Cover It Up

The history, cost, outcomes, and implications of decking over highways and what it means for Madison, Wisconsin

Matt Covert, 1000 Friends of Wisconsin

Introduction

In early May, a team of public interest-minded architects, designers, planners, and real estate experts called the Madison Design Professionals Workgroup went before the City of Madison's South Capitol Transit-Oriented Development committee (SCTOD) to propose burying part of one of the city's busiest and most complicated roadways and intersections in a tunnel and creating a new public park on the surface. This proposal to "deck over" John Nolen Drive made waves in local media and sparked conversations citywide about public space, investment in urban parks, and transportation policy. What does it mean to "deck over" a highway or busy road? What benefits might such a project bring to the intersection, the street, the neighborhood, the city, and at what costs? At 1000 Friends of Wisconsin, we argue that ideas like this should be fully vetted in the public conversation about infrastructure, open space, neighborhoods, and transportation and have the potential to impact communities across the state. This paper aims to contribute to that conversation by analyzing some of the potential costs, benefits, side effects, and policy implications of such a project and makes specific recommendations for further study.

History and Background

To provide appropriate context, we must look to the post-World-War-II construction of the Interstate Highway system. Originally envisioned as a way of connecting cities and regions across the country with high-speed, high-capacity roadways, interstate highways came to dominate the urban core as well. Traffic engineers and state and federal agencies tried to solve some of the major problems created by freeways—namely, congestion and pollution—by doubling down on the same ideas that created the problems in the first place. Freeways were constructed and widened straight through downtowns and urban (often minority) neighborhoods, destroying community connections, historic districts, and green space. In an unfortunate and (in hindsight) thoroughly predictable turn of events, American cities got few of the promised benefits of additional freeway capacity and a heavy dose of its side effects.

Figure 1 (above): destruction of an urban neighborhood over the years in New Haven, CT
Figure 2 (Left): construction of freeway in Los Angeles decimates neighborhood in 1957. Image credit: USC Libraries, Los Angeles Examiner Collection

In Wisconsin, Milwaukee's Marquette Interchange, originally built in 1968 and rebuilt in 2008, resulted in the symbolic and literal destruction of the core of the city's old transportation infrastructure, Milwaukee Electric Railway and Light Company's Transport Building (right top).

Another Milwaukee freeway, Interstate 43, destroyed Bronzeville (right bottom), one of the most vibrant early- to mid-twentieth-century African American neighborhoods in the Midwest and a hotbed of jazz and entertainment.

Figure 3 top: The Transport Company Web Station. Bottom: Urban Milwaukee Dial (urbanmilwaukeedial.com).

As the decades passed, many communities across the country and the world have recognized this historic mistake and have reaped the benefits of different strategies: either removing freeways or burying them in tunnels and covering them with parks, new development, and public spaces. The latter strategy, referred to as "decking over" or "cutting and capping" a roadway, is a compromise of sorts. Roadway capacity is maintained (albeit underground), surface connectivity is restored, and cities "reclaim" acres and acres of space on the surface formerly devoted to moving automobiles and trucks.

Seattle built the first nationally significant freeway deck over Interstate 5 in 1976. This project, called "Freeway Park," occupies 5.5 acres atop one of the West Coast's busiest stretches of interstate freeway. The park, an interconnected series of plazas and natural spaces, features abundant use of landscaping, sculptures, and even water features.

Figure 4: Seattle's Freeway Park. Photo courtesy of City of Seattle.

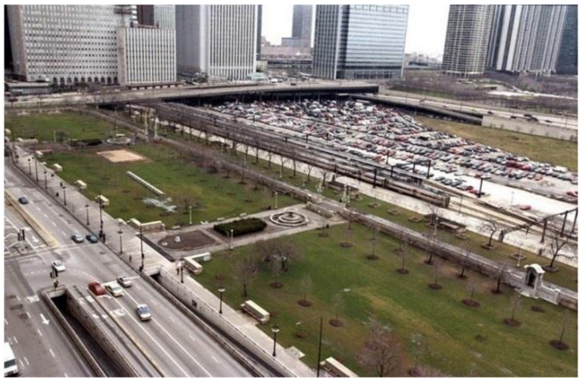


Figure 5: Millennium Park before (rail yard and marginal green space

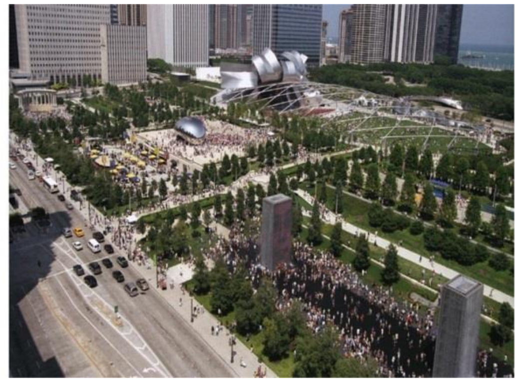


Figure 6: Millennium Park after $270 million makeover

Decking is not unknown in the Midwest. Chicago's renowned Millennium Park, not normally associated with this technique, resulted from decking over the city's large rail yard (Figures 5 and 6, above).

Other projects that more closely resemble the Madison proposal in size and scope can be found in cities across the country and are sampled below. According to the Trust for Public Land, the average size of freeway parks in the US is 9 acres and that each one covers 1,620 linear feet of roadway.

Figure 7 (clockwise from top left): Leif Erickson Park, Duluth, MN (credit: MN Dept of Transportation); Cap at Union Station, Columbus, Ohio (credit: Chicago Tribune); Founders Bridge, Hartford, CT (credit: kurumi.com); Klyde Warren Park, Dallas, TX (credit: iliveindallas.com)

Features of the Proposed Highway 151 Deck in Madison, WI

This “decking” strategy is precisely what the Madison Design Professionals Workgroup is proposing for the thorny intersection of John Nolen Drive, Williamson Street, Blair Street, and East Wilson Street. This crossing serves as the route of US Highway 151 through central Madison and also contains a railroad crossing, a major bike path, a water utility facility, and a park, among other features. The Design Professionals proposal would bury John Nolen and its continuation on Blair Street in a tunnel for as few as 1,290 feet and up to 2,200 feet, reconnecting the street grid on key surface streets and creating a large park along the waterfront of Lake Monona.

This proposal also involves siting a multimodal transit center along the rail line to capture the benefits of any passenger rail that may eventually stop in Madison.

The centerpiece of the proposed deck is a 6.5-acre park on top of the buried roadway, which would include multiple access points from downtown, a boat house and boardwalk, expanded wetlands and lake access, and an improved multi-use Capital City Trail.

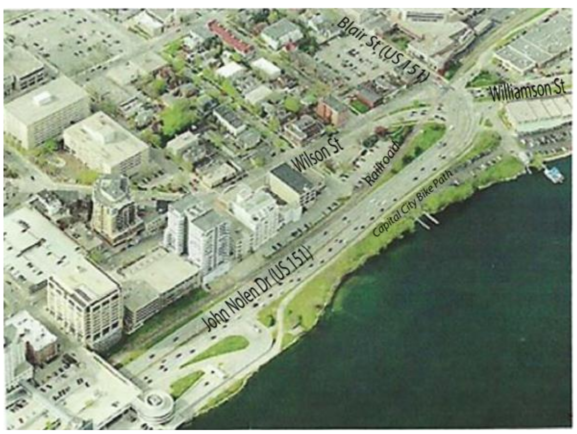
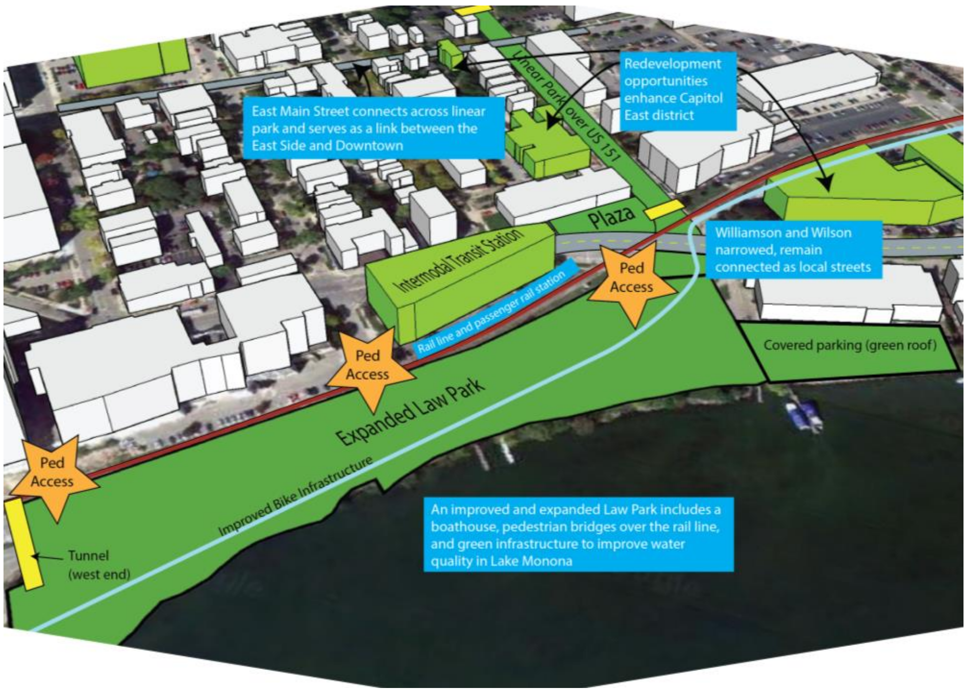


Figure 8 (left): aerial view of John Nolen Drive and the project area roughly as it is today
Figure 9 (right): artist’s sketch of proposed park and tunnel and possible redevelopment resulting from the change (images courtesy of Design Professionals Working Group).
Figure 10 (next page) summarizes the park and transportation features of this project as presented by the Design Professionals Working Group.



Cost Estimates and Projections

Our preliminary cost analysis based on other decking projects from around the country is summarized in the following table. Depending on a number of variables, including the length of tunnel constructed, the total project cost in 2014 dollars could be expected to be anywhere from $68 million to over $300 million.

Table 1: sample of cost breakdowns adjusted for inflation and for two different tunnel lengths (2,200 feet and 1,290 ft)

Project	Cost (deck)	Cost (park)	Cost in 2014$	Year	Details	Cost per Mile, 2014$	Cost for 2,220 ft tunnel	Cost for 1,290 ft tunnel
I-10 in Phoenix (1.4 million)	$100 million	$5 million	$168.4 million	1992	1/2 mi tunnel	$210 million	$88.2 million	$51.3 million
I-5 in Seattle, WA (652,000)	$24 million (total)		$100 million	1976	403 ft	$1.3 billion	$552.6 million	$317.6 million
I-670, Columbus, OH (823,000)	$1.9 million	$7.5 million	$11.8 million	2004	206 ft	$302.5 million	$127.1 million	$73.9 million
I-91/I-94 Interchange, Hartford, CT (124,000)	$24.6 million	inc.	$34.9 million	1999				
Route 1/93 City Square Park, Charlestown, MA	$110 million	$2 million	$174 million	1998				
I-35 Extension, Duluth, MN (86,000)	$23 million	$45.5 million (total)		1992	1,480 ft tunnel	$162.4 million	$68.2 million	$39.7 million
Atlantic City/Brigantine Connector	$330 million	$10 million		2001	2,200 ft tunnel	$809.5 million	$340 million	$197.8 million
I-71 Fort Wash. Way: Cincinnati, OH (297,000)	$56 million	$12 million	$82.3 million	2005	1,200 ft tunnel	$357.8 million	$150.3 million	$87.4 million

Funding Mechanisms for Decking Projects

<u>A: TIGER Grant</u>

While this project would certainly involve some level of local tax dollars being spent, the fact that John Nolen Drive and S Blair Street are designated as US Highway 151 makes a project like this eligible for federal transportation funding, including potentially a TIGER grant.

TIGER, or Transportation Investment Generating Economic Recovery, is a grant program from the US Department of Transportation. Begun in 2009 as part of the American Recovery and Reinvestment Act and now in its fifth round out of six, TIGER has awarded local governments and regional authorities and partnerships to the tune of $3.7 billion and counting. Projects address roads, rails, ports, transit, and other transportation elements in ways that achieve national objectives while improving local infrastructure. They are evaluated on the basis of safety, economic competitiveness, state of good repair, livability, and environmental sustainability (USDOT, 2014).

While not without its critics nationally, TIGER has already benefitted Madison, which received a $950,000 grant in 2010 to study and plan for an intermodal transportation hub and district in anticipation of a high-speed rail line. That rail line never materialized due to the 2010 election of Governor Scott Walker, who ran against it, but much of the study of the area of the city's downtown that precipitated this proposal has been accomplished thanks to the TIGER grant.

TIGER grants have been awarded in amounts of up to $200 million, with a combination of state, local, private, and philanthropic funds used to leverage the grants. In other words, while the up-front cost of a decking project like the one discussed in this paper can be very high, local governments receiving TIGER grants have been able to defray a large portion of their costs not only through the federal grant but also through leveraged funding from other sources.

The John Nolen Drive proposal would be a qualified candidate for a TIGER grant because it primarily solves a messy transportation problem while also adding substantial co-benefits in the other focus areas of the grant:

1) Safety – While not among the city's most dangerous intersections by crash rate or traffic fatalities, there is a widely perceived safety problem. Much of that perception comes from bicyclists and pedestrians trying to cross and from people making protected and unprotected left turns. This project would take away those turns and put a substantial volume of traffic at the intersection underground, creating an environment where local car, pedestrian, and foot traffic coexist.
2) Economic Competitiveness – this project could benefit the city's economic development of the Capitol East district by helping establish Main Street as a neighborhood "main street" and enhancing the profile of the East Washington Corridor.
3) State of Good Repair – The center of the proposed project area, in and near the intersection of US 151 and Williamson/Wilson streets, has a pavement rating of 4, and its surface dates to 1985. A full State of Good Repair (SGR) analysis should be done per the rulemaking guidelines of

the US Department of Transportation, but there is little question that the infrastructure is in need of repair.

4) Livability – As will be addressed shortly, a large urban park like the proposed expansion to Law Park is an extremely valuable asset and major boon to quality of life downtown.
5) Sustainability – while the construction of the tunnel itself would not lead directly lead to meaningful reductions in greenhouse gas emissions because it does not contain a demand management component, the associated improvements to the local transportation network (and opportunities for human-scale, pedestrian friendly urban infill redevelopment) could create both higher densities and fewer cars on the road. This would benefit Madison's overall sustainability profile.

B. Other Federal Funds

Other components of the larger vision may be eligible for federal funds. For example, the intermodal transit center, which is based on the future arrival of passenger rail but which also might include a bicycle center and bus stop, might be eligible for New Starts, Small Starts funds through the Federal Transit Administration. Coupled with TIGER requirements, the current state of road and rail infrastructure on the site might be eligible for transit-related State of Good Repair Grants Program funds (see more details here).

C. Local Funding

Other local funding sources can be marshalled strategically to complement federal funding, including:

- Tunnel
- Streets
- Ped/Bike Infrastructure
- Transit
- Parks
- Stormwater
- Water Quality (including local sewerage districts, Clean Lakes Alliance, regional planning commission)

Ongoing maintenance and operations of parks is a purely local concern and demands a local solution. Possibilities exist for innovative and ongoing funding models, including special assessment districts, developer credits, and parking utility increments.

D. State Funding

In other cities where decking projects have been constructed, state governments have occasionally stepped in to provide some (though not all) the funding. In Duluth's I-35 decking project, Minnesota Department of Transportation funded 10% of the project. It is possible that state transportation funding might be available for part of the project, but that may depend on exogenous political forces and the schedule of existing projects versus available dollars.

Economic, Social, and Environmental Benefits of the Proposed Project

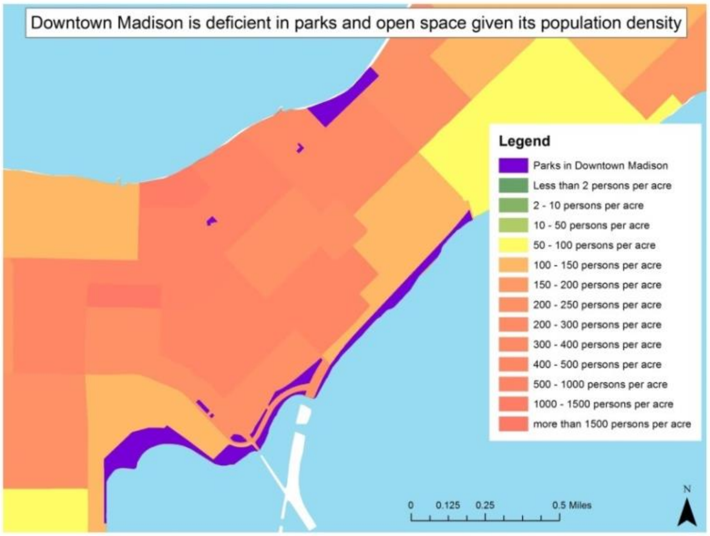


Figure 11: Map showing park space and population density by Matt Covert, 1000 Friends of Wisconsin

The proposed "decking" of John Nolen Drive and Blair Street and creation of a large urban park is captivating on a number of different levels and merits consideration and further research. Benefits include creation of new public parkland in a dense urban area, a reconnected street grid to improve flow of people and local traffic between the near east side and downtown, and a high-quality public space accessible to everyone that enhances quality of life citywide and spurs development and investment in areas calling for it.

First, a project like this would create new open space (and associated environmental benefits) in an area of the city that could use more of it. Currently, Downtown Madison features 45 acres of parks in an area with some of the highest population densities in the state (Figure 11, above). With a population of more than 23,000 in a downtown that is around 1 mile square in land area, this ratio can and should be higher. Adding 6 acres of parks through this project would increase parkland available to residents and visitors of the central city by more than 13 percent.

Creating a substantial new urban park, particularly along the lakefront, provides opportunities for better stormwater management. A local example can be seen at nearby Brittingham Park, one of the only other large parks in the downtown area.

Brittingham Park

Figure 12: Before and after of green infrastructure at Brittingham Park. [WRM Report]

The green infrastructure installed at Brittingham Park is one successful model that could be employed at an expanded Law Park. The establishment of the watershed group Friends of Monona Bay in 2006 coincided with a series of studies on that eutrophic arm of Lake Monona with a focus on public health and water quality improvements and the installation of a rain garden, among other interventions. According to the 2006 Monona Bay Watershed Management plan from the UW-Madison's Water Resources Management graduate program, rain gardens are effective, scalable, and relatively inexpensive water quality improvement tools.

Additionally, because the traffic on US 151 would be buried underground, there may be air quality benefits at the surface, particularly in the park. Overall air pollution would likely decrease as well due to a drop in idling at the stoplight that currently controls the large intersection. Considering that parks and trees are already good for local air quality, this is a compounding benefit (National Recreation and Park Association).

Second, a John Nolen Drive deck addresses this transportation problem by providing a through-way for US highway through traffic while reconnecting local streets in ways that are safer, more comfortable, and more convenient for pedestrians, bicyclists, and local auto traffic.

The intersection of John Nolen Drive, Williamson Street, Wilson Street, and South Blair Street has a well-earned reputation as an impediment to pedestrian and bicycle traffic. The city has made small infrastructure improvements in the past few years, including so-called "green boxes" designed to give bikes a head start on car traffic and better crossing signals for pedestrians. Overall, though, the area is frequently cited in reports and public discussions as intimidating, confusing, and a barrier to easy movement of local traffic, particularly of the pedestrian and bicycling variety. The South Capitol Transit Oriented Development Committee has made fixing issues at this intersection a top priority.

Street Segment	Average Daily Traffic Count
John Nolen Drive (US 151)	39,700
E Wilson Street (west of John Nolen)	10,700
S Blair Street (US 151)	23,650
E Main Street (west of S Blair)	1,650
Williamson Street (east of S Blair/John Nolen)	21,500
E Washington Ave (US 151)	45,100

Table 2: ADTs for US 151 and feeder roads highlighted in yellow. Data from City of Madison Engineering

In Table 2 above, average daily vehicle counts on the street segments directly impacted by this proposal demonstrate that through-traffic on Highway 151 (combined with freight trains using the adjacent rail line) is driving the bulk of the congestion in the area. Burying the highway corridor in a tunnel would result in the following improvements to the overall transportation picture:

1) Surface streets like Williamson and Wilson could be made much narrower immediately adjacent to the highway corridor, opening up more space for public sidewalks and/or new private development.

2) Removing an intimidating stretch of street segments and intersections may increase the walkability and bike-friendliness of surface streets downtown and on the near east side. This has positive implications for neighborhood quality of life (reduced traffic noise and air pollution, better sidewalks, more eyes on the street, more space for pedestrians to move about and gather).

3) Providing a local road connection across US 151 for East Main Street could help jump-start reinvestment and economic development.

4) Area businesses that right now suffer from poor accessibility could see their exposure grow as the absence of highway traffic attracts more local business, especially pedestrians and bicyclists.

Figure 13: Boston's Emerald Necklace park system, designed by Frederick Law Olmstead, enabled the public at large to enjoy natural spaces in the city.

Third, creation of parkland at this scale accomplishes an important public policy objective—creating public space that is accessible to people across the social and economic spectrum. Parks have a long history in the city planning movement, and in the United States, visionary city-wide parks systems designed by the likes of Frederick Law Olmstead were places where people without access to private estates and clubs, typically immigrants and the working poor, could come to relax and socialize (Trust for Public Land, 2003). This project, by creating a new park downtown, accomplishes this objective of public policy (providing a place where everyone can gather) while also helping to solve a transportation problem. It has substantial public benefit to accompany expense of public dollars.

Madison has had its own large-scale vision for waterfront park development, and this project is a natural continuation of that history. The Madison Park and Pleasure Drive Association, which sponsored carriage rides on scenic trails and roads to allow late 19th-early 20th-century residents of Madison to escape to the countryside, also became the city's earliest parks advocates in 1899 with the donation of what was to become Tenney Park on the city's East Side (Madison Parks Foundation). John Nolen, whose 1911 plan, "Madison: A Model City," articulated a vision for the city that still shapes it, called for an "organic" link between the Capitol and Lake Monona (right).

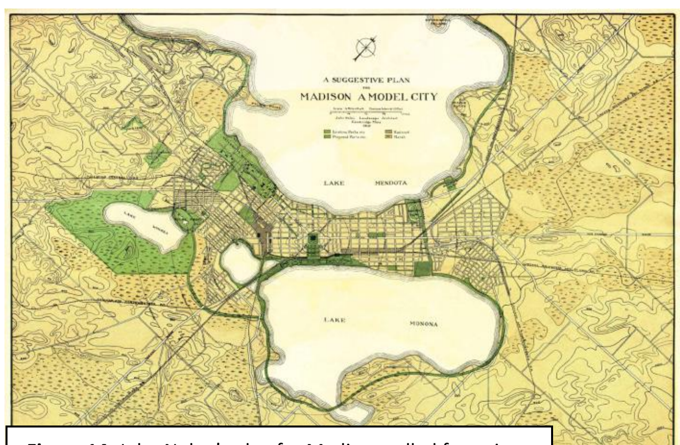


Figure 14: John Nolen's plan for Madison called for a ring of green parkways and parks around Lake Monona and sizable park space between the Capitol and the lake.

Nor is this the first proposal to rejuvenate the John Nolen Drive lakefront. Local architect Kenton Peters has proposed the construction of a Grand Promenade down the East Wilson Corridor, over John Nolen Drive, and to the lakeshore (below right). Local businessman Tim Metcalfe has also proposed rejuvenating the John Nolen Drive corridor south of Downtown by expanding the Alliant Energy Center exposition and fairgrounds (Nolen Centennial plan). Doug Kozel, another local architect and member of the Design Professionals Working Group, drew up preliminary plans for what would become the current working group proposal (below left).

Figure 15: Doug Kozel's (left) and Kenton Peters' (right) visions for burying John Nolen Drive. Kozel's work has led to the Design Professionals' proposal, whereas Peters' more closely resembles Seattle's Freeway Park in its terraced form.

While none of these projects or plans have yet come to fruition, it is clear that this current proposal from the Design Professionals Working Group must be viewed as part of a long tradition of parks and transportation visioning in Madison. Specifically, it fulfills a direct call from Madison's original city plan, authored by John Nolen, to link the capitol building to Lake Monona with parkland. As such, it carries historical weight and deserves to be seen as an expression and continuation of a longstanding idea and not as an unrealistic dream.

Design, Operations, and Logistics Issues and Opportunities

There are a number of design and engineering challenges specific to this site and this area of the city that need further exploration, and we will advocate for a full accounting of these challenges. Some of these issues are explored below; this is not a comprehensive analysis of all possible pitfalls, but rather a representative sample of some of the challenges that might face this project from planning through operations and maintenance.

1) Water Table – John Nolen Drive sits a few dozen feet from Lake Monona and is higher by only 3 feet. The water table is quite high and the soil beneath is mostly fill, increasing the level of difficulty in constructing a tunnel. This is an engineering problem that can be met with a variety of designs and solutions, cost being the primary factor. An example of below-table tunnels can be seen below.

2) Slope – This part of downtown features a drop from the capitol that is often steep. Additionally, there are space limitations because the city is not, as of present, interested in making any changes to the shoreline of Lake Monona. While the city could get a permit from the Army

Corps of Engineers to expand the shoreline to the established dockline, this idea was briefly pursued in 1990 and then jettisoned in favor of focusing on the Monona Terrace convention center. In 2012, a draft of the city's Downtown Plan originally recommended filling part of the lake to expand the park, but the approach was again abandoned, this time due to environmental concerns. This presents design challenges as far as pedestrian access to the park is concerned but also creates new opportunities. If a shallow tunnel is constructed for the roadway, a portion of the park will rise up to up to 10 feet above the railroad grade. This rise, matched with the steep upslope to Wilson Street, could create opportunities for pedestrian bridges of acceptable slope over the rail line at the proposed Transit Center deck as well as at Hancock Street (see diagrams below). This technique would also have the added benefit of lowering the construction cost of the tunnel.

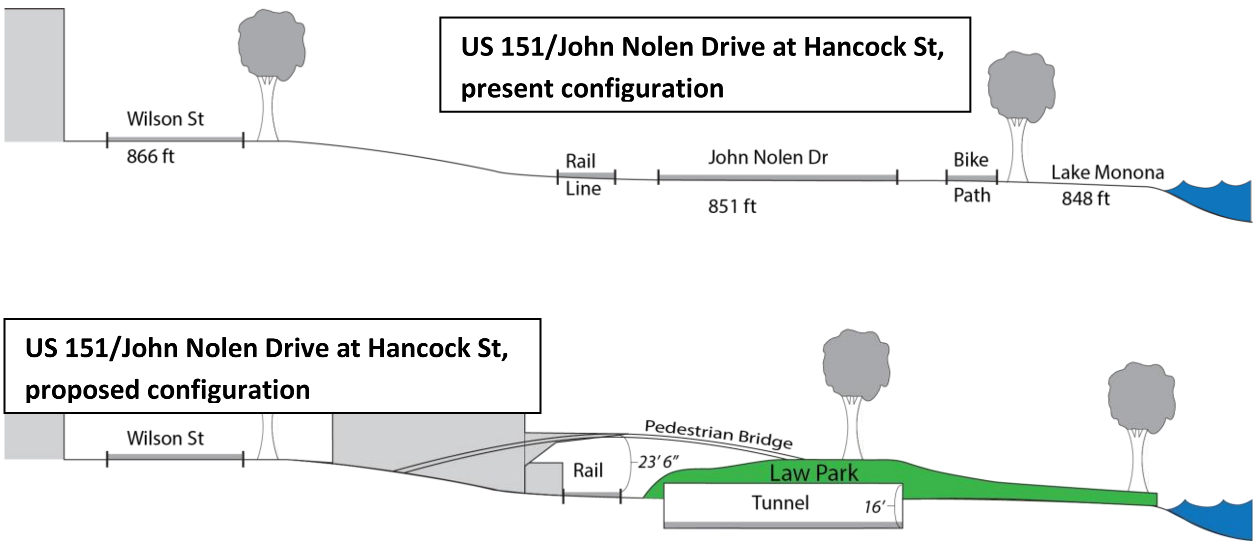
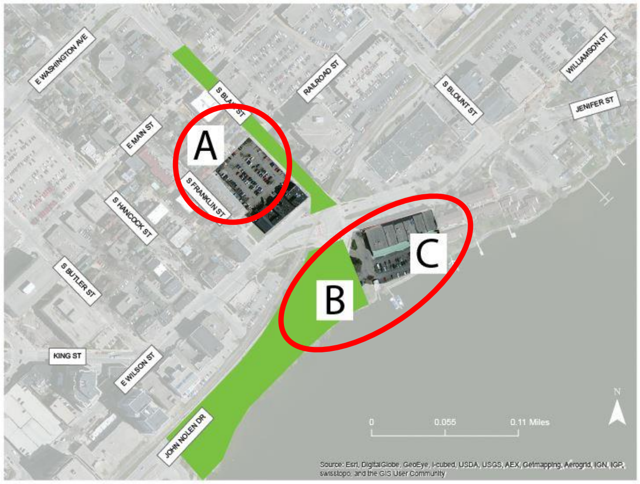


Figure 16: Present cross-section and elevation (above) and proposed configuration and pedestrian linkage (below)

3) Rail – Per federal law, freight rail lines require higher clearance than interstate roadways – 23.5 feet versus 15 feet. The Design Professionals' proposal includes keeping the railroad at grade and constructing an intermodal transportation station along the tracks (see above). Removing the rail line is unlikely to happen, and dropping the US 151 roadway removes a large part of the potential for traffic backups due to railway use and preserves a rail corridor that could become increasingly important if intercity rail comes to Madison.

Significant Surface Parking Facing Reduced or Constricted Access by Vehicles



4) Parking – depending on the treatment of some of the local streets during the redesign that would accompany this change, certain businesses might see significant changes to their parking layout and access. This may include an addition of on-street parking on Williamson Street and East Wilson Street but also a loss of parking in Law Park and a potential loss or constriction of access to parking on either side of the proposed park (A and B, left). The Design Professionals' proposal keeps the parking lot behind Machinery Row (C on map) and covers it with a green deck as well. This would keep a large number of parking spaces for those concerned about vehicle access but would cost considerably more due to the lot's location on private land. It also does not address the increased difficulty of reaching the lot from US 151, which would not have entrances or exits at Williamson Street. Access to Lot A could be maintained in the long tunnel option by a) reestablishing a Blair Street surface extension to the lot, or by b) reopening the western driveway onto S Franklin St. In the short tunnel option, the intersection with Railroad Street could become the primary entry point for this lot. Neither lot A nor C needs to be eliminated completely, but changing configurations and/or covering lots comes with attendant costs.

All told, this project could result in the loss of between 123 and 334 off-street parking spots in or near the project area (depending on if lots A, B, and C are eliminated or reduced). However, it would also open up new opportunities for on-street and structured parking that would retain (or possibly exceed) current parking supply while lowering the supply of parking in surface lots, a change that is desirable under the city's long-term plans. For example, the Design Professionals proposal involves structured parking at the Intermodal Transit Center numbering around 300 spaces. Public parking structures with hundreds of spaces can be found nearby, generally within a half-mile. All in all, it is likely that parking issues with this project are likely to be political rather than technical and will hinge considerably on the perceptions of customers, business owners, and residents.

5) Access to Highway 151, Williamson Street, and downtown – This project would remove some local access points to the busy federal highway by design, but a necessary side effect is reduced ability to access that corridor from many surface streets Downtown. In order to maintain the draw of the Williamson Street corridor and access to parts of the downtown, other interventions might be necessary, including making Wilson Street into a two-way street, upgrading the capacities of other surface streets (see Figure 14, next page), and improving infrastructure and level of service for other forms of transportation. An additional challenge concerning street

network access is how to reap the benefits of the urban street grid for distributing vehicle traffic without causing unwanted congestion on the residential streets that abut the corridor in the historic First Settlement neighborhood.

6) Management and Operations – Every park and tunnel in every community faces ongoing challenges with regards to management and operations. In some ways, management of the expanded Law Park would depend to a large extent on the vision the community decides upon for the park. Some urban parks, like Millennium Park in Chicago, feature impressive landscaping, a variety of architectural and cultural attractions, and large public gathering places. Some, like Madison's Brittingham Park, are comparatively much less complicated, generally featuring large grassy areas, some low-impact landscaping like community gardens and rain gardens, and perhaps a park shelter. Among the chief management and operations concerns for an expanded Law Park would be dealing with homeless use, running programming and events, and general cleanliness and tidiness—common and ongoing issues in any urban park. That said, as a centerpiece urban park with a high price tag, this project would face heightened public scrutiny and standards.

   The City of Seattle commissioned a study of its parks system, which faces the familiar challenge of a backlog of needed maintenance amid ever-expanding demands of residents for more and better parks. That study identified several strategies that can be used to provide ongoing financial support for operations, maintenance, and programming:

   - Establish new special districts within the City such as business improvement areas, l ocal improvement districts or tax increment financing districts;
   - Implement development impact fees;
   - Offer zoning incentives to developers who contribute funding for park maintenance and operations;
   - Create public development authorities or conservancies for specific parks

Integrating Transit, Biking, and Walking

Most importantly, it is clear from our research that improvements and investments in the transportation system as a whole, not just US Highway 151, are necessary to make this project successful. As the diagrams below indicate, building the tunnel and park without improving pedestrian, bicycle, and transit infrastructure and service could result in simply shifting the vehicle burden to other roads. Taken as part of a broader strategy, however, the project could have a significant positive impact on quality of life and transportation downtown and community-wide.

<u>A. Bus Rapid Transit</u>

The City of Madison has been studying and planning for a Bus Rapid Transit system that would combine the flexibility and low cost of a bus system with the predictability, higher speeds, and capacity of a commuter rail line. This table (below) illustrates projected ridership on the East Washington Ave line of the proposed BRT system. Madison has studied BRT as a solution to future transportation needs for many years, particularly for people seeking to access major destinations across the city quickly and predictably. Because of its capacity, service style, and relatively low cost, BRT is seen as a transit service that could provide commuters who live in one area of the city but work in another a high quality alternative to driving alone. It is a coincidence, albeit a fitting one, that the most optimistic ridership projection nearly matches the number of vehicles that would need to find alternate routes to Williamson Street using current traffic numbers.

East Corridor Daily Ridership

Opening Year (2016)	3,530
Future Ridership (2035)	4,170
TOD Enhanced Ridership (2035)	5,180

Table 3: Source: Madison MPO BRT Study

B. Streetcar

Figure 18: numbers courtesy of Portland Streetcar

Other transportation improvements that have been discussed include a streetcar line, improvements to cycling infrastructure, and passenger rail. Leaving aside the question of passenger rail for the moment because of Wisconsin's rejection of federal funding for high-speed rail and associated political fallout, we examined some data on both streetcars and Madison cycling numbers. In consulting the Madison Streetcar study from 2007, the estimated TOD-enhanced ridership in 2030 for a streetcar system that includes this project area is 4,430. For an alternate ridership projection, we looked to Portland's streetcar system. Figure 18 (above) displays ridership records for that system. With daily ridership on weekdays in Portland approaching 16,000 in spring of this year (the 13th year of the system), and with Madison (city and metro area) being 39.4% the size of Portland, we estimate Madison's streetcar could average 6,300 daily riders in its 13th year of operation. Therefore, a working range for projected ridership after 2030 can be estimated at 4,430 – 6,300. These projections naturally depend a great deal on using planning and economic development tools appropriately to encourage transit-oriented development along a streetcar corridor working in concert with the Bus Rapid Transit system currently in the planning phase.

C. Madison Metro

In examining the Metro system, it is important to note that four of the busiest bus routes in the city go up and down Jenifer Street (parallel to Williamson) and cross John Nolen Drive and through Downtown. Below are monthly ridership figures from Routes 3, 4, 10, and 38 averaged over a 30-day month (22 in the case of Route 38, which is a 5-day-a-week commuter route).

2014 Williamson Street Corridor Bus Route Ridership

Route #	Monthly Ridership	Average Daily Ridership
3	59854	1995.1
4	78520	2617.3
10	71739	2391.3
38	35661	1621.0

Table 4: Madison Metro 2013 – 2014 Operating Statistics

Not all of those riders traverse the Williamson Street corridor, and of course there are large variations throughout any given day depending on day, time, and frequency of service. Regardless, we may see more people who seek to move between Downtown and the East Side via transit if this project is built due to the enhanced opportunities for getting around without a car.

D. Bicycling and Walking

The Bike Federation of Wisconsin, not content to rely on U.S. Census figures on bicycling to work, has conducted multi-day traffic counts of both pedestrians and bicyclists at many intersections and bike routes throughout Madison. At the intersection of US Highway 151 and Williamson/Wilson streets, the Bike Fed's volunteers observed the following:

US 151/Williamson Street Bike/Ped Counts

Date	Time	Cyclists	Pedestrians
5/7/2013	4 - 6pm	694	373
9/10/2013	4 - 6pm	953	276

Table 5: Zac Barnes, Central Director for Bike Federation of Wisconsin

These impressive numbers come because the Williamson Street corridor (especially the dedicated, separated Capital City Bike Path and Jenifer Street) is one of the city's major bike and pedestrian conduits connecting Downtown and the East Side. If this decking project were built, more bicyclists are likely to ride this route due to increased safety and comfort.

E. Decking Project Transportation Demand Management Scenarios

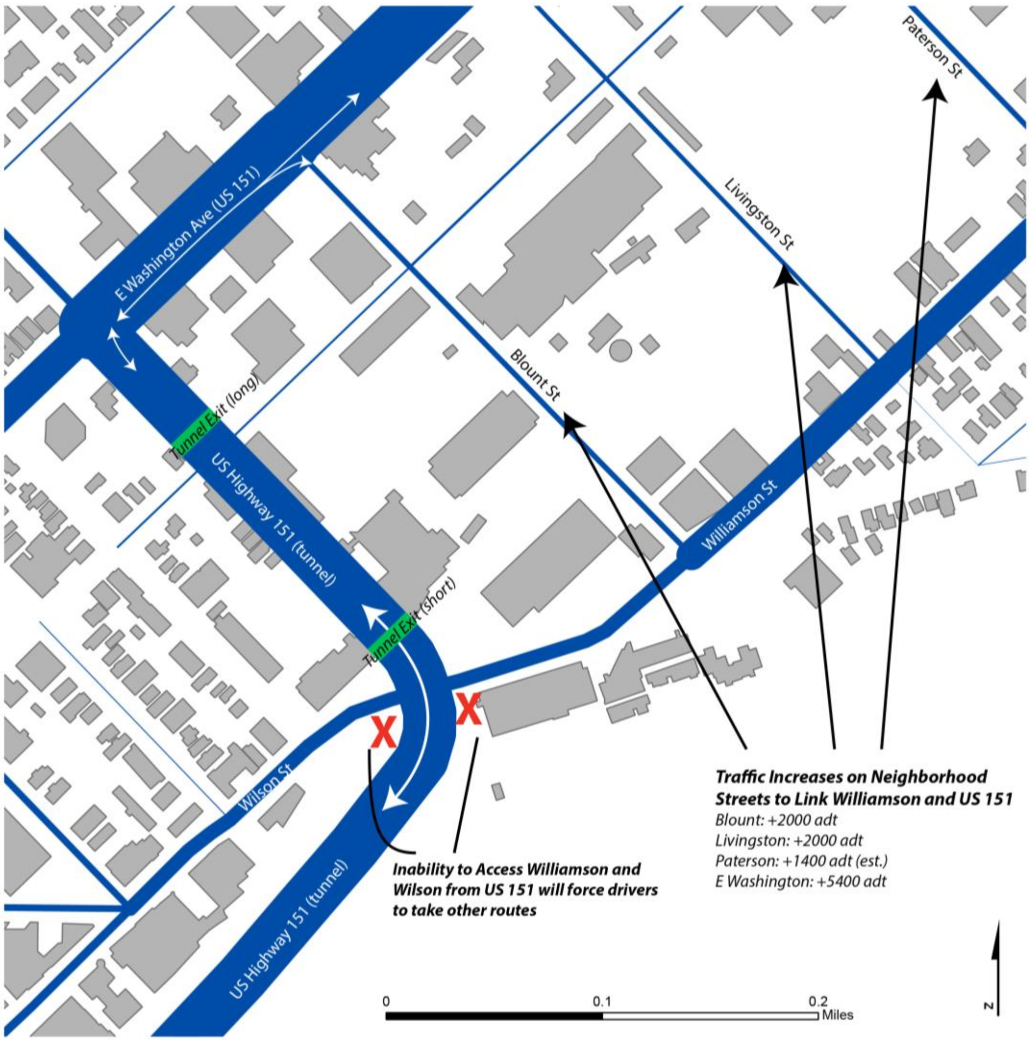


Figure 19: diagram of possible alternative routes for vehicles seeking to access Williamson Street from US 151 or vice versa

Under the general no-additional-improvements scenario (above), the inability to access Wilson Street, Williamson Street, and possibly Main Street (depending on tunnel length) would force some drivers to loop back around on other surface streets to reach their destinations. This would result, in one specific scenario, illustrated above, in significant increases in traffic on Blount, Livingston, and Paterson streets and a spike in East Washington Ave traffic as well. If Wilson Street remains a one-way street, as current South Capitol Transit-Oriented Development plans indicate, drivers seeking to access John Nolen Drive from the Williamson Street neighborhood would need to make that roundabout journey in reverse.

However, if the visionary transportation improvements (see below) scenario comes to pass, including better public parking, Bus Rapid Transit, a streetcar, bicycling improvements, and added capacity on existing Metro lines, a reduction in overall motor vehicle traffic and economic development can occur hand-in-hand. In fact, robust transit, bicycling, and walking infrastructure and service on the Isthmus would greatly *increase* total trips without a corresponding increase in vehicle traffic.

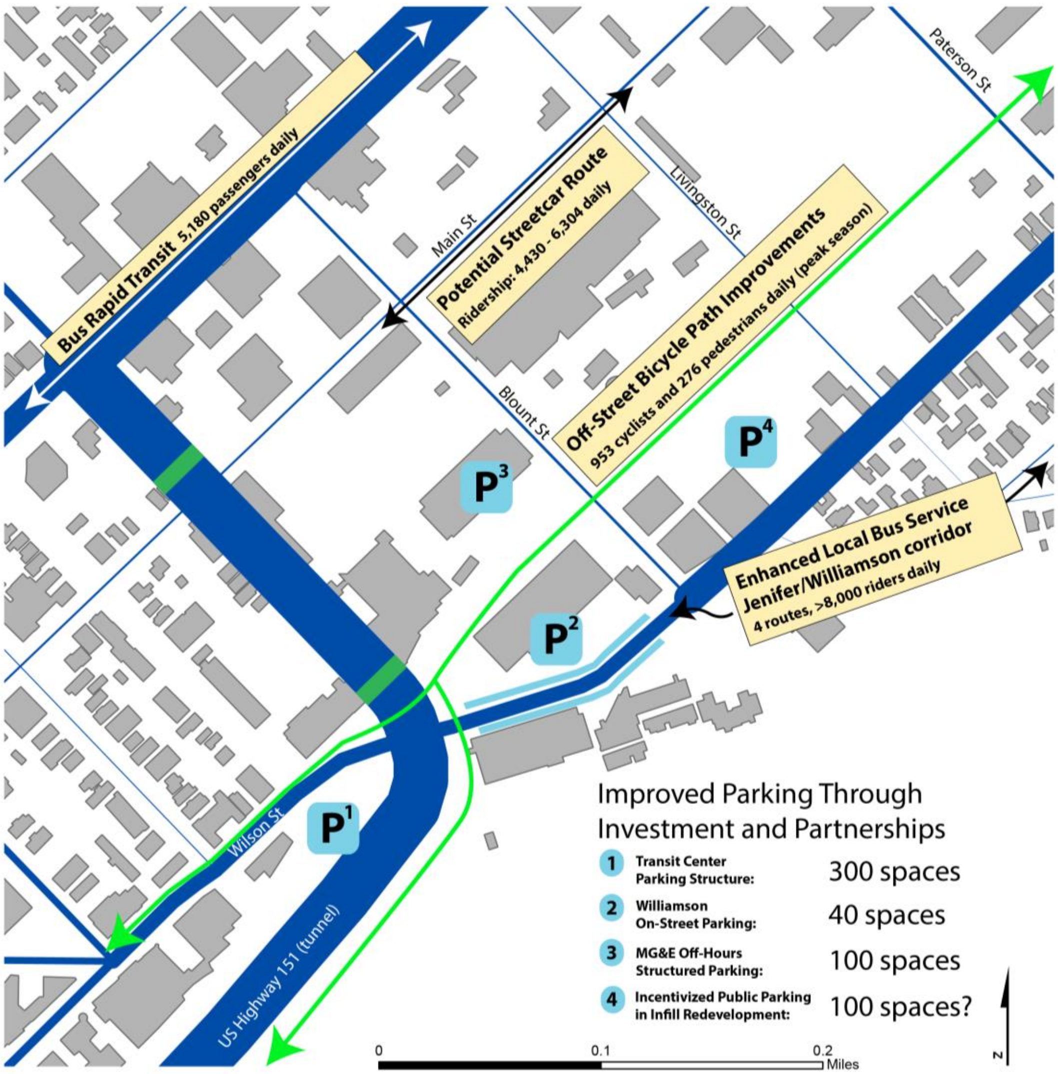


Figure 20: Potential alternative transportation innovations, enhancements, and improvements

Policy and Implementation Questions

The cost of such a project would be high, and the political appetite for spending public dollars on such an initiative may be lacking. After all, similar proposals have been rejected before due to their high cost (see an example), and current local tax policy debates over the proposed Judge Doyle Square convention hotel and mixed use development may signal a challenging road ahead (source). The prospect of a significant portion of the project cost coming from a TIGER grant or similar source may help defray some of this worry. Local financing could come partially in the form of Tax Increment Financing (TIF), but the expanded use of this tax policy has become increasingly controversial (see here for example) and could draw fire from supporters of a more narrow TIF policy.

While restructuring the surface streets (Wilson, Williamson, and Main Streets, in particular) as purely local connections would have undeniable benefits for pedestrians, bicyclists, and slow-moving local traffic, access to US Highway 151 (John Nolen Drive and South Blair Street) will, by definition, become more restricted. This has implications for traffic flow on other surface streets, as motorists and delivery vehicles will have to make large changes to their routes to access the highway. This has implications not just for infrastructure (can adjacent surface streets safely absorb these altered routes?) but also for politics (will adjacent neighborhoods readily accept increases in surface traffic on some streets and/or changes in the one-way status of others?).

Table 6 (below) summarizes the pros and cons of capping freeways to create park space. Items in bold are specific to this particular project and summarize the analysis in this paper.

Pros	Cons
· Create large new parks in park-poor urban areas · Reconnect neighborhoods divided by freeways · Enhance adjacent property values · Create direct and indirect jobs · Large park proposals appeal to a much broader audience than smaller projects · **Meet long-standing civic objectives to increase public space and access along lakeshore** · **Spur infill redevelopment called for by city's Downtown Plan, Tax Increment District** · **Presence of rail line provides opportunity to create intermodal transit center, simplify surface street crossing** · **Walking environment and urban amenities could be improved due to decreased traffic demand on surface streets** · **Opportunities to improve stormwater management and downtown air quality** · **Public space an asset for downtown convention center** · **Increase in business for businesses on local streets that cater to local/alternative transportation traffic**	· Construction, operation, and maintenance costs are high for large cap parks · Political appetite for large capital projects may be low · Could require complex funding mechanisms · Cap parks may be taken over by the homeless · **Nearby lake and high water table may increase costs of construction and maintenance** · **May affect demand for truck and private vehicle traffic seeking to enter the local street network or access the highway** · **Potential decrease in business for businesses that depend on vehicle traffic from US 151 exiting onto Williamson Street** · **Changes in surface parking access and addition of on-street parking may affect access to businesses** · **May not be successful without concurrent investments in transit, pedestrian and bike infrastructure, and changes to surface streets and parking** · **Shorter tunnel would be more financially feasible but less effective in improving local street connectivity** · **Rail line creates a man-made barrier to pedestrian access and requires large amount of clearance**

Table 6: http://lasustainability.org/wp-content/uploads/2012/07/LASC-ClementLau-CapParksPolicyBriefing.pdf

Conclusions

One of the most consequential side effects of this project would be the necessary changes in the street network to re-route vehicles entering downtown on US 151 to the local surface streets to access downtown businesses and the Williamson Street commercial corridor. The City of Madison should conduct detailed traffic models and develop alternatives to deal with the changes in traffic patterns. This should include studying the effects of converting all of Wilson Street to two-way as well as what effects future apartment and mixed-use development on Williamson Street will have on demand for US 151 north- and southbound. For starters, we suggest investing in access to data from consenting drivers' cell phone locations or GPS information, such as from http://www.navizon.com/. We must have the best data in order to make the right decisions about proposed infrastructure investments of any size, but especially when considering a proposal of this magnitude. Traffic models do an acceptable job of estimating some real-world situations, but a more in-depth understanding of where people are coming from and going to will help us weigh the costs and benefits of decking over John Nolen Drive.

Another subject on which further study is encouraged is park access. Pedestrian, bicycle, and transit access is expected to be high, but the city and neighborhoods must also plan for vehicular parking at the newly created park. Options include using part of Monona Terrace's parking, creating or expanding small lots and on-street parking on surface streets, or using TIF to incentivize development of a public lot or garage close to the site.

A final area of further research is mass transit integration. The site would be fairly well connected to bicycle and pedestrian infrastructure, particularly if Wilson and Williamson are right-sized for local traffic and the crossings at Railroad and Main are strengthened for these transportation modes. However, as Madison looks to the future of public transportation—improved bus service, a Bus Rapid Transit system, a streetcar, high-speed rail—several issues emerge relevant to this proposed project. First, Williamson and Wilson will need to retain bus service through to the center of Downtown, which affects the kinds of streetscape treatments and right-sizing that is done. Second, while East Washington Ave, University Ave, and Park Street are the likely candidates for Bus Rapid Transit, John Nolen Drive is not, so the possibility of establishing a connector route or additional mode (like a streetcar) should be evaluated. Third, any planning for transportation infrastructure and service improvements must be done in concert with economic development strategy and city planning to make sure that good opportunities for infill redevelopment in appropriate locations are enhanced, rather than hindered, by significant changes to the local and regional transportation system.

1000 Friends of Wisconsin concludes that this proposal to deck over John Nolen Drive with a public park is a worthy idea in need of further study and research. Our aim in this paper has been to elucidate the likely benefits and complications that such a significant project might bring and reveal areas where information is lacking and research is needed.

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