series of shared surface and structured lots. Part of the link includes a new street facing the riverfront with new private development opportunities to benefit the city's economic vitality.



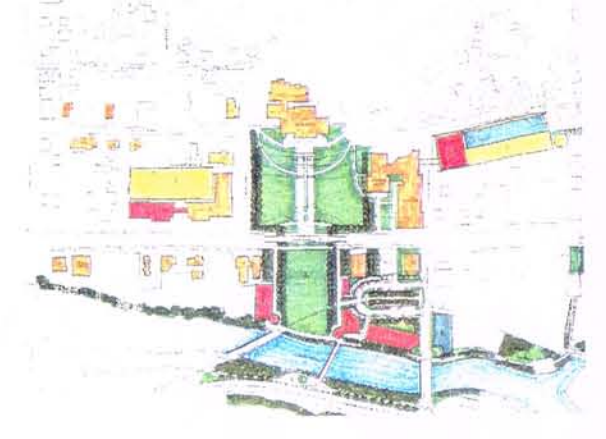
3. River Connections

New buildings are developed along State Street to fill existing "gaps", preserving the continuity of the historic streetscape. In contrast to the built-up street is a continuous park established along the river which integrates a new Capital District and Downtown Montpelier Transit/Gateway Center.



4. Alternative Street Connection - Riverfront Revitalization

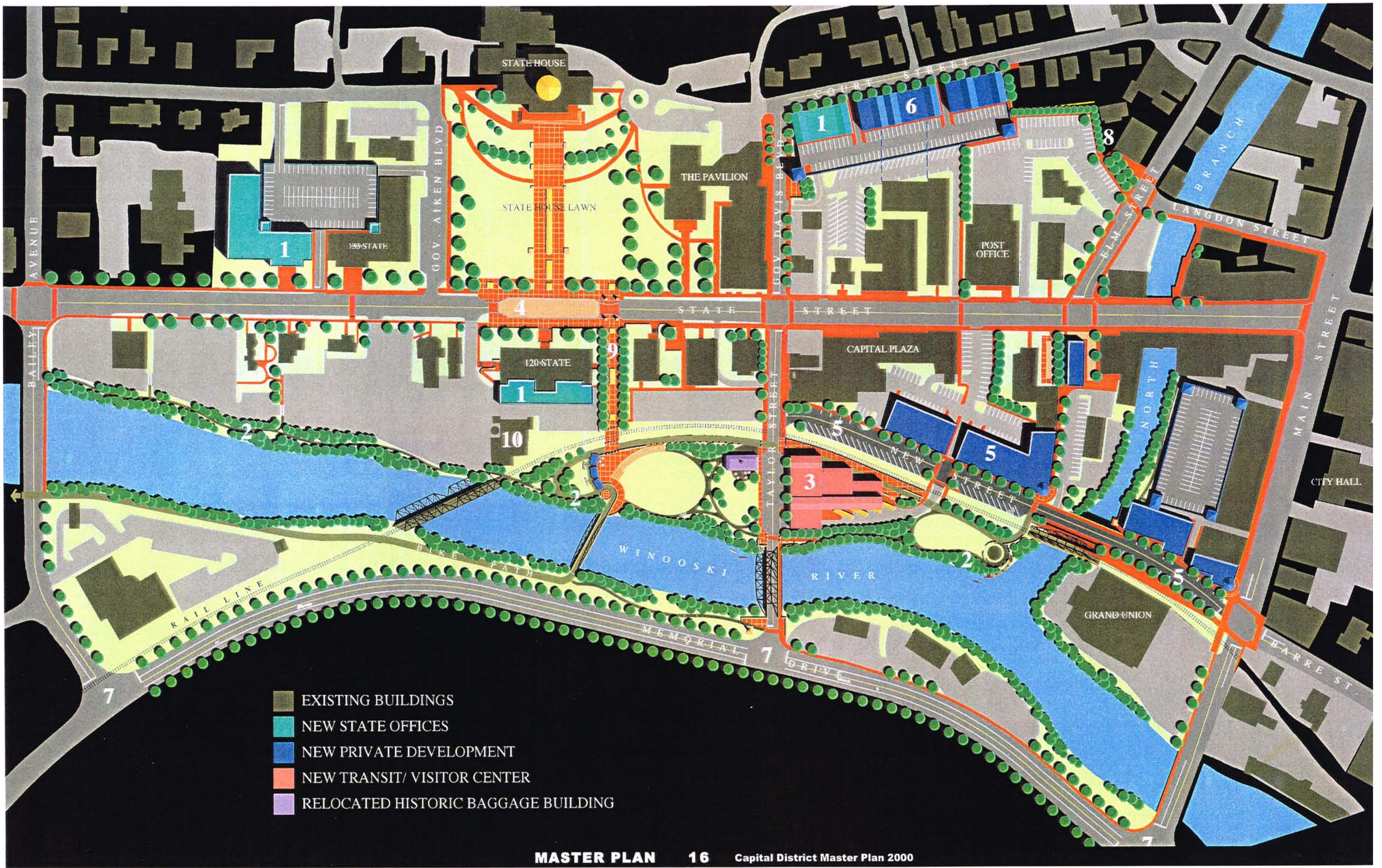
The Downtown and the Capital District are connected with a new road from Main/Barre Street to Taylor Street paralleling the WCRR line. New private development is located along this street requiring the removal of the former VTLCT building and M&M beverage. New buildings match the scale of Main Street in a series of commercial blocks and storefronts, all facing a large riverfront park. State buildings are accomplished with new construction on Taylor Street and additions to both 120 and 133 State Street. Additional state office space is available on Court Street above the parking structure.



5. Maximize Green Space

The central feature of this plan is the removal of the 120 State Street building and the extension of the State House Lawn to the river. New buildings frame the green on both sides and additional buildings are added to 133 State Street, next to and across Gov. Davis Blvd from the Pavilion. Displaced parking is located to peripheral lots and structures on the back lots.

IV. The Master Plan



- EXISTING BUILDINGS
- NEW STATE OFFICES
- NEW PRIVATE DEVELOPMENT
- NEW TRANSIT/ VISITOR CENTER
- RELOCATED HISTORIC BAGGAGE BUILDING

Description of Master Plan Elements

- 1. Alternative Sites for Future State Buildings-** There are several options to consider: 133 State Street could receive a mirrored partner, as envisioned by the original architect. This could be accompanied by a parking structure. On Court Street, additional offices and commercial spaces are proposed on top of an alternative parking structure. 120 State Street could receive additional space oriented towards the new Greenway.
- 2. Winooski Greenway-** This urban park will include an extension of the Winooski West and Winooski East bikepath, riverwalks, pocket parks, and overlooks along the Winooski River and the North Branch. Other activities will include a central gathering area that is covered in grass during the summer but is then turned into a public skating rink during the winter. The river's edge will provide both natural buffers for wildlife and designed access points from which to reach the water or launch a boat. Pedestrian linkages will connect to the Capitol, transit center, parking and downtown.
- 3. Transit Center-** The transit center will be combined with a Welcome Center and Museum. The transit center, a gateway to downtown and the Capitol Complex, includes a Vermont Transit Facility, future expansion potential for rail service, "Wheels" service, and a link to state employee satellite parking lots
- 4. State Street Improvements-** Pedestrian and streetscape design enhancements to State Street will include design plans more appropriate to the State House Lawn, a clearer connection between the Capitol Complex and downtown, and safe connectors to and from parking areas.
- 5. Barre Street Extension-** A new city street will link Taylor Street to Main Street. New street frontage will bring private development opportunities, vehicular and pedestrian connections, and access to the riverfront. On-street parking and sidewalks are provided.
- 6. Court Street Parking Structure-** A parking deck below Court Street will provide spaces for 450 cars on 3 levels. At the Court Street level will be mixed-use sites for state/office/commercial buildings at a compatible scale to the historic pattern of buildings on Court Street.
- 7. Gateways-** The bridge connections to the Capital District and Downtown, Taylor Street, Main Street and Bailey Avenue, will receive greater definition. Additional landscaping and lighting design will provide more emphasis to these important city elements
- 8. Langdon Street Pedestrian Link-** From Court Street area to Langdon Street a pedestrian walk will conveniently lead pedestrians from the parking deck to the downtown.
- 9. Pedestrian Links-** A formal connection from the State House Lawn to the Winooski River Greenway will remind visitors and pedestrians of Vermont's attachment to its local surroundings. This link will be only a small part of a larger network of walkways and trails leading to downtown and even Hubbard Park.
- 10. District Heating-** The city is considering two options: updating and renovating the existing plant or building a new plant outside of the city.

Capital District Master Plan

Change Over Time

The Capital District and Downtown Montpelier have evolved together over time. Since WWII, Montpelier has considered various master plan schemes. Typically, each proposal was characterized by the influential ideas of that time, and its potential for implementation was equally governed by the period's economic and political factors. During the 1970's, for example, Montpelier considered removing vehicular traffic from the downtown center in favor of a pedestrian-only promenade. On the other hand, an extension to Barre Street was entertained prior to WWII. This idea is now being reconsidered in the most recent master plan.

In spite of these attempts to change the face of Montpelier only incremental changes have actually taken place. Many buildings have been demolished along the river and some along the main avenues. But in general no comprehensive plans have been accomplished. The master plan before you follows a middle road. Both cautious, infill development, and confident, large scale design interventions have been proposed. In either case, proposed development is structured to be sensitive to the existing pattern of buildings and urban spaces while still looking forward to how Montpelier and the Capitol Complex may change in the next twenty-five years.

This plan is intended to act as a conceptual framework from which many of these projects can be coordinated in the future. This plan is unique because it is the result of a coordinated effort between the City of Montpelier and the State of Vermont. While addendums to this plan may happen over time, because this plan is the product of a comprehensive coalition of interests and governments, the primary concepts and goals should always remain at the core of any city development project. Especially since WWII, the field of planning has received a startling amount of attention as countries, states, cities and towns have struggled to keep up with economic and cultural change. Many planning pitfalls can be blamed on overly aggressive planning concepts that tried to introduce elements that were alien to their environment, such as the urban redevelopment projects of the 1970's. More recently, planners have gone the opposite direction, such as the Neo-traditionalist who have tried to backtrack, reintroducing old building patterns and forms. Montpelier, on the other hand, has never subscribed to either path. Instead, Montpelier has been able to rely upon an existing city form, the surrounding natural environment, and attention to the local residents. This Master Plan keeps this tradition alive. Also central to the Master Plan are issues of sustainability and the environment. For example, all construction takes the form of infill development or follows the existing development patterns. The scale of design consistently keeps the pedestrian in mind, avoiding big box design concepts. Also, the proposed greenway not only promotes green design concepts such as wildlife buffers, but is also the hub of a network of pedestrian links that better connect residents and visitors to various parts of the city and the natural surroundings. Perhaps the most logically sustainable aspect of this Master Plan is its attention to pollution and transportation, global issues that can be addressed in our own backyard. The Transit Center will be only the most visible example of a new transportation policy that marries economic growth with transportation. Not only will tour buses have a destination but so will commuter light rails, commuter buses, and State employee commuter shuttles.

Although this plan takes a holistic planning approach it is not a substitute for existing plans now being used by both the City and State. Instead, the CDMP is a synthesis of issues shared between the Capitol Complex and public/private interests within the City of Montpelier, including the Montpelier Downtown Community Association. Because of this understanding, the CDMP is not only a manifestation of true municipal collaboration but also a real and tangible physical response to local, regional, and state wide concerns.

Winooski River Greenway

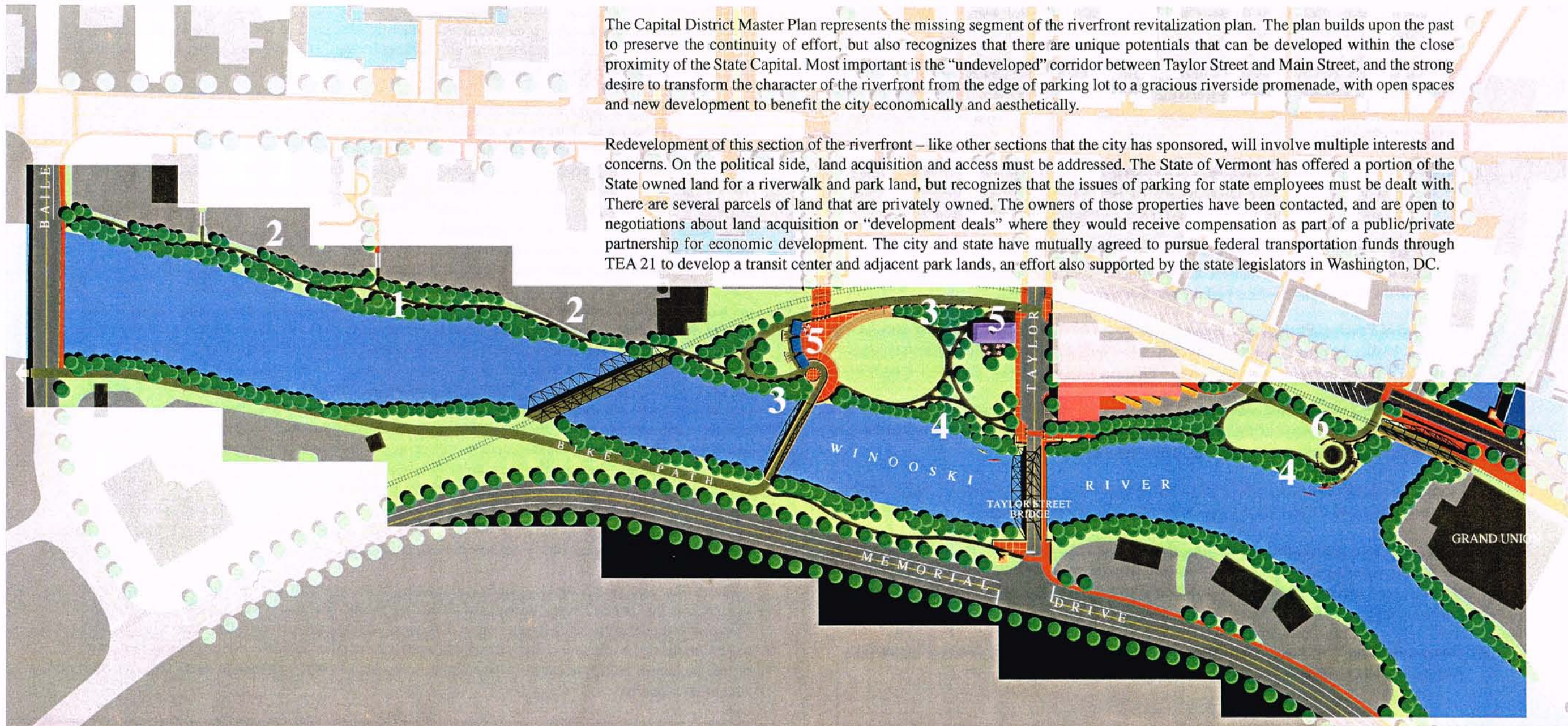
The River and the City: transformation of a corridor

Whereas in the past, the Winooski River served as an industrial conduit, the waterpower, and waste disposal system for the city, recent years see a more complementary relationship. The river is now seen as a positive attraction, where clean water and an attractive riverbank is an essential element of the city's future economy and quality of life.

For almost 10 years, the city has been actively engaged in the planning and implementation of a riverfront improvement plan. River corridor improvements have been included in the City Master Plans, and separate design and planning efforts have resulted in construction of the Winooski West and Winooski East Bikepaths and improvement districts. The city-sponsored Montpelier Rivers Report and the River Visions plan have served as the inspiration for planning efforts, and helped to articulate the community's sentiments about the past, present and future for the river corridors in Montpelier.

The Capital District Master Plan represents the missing segment of the riverfront revitalization plan. The plan builds upon the past to preserve the continuity of effort, but also recognizes that there are unique potentials that can be developed within the close proximity of the State Capital. Most important is the "undeveloped" corridor between Taylor Street and Main Street, and the strong desire to transform the character of the riverfront from the edge of parking lot to a gracious riverside promenade, with open spaces and new development to benefit the city economically and aesthetically.

Redevelopment of this section of the riverfront – like other sections that the city has sponsored, will involve multiple interests and concerns. On the political side, land acquisition and access must be addressed. The State of Vermont has offered a portion of the State owned land for a riverwalk and park land, but recognizes that the issues of parking for state employees must be dealt with. There are several parcels of land that are privately owned. The owners of those properties have been contacted, and are open to negotiations about land acquisition or "development deals" where they would receive compensation as part of a public/private partnership for economic development. The city and state have mutually agreed to pursue federal transportation funds through TEA 21 to develop a transit center and adjacent park lands, an effort also supported by the state legislators in Washington, DC.



Winooski River Greenway Design Features

1. Walking Trail connection from Bikepath bridge to Bailey Avenue

This path extends the bikepath connection with a more rustic walking path to complete a riverfront trail system across the Capital Complex.

2. Reorganization of state parking areas to improve aesthetics and pedestrian circulation

Parking spaces are redefined and pedestrian access is improved as part of the trail project and cross paths from parking areas to the State Street area run through the existing spaces between state buildings. Where appropriate, small park and yards areas are created to screen parking areas and reinforce the historic character of State Street.

3. Refinements to the Winooski West – Winooski East Bikepath corridor

The massive concrete bridge landing needs to be enhanced to be more attractive and to integrate with the nearby park area. The existing path location from the steel bridge to Taylor Street is retained, and the bikepath is relocated to the north where it can interface with the transit center on the east side of Taylor Street.

4. A linked series of public parks

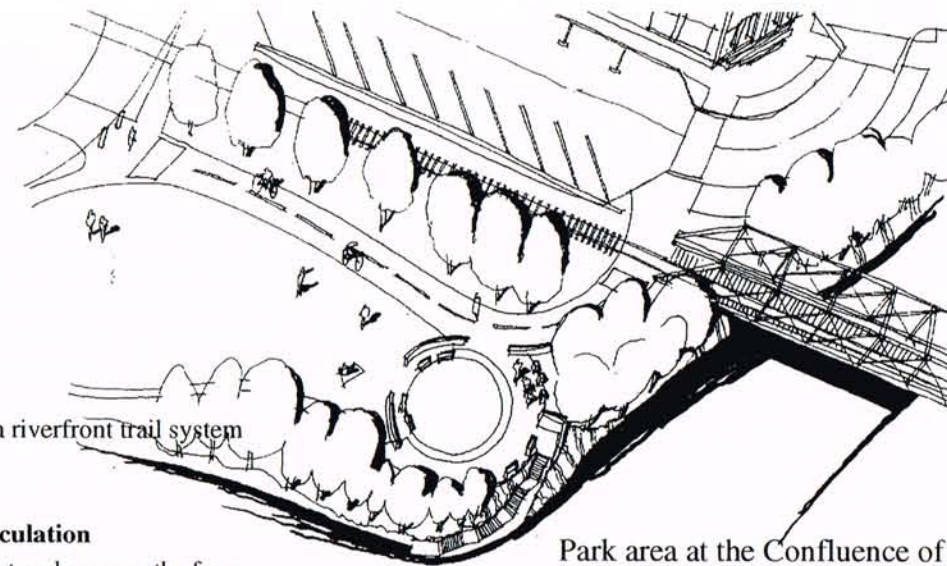
Following the river is a series of park spaces ranging from open grassy spaces to a paved urban promenade and café /overlook near Taylor Street. Larger open spaces are provided both east and west of Taylor Street.

5. Complementary recreation facilities for residents and visitors

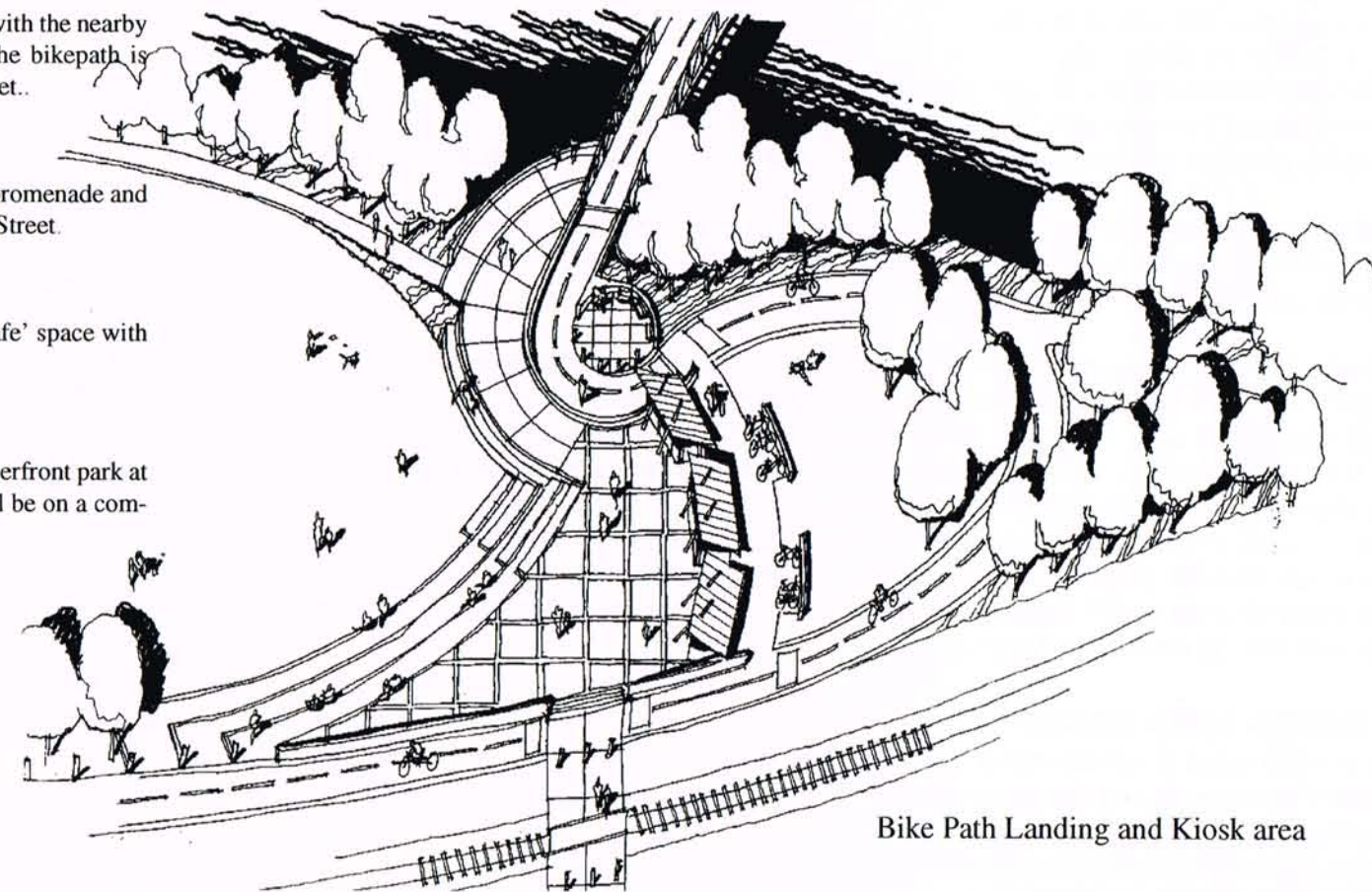
A visitor kiosk structure and the relocated Rail Baggage Building can provide bike rental and café space with direct access to the bikepath system and Capital Complex.

6. Bikepath connection from Taylor Street to Main Street

This section of the Winooski Bikepath connects from Taylor Street and the transit center to the riverfront park at the convergence of the North Branch and Stevens Branch. The crossing of the North Branch will be on a combined bike/automobile bridge as part of the new street connection to Barre Street/ Main Street.



Park area at the Confluence of the North Branch



Bike Path Landing and Kiosk area

River Conservation issues:

Coordination between the planning process and the Montpelier Conservation Commission was central in the planning for the riverfront improvements. In October of 1998, the Montpelier Conservation Commission affirmed the following principles for the City State Commission Master Plan for the Capital District:

- Create a riverside park
- Ensure a continuous green belt along the river that has trees and shrubs and is wide enough to include a walking/bike path and benches
- Include small parks for picnicking and family recreation along the path as well as an overall layout that reflects the vitality of the city
- The path should connect with other pedestrian and bicycle paths and access roads
- Provide access points for people to walk down to the water
- Encourage four - season usage

Celebrate and draw attention to the river through

- Historical markers
- Educational exhibits
- Displayed art
- Facilities for music and other cultural events

Maintain the ecological function of the river bank

- Utilize natural landscaping,
- Place shade trees along the river edge,
- Provide habitat for wildlife, and
- Stabilize and restore the stream bank.
- Ensure a balance between natural vegetation and landscaped sections.
- Utilize the greenbelt as a filtration system for stormwater runoff from the adjacent paved areas.

All of these themes for river corridor planning are not mutually exclusive, and a diversified riverfront plan would allow some of each element to exist: to create a river corridor with complementary areas of ecological, aesthetic, and recreational opportunities.

The final plan preserves both natural riverbanks, historic stone retaining walls that have bordered developed edges, and where appropriate, enhances those features as part of an overall river corridor plan. The simple act of removing several acres of parking with its damaging erosion and runoff and substituting impervious surfaces with park land, grass and trees will improve water quality and wildlife habitat in the corridor. Properly planned pathways and a promenade will allow residents and visitors to walk along the river, appreciating the river as current conditions do not allow. Areas for recreation and activities compatible with a scenic riverwalk have also been accommodated, along with sites where visitors can descend from the higher elevation riverwalk to the water's edge. It is hoped that the end result will be a positive demonstration of the values of river corridor planning and urban design.

River interpretation themes

There is a strong desire to tell the role of the river in the evolution of Montpelier, and to integrate river interpretation themes in an overall plan for riverfront amenities. Some of the interpretive signage, environmental sculpture, and display themes might include:

- Explanations of riverbank restorative efforts.
- A living river: Natural communities.
- Fish and wildlife habitats.
- The working river: industry in Montpelier

The Greenway as a destination for regional trails around Central Vermont

Montpelier's central location in the state coincides with linkages between the Winooski river corridor and other recreational corridors in Central Vermont. There are many existing and planned trails in the Montpelier area, as well as linkages from the river corridors to other local trails in Montpelier and other nearby towns. Some of these trails include, for example:

The Cross Vermont Trail

A planned trail that follows the old Wells River – Montpelier RR line. Planned as a multiuse trail, there are several segments of this trail already in place, including one from Groton to Marshfield, Plainfield and East Montpelier. The trail is being planned with assistance of the Rivers and Trails Program of the National Park Service and the State of Vermont, and in cooperation with East Montpelier Trails, Inc. and local snowmobile clubs. The VAOT hired a Cross VT Trail project coordinator in 1999 to support ongoing trail development.

The Central Vermont Bikepath

This is a planned four - town bike path project being planned under the leadership of the Central VT Regional Planning Commission (CVRPC). The path originates as part of the Winooski West and Winooski East Pathways and follows the Washington County RR (WCRR) line east towards Berlin, through Barre City and to Barre Town. The path segments from Montpelier to the Ames Plaza in Berlin have been funded by the VTrans, and the Barre City pathway segment is currently ranked #1 in regional priority with the CVRPC Transportation Advisory Committee (TAC). The City of Barre and Barre Granite Center and Heritage Museum are cooperating on future planning efforts.

North Branch Greenway

As a part of the Montpelier Rivers Study, the concept of a walking route along the North Branch is planned to extend from the Lane Shops to the Wrightsville Dam. This route would follow some of the city's most remote and interesting natural areas, to the site of the new VINS Center, North Branch Park the Elm Street Recreation fields, and eventually to Hubbard Park to the west and to the East Montpelier Trails network to the east and south. This system will ultimately link the downtown to the city's extensive park network. The downtown connection segment from the Lane Shops to the convergence of the Steven's Branch and the North Branch is perhaps the most difficult to accomplish. The initial phase from State Street to Langdon Street has been supported by the city.

Statehouse Trail

A new trail is being planned in partnership with the State of Vermont and the City of Montpelier to ascend the hill behind the Capitol, linking to Hubbard Park.

East Montpelier Trails

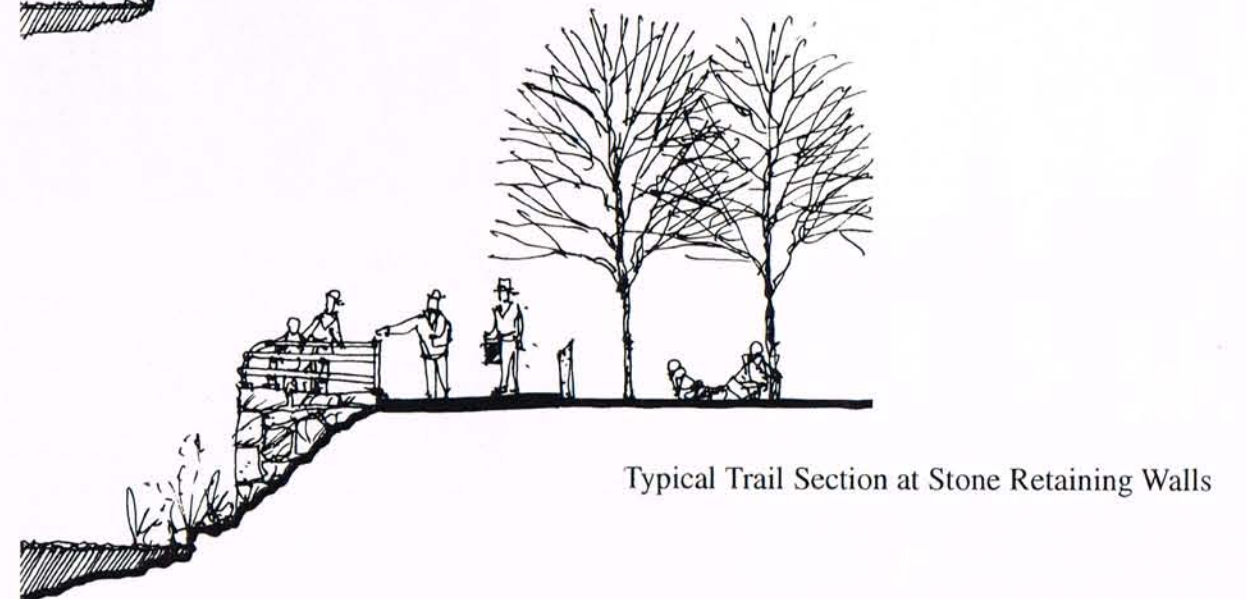
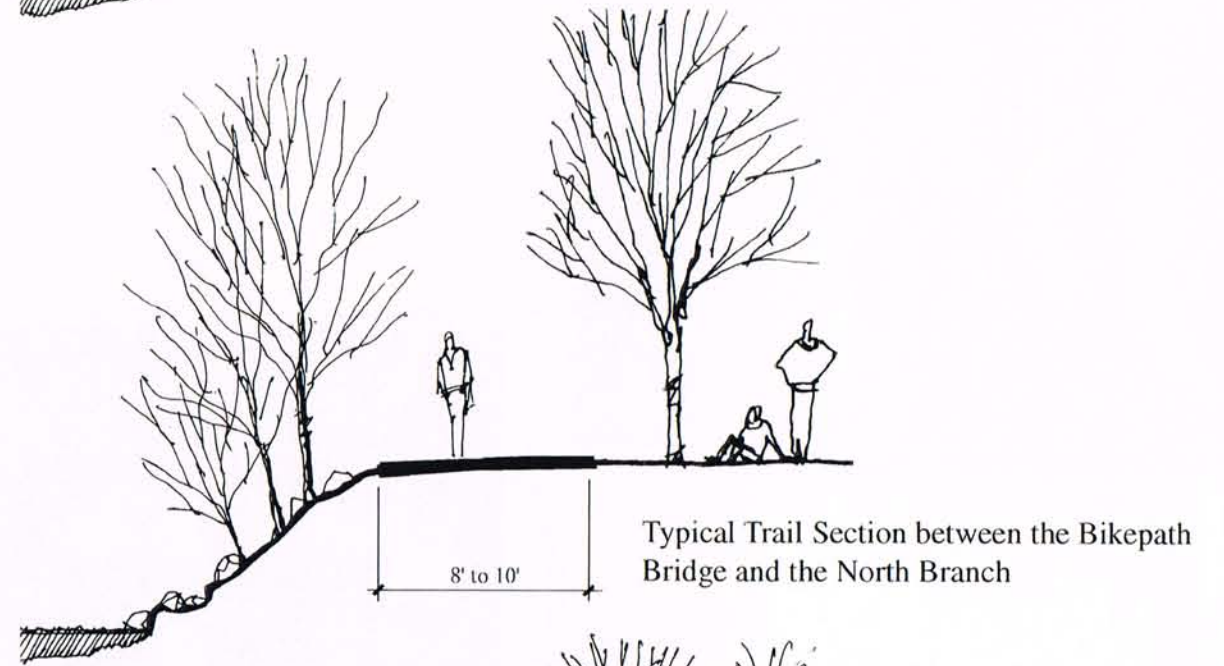
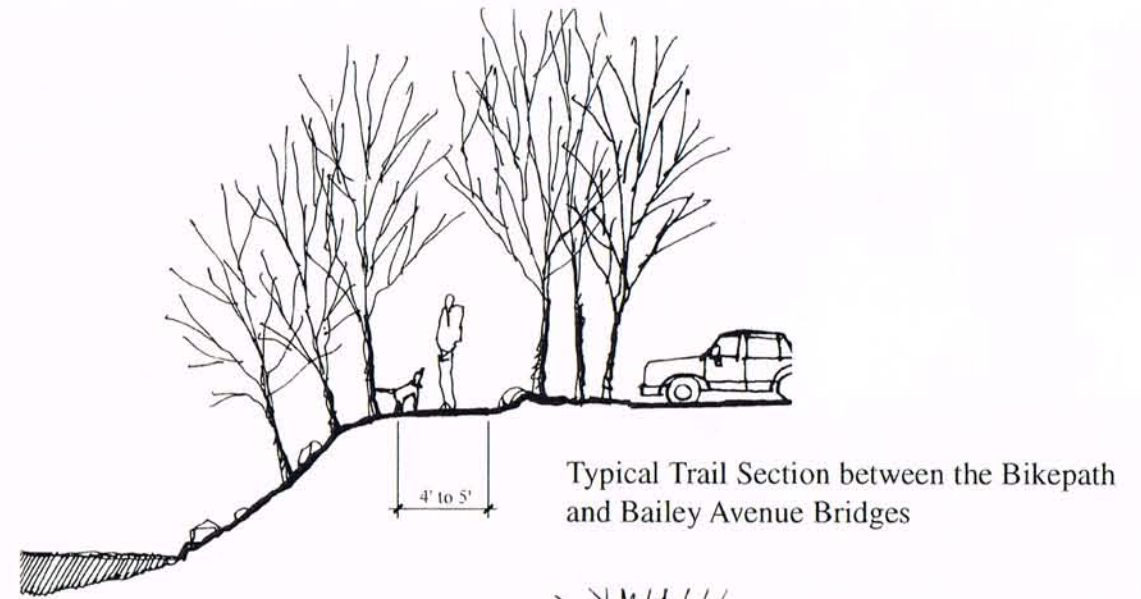
East Montpelier Trails, Inc., a non-profit organization, maintains a network of trails that bring together recreational users of many types. A system of trails is already in place for skiing, walking, snowmobiles, and other uses.

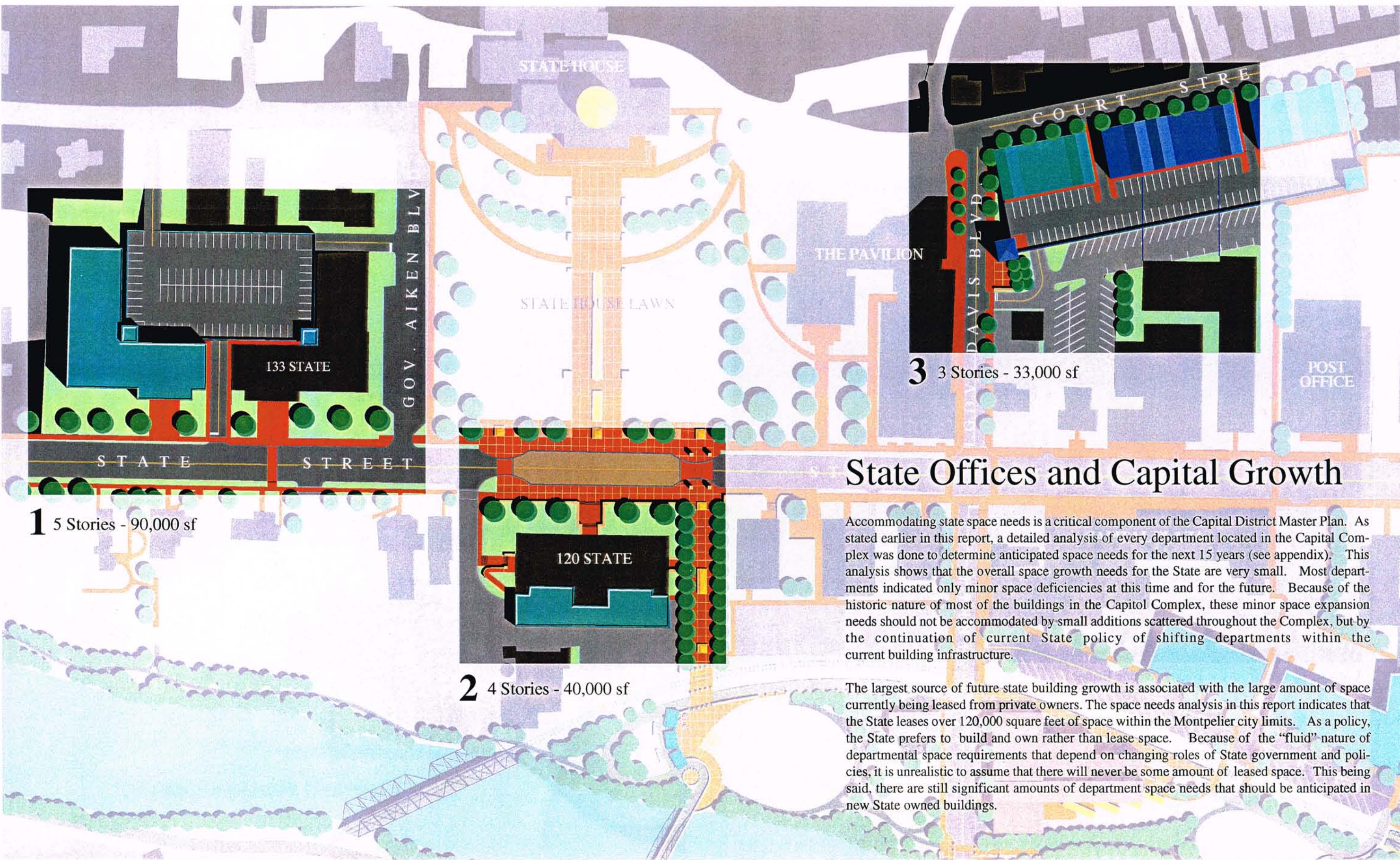
Canoe/kayak access along the Winooski River

The Winooski River is a popular boating corridor, and below Montpelier the river is very passable for recreational paddlers and families. While there are no current locations where paddlers can put into the river near the downtown, below the last dam west of Main Street, in the same area as the greenway, entry to the river could be an exciting new river oriented use.



Looking upriver from the Bailey Avenue Bridge





1 5 Stories - 90,000 sf

133 STATE

GOV. AIKEN BLVD

STATE STREET

2 4 Stories - 40,000 sf

120 STATE

THE PAVILION

3 3 Stories - 33,000 sf

COURT STREET

DAVIS BLVD

POST OFFICE

State Offices and Capital Growth

Accommodating state space needs is a critical component of the Capital District Master Plan. As stated earlier in this report, a detailed analysis of every department located in the Capital Complex was done to determine anticipated space needs for the next 15 years (see appendix). This analysis shows that the overall space growth needs for the State are very small. Most departments indicated only minor space deficiencies at this time and for the future. Because of the historic nature of most of the buildings in the Capitol Complex, these minor space expansion needs should not be accommodated by small additions scattered throughout the Complex, but by the continuation of current State policy of shifting departments within the current building infrastructure.

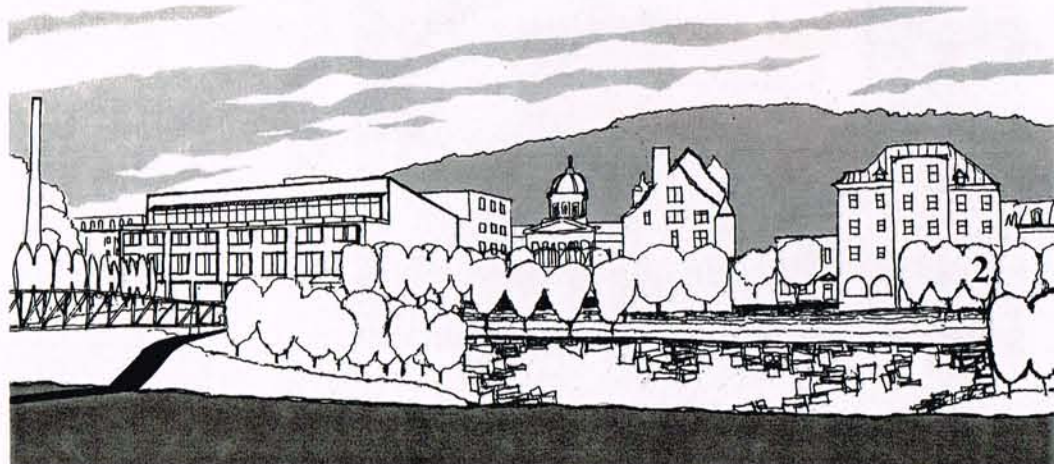
The largest source of future state building growth is associated with the large amount of space currently being leased from private owners. The space needs analysis in this report indicates that the State leases over 120,000 square feet of space within the Montpelier city limits. As a policy, the State prefers to build and own rather than lease space. Because of the "fluid" nature of departmental space requirements that depend on changing roles of State government and policies, it is unrealistic to assume that there will never be some amount of leased space. This being said, there are still significant amounts of department space needs that should be anticipated in new State owned buildings.

The State of Vermont has a long-standing commitment to downtown Montpelier. Any new state buildings will be located within the current Capitol Complex boundaries, and preferably in the downtown. This commitment is made with the realization that any new state buildings in the Capitol Complex need to be significant in their civic presence and design quality. The only potential building site that will be considered that is not in the immediate downtown is the land adjacent to the Department of Employment and Training.

This report identifies three potential sites for future state buildings. It is not the recommendation of this report to construct all three structures, but to choose one or two of the locations to phase in the state needs over the next 15 years. All three sites offer opportunities to develop these structures in a way that will enhance the architectural character of the Capitol Complex, and also contribute to the planning goals of both the State and City.

The sites are as follows:

View of New Addition to back of 120 State Street



1. Addition to 133 State Street (5 stories, 90,000 sq. ft., 280 parking deck) This building would complete the “mirror image” design of the existing building as planned by the original architect. The building will be in keeping with the original architecture and fill a void in the streetscape. The potential parking deck would be totally hidden by the building along State Street, and utilize the natural slope of the site to accommodate multiple level street access.

2. Addition to 120 State Street (4 stories, 40,000 sq. ft.) The proposed addition runs the entire length of the backside of the existing building. The architecture should take advantage of the Southern exposure and greenway views. The addition will also hide the very visible but ugly existing façade of the existing structure.

3. New Building on Court Street (3 stories, 33,000 sq. ft.) This building could be built above a parking deck along Court Street on a highly visible corner site. The site also offers an opportunity to bridge over Gov. Davis Blvd to the Pavilion.



View of Court Street



View of New Addition to 133 State Street

Capital City Transit/Visitor Center

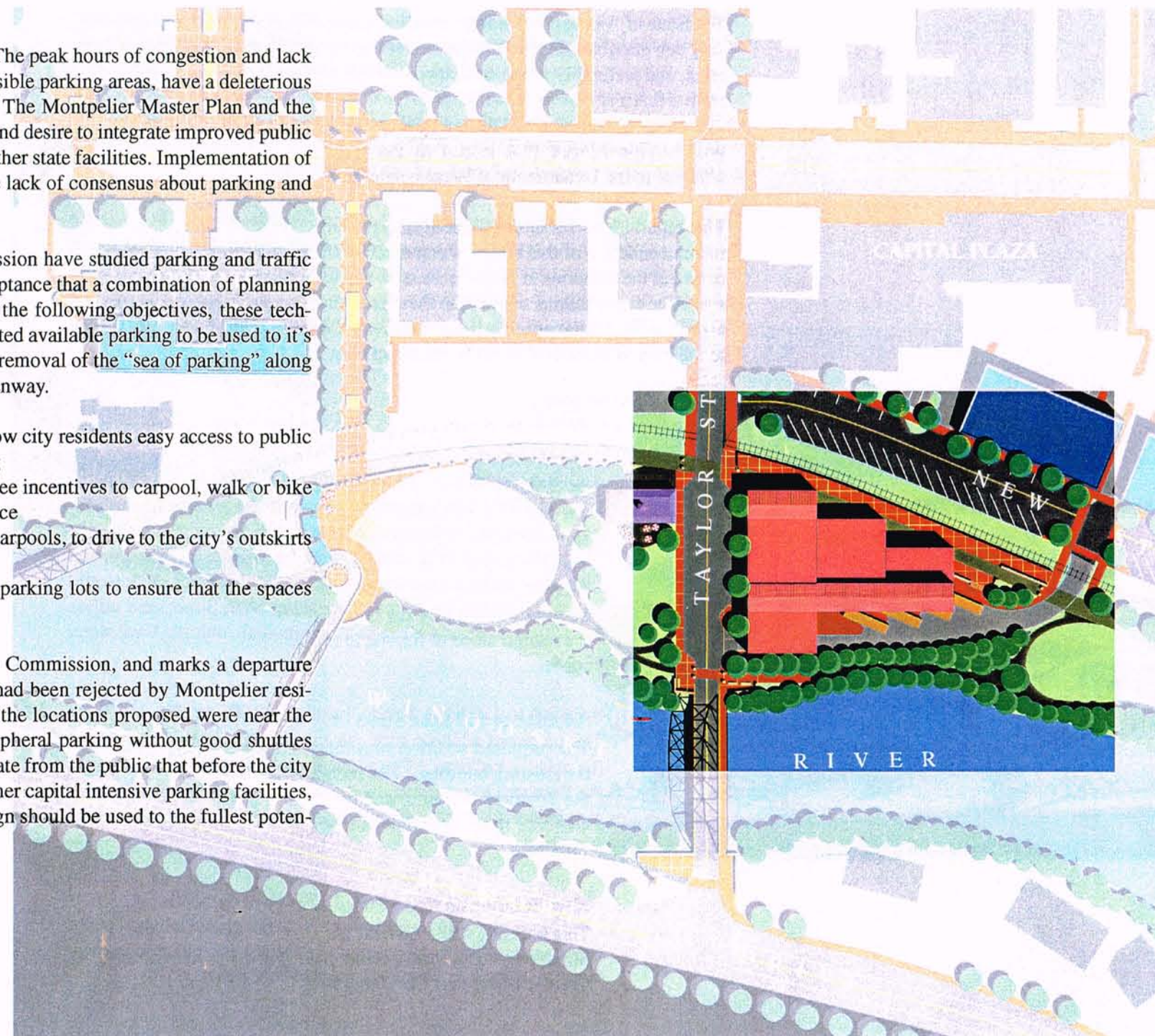
Background: the link between traffic, parking and transit

Like all cities, Montpelier experiences parking and traffic problems. The peak hours of congestion and lack of available parking spaces, in combination with unattractive inaccessible parking areas, have a deleterious effect on the economic vitality and quality of life of the downtown. The Montpelier Master Plan and the Phase I Plan for the City/State Commission articulated both the need and desire to integrate improved public parking, access to the downtown, access to the state legislature, and other state facilities. Implementation of that goal in the interim years has proved controversial because of the lack of consensus about parking and traffic.

The City, State, and the Central Vermont Regional Planning Commission have studied parking and traffic issues in Montpelier for many years, and have come to a general acceptance that a combination of planning tools may work best to solve the problems at hand. Translated into the following objectives, these techniques are targeted to reduce traffic entering the city, to allow the limited available parking to be used to its maximum potential for business and economic gain, and to allow for removal of the “sea of parking” along the riverfront so that the area can be redeveloped as park land or greenway.

- Improve access and management of a public transit system to allow city residents easy access to public transit to get downtown and to work in the city instead of driving
- Create a program with the state employees union to offer employee incentives to carpool, walk or bike to work instead of using a designated state employee parking space
- Strategically locate “peripheral” parking lots for commuters and carpools, to drive to the city’s outskirts and then pool or take a shuttle bus
- Employ parking management of the downtown and state owned parking lots to ensure that the spaces provided are indeed used by the desired parties

This strategy has emerged from the Phase 1 effort for the City/State Commission, and marks a departure from past efforts to make singular improvements: parking garages had been rejected by Montpelier residents on several occasions, because they drew additional traffic and the locations proposed were near the river. Shuttle systems had mixed success until recent years, and peripheral parking without good shuttles was ineffective. At the same time though, there has been a clear mandate from the public that before the city and state invested in massive expenditures for parking garages and other capital intensive parking facilities, that public transit, parking management and alternative land use design should be used to the fullest potential.



Vermont has been recognized for its commitment to rail service through subsidization of AMTRAK. Across the state the VT Agency of Transportation (VTrans) has been involved in other projects to develop public transportation. In Rutland, a downtown transit center has been constructed in conjunction with a large downtown parking garage, a similar facility is planned in Brattleboro, and the advent of commuter rail from Shelburne to Burlington will be supported by stations in Burlington and other towns along the route. Other parts of the state have also developed local transit services such as Advance Transit in the White River Junction area and Central VT Transit Authority (CVTA) in Montpelier, which operates "Wheels" the provider for the Central VT region.

Unifying Public Transit

Multiple transportation modes already serve Montpelier. However, these are not integrated into a comprehensive plan for MOBILITY in the capital city. The solution to municipal parking and traffic congestion problems calls for an integrated approach combining land use, zoning, and the power of market incentives, innovative approaches to parking and busing, among others. The Multi Modal Transit and Visitor Center is one piece in the plan, not the entire solution.

Five different providers of public transportation currently serve the City of Montpelier:

- *Vermont Transit*, the interstate bus company owned by Greyhound Bus Lines
- *Central Vermont Transportation Association* (CVTA) or "Wheels", the inter - and intra - city transit provider serving numerous towns in the Central Vermont area
- *Amtrak* rail service from Montreal to Washington
- *Tour buses* from dozens of companies across the U. S. and Canada
- Private *taxi* companies

While all components of the public transportation systems operate independently of one another, a linkage program which would allow people to move efficiently through the city has yet to be developed, and the overlap of those services is generally thought to be reliant on a single point of contact for all providers: a transit center.

Why a built facility?

As a major regional and statewide destination for travelers and state employees, Montpelier has all the characteristics of a city that would benefit from enhanced public transit: large commuting population who work "regular" hours, a "captive audience" on the part of state employees that are an employment pool that are organized and accessible to being invited to participate in alternative transportation programs, and a local population that live and work within the city, for whom the convenience of public transit would

provide a tangible alternative to commuting short distances and having to locate and pay for long - term parking. In acknowledgment of these potentials, the city and state have considered establishing such alternatives such as peripheral parking, improving the "Wheels" transit program and improving the availability of parking for both the state and the city, and the city bikepath projects promise on the long term to create a non - vehicular travel alternative on a seasonal basis.

The concept of a centrally located Transit Center has been advanced by city officials as a way to efficiently bring together public transit providers, such that comprehensive services can be made efficient and accessible for local and regional/statewide riders. The facility has been conceived as a place for residents, visitors, and people who work in the city, integrated with a larger urban plan as a unifying public facility to link the different ways that people come to Montpelier.

The transit center could be a pivotal development to the Capital Area, and its location and function are critical to both the operation of the whole system as a public orientation center for the city. Given the current priority for alternative transportation funding, a comprehensively sited and designed facility could be highly fundable via a variety of TEA21 programs through the VTrans.

- This building will be the destination for VT Transit Bus Lines, Wheels, a central facility and Welcome Center for tourists and tourist buses, current Washington County RR uses and a potential stop for a future AMTRAK connection.
- A second function of the transit center will be for shuttles to and from satellite parking lots for state employees and legislators when the state government is in session. The shuttle program may also be used by downtown businesses as part of the larger parking policy. Further details concerning parking can be found in the "Parking and Traffic" chapter.
- A third element in the transit center program could be to integrate transit with a new and larger Montpelier Visitors Center, a concept supported by many state and city officials, perhaps even as expansive as a VT Welcome and exhibition center.

A Multi Modal Transit Center should be located so passengers can combine trips to everyday services such as banks, dry cleaners, etc. and within easy walking distance of their ultimate destination — a place of employment. The facility should be designed to be visually prominent while compatible with its architectural setting in historic downtown Montpelier. The Center should link travelers with travel modes within the Montpelier area (Wheels, peripheral parking lots, etc.) and beyond (i.e. buses to Burlington International Airport, Amtrak). Ideally, the Center should be easy to get to and easy to get away from; time spent at the



Center should be as comfortable as possible. Some of the amenities typically found in successful transit facilities include a coffee or sandwich shops, gift shop, displays of local crafts, agricultural products and merchandise, information guides, etc. The Center should be designed to be secure, well lighted, well signed, affordable to construct and easy to maintain. The sheltered waiting area should have all of the amenities of a public building and, if possible, attractive views of the Winooski River, the State Capitol and the hillsides around the city.

A Range of Possible Transit Center Facility Alternatives:

The function of a Multi Modal Transit Center is to provide interface between differing modes of transportation. Broadly defined, passengers interface in the following ways:

- Passengers enter the transportation system either at peripheral parking lots and travel to the Center or directly at the Multi Modal Transit Center
- Passengers change between modes of travel (i.e. leave a car and get on a shuttle bus, etc.)
- Passengers interchange within modes (i.e. leave a bus and get on another bus, etc.)
- Passengers leave the transportation system (i.e. return to their cars in a peripheral parking lot)

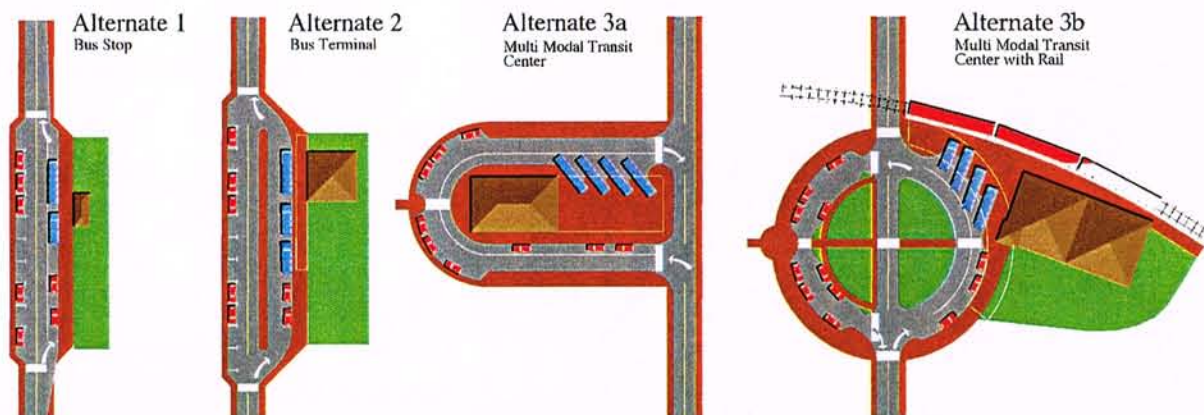
Transit service for downtown Montpelier could take several forms depending upon the need, funding and public policy. The options are:

- A **simple bus stop** at the curb of a street typically with a shelter, similar to the VT transit bus station currently in use.
- A **bus station** serving one or more companies providing intercity or interstate service
- An **intermodal center** serving multiple forms of transit providers such as buses, shuttle buses, taxi, commuter rail station, auto leasing, etc.
- A **multimodal** center serving all of the above plus direct connection with Amtrak service

Montpelier's existing service demands substantiate needs that are already greater than the first two options. Montpelier has an established demand for inter- and intracity bus service, airport shuttle service to Burlington, a shuttle bus/peripheral parking lot system, taxi service and a vibrant tour bus destination demand. However, direct connection (via rail) with Amtrak is infeasible since their existing station is located out of town.

These factors suggest that an intermodal transit center in the downtown would best accommodate the transit needs and provide a facility adequate for the city's transit needs to grow to a mature level of service effective enough to contribute to the overall transportation and mobility scenario of the city.

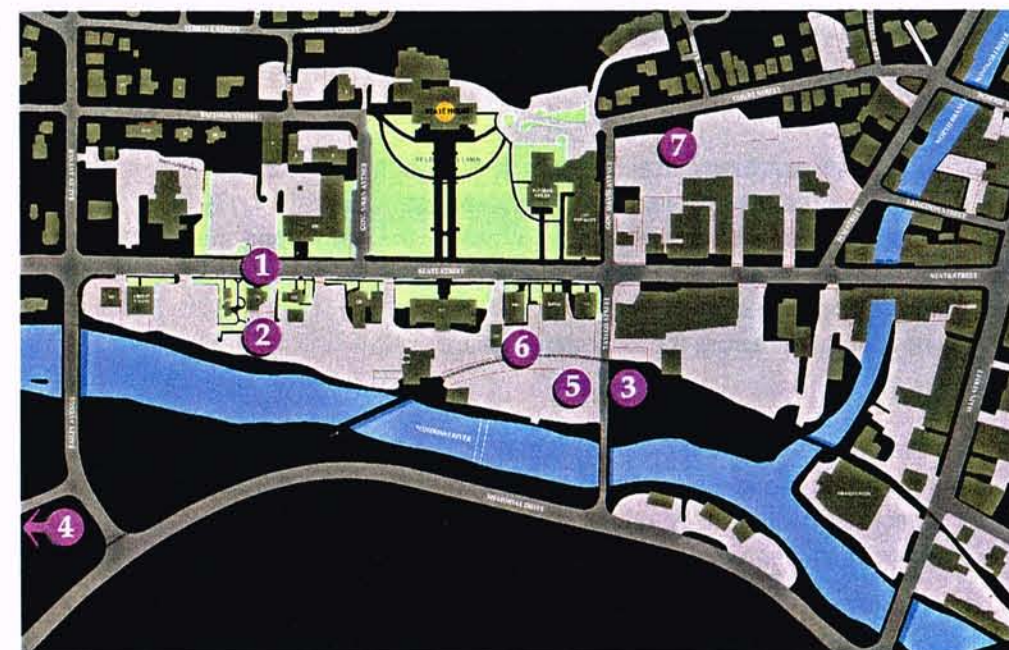
HIERARCHY OF TRANSIT FACILITIES



Public policy and user preference for transit has been changing rapidly in recent years and promises to change even more so in the future. Therefore, planning for a true intermodal transit center seems warranted. While commuter rail service from Montpelier to Burlington does not currently exist — and may not materialize for more than a decade — the location and design of the transit center should anticipate this development and remain flexible enough to accommodate rail use in the future.

Determining the best location for the Transit Center

Seven potential sites for the Montpelier transit center were evaluated during this study. The nominated sites were identified during discussions with public officials, the transit providers, local residents and people attending the various public meetings. The sites evaluated were:



- Taylor Street at the existing Vermont Transit ticket trailer
- The Department of Employment and Training parking lot off Memorial Street
- State Street in front of or behind the existing State Visitors' Center
- Court Street behind the Thrush Tavern;
- The Capitol Complex parking lot on Taylor Street
- The Amtrak Station
- The I-89 Triangle park-and-ride lot

The optimum site criteria used to evaluate sites:

- Large enough to accommodate all transit operators in the area: Vermont Transit, Wheels, tour buses, taxis, rental car leasing and, in the future, commuter rail service.
- Proximity to the downtown central business district and the Capitol Complex is essential to attract ridership.
- Convenient walking distance of no more than ten minutes to-and-from principal places of work and the transit center.
- Connections between the transit center and the Wheels intra-city and shuttle bus stops on State and Main Streets.

- All buses should be able to maneuver quickly and easily in and out of downtown Montpelier from I-89 and from the peripheral parking shuttle lots
- Nearby available long - term downtown parking so VT Transit riders can leave their cars if going out of town for several days.
- Space for parking for tour buses
- Future potential to accommodate commuter rail service to and from Burlington.

Each site was evaluated and ranked with a numerical score. (See Appendix for Site Evaluation Matrix) The highest ranking sites in order, with a brief explanation for the reasons why, are:

- Taylor Street in the Capitol Complex parking lot; this site does not require buses to cross the rail tracks in order to get into and out of the transit center
- Taylor Street in the same location as the Vermont Transit trailer; this site is currently being used as a bus station and is available. Depending upon the final facility layout buses may be forced to cross the rail road tracks entering and/or exiting the transit center
- Taylor Street between the Chittenden Bank building and the rail lines; this site has the best potential for coordinating with a future commuter rail service but requires that buses cross the tracks. The existing bank drive-in teller operation would need to be relocated to accommodate this scheme
- The DET site; this site is already being used as a shuttle bus parking lot and could be available for development as a transit center but is located very far from downtown

The highest ranking, and therefore best recommended site for the transit center is on Taylor Street. Locations either in the Capitol Complex parking lot or across the street at the existing Vermont Transit trailer on the Carr property. Due to limitations on the part of the state that precluded use of state land for the facility, the conceptual plan shows the transit center on the Carr Prop. on the east side of Taylor street, a location generally supported by all participants. Other sites evaluated were dropped from further consideration for a variety of reasons as noted.

A transit center space needs to be approximately 2,500 to 3,000 square feet and could be as large as 5000 square feet depending on the use projections for the facility. The building and bus platform and circulation, can easily be accommodate on less than one acre of land, particularly if combined with other complementary uses like the visitor center.

Optimum external facility space program:

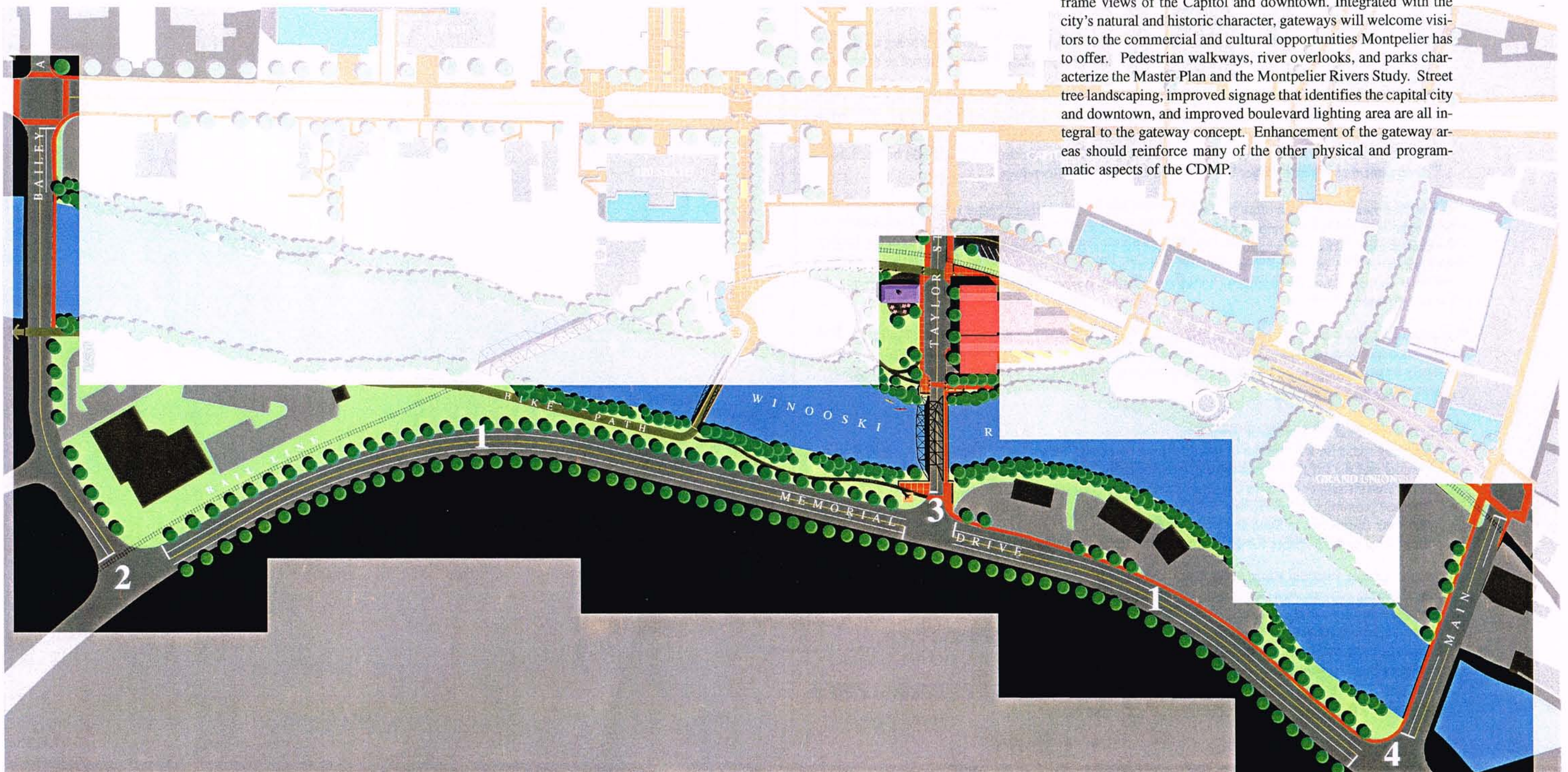
- Berthing space for a minimum of three 55' long buses and, ideally up to five
- Parallel parking for shuttle bus stops and taxi standing in front of the facility
- A covered passenger platform over the entire island
- Physical proximity to the existing rail line
- Sidewalk connection to State and Main Streets
- Short-term parking spaces for approximately two dozen vehicles

Optimum external internal space program:

- One ticketing counter with secure package storage so that a single agent can sell tickets for Vermont Transit, Wheels, Amtrak, and lease rental automobiles
- Space for tourist information displays about Vermont and surrounding attractions
- A waiting room sufficient to handle approximately two dozen people
- Public bathroom facilities and a public telephone
- Space for vending machines and vendor carts and rough - in plumbing to accommodate a potential coffee shop operation with a small number of tables and chairs

City Gateways

City Gateways at Bailey Avenue, Taylor Street and Main Street have been defined in the Montpelier Master Plan for over 10 years. Envisioned as identifiable public junctures, the gateways should frame views of the Capitol and downtown. Integrated with the city's natural and historic character, gateways will welcome visitors to the commercial and cultural opportunities Montpelier has to offer. Pedestrian walkways, river overlooks, and parks characterize the Master Plan and the Montpelier Rivers Study. Street tree landscaping, improved signage that identifies the capital city and downtown, and improved boulevard lighting area are all integral to the gateway concept. Enhancement of the gateway areas should reinforce many of the other physical and programmatic aspects of the CDMP.



1. A Memorial Drive Boulevard:

The recent reconstruction of Memorial Drive improved the physical condition of the road, but did little in the way of creating a distinguished urban boulevard or parkway commensurate with a capital city. Additional street trees, improved sidewalks, linkages to the Winooski West Bikepath, sensitive street lighting, and a capital city signage program will all contribute to Montpelier's primary gateway entry.

2. City Gateway: Bailey Avenue

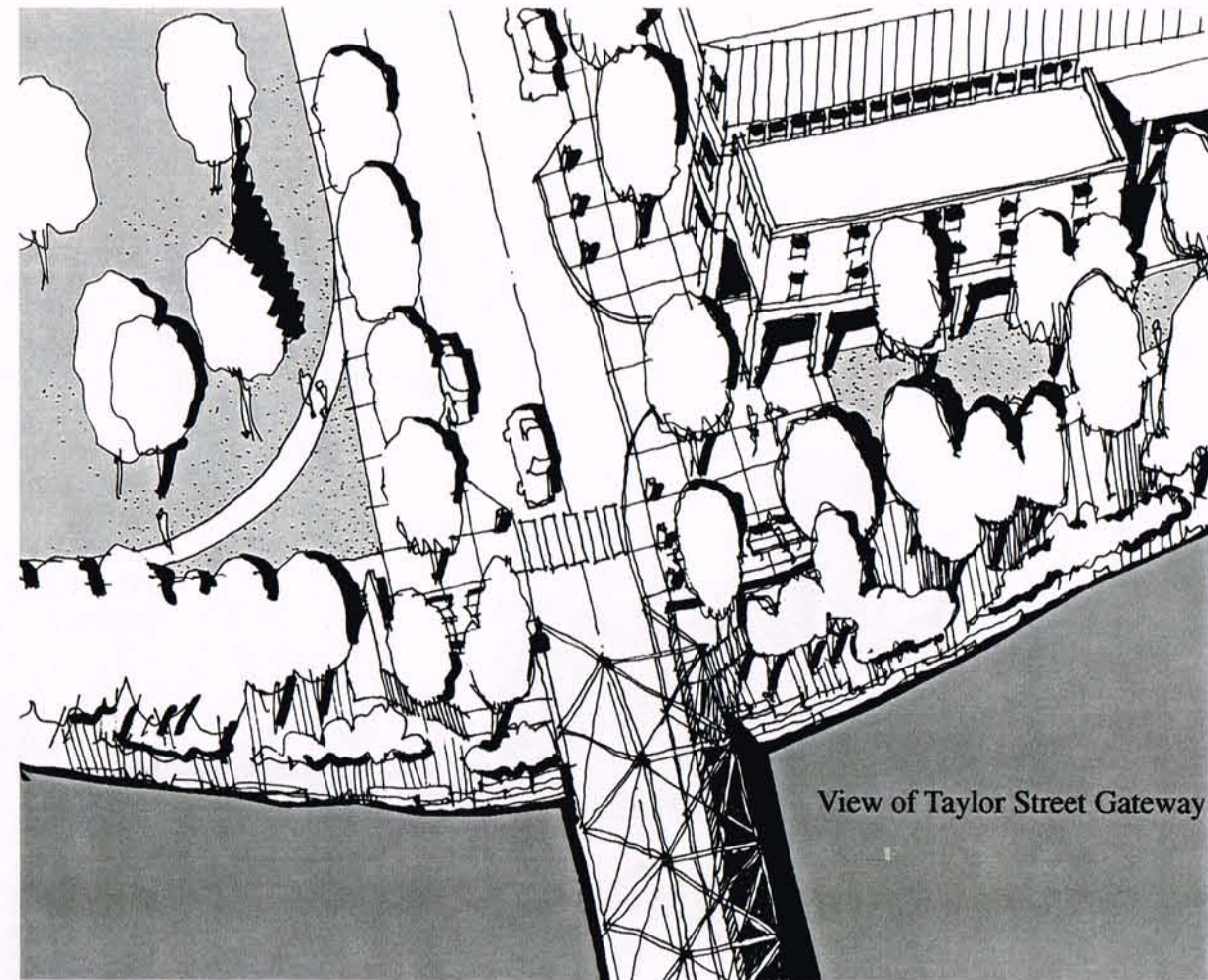
The new bridge on Bailey Avenue was designed to have an historic flavor that would enhance the entrance to the Capital District. Future improvements should include a streetscape design for Bailey Avenue and make the intersection of Bailey Avenue and Memorial Drive more attractive and pedestrian friendly.

3. City Gateway: Taylor Street

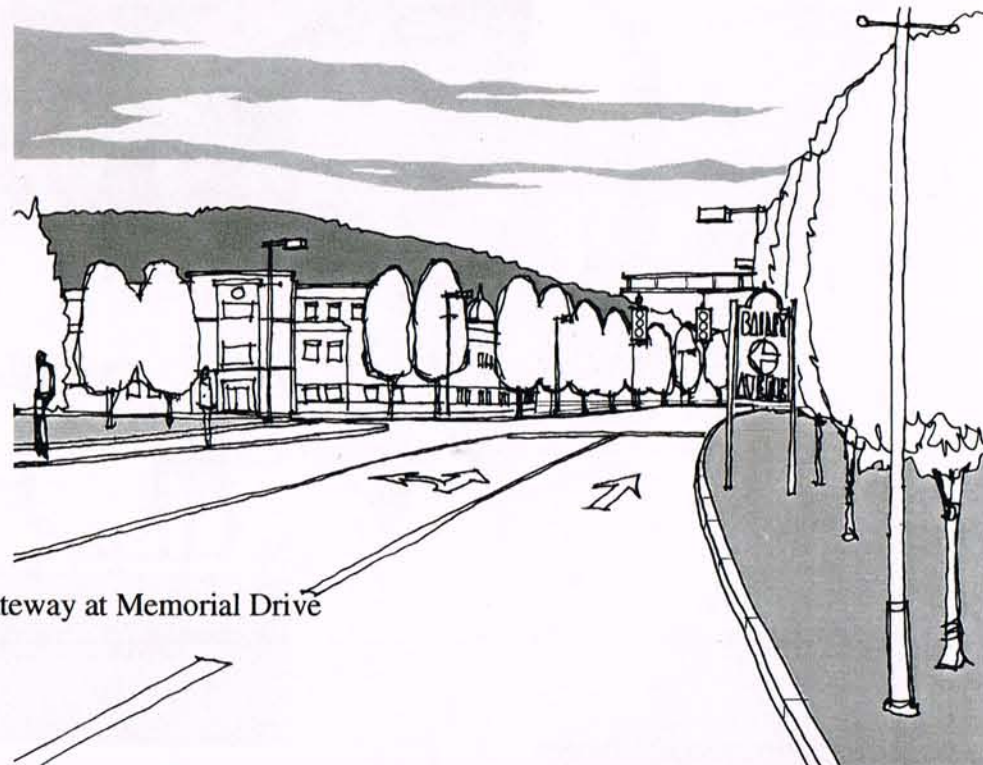
The steel truss bridge on Taylor Street is one of the "City of Bridges" most treasured historic and visual assets. Taylor Street is optimally located to serve as a contributing gateway to the city, particularly in combination with development of the visitor/transit center. The bridge will be improved structurally, and modified to accommodate pedestrians from the greenway and city sidewalk systems.

4. City Gateway: Main Street

The entrance to the downtown currently offers little in the way of visual or pedestrian enhancements. Although not officially included in the CDMP Main Street should be identified as an area in need of landscaping, street trees, and a riverfront park with an overlook. Similar to Bailey Avenue, the Main Street and Memorial Drive intersection should be made safer for pedestrians.



View of Taylor Street Gateway at the River



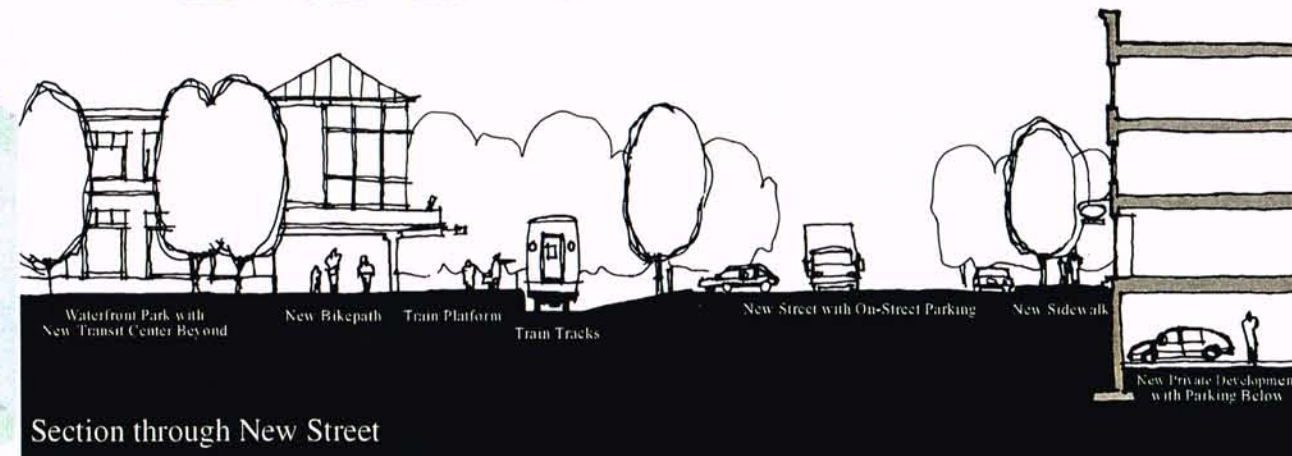
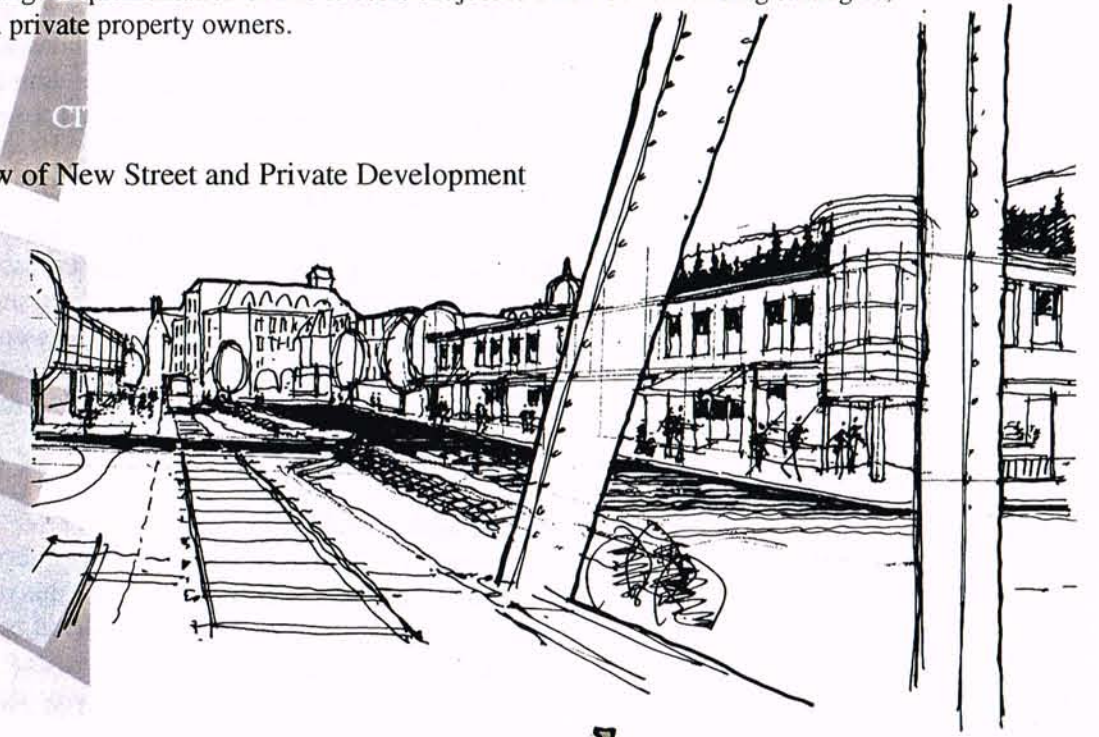
View of Bailey Street Gateway at Memorial Drive

Street Improvements

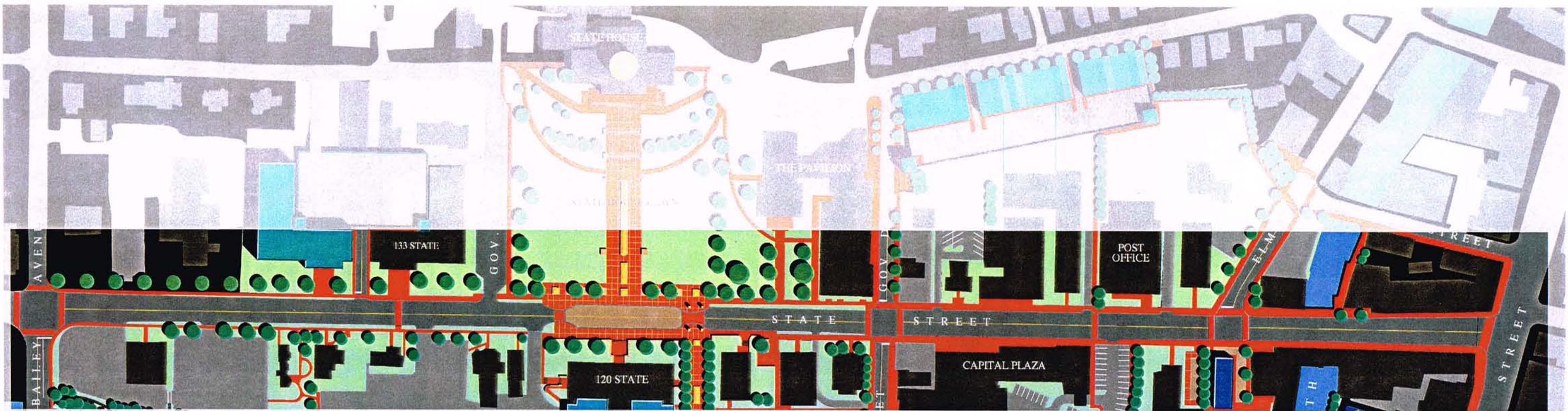
1. New Street Extension from Taylor to Barre Street

Enormously popular in public comments was the concept of extending Barre Street to Taylor Street on the north side of the WCRR tracks. Street construction would include two-way lanes, on-street parking, sidewalks, a bike path connection, landscaping and a new bridge across the North Branch. The Master Plan shows a possible alignment of the road and how a connection could be made to a parking structure. Also included is the accommodation of additional development on the corner of the Barre Street extension and the end of the art supply building. Implementation of this street is subject to a number of funding strategies, permits and negotiations with private property owners.

View of New Street and Private Development



Section through New Street



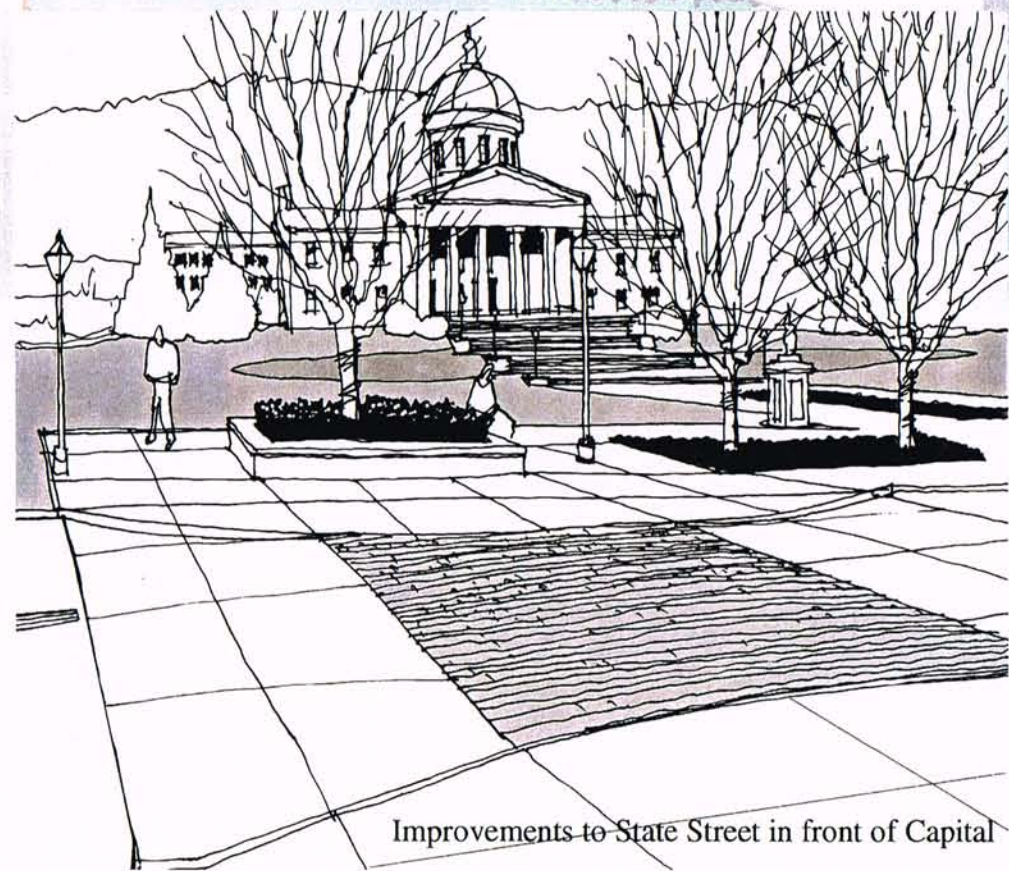
2. State Street Improvements

State Street is Vermont's Main Street, yet many believe the street that once was a distinguished front door to the Capitol, lined with graceful elms, framing views to the Capitol building and Supreme Court and other civic buildings has fallen into decline. An increase in commuting traffic and tour busses has only made greater demands on safety and pedestrian access.

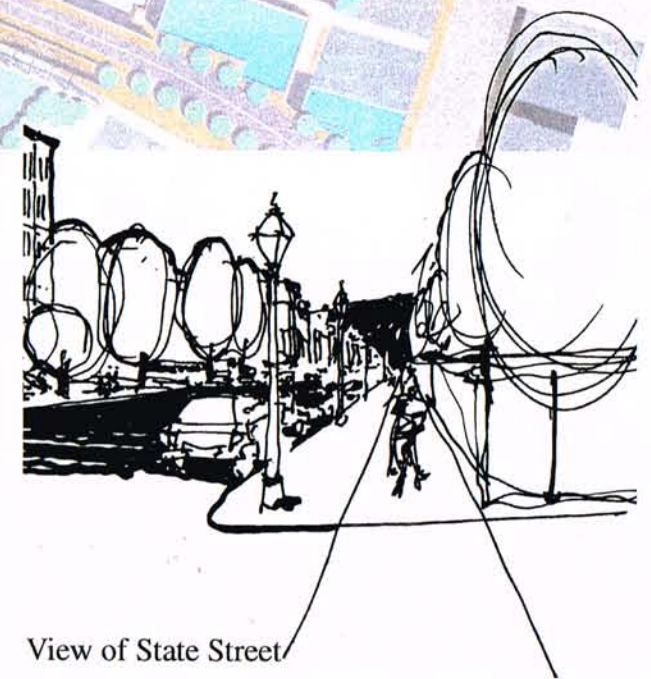
In 1997, the VAOT planned a major reconstruction project for State Street and the Rialto Bridge over the North Branch. Those projects were cancelled due to the impacts upon the downtown that reconstruction would create.

It is the recommendation of the Master Plan that an improvement project for State Street be re-initiated but that the "purpose and need" be altered to be more reflective of the types of improvements that the city desires: to make State Street a distinguished urban street befitting a State Capital, better pedestrian access, and a landscape design of statewide significance.

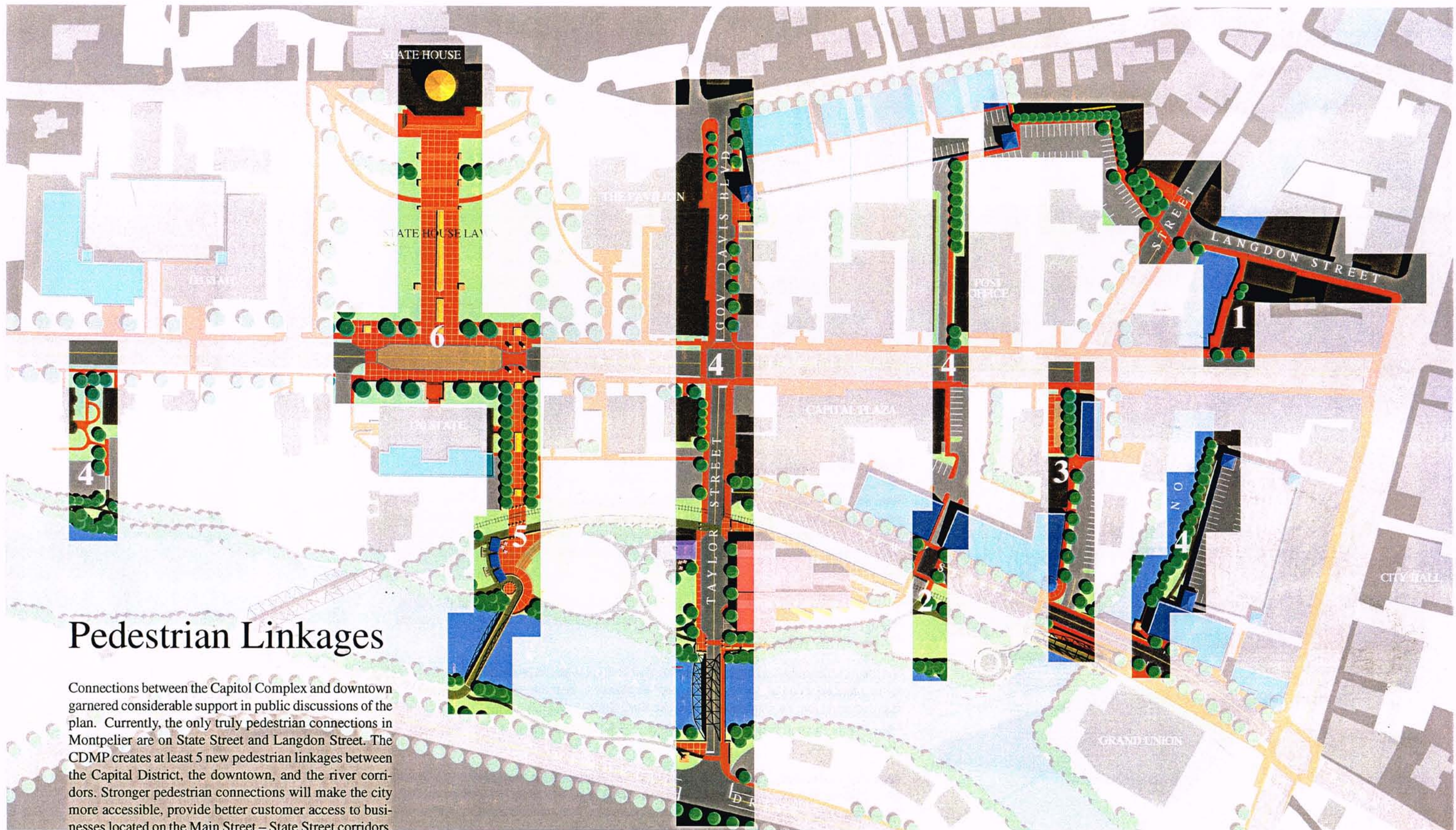
The State of Vermont, through the Department of Buildings, is independently planning many of these improvements. Projects that are currently underway include, improved lighting around the Capitol lawn, street tree replacements, and establishment of a Winooski River connection. It is hoped that these and other improvements will reinforce the commercial downtown extent of State Street as it nears the Main Street intersection.



Improvements to State Street in front of Capital



View of State Street



Pedestrian Linkages

Connections between the Capitol Complex and downtown garnered considerable support in public discussions of the plan. Currently, the only truly pedestrian connections in Montpelier are on State Street and Langdon Street. The CDMP creates at least 5 new pedestrian linkages between the Capital District, the downtown, and the river corridors. Stronger pedestrian connections will make the city more accessible, provide better customer access to businesses located on the Main Street – State Street corridors, and will enable higher utilization of off-street public parking facilities.

1. North Branch Riverwalk between State Street and Langdon Street

Long envisioned, the North Branch Riverwalk will run from the Rialto Bridge on State Street to the steel truss bridge on Langdon Street. Improvements to Langdon Street and a pedestrian connection pathway to the new parking structure on Court Street will be integrated with the riverwalk.

2. Extension of Winooski West Bikepath

The Winooski West Bikepath, partially completed in 1999, terminates at Taylor Street. Future plans to extend this path will be combined with the new transit facility, and the extension of Barre Street. The new plan for parking in this area could require the relocation of the bikepath route from the current Master Plan. There may be several routes that relate to the parking alternatives listed above and there may be different programmatic alternatives that may want to be considered.

3. Pedestrian link from Christ Church park

As part of a private development plan for the Bashara property on Elm Street, pedestrian access from State Street should be implemented as either a public project or as a private development with coordination with the CDMP.

4. Links from bike path to both State Street and Main Street

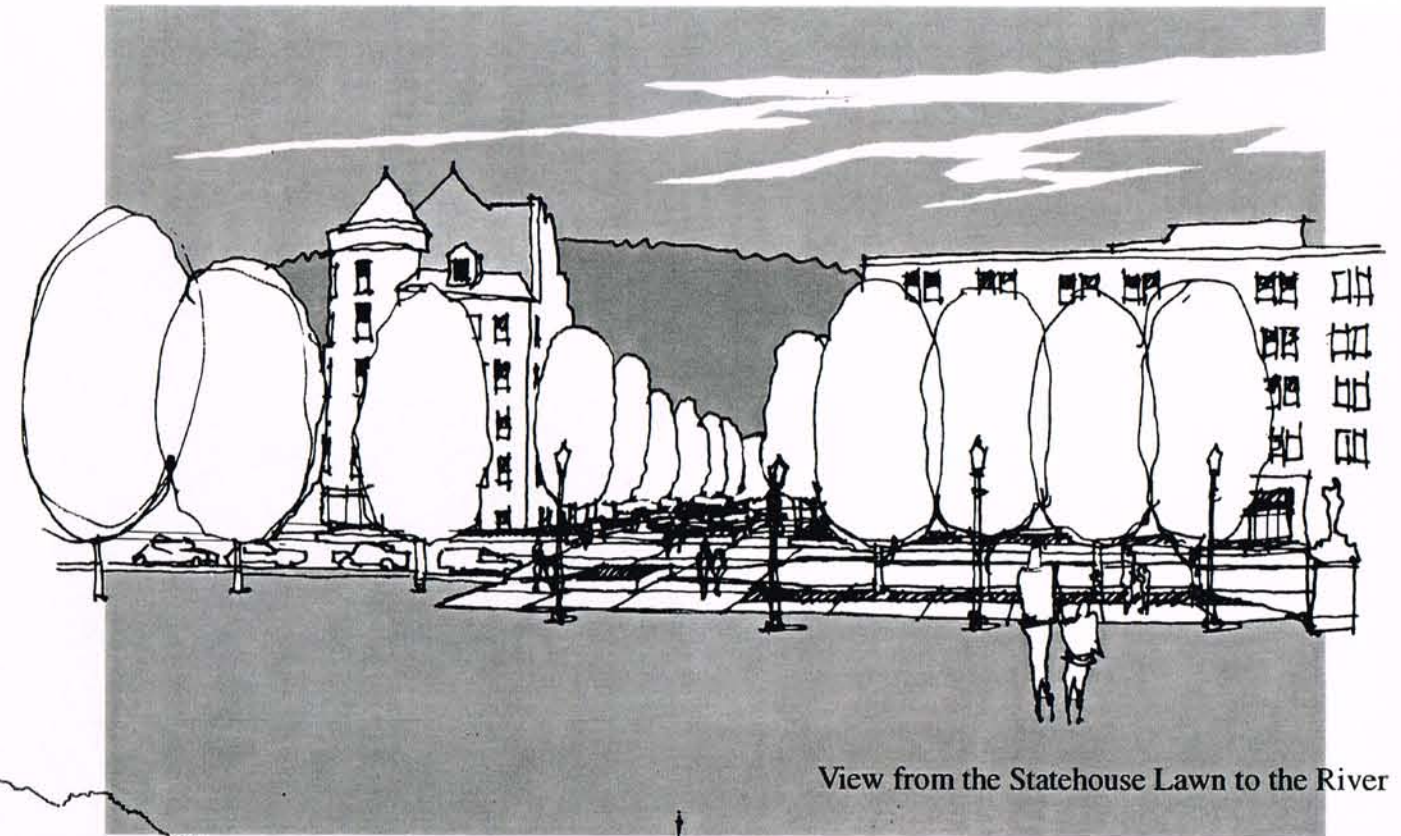
Walkways from the bikepath will provide essential connections to the public parking area behind Main Street. Riverwalk paths along the North Branch and sidewalk connections to Main Street and State Street will connect these routes, which should be integrated into future plans for parking behind Main Street and State Street.

5. Pedestrian Linkage from the Capital to the River.

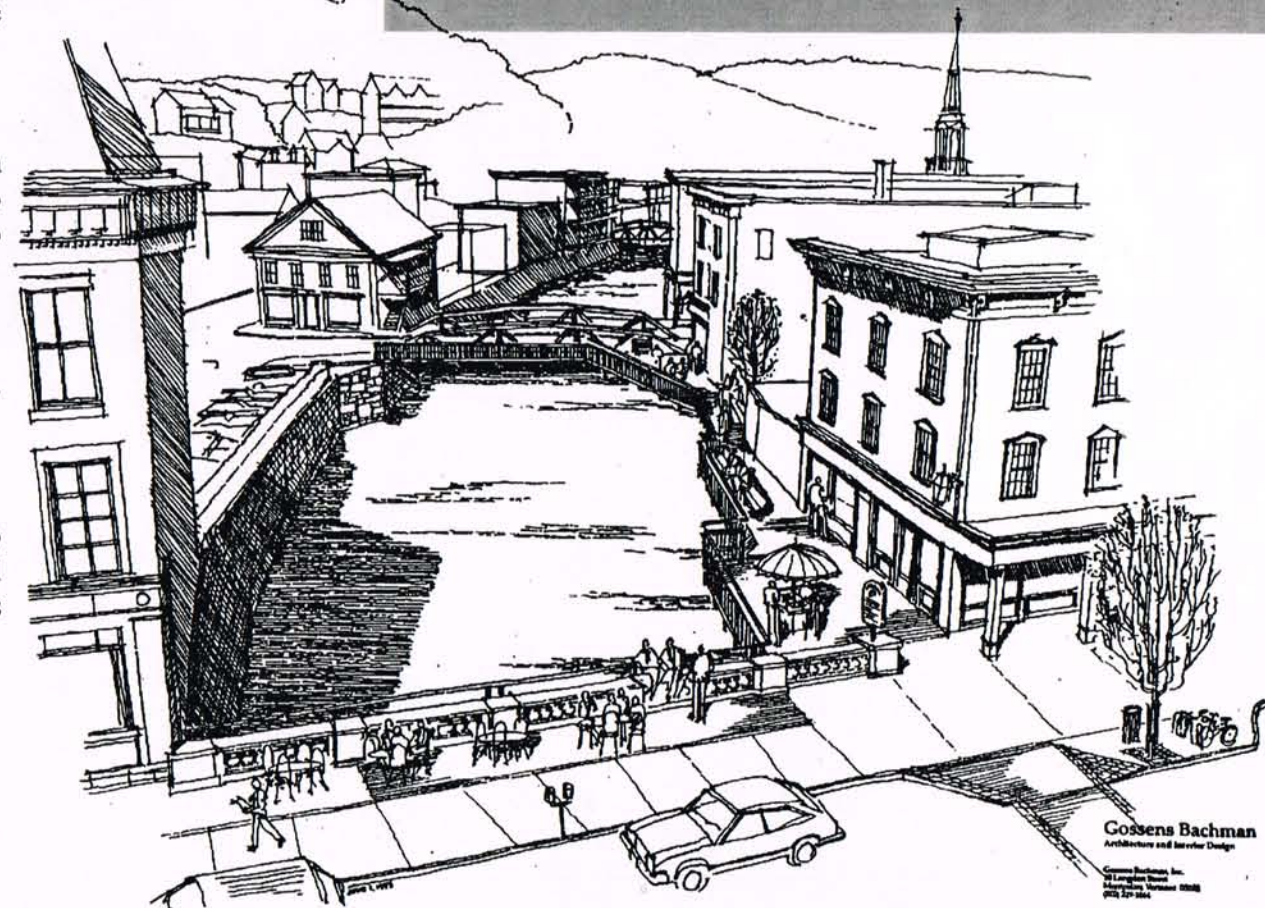
A new pedestrian pathway is developed from the Capitol Lawn to the new riverfront park. The new pathway uses the route of the former driveway, which is discontinued.

6. Enhancements to the Capital Grounds on State Street.

The Capitol Lawn along State Street is enhanced to create more gathering spaces and to improve the interface between the city sidewalks and the formal walkway to the Capitol building. A gathering space and plaza is located adjacent to the entrance walk, and links with the Pedestrian linkage walkway described above.



View from the Statehouse Lawn to the River



North Branch Riverwalk

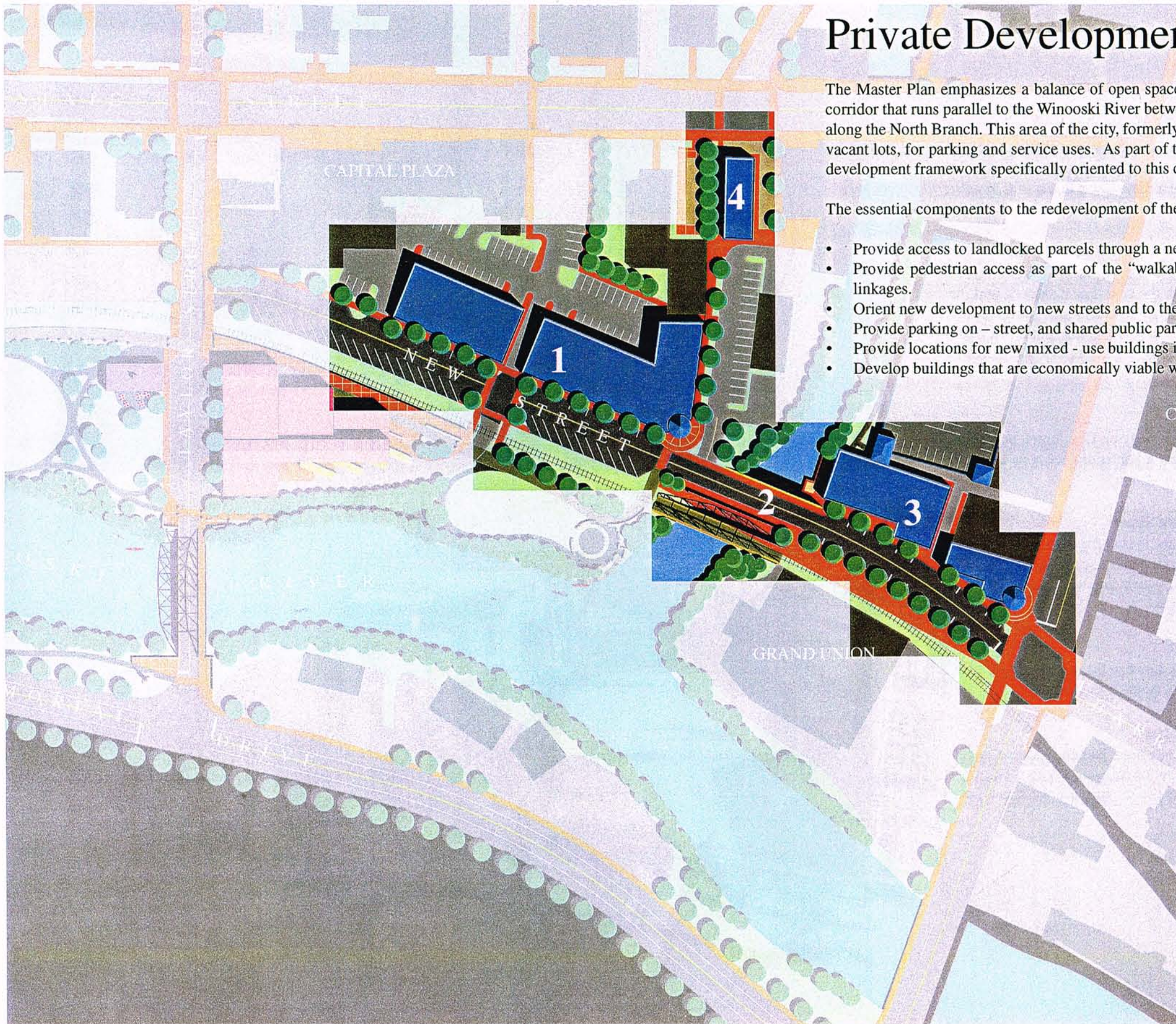
Gossens Bachman
Architects and Interior Design
21 Langdon Street
Montpelier, Vermont 05602
977-12-1114

Private Development

The Master Plan emphasizes a balance of open space and new development. Most of this occurs along a corridor that runs parallel to the Winooski River between Taylor Street and Main Street and turns upstream along the North Branch. This area of the city, formerly an industrial zone, is now a series of open, generally vacant lots, for parking and service uses. As part of the city's longtime desire to revitalize the riverfront a development framework specifically oriented to this corridor has been recommended.

The essential components to the redevelopment of the riverfront are to:

- Provide access to landlocked parcels through a new street connection.
- Provide pedestrian access as part of the "walkable" downtown with sidewalks and other pedestrian linkages.
- Orient new development to new streets and to the rivers.
- Provide parking on - street, and shared public parking to serve a whole riverfront revitalization district.
- Provide locations for new mixed - use buildings in an urban setting facing streets and sidewalks.
- Develop buildings that are economically viable while still compatible to the street's character.



Implementation of this plan will rely on a public/private partnership because current city development policies may preclude some development options that are beneficial:

- Setbacks will need to be reviewed so that buildings can be located curbside, consistent with the current urban fabric. Service and pedestrian alleys must be addressed in a similar fashion.
- Landscape requirements should favor an overall streetscape design rather than a parcel by parcel approach.
- Design review guidelines should encourage new construction to follow consistent guidelines for materials and scale, while still maintaining visual interesting and diversity.
- Buildings will need to be designed with parking underneath.

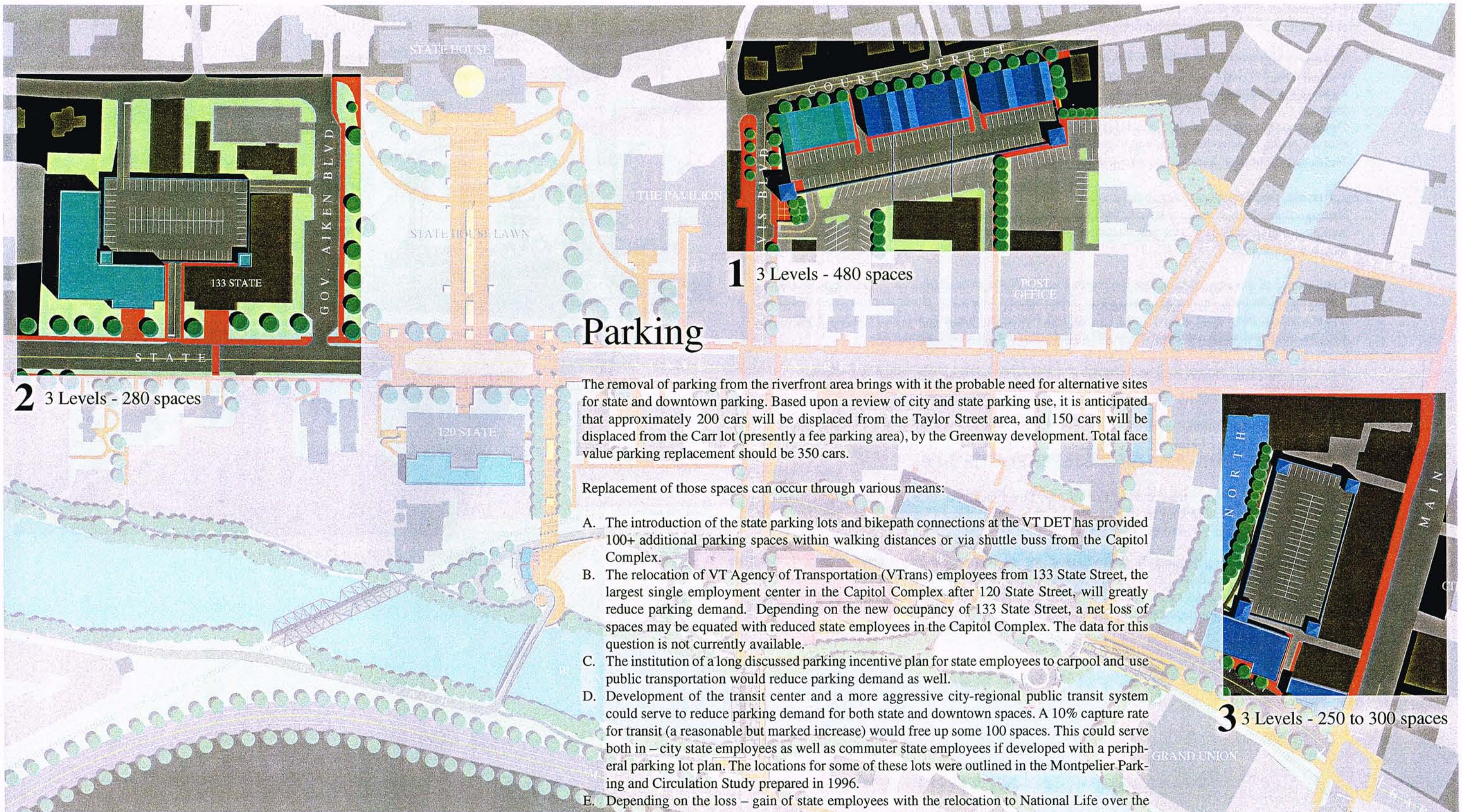
New Private Development: (key to the plan)

1. Frontage along the new street between Taylor and the North Branch provides locations for new buildings with programs of uses that include mixed-use for retail floor, offices and residential on the upper floors.
2. Continuance of the new street across the North Branch allows circulation from Main Street to Taylor Street and to the back lots behind State Street. Development of the new street requires the acquisition and removal of the former VT League of Cities and Towns building and M&M Beverage. Owners of both buildings indicated a willingness to sell contingent upon an agreed upon price.
3. Between the eastern bank of the North Branch and Main Street, there are several new building opportunities:
 - a free standing building near the river that could be developed in conjunction with a parking garage in the back lot behind Main Street
 - a second facing Main, the new street, and the Barre Street intersection
4. A building facing State Street and the end of Elm Street has been a long - standing potential. This building would include an alley to provide access to back - lot parking. Use of the alley could be for both pedestrians and vehicles until the new street was developed, and then pedestrian - only afterwards.

Parking integration: parking demand for the individual parcels will need to be creatively managed. It is possible that individual parcels will not be able to accommodate on - site parking requirements. In that case either off - site parking should be allowed elsewhere, or a public parking fee paid by the developers to allocate parking in newly developed parking structures.



New Private Development at Barre and Main Streets



1 3 Levels - 480 spaces

2 3 Levels - 280 spaces

3 3 Levels - 250 to 300 spaces

Parking

The removal of parking from the riverfront area brings with it the probable need for alternative sites for state and downtown parking. Based upon a review of city and state parking use, it is anticipated that approximately 200 cars will be displaced from the Taylor Street area, and 150 cars will be displaced from the Carr lot (presently a fee parking area), by the Greenway development. Total face value parking replacement should be 350 cars.

Replacement of those spaces can occur through various means:

- A. The introduction of the state parking lots and bikepath connections at the VT DET has provided 100+ additional parking spaces within walking distances or via shuttle buss from the Capitol Complex.
- B. The relocation of VT Agency of Transportation (VTrans) employees from 133 State Street, the largest single employment center in the Capitol Complex after 120 State Street, will greatly reduce parking demand. Depending on the new occupancy of 133 State Street, a net loss of spaces may be equated with reduced state employees in the Capitol Complex. The data for this question is not currently available.
- C. The institution of a long discussed parking incentive plan for state employees to carpool and use public transportation would reduce parking demand as well.
- D. Development of the transit center and a more aggressive city-regional public transit system could serve to reduce parking demand for both state and downtown spaces. A 10% capture rate for transit (a reasonable but marked increase) would free up some 100 spaces. This could serve both in – city state employees as well as commuter state employees if developed with a peripheral parking lot plan. The locations for some of these lots were outlined in the Montpelier Parking and Circulation Study prepared in 1996.
- E. Depending on the loss – gain of state employees with the relocation to National Life over the past 5 years, additional parking spaces for state employees and legislators may need to be made up in parking garage structures. Depending on the location of parking structures, their use allocations between the city, downtown and state could vary widely and there are distinct possibilities that “shared” facilities could be developed.

Key to future buildings:

1. Below Court Street,

A multi-level structure built into the hillside with new mixed-use development facing Court Street has been shown as a possible shared city-state-downtown parking structure. The garage could have a capacity for 480 cars on three levels and still remain below the level of Court Street, essentially behind the Union Mutual, Post Office and Thrush Tavern sites. A garage in this location would be centrally located for city and state activities, and close enough to the transit center for multi-day transit travelers. Shared use of this facility could either be on a space or level basis with allocation of the three levels to different users, or a seasonal component could be added depending on the peak parking demands – summer – fall for city uses, winter - spring for state/legislative uses.

2. 133 State Street

As part of the expansion of 133 State Street, there is the opportunity to develop a core parking garage within the center of the U shaped footprint. The garage would have a capacity of 280 spaces on three levels with entrance/exits on State Street level, Governor Aiken Blvd. and Baldwin Street level.

This structure would be for state use only.

3. Behind Main Street in the current public parking lot.

Two for parking structure alternatives.

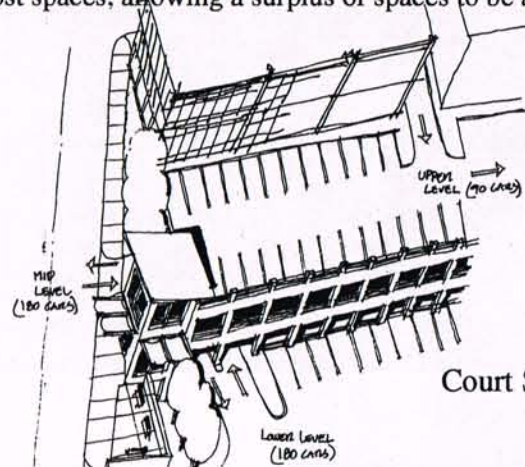
- A scheme that creates a parking structure that essentially “works around” the existing back building extension of the Aubuchon Hardware Store. This could be a multi story deck that goes over the top of the Aubuchon, leaving it undisturbed except perhaps for a different access route.
- A scheme that removes/rebuilds or relocates the Aubuchon building – and perhaps even accommodates other building extensions so that there can be an uninterrupted block for the parking structure.

The approximate capacity for a three-level garage in this location is 250 – 300 cars.

This structure would likely be for city/downtown use only.

Conclusion:

The amount of parking provided in Montpelier is dependent in large part upon public spaces provided to the city, and state employee spaces. It is entirely possible that a combination of employee incentives, parking management, and transit alternatives could make up for spaces lost to the development of a greenway along the Winooski River. It is also possible that a coordinated approach between the city and the state could more than make up for lost spaces, allowing a surplus of spaces to be allocated to new downtown businesses.



Court Street Garage across from the Pavilion

Future studies need to address parking and access in greater detail

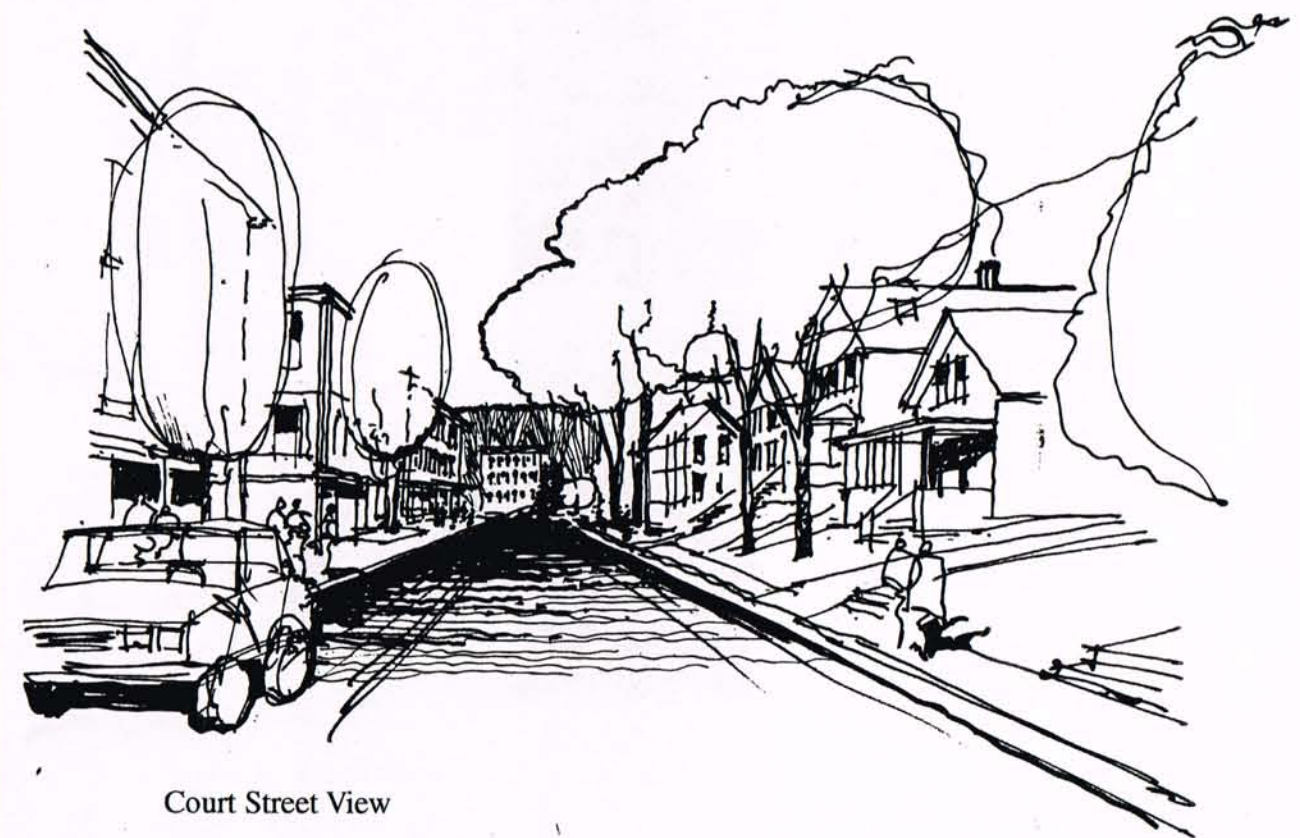
Outside the scope of this project is the technical analysis of traffic implications for the changes proposed. Changes to streets, parking areas, travel origins, destinations, and land uses impact traffic congestion and roadway / intersection capacities.

Traffic Analysis

It is highly recommended that the City/State Commission engage a traffic analysis study for the downtown in partnership with the CVRPC and assess the overall traffic issues in the downtown, as well as the changes to existing traffic patterns.

Parking needs

The supply and demand for downtown, state office, and legislature parking needs to be further studied and quantified for the purpose of assessing parking demands by peak day and months. A shared use program for the facility might need to base revenue sharing on a parking utilization study.



Court Street View

District Energy

District energy is one element of the Capital District Master Plan. Like other Master Plan elements, it is a bridge for cooperation and mutual benefit between the State of Vermont and the City of Montpelier.

What is district energy?

District energy is the use of local energy resources to meet community needs. In Montpelier, the core concept is *district heating*: the use of a central heating plant to supply heat and hot water to many buildings throughout the community. When the system is fueled with locally produced waste wood it benefits the broader community and becomes a *community energy system*.

In a district energy system, buried hot water or steam pipes are used to distribute thermal energy from the central plant to the customers. Each subscriber pays only for the energy they use. The system functions much like a municipal water supply system. Most subscribers will no longer need to use their own heating plants and fuel storage tanks.

What is the existing Capital District plant?

The Capital District of state buildings in Montpelier has been served by a district heating system for over fifty years. The plant is located behind 120 State Street, and is recognized by its tall brick stack. In addition to state buildings, it also serves the new Chittenden Bank building.

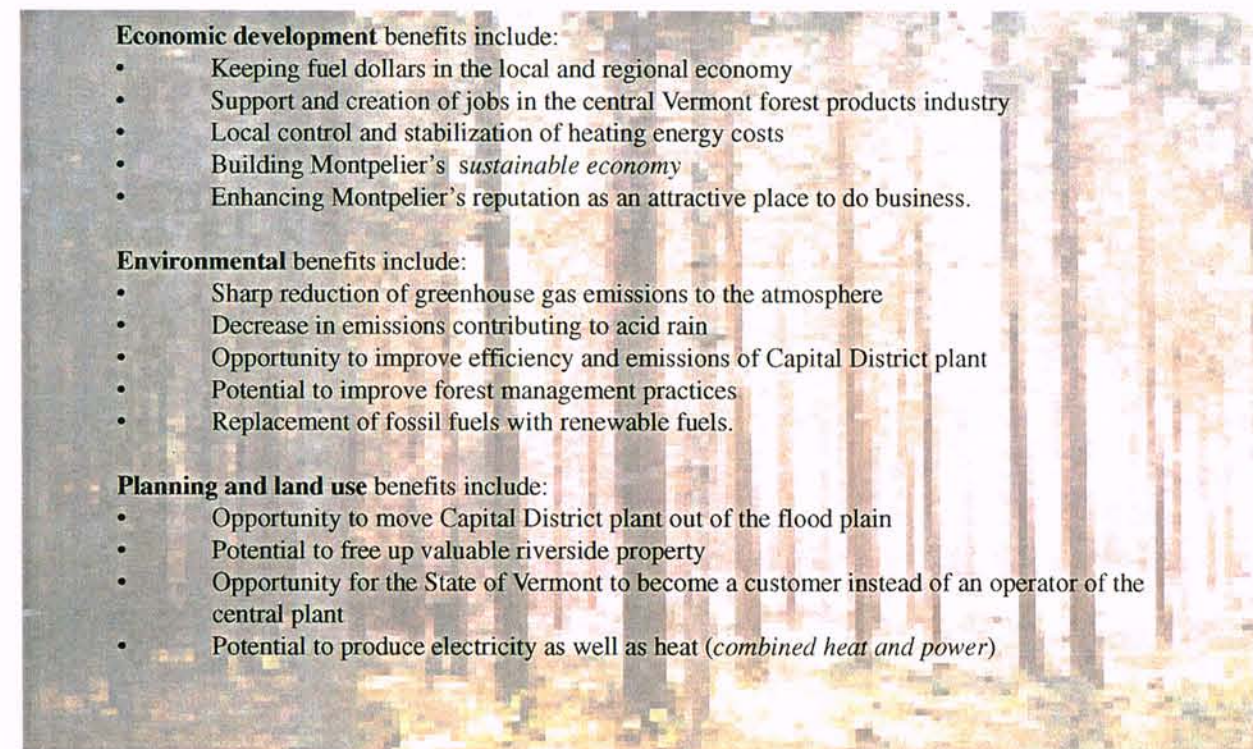
The Capital District Plant has used wood chips for its main fuel for the last fifteen years. The wood chips can come from either of two sources:

- Chipped sawmill waste wood
- Low-grade wood chipped in the forest as harvest by product



What are the benefits of a modernized or expanded system?

The Master Plan offers an opportunity for the benefits of wood-fired district energy to be extended to public and private buildings in Montpelier's downtown and nearby areas.



Economic development benefits include:

- Keeping fuel dollars in the local and regional economy
- Support and creation of jobs in the central Vermont forest products industry
- Local control and stabilization of heating energy costs
- Building Montpelier's *sustainable economy*
- Enhancing Montpelier's reputation as an attractive place to do business.

Environmental benefits include:

- Sharp reduction of greenhouse gas emissions to the atmosphere
- Decrease in emissions contributing to acid rain
- Opportunity to improve efficiency and emissions of Capital District plant
- Potential to improve forest management practices
- Replacement of fossil fuels with renewable fuels.

Planning and land use benefits include:

- Opportunity to move Capital District plant out of the flood plain
- Potential to free up valuable riverside property
- Opportunity for the State of Vermont to become a customer instead of an operator of the central plant
- Potential to produce electricity as well as heat (*combined heat and power*)

What would an expanded system look like?

District energy is nearly-invisible infrastructure. Distribution pipes can be buried under sidewalks or streets, in front or in back of buildings, or can be run through basements of connected buildings to save digging.

A community energy system would be able to serve major buildings (schools, city buildings, National Life of Vermont, large commercial buildings) as well as smaller commercial and institutional structures and apartment buildings. In the early phases of development, it is generally not cost-effective to serve single-family residences.

Benefits:

- Least cost site for expansion of district heating
- Utilize existing infrastructure (building, fuel storage, boilers, chimney)
- Close to downtown and State buildings
- Easy to provide steam to existing heat distribution piping for State buildings

Drawbacks:

- Existing boilers functional but inefficient
- Existing boilers have relatively poor stack emissions
- Plant located in the flood plain
- Takes up prime riverside real estate (including space for fuel delivery trucks)
- Combined-heat-and-power potential limited (joint production of heat and electricity)

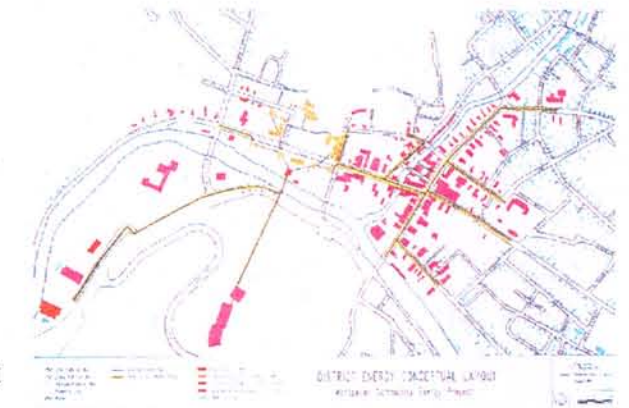
New Plant Location

While reusing the existing central plant will involve compromises in the efficiency and operation of the plant, a new facility in a new location allows for an optimal system to be built. A new central plant could be a model wood-burning facility, with high-efficiency, low-pollution boilers and the possibility of producing heat and electricity.

Benefits and drawbacks of a new central plant location are presented Below

Benefits:

- Could be located out of downtown, out of the flood plain
- Frees up riverside location for other uses
- Gets fuel delivery truck traffic out of Montpelier
- Easier to build state-of-the-art system: high efficiency, low emissions, combined-heat-and-power production
- Provides opportunity to upgrade state steam distribution system to hot water



Drawbacks:

- The further from downtown, the higher the capital cost (for buried piping)
- More expensive than recycling existing plant
- May be difficult to find a good site that is also available for use
- More difficult to continue providing steam to state buildings

Economic Development Benefits:

Using wood in an expanded Capital District energy system will:

- Increase income in Central Vermont by \$1.2 million annually
- Increase local, state and federal tax revenues by over \$200,000
- Create 25 jobs

(Using data from a 1994 DOE-funded study, *Economic Impact of Wood Energy in the Northeastern States*.)

How big will it be?

- Number of Montpelier buildings to be served: 150
- Square footage to be served:

Existing State buildings	500,000 sq. ft.
New State buildings	240,000 sq. ft.
Downtown buildings	2,000,000 sq. ft.
- Central plant fuel consumption:

Wood chips	26,500 tons
Fuel oil	300,000 gallons

V. Implementation

City State Commission Master Plan
Implementation Plan Matrix

Phase	Description	Planning	sitework	Constr. cost	FFE cost	Constr. cost	Constr. cost	sitework	City	State DBGS	State VAOT	CVRPC	Private NFP	Private Devt.	Fed. CDBG	Fed. TEA 21	Other Fed.	VAOT STIP	VAOT Discretionary	VAOT enhancements	VAOT bike /pd.	VTDBGS	State Comm. Devt.	State Hsg. Cons. Fund	Other state	City financed	Private Development	
									Responsible party																			
									Funding sources																			
3D	Street Improvements																											
	New Street Extension from Taylor to North Branch: 1200 ft.	\$112,500		\$750,000																								
	North Branch Bridge: 150 ft.	\$120,000		\$800,000																								
	No. Branch to Main Street: 600 ft.	\$30,000		\$200,000																								
	State Street Improvements	\$75,000		\$500,000																								
	subtotal	\$1,006,875		\$6,693,750																								
3E	new infill buildings.																											
	Acquisition and removal of the former VLCT bldg.	\$44,250		\$295,000																								
	Acquisition and removal M&M Beverage	\$60,000		\$400,000																								
	New building near the river					\$2,250,000		\$562,500																				
	New building on corner of Main and Barre Street					\$2,500,000		\$625,000																				
	New building facing State Street and the end of Elm Street					\$2,000,000		\$500,000																				
	facing new Street: 18,200 SF					\$2,275,000		\$568,750																				
	facing new Street: 28,000 SF					\$3,500,000		\$875,000																				
	Parking below (above 2) buildings					\$2,250,000		\$562,500																				
	Court Street: 32,000 sf					\$4,000,000		\$1,000,000																				
	Court Street: 14,000 sf					\$1,750,000		\$437,500																				
	subtotal	\$104,250		\$695,000		\$20,525,000		\$5,131,250																				
3F	Pedestrian Linkages																											
	Northbranch Riverwalk between State Street and Langdon Street	\$46,500		\$310,000																								
	Extension of Winooski West Bikepath	\$37,500		\$250,000																								
	Pedestrian link from Christ Church park	\$22,500		\$150,000																								
	Links from bike path to both State Street and Main Street	\$37,500		\$250,000																								
	second ped. bridge over North Branch	\$22,500		\$150,000																								
	subtotal	\$166,500		\$1,110,000																								
3G	Transit Center																											
	2,500sf minimum program for tickets and waiting	\$52,500	\$100,000	\$250,000				\$100,000																				
	additional 2,500 sf for visitor space	\$37,500		\$250,000																								
	Capital City Visitors Center/ Exhibition Center	\$0					\$5,250,000																					
	Berthing space for a minimum of 3 - 5 55' long buses	\$15,000	\$100,000					\$100,000																				
	Parallel parking for shuttle bus stops and taxi standing	\$7,500	\$50,000					\$50,000																				
	A covered passenger platform	\$22,500	\$150,000					\$150,000																				
	Sidewalk connection to State and Main Streets	\$11,250	\$75,000					\$75,000																				
	subtotal	\$146,250	\$475,000	\$500,000				\$5,250,000																				
3H	Parking for State Employees and Downtown Businesses																											
	Below Court Street,	\$1,080,000		\$7,200,000																								
	133 State Street	\$630,000		\$4,200,000																								
	Behind Main Street in the current public parking lot.	\$630,000		\$4,200,000																								
	Traffic Analysis:	\$35,000																										
	Parking needs	\$20,000																										
	subtotal	\$2,395,000		\$15,600,000																								
	totals	\$5,548,875	\$13,312,500	\$50,698,750	\$2,500,000	\$41,050,000	\$10,500,000	\$11,212,500																				
	total public improvements and state facilities	\$72,060,125																										
	total value private development	\$51,550,000																										

City State Commission Master Plan Implementation Plan Matrix

Phase	Description	Planning	sitework	Constr. cost	FFE cost	Constr. cost	Constr. cost	sitework	Responsible party	Funding sources																				
1	funding, management and planing	public	public	public	state	private devt.	NFP	private	City	State DBGs	State VAOT	CVRPC	Private NFP	Private Devt.	Fed. CDBG	Fed. TEA 21	Other Fed.	VAOT STIP	VAOT Discretionary	VAOT enhancements	VAOT bike /pd.	VTDBGs	State Comm. Devt.	State Hsg. Cons. Fund	Other state	City financed	Private Development			
	land appraisals	\$25,000																												
	secure fed. and state funding sources	\$15,000																												
	stakeholders coordination: city	\$25,000																												
	stakeholders coordination: State employees union	above																												
	stakeholders coordination: VAOT	above																												
	stakeholders coordination: CVRPC	above																												
	stakeholders coordination: private prop. owners	above																												
	subtotal	\$65,000																												
2	Permitting	fees in cost below																												
	City Design Review																													
	City Site Plan Review																													
	City Zoning revisions/ amendments																													
	VT ANR Permits: stream alteration																													
	VT ANR Permits: Stormwater discharge																													
	Fed. Permits: Cond. Use det. (wetlands)																													
	Fed. Permits: Section 106 review																													
	Fed. Permits: 4F Review																													
	Fed. Permits: Categorical exclusions																													
	Natural heritage sites																													
	critical wildlife habitat																													
	Act 250																													
	floodplains																													
3	Construction:																													
3A	Winooski River Greenway																													
	Walking Trail connection from Bikepath bridge to Bailey Avenue.	\$6,250		\$25,000																										
	Reorg. of state parking areas for aesthetics and ped. circ.	\$25,000		\$100,000																										
	Refinements to Winooski West - East Bikepath.	\$62,500		\$250,000																										
	Pedestrian Linkage from the Capital to the River.	\$62,500		\$250,000																										
	Enhancements to the Capital Grounds at State Street.	\$37,500		\$150,000																										
	A linked series of public parks and public space	\$187,500		\$750,000																										
	subtotal	\$381,250		\$1,525,000																										
3B	Vermont State Office Facilities																													
	Addition to 133 State Street, 5 stories, 90,000SF	\$281,250	\$2,812,500	\$11,250,000	2,800,00			\$0																						
	Taylor Gateway building relocated baggage building	\$0	\$0	\$0				\$0																						
	Court Street: Pavilion Addition, 3 stories, 33,000 SF	\$103,125	\$1,031,250	\$4,125,000	NA			\$0																						
	New Garage	\$105,000	\$1,050,000	\$4,200,000				\$0																						
	Rear Addition to 120 State Street, 4 stories, 40,000 SF	\$125,000	\$1,250,000	\$5,000,000	1,250,000			\$0																						
	subtotal	\$614,375	\$6,143,750	\$24,575,000	\$1,250,000																									
3C	City Gateways																													
	A Memorial Drive Boulevard:	\$20,000	\$200,000																											
	City Gateways: Bailey Street	\$7,500	\$75,000																											
	City Gateways: Taylor Street	\$20,000	\$200,000																											
	City Gateways: Main Street	\$7,500	\$75,000																											
	subtotal	\$669,375	\$6,693,750																											

VI. Appendix

MONTPELIER DISTRICT ENERGY

Central Plant Location Options

There are two possibilities for the location of an expanded central heating plant, each with its own benefits and drawbacks. The existing plant (located behind 120 State Street) could be retained, expanded and modernized. Or, a new plant could be built at another location.

Existing Plant Location

The existing plant has one wood boiler and two oil boilers, and has served the Capital Complex of State office buildings for 50 years. There is enough boiler capacity to meet a modest increase in use of the plant, but not enough to serve buildings in downtown Montpelier. To be used for an expanded district heating system, the building would need to be enlarged and a new, efficient wood boiler would need to be installed.

Introducing Biomass District Energy for Communities

Canada and the United States are some of the highest per-capita energy users among developed nations, relying heavily on fossil fuels and electricity to meet their heating and cooling needs. Concerns about the future costs and availability of fossil fuels, combined with a heightened awareness of the environmental risk associated with their use, are prompting many communities in these two countries to seek alternative ways of meeting local energy needs.

One attractive alternative is *biomass district energy*, the fueling of community energy systems with locally produced biomass. This promising approach is a positive marriage of two mature technologies: district energy and biomass-fueled systems.

This guide introduces communities to the concept of district energy, and it shows the potential advantages of modern, biomass-fueled systems.

What Is District Energy?

District energy systems use one or more central plants to provide thermal energy to multiple buildings. This approach replaces individual, building-based boilers, furnaces and cooling systems.

With a district energy system, thermal energy -- in the form of hot water, steam or chilled water -- is distributed by underground pipelines from the central plants to each of the connected buildings. Energy is extracted at the buildings and the water comes back to the central plants, through return pipes, to be heated or cooled again.

The concept of district energy dates as far back as ancient Rome, where hot water was used to heat public baths and other buildings. Urban steam systems first became common about 100 years ago (the first North American system was built in 1877) -- and modern hot water systems have been used extensively in Europe since the 1970s. Today, as modern district energy rapidly gains acceptance, systems are being built in increasing numbers in cities and communities across North America.

District heating systems can provide space heating and domestic hot water for large office buildings, schools, college campuses, hotels, hospitals, apartment complexes and other municipal, institutional and commercial buildings. Systems can also be used to heat neighborhoods and single-family residences. Some district energy systems have the capability to supply steam to industrial customers for "process heat," while others capture low-grade waste heat from industry to sell to other customers. Municipalities can incorporate district energy into the infrastructure of their downtown business districts, or encourage its use in new developments, such as office building complexes and industrial parks.

District energy plants can be designed to produce not only energy for heating and cooling, but also electrical power. This is called *combined heat and power*, or *CHP*. CHP plants are able to get more usable energy out of the input fuel than a plant that only produces electricity. In general, the efficiency of central power plants is low, with only 30-40% of the fuel converted to useful energy. Electricity production should always be considered when a district heating

system is being planned.

Why Should a Community Choose District Energy?

District energy can be a significant community asset, and it can offer benefits to individual system customers as well.

Some **community benefits** include:

- *Fuel flexibility and access to fuels.*

District heating provides access to a much wider variety of energy sources -- including fossil fuels, industrial waste heat and locally produced renewable fuels -- than is available to individual buildings. District energy gives both large and small users access to low-cost fuels.

- *Low, predictable energy costs.*

Through bulk purchasing, access to the least-costly fuels and efficient central operation, district energy systems provide thermal energy at stable rates that are often lower than the price of fuel purchased by individual users.

- *Better air quality.*

Air quality improves -- as does community livability -- when emissions from a single, well-managed plant replace uncontrolled stack emissions from boiler plants in many individual buildings.

- *Community revitalization.*

District energy infrastructure and stable rates improve a community's business climate, make local businesses more competitive, and help to revitalize downtowns and urban core areas so they can better compete with suburban sprawl.

District energy also offers several important **advantages to the customer**:

- *Simplified operation.*

With district heating, the individual building owner does not need to own and maintain a heating plant, or to procure and store fuel on-site. The "hassles" associated with operating a heating plant disappear. For large customers, on-site system operators (stationary engineers) may no longer be needed. Capital expenses for heating-plant equipment are also avoided.

- *Reliability.*

District energy systems have an unparalleled record of reliable service to users. They achieve this by well-managed central plant operation, by the use of multiple fuels, by having backup boilers in one or more locations, and by having standby power at the central plant.

- *Price stability.*

Compared to the purchase of fossil fuels by individual users, a central district energy system offers customers long-term price stability. District energy can also be a powerful means to make *renewable fuels* available to large numbers of buildings. And although district energy systems can use many different fuels and forms of energy, this guide focuses on district energy systems fueled with biomass.

Why Use Biomass for District Energy?

Using local energy resources for district energy systems makes sense because it keeps energy dollars in the local economy. Communities considering district energy should first consider whether local industries might produce saleable waste heat, or whether a local electricity-generating plant might be retrofitted for CHP operation. Many communities, however, will not have these resources in close proximity to their area of concentrated heat load. In many of these cases, locally produced biomass may be a more realistic source of energy for district heating.

Biomass refers to biological matter that can be burned for energy. Biomass fuel includes wood chips, bark, sawdust,

other wood-product industry wastes, urban and forestry tree thinnings, cordwood, some clean forms of municipal solid waste, landfill gas, animal manure, agricultural crop residues, food processing wastes and energy crops (grasses or fast-growing trees). Not all communities will have access to many of these forms of biomass. Most communities, however, will find that at least some are available from local sources.

Using Byproducts, Protecting Forests

Mill residues and whole tree chips are available in many areas where logging operations are common and there is a viable forest product industry.

The increased use of these forms of biomass for energy does not require more forest harvesting, since they are byproducts of activities that are already going on.

Any district energy project that uses whole tree chips from the forest should put in place protections to assure that responsible forest harvest practices are being used, including reforestation, replanting and creating a favorable environment for natural forest regeneration.

In many parts of North America, large quantities of biomass are available in two particular forms: sawmill wastes and chipped low-grade wood (also known as *whole tree chips*) from forest harvesting operations. Sawmill wastes include wood chips (from wood that is not of high-enough quality to be made into lumber), sawdust and bark. Whole tree chips are made in the woods from logs or parts of logs that are not of commercial quality. Both mill residues and whole tree chips can be considered low-grade "waste wood," suitable to burn for energy.

Biomass district energy, then, is the use of locally available biomass as the primary fuel for a district heating system. In certain specialized situations, biomass can also be the energy source for cooling. When the central biomass heating plant is designed to produce heat and electrical energy, this is called *biomass CHP*.

Combining the two mature technologies of clean-burning biomass combustion plants and modern district energy provides a community with added benefits beyond those supplied by district energy alone.

Additional Benefits of Linking Biomass and District Energy:

- *Increased community wealth.*

Using locally produced biomass can significantly increase community wealth by replacing dollars now spent on fossil fuels, and thus exported from the local economy, with dollars spent on fuels produced in the regional economy.

- *Locally priced energy.*

The use of locally managed resources provides more secure energy prices for a community, with less impact from global forces and events. In many cases, biomass is also the least costly fuel available.

- *Positive action on climate change.*

Biomass fuels can be a key component of a community's climate-change effort, since burning sustainably produced biomass adds no net carbon dioxide to the atmosphere -- unlike the burning of gas, oil, or coal.

- *Job creation.*

Combining district heating with biomass supports and can create jobs in the forestry sector, creates construction jobs when systems are built, and creates new jobs in plant operation and system extension.

- *Solid waste reduction.*

Some forms of biomass are currently being treated as wastes. Burning them for energy solves a waste disposal problem and the related environmental impact at the same time that it meets an energy need.

Enhancing the Forest Resource

At a time when the critical importance of protecting our natural resources is receiving more and more attention, it may seem irresponsible to suggest that forest biomass can play an increased role in meeting our energy needs. This section addresses that concern -- and it demonstrates how the use of low-grade forest wood for energy can complement society's use of higher-grade wood for other purposes.

Since the earliest days of human history, from the first use of wood as a source of heat to its succeeding role as a provider of lumber, wood products, paper and energy, forests have helped to sustain humanity. This unique resource can be *both* used *and* regenerated. Much of the original forests of North America were cleared to open land for settlement; but large areas of forest still exist, while once-open land in many other areas has grown back to woods. These forests continue to provide our population with fuel, recreation, wood products and energy.

Forest biomass is the most common and most likely form of biomass to be used in district energy systems. For this reason, it is important to consider carefully the impact of this new use on the health and long-term sustainability of the forest resource.

The "Full Use" Philosophy

Native people across Canada and the United States share a traditional belief in making full use of anything that is taken from nature, leaving nothing to waste. Today we can adopt this environmental philosophy in the way we use and protect our forest resource.

In Canada and the United States, some forestlands have been set aside as protected wilderness areas, while others are used to produce commodities. When forest lands are harvested for lumber, it is good policy to make the best possible use of the harvest byproducts -- such as chipped waste or low-grade wood, sawdust and bark -- while leaving sufficient volumes of tops and branches in the forest to replenish soil nutrients. Although some of these byproducts have markets in paper production, or for uses like animal bedding or landscaping mulch, it makes sound economic and environmental sense to burn the remaining wood-harvest byproducts for energy.

Many parts of North America are particularly good candidates for the increased responsible use of wood byproducts for energy. In some regions, forests are growing in area; in others, sawmill or harvest byproducts are under-utilized and contribute to a significant waste disposal problem. In many areas, the volume of forestry byproducts is so great that it can readily accommodate large increases in the use of low-grade wood for energy.

Keeping the Forest Healthy

Careful human use of the forest resource is compatible with the idea of a healthy forest. The conscious effort required to both use the forests *and* sustain them for the long term is also an opportunity to keep the resource healthy through responsible forest management.

The commercial use of our forests involves harvesting trees and turning the wood into useful products and energy. For this activity to be sustainable, forestry practices must include:

- preventing soil erosion;
- replanting trees, or creating favorable conditions for regeneration;
- leaving adequate biological matter in the forest (tops, leaves and branches); and
- maintaining species diversity.

As logged areas regenerate, or as younger uncut trees grow to maturity, good forest management plays an important role in building and maintaining the health and vigor of the forest.

Using for energy the least commercially valuable forestry residues (including deformed trees or diseased wood) is part of a full-use strategy. Making conscious decisions to optimize the products, byproducts and energy that can be produced by the forest resources goes hand-in-hand with good forest management.

District energy provides a new market for low-grade wood, and increases the opportunities for sustainable forest management -- which in turn builds healthier forests.

Achieving Sustainable Forest Practices

Any significant increase in the use of forest biomass should be accompanied by some means of assuring that the forest resource is not damaged and is sustained for future generations. Even though regulatory controls on logging operations may not always be well-received or effective, other approaches have been proven to work.

Biomass district energy systems have adopted *wood procurement standards*, spelling out specific practices that must be followed by suppliers who provide fuel to the system.

As an example, the McNeil Generating Station in Burlington, Vermont, one of the world's largest biomass-fired generating plants, operates under a state permit that requires it to employ foresters to enforce strict wood procurement standards.

The Amount of Wood Fuel Available for Energy

Is there enough wood in your region to fuel a new biomass district energy system for your community? Vast areas of Canada, the eastern United States and the northern-tier U.S. States are forested. Canada alone accounts for 10% of the world's forestland. Even states and provinces that are not heavily forested do have areas with commercial logging and a significant forest-product industry.

In many areas, the amount of new wood that grows each year exceeds the amount that is cut for lumber, other products and energy. This "excess" growth, which results both from the growth of individual trees and from land reverting to forest, may be available for increased, responsible harvesting for both wood products and energy. When considering wood use for a particular district energy project, it is necessary to assess carefully the capacity of the local forest resource, and the forest products industry, to supply fuel. Local forestry officials can supply federal, state, or provincial/territorial data on the size, use and availability of the resource. These officials can help your community determine if there is an adequate supply to meet the needs of the project you are considering.

Forests, Wood Fuels and Climate Change

The Industrial Revolution of the 19th Century began the large-scale extraction and burning of coal, oil and gas. Continuing to this day, fossil-fuel combustion has added huge amounts of carbon dioxide to the atmosphere. Over the last 200 years, atmospheric CO₂ levels have increased 30 percent. CO₂ is one of the "greenhouse gases" most responsible for global warming and climate change. Since growing trees take up carbon out of the atmosphere, healthy forests play an important role in countering the global buildup of atmospheric CO₂.

If the forests involved are managed and harvested sustainably, replacing the use of fossil fuels with the burning of forest biomass for energy will result in a net decrease of CO₂ levels in the atmosphere. Even though all fuel combustion -- whether of a fossil fuel or of biomass -- results in CO₂ coming out the stack and entering the atmosphere, the overall effect of wood burning is very different from that of fossil fuels.

Burning fossil fuels takes carbon that was locked away underground as crude oil, gas, or coal, combines it with oxygen, and discharges the resulting CO₂ to the atmosphere, where it accumulates. In the natural world, trees and other forms of biomass remove CO₂ from the atmosphere, store the carbon while they live, and release it back to the atmosphere as they decay on the forest floor. This process is called the *carbon cycle*. Burning sustainably produced wood recycles carbon that is already in the carbon cycle. As long as trees are replanted or regenerate to replace harvested trees, the combustion of forest biomass for energy adds no new CO₂ to the atmosphere.

Fully utilizing our forest harvests can bring multiple benefits to society. Long-lived products made out of wood lock up carbon and help to reduce the level of CO₂ in the atmosphere. When the waste wood from harvesting is used for energy, and high-grade wood is made into durable products, atmospheric CO₂ concentrations are reduced, wastes are utilized, non-renewable fossil fuels are conserved, beneficial products are produced, and the forest is kept healthy.

Biomass Energy and a Sustainable Future

If we try to conceive a positive vision of the future, in which the world's population can be well-accommodated over the next century and beyond, it seems inevitable that we will rely on renewable resources. While certain public forestlands will continue to be set aside as wilderness areas, others will continue to be harvested and used for lumber, paper and wood products. We will undoubtedly find new productive uses for waste wood and other forest byproducts. It also seems highly advantageous to continue using low-grade forest wood residues and recycled wood for energy. Society will have to find alternatives to burning fossil fuels to produce energy. Although new buildings that require very little heat will be designed and built, those of us who live in colder climates will continue to need combustion fuel for space heating. Biomass district energy systems are ideally suited for this purpose.

State Department Space Use by Agency

		EXISTING			ADDITIONAL FUTUR
AGENCY OR DEPARTMENT	LOCATION	AREA			
ADMINISTRATION					
Administration Secretary	Pavilion Building - 109 State	1,581	1,581	NR	NR
Buildings & General Services	Pavilion Building - 109 State	3,532			
	122 State	6,085			
	Adams House - 128 State	5,750			
	House & Garage - 132 State	450			
	Administration Building - 133 State	19,298			
	6 Baldwin	6,231			
	House - 10 Baldwin	2,253			
	Warehouse - 10 Taylor	2,325			
	2 Governor Aiken Drive	8,350			
	4 Governor Aiken Drive	5,275			
	US Rte. 302	6,500			
Travel Information Center	134 State	2,650			
	Central Heating Plant	6,825	75,524		2,700
Finance & Management	Pavilion Building - 109 State	3,992		0	
	Administration Building - 133 State	3,755	7,747	0 ¹	0 ¹
GOVnet	House - 10 Baldwin	1,657	1,657	843	843
Personnel	56 East State	3,000			
	Personnel Building - 110 State	8,250			
	Administration Building - 133 State	3,148	14,398		500
Tax Department	Pavilion Building - 109 State	38,194		0	
	Pavilion Building - 109 State	2,486	40,680	0	0
Agriculture, Food and Markets	Agriculture Building - 116 State	16,250	16,250	1,250	1,250

Banking, Insurance and Securities	89 Main	14,562			0	
Health Care Administration	89 Main	3,735	18,297		0	0
Commerce and Community Development	1 National Life	18,668			2,620	
Tourism & Marketing, Vermont Life	House - 6 Baldwin	14,477	33,145		0	2,620
Defender General	141 Main	4,100	4,100		820	820
Education	State Office Building - 120 State	27,672			0	
	Capitol Plaza - 100 State	3,000			0	
Storage	Adams House - 128 State	400	31,072		0	0
ELECTED OFFICES						
Governor's Office	State Capitol & Annex - 115 State	1,799			0	
Governor's Office - Executive Offices	Pavilion Building - 109 State	11,007			0	
Governor's Office - Policy Research	Pavilion Building - 109 State	2,050			0	
Governor's Office - Nat'l Community Service	Administration Building - 133 State	577	15,433		0	0
Lt. Governor	State Capitol & Annex - 115 State	761	761		0	0
Attorney General	Pavilion Building - 109 State	17,901	17,901		1,790	1,790
Auditor of Accounts	House & Garage - 132 State	2,394	2,394		0	0
Secretary of State	Redstone Building - 26 Terrace	8,615			0	
	81-83 River	3,500	12,115		0	0 ²
Treasurer	Administration Building - 133 State	8,147			3,259	
Retirement	Administration Building - 133 State	3,484	11,631		incl above	3,259
Employment & Training	4 Green Mountain Drive	40,000			0	
	National Life Drive	5,000	45,000		0	0
Enhanced 9-1-1 Board	58 East State	1,650	1,650		1,000	1,000
Film Commission	House - 10 Baldwin	140	140		420	420

State Department Space Use by Building

BUILDING	SS AREA (s.f.)	DEPARTMENT	BUILDING	N.TOTALS
			NET (s.f.)	
56 East State	4,500	Personnel	3,000	4,500
		Enhanced 9-1-1 Board	1,500	
100 State	1,354	Tax	304	1,354
		Public Service Board	350	
		Public Service Department	700	
Pavilion Building - 109 State	124,188	Administration Secretary	1,581	115,634
		Bldg. & General Services	3,532	
		Finance & Management	3,992	
		Tax - Office	26,495	
		Tax - Storage	2,486	
		Development & Comm. Affairs	11,699	
		Attorney General	17,901	
		Executive Offices	11,007	
		Office of Policy Research	2,050	
		Libraries	13,841	
		Vermont Historical Society	21,050	
Personnel Building - 110 State	11,675	Personnel	11,675	11,675
Library & Supreme Court 111 State	38,284	Court Administrator	7,030	34,322
		Supreme Court	12,228	
		Libraries	15,064	
112 State	22,662	Public Service	20,931	21,640
		Vacant	709	

State Capitol & Annex 115 State	62,418	Governor	1,799	51,457
		Lt. Governor	761	
		Legislative Council	7,363	
		Legislature	32,273	
		Sergeant at Arms	9,261	
Agriculture Building - 116 State	22,550	Agriculture	16,250	16,250
House - 118 State	4,817	Fair Hearing Office	979	3,992
		Transportation	937	
		Vermont Veteran's Affairs Office	1,116	
		Vermont Veteran's Affairs Office-	960	
State Office Building 120 State	75,672	Motor Vehicles	40,402	70,150
		Education	27,672	
		Social & Rehab. Services	2,076	
122 State	7,825	Bldgs. & General Services	6,085	6,085
126 State	5,665	Governor's Comm. On Status of VFW	1,745	3,490
		VFW	500	
		America Legion	700	
		America Legion Auxiliary	545	
Adams House - 128 State	9,250	Bldg. & General Services	5,750	7,900
		Education	400	
		Motor Vehicles	1,750	
House & Garage - 132 State	3,950	Bldgs. & General Services	450	2,844
		Auditor of Accounts	2,394	
Administration Building 133 State	103,160	Bldgs. & General Services	19,298	3,484
		Finance & Management	375	
		Personnel - Payroll	3,148	
		Governor's Office	577	
		Treasurer	8,147	
		Social & Rehab. Services	1,626	
		Retirement & Social Security	3,484	

Transit Center Site Location Evaluation

Number	Name of Site	Location	Type of Facility Suitable at Site	Existing Use	Utilities	Ownership	Proximity to I-89	Proximity to Downtown	Proximity to Capitol Complex	Connection to Other Modes	Bike Path & River Connection	Visibility of Site	Overall Suitability of Site	Meets Project Purpose	Comments	Numerical Score	Rank	Name of Site
1	State Street	In front of the Vermont Tourist Info Bureau	Bus Stop	Municipal Parking Spaces	Yes	City	Good	Acceptable	Excellent	Average no rail connection / no tour bus space	None	Good	Below Average no parking; no rail or river connection	No	Removes public on-street parking. Long walk to downtown.	16	5	State Street
2	State Street	Behind Vermont Tourist Info Bureau	Bus Stop	State Parking Lot	Yes	State	Good	Poor	Excellent	Poor no rail connection	None	Poor	Below Average no parking; no rail or river connection	No	Removes parking used by state employees. Long walk to downtown.	9	7	State Street
3	Taylor Street	Vermont Transit ticketing trailer on Carr Property	Bus Station or Intermodal Center	Bus Stop and city parking lot	Yes	Private	Good	Excellent	Excellent	Excellent bus, rail, shuttle, taxi	Excellent	Very Good	Good near parking and rail connection	Yes	Site is tight due to narrow dimension between rail and river. Question if final design will work.	30	2	Taylor Street
4	DET Peripheral Lot	Green Mountain Drive	Bus Station or Intermodal Center	State Parking Lot	Yes	State	Excellent	Poor	Poor	Good no rail connection	Excellent	Excellent	Good near parking; rail proximity an issue	No	Far from downtown and Capitol Complex. Poor pedestrian connection to work centers.	21	4	DET Peripheral Lot
5	Taylor Street	Across from Vermont Transit trailer on State property.	Bus Station or Intermodal Center	State Parking Lot	Yes	State	Good	Excellent	Excellent	Excellent bus, rail, shuttle, taxi	Excellent	Very Good	Excellent near parking and rail connection	Yes	Removes potential office site and potential greenway area along river	32	1	Taylor Street
6	Taylor Street	Behind Chittenden Bank on State Property	Bus Station or Intermodal Center	State Parking Lot	Yes	State	Good	Excellent	Excellent	Excellent bus, rail, shuttle, taxi	Below Average	Good	Average	Yes	Too close to existing and proposed buildings. Requires two at-grade crossings of rail line. Not optimum situation.	24	3	Taylor Street
7	Court Street	Behind Thrush Tavern	Bus Station	Municipal Parking Lot	Yes	City	Poor	Acceptable	Excellent	Good bus, shuttle, taxi but no rail	None	Poor	Below Average	No	Better site for parking garage and office development. Joint site development possible. Poor pedestrian connection to downtown.	11	6	Court Street
Scoring:		Excellent		5 Points														
		Very Good		4														
		Good		3														
		Average/Acceptable		2														
		Below Average		1														
		Poor/None		0														

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