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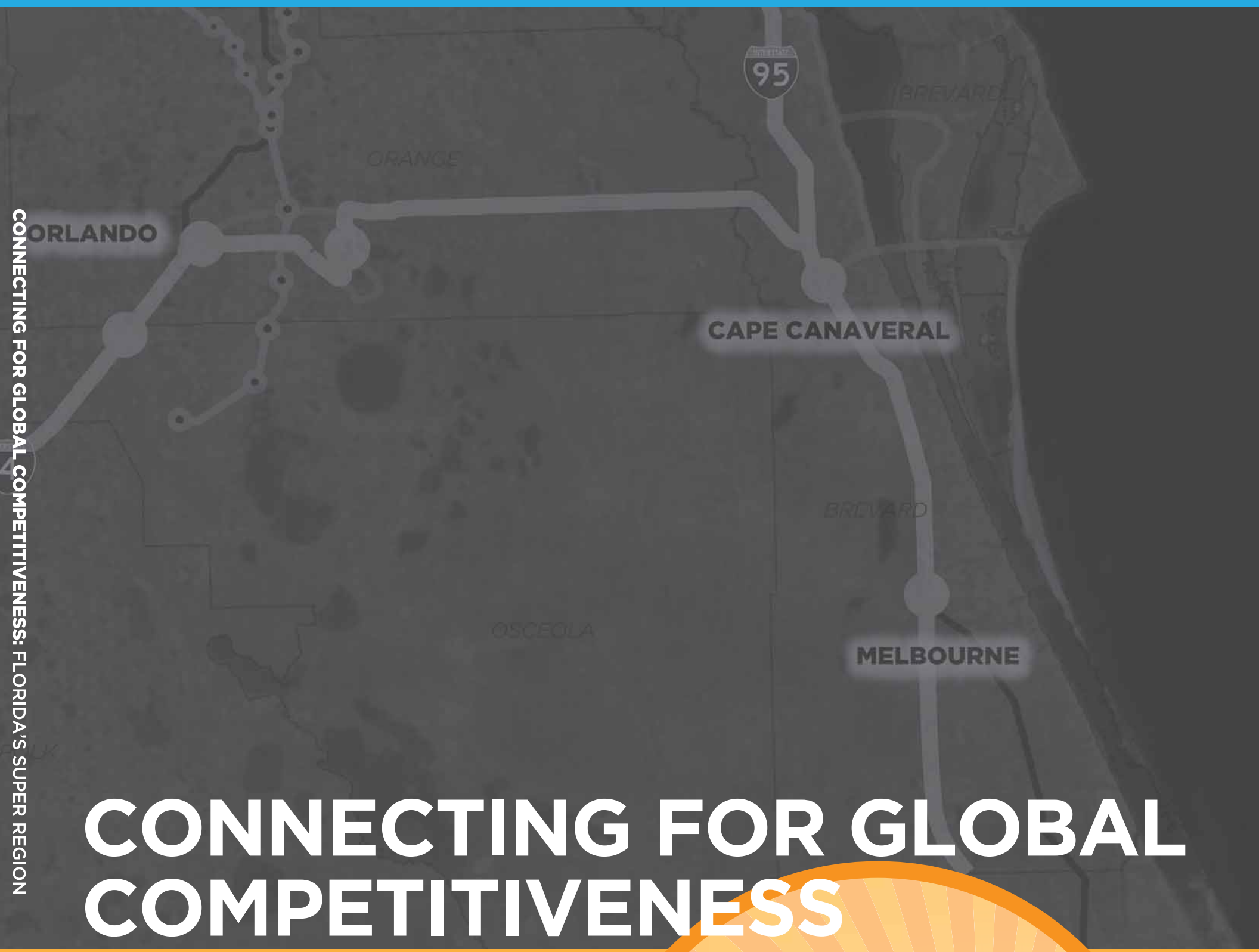
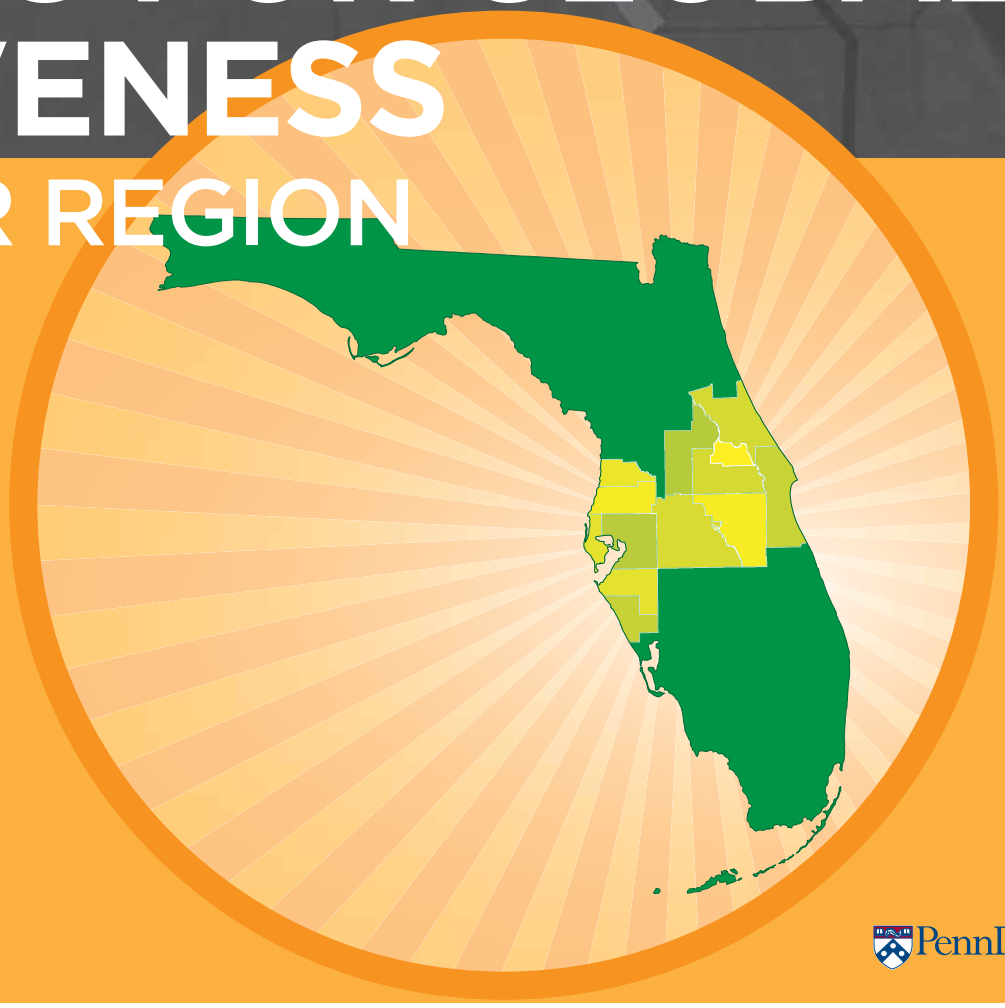


CONNECTING FOR GLOBAL COMPETITIVENESS

FLORIDA'S SUPER REGION



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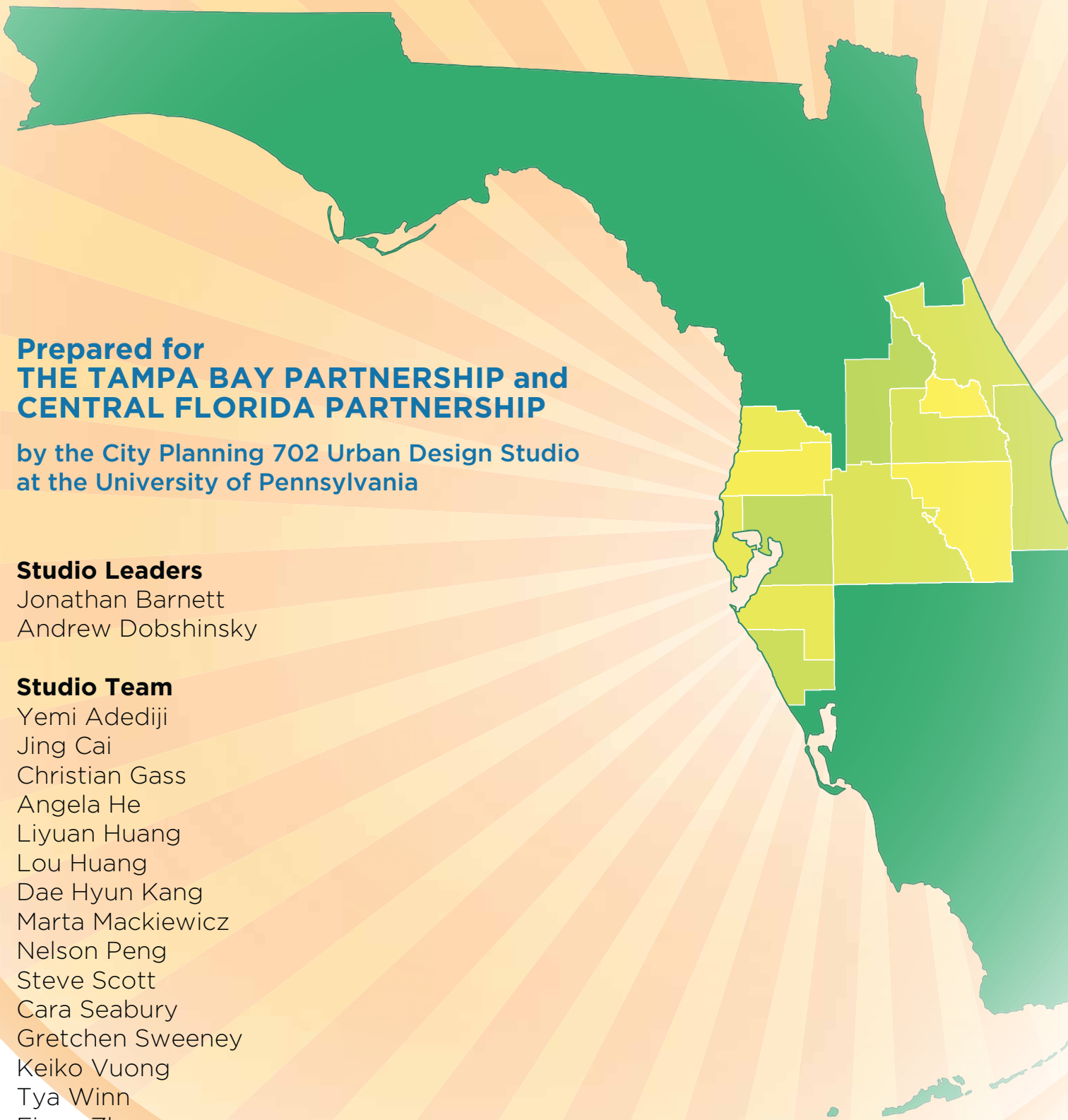
CONNECTING FOR GLOBAL COMPETITIVENESS: FLORIDA'S SUPER REGION

SPRING 2010

CONNECTING FOR GLOBAL COMPETITIVENESS

FLORIDA'S SUPER REGION



Prepared for
THE TAMPA BAY PARTNERSHIP and CENTRAL FLORIDA PARTNERSHIP

by the City Planning 702 Urban Design Studio at the University of Pennsylvania

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Spring 2010

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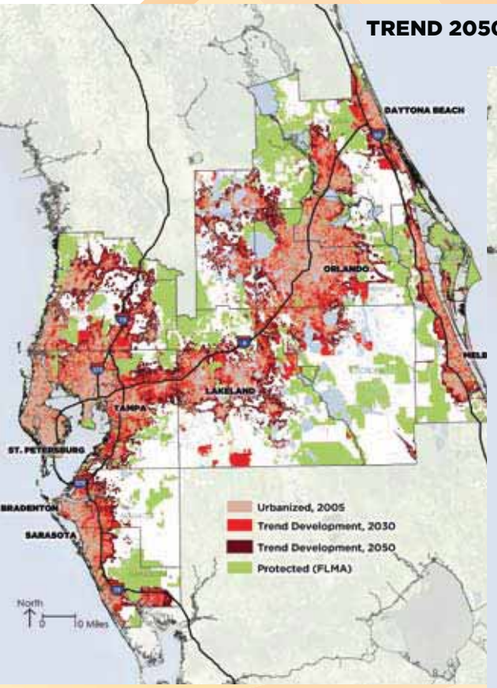
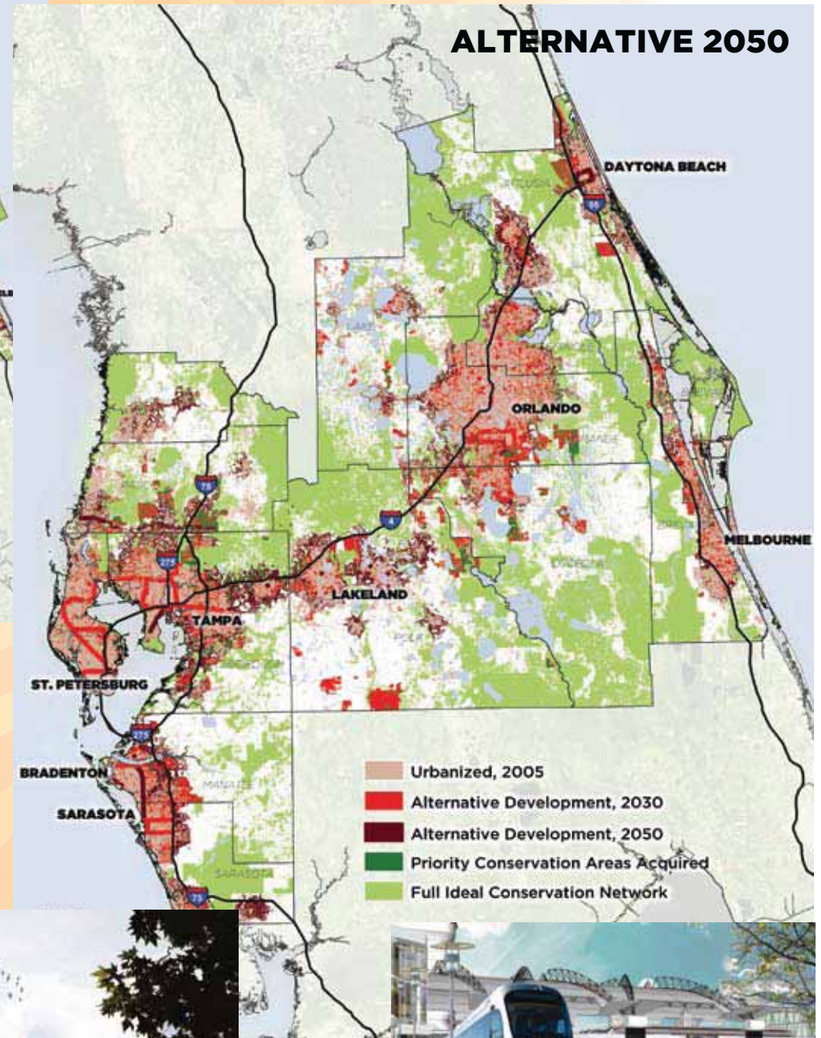




EXECUTIVE SUMMARY

Two Choices for the Region's Future

High-speed rail (HSR) integrated with local transit systems will connect Florida's Super Region in a way that provides an opportunity to reshape its future. Using computer-aided analysis based on population and job projections, this study presents two alternatives for the Super Region in 2050. In one alternative, new development follows the patterns already established in Florida, despite transportation investments. In the second alternative, the presence of HSR and local transit permits compact urban centers and infill development along transit corridors, while development away from the new transportation continues in current patterns. This second alternative creates a far more sustainable development future while preserving a range of lifestyle choices.

Saving The Region's Natural Landscape

Florida's landscape and lifestyle are great competitive advantages, but new development can threaten the unique natural character of the Super Region. This study uses computer-aided analysis to identify the most important features of the existing natural landscape, combining the recommendations of many technical reports into an ideal conservation network. This study provides objective priorities for determining the natural resources that are most in need of preservation. In combination with computer-aided studies of future development, the study identifies the parts of the ideal network that are most at risk in the future and recommends that these lands be acquired and preserved first.

New Opportunities for Global Competitiveness

Throughout the world, HSR and high-tech research centers are reshaping business and development patterns. HSR and innovative industry clusters in Florida offer an opportunity to compete on the global stage by offering similar connections and amenities. Looking ahead to 2030 and beyond, this study illustrates a possible future where connectivity allows for the development of new economic nodes in Florida's Super Region. These developments include a new district in downtown Tampa around the HSR station, which has the potential to be like the Canary Wharf financial district in London; a new urban center and research park centered around HSR and the University of South Florida Polytechnic campus in Polk County, which can be comparable to Tsukuba City in Japan; an expanded Medical Research City connected to Orlando International Airport, which can become like North Carolina's Research Triangle; a reshaped Gateway District in Pinellas County that is only two transit stops away from Tampa International Airport; and new transportation-oriented downtown centers in Orlando, near the Sarasota-Bradenton International Airport, and in Daytona Beach.

Aerial Photo of Tampa Bay

1 THE VALUE OF WORKING AS A SUPER REGION

POPULATION AND EMPLOYMENT

High-rise Building in St. Petersburg

In 2008, the Super Region had approximately 7.2 million residents and 4.1 million jobs. According to projections from the Tampa Bay Regional Planning Council, these numbers will grow to approximately 11.2 million residents and 4.8 million jobs by 2030. Between 2030 and 2050, the population is projected to grow by 30% to 14.4 million, and the number of jobs is projected to increase by 27% to 6.2 million.

These projections do not take into the account the current economic crisis and therefore might overestimate the rate at which population and jobs will increase in the Super Region over the next decades. It is appropriate to use these official projections, however, as they are the projections local planning commissions and metropolitan planning organizations are required to use in their long-range plans. Even if the stated total population and job numbers may not occur by 2050, it is necessary to plan for such long-term growth.

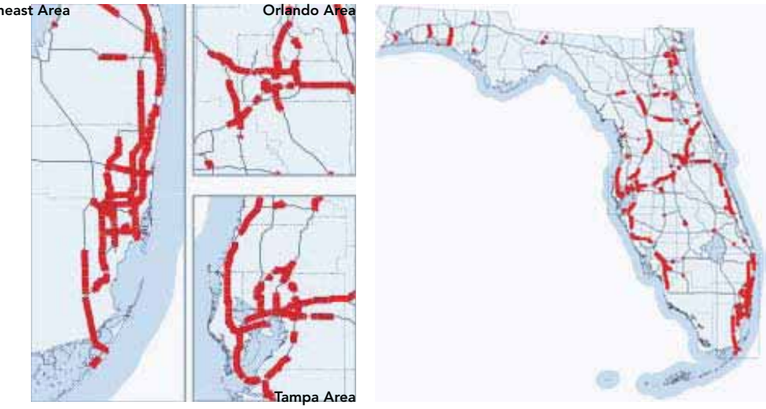
Art Festival in Down Town Tampa
Big events in Florida attract hundreds and thousands of people

Marina and Condo in St. Petersburg
Prepare for the upcoming employment center and prosperous communities

INFRASTRUCTURE

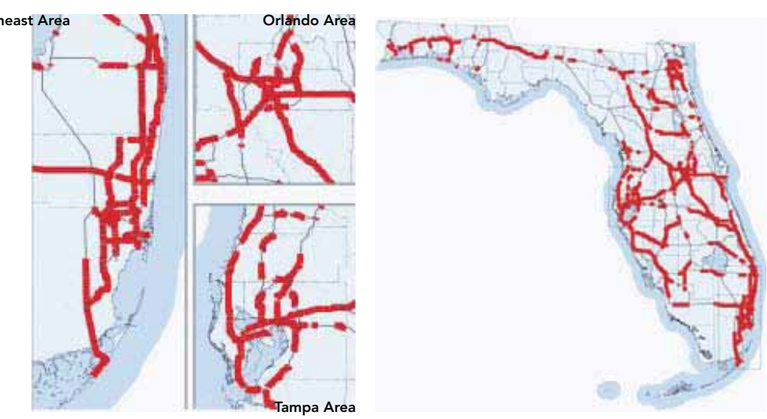
Currently, the state of Florida, including its Super Region, relies heavily on its highway system. The Florida Interstate Highway System (FIHS) makes up only three percent of Florida's public roads, but it carries 32 percent of the state's traffic. Travel demand has been continually growing, and usage of the FIHS has increased by 30 percent since 1990. Over the same period, FIHS capacity increased by approximately 13 percent. As a result, the state is struggling with traffic congestion on its highways, especially around its urban areas. The Florida Department of Transportation (FDOT) expects this trend to continue. According to their projections, highway traffic congestion will become an even greater problem in the future as travel demand on the FIHS continues to increase.

Highway in Pinellas County
Highways heading to Gateway and Downtown St. Petersburg



Traffic Congestion in 2005
SIS highways not meeting level of service standards in 2005

Traffic Congestion in 2015
SIS highways not meeting level of service standards in 2005



Traffic Congestion in 2025
SIS highways not meeting level of service standards in 2005

ENVIRONMENT

Thanks in part to its exceptional natural environment, Florida is a popular place to live, work, and visit. Environmentally sensitive lands are threatened by development pressure caused by population, job, and tourism growth. There is a danger that the very qualities that make Florida so attractive will be erased by new development. Some state-wide programs, including Florida Forever and the Critical Lands & Water Identification Project, identify and protect environmentally significant lands. Florida has been a leader in protecting critical elements of the environment, but as growth pressures increase much more needs to be done.

Florida Wetlands

Rain Garden in Manatee County
A small rain garden at the backyard

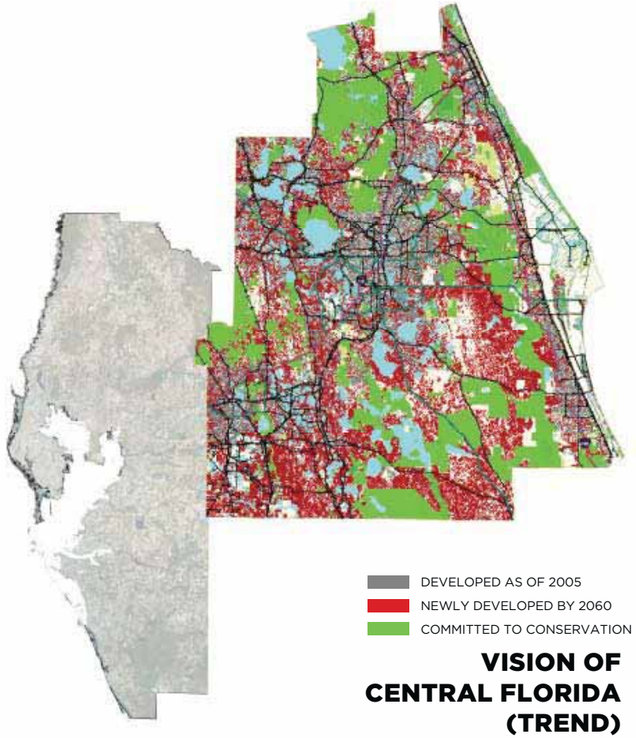
Riverfront Trail and Boat Tour

HOW WILL THE SUPER REGION GROW?

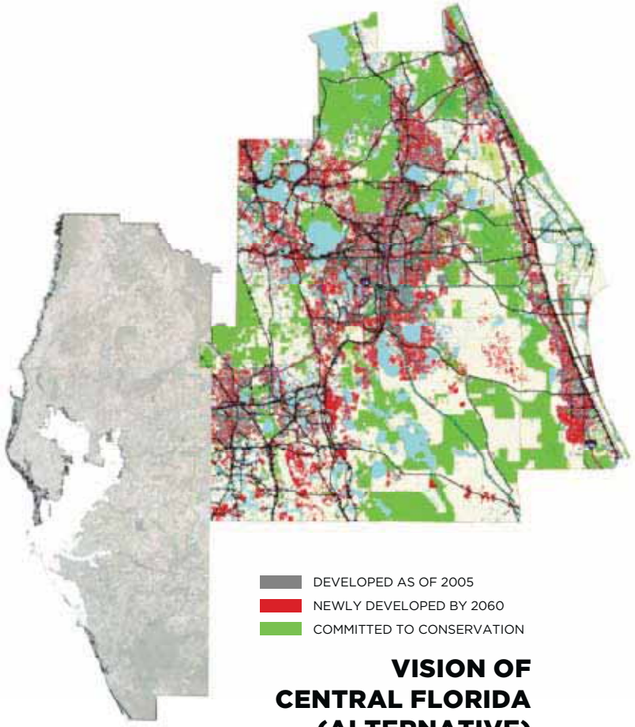
Between March 2006 and August 2007, nearly 20,000 Central Florida residents answered the question "How Shall We Grow?" through a series of community meetings, presentations, and surveys. The result was the Central Florida Regional Growth Vision. This vision shows development scenarios for how the region can look in 2050, when the population is expected to more than double its current size. In April 2010, One Bay released its future vision of how the Tampa Bay Region could be in the coming years. As part of its "Livable Communities Initiative," One Bay has held seminars involving some 10,000 people to create their vision of how the Tampa Bay Region can and should grow by 2050.

The PennDesign Studio reviewed these existing efforts and, using computer-assisted techniques, created two predictions about how the Super Region that combines Central Florida and Tampa Bay can grow. The first scenario is what would happen if current trends continue despite transportation investment and new public consensus. The second scenario shows how the Super Region can be transformed if the principles of the two regional visioning processes are followed and development patterns are influenced by new transportation investment. The studio illustrates these scenarios through growth simulation models from 2005 through 2030, and on through 2050.

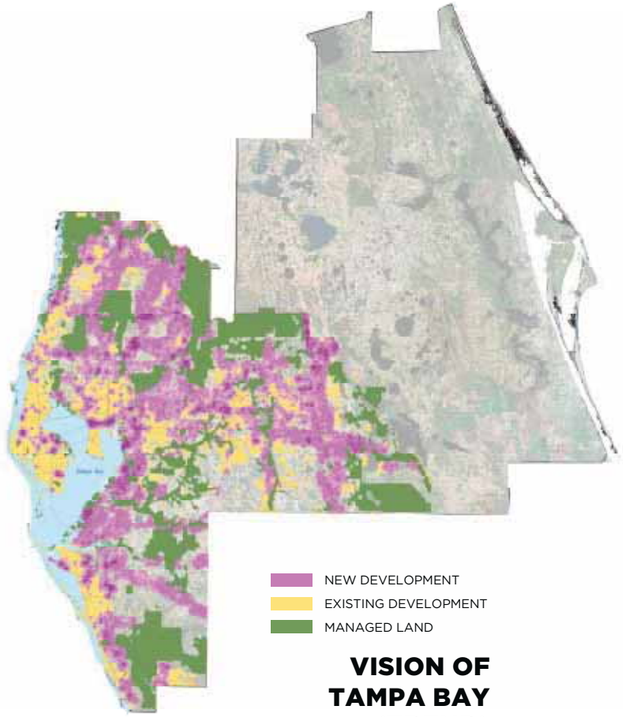
Urban Sprawl of Florida
Photo Credit: www.flickr.com



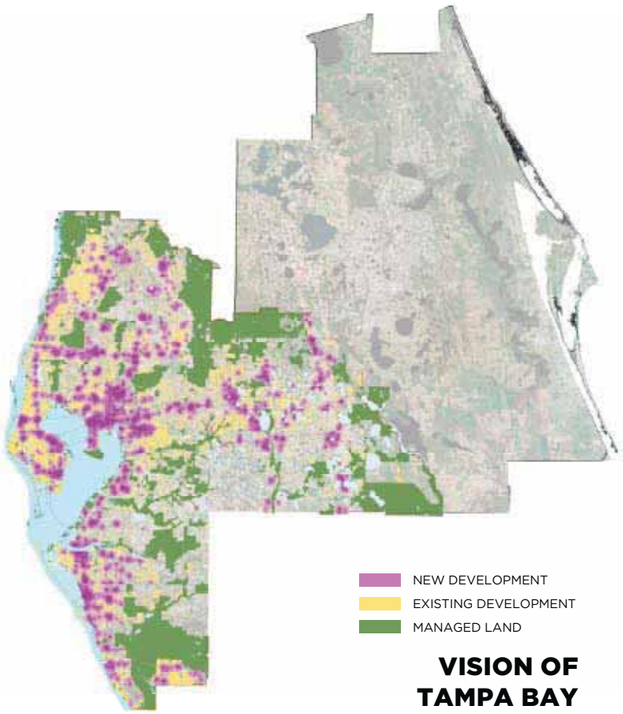
VISION OF CENTRAL FLORIDA (TREND)



VISION OF CENTRAL FLORIDA (ALTERNATIVE)



VISION OF TAMPA BAY (TREND)



VISION OF TAMPA BAY (ALTERNATIVE)

Traffic Flow in Down Town Tampa

2 THE TREND MODEL

CREATING THE TREND MODEL

The trend model for the Super Region is a worst-case scenario. Because current development policies are deeply embedded in the regional economy, it is a likely reality. The computer model shows the impacts of the trend, if business as usual prevails.

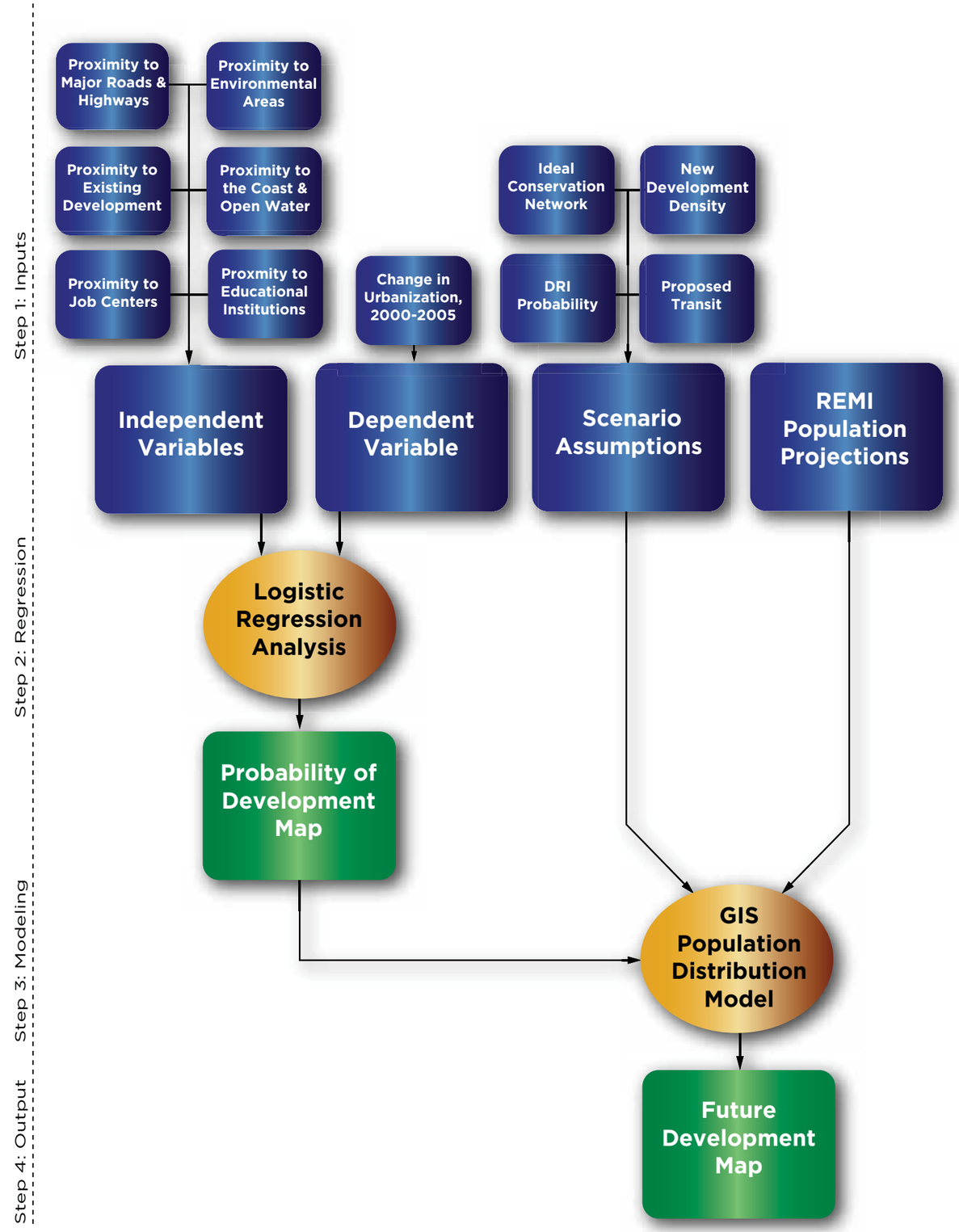
The studio used logistic regression to analyze the coincidence of factors that commonly are associated with growth. This regression was used to develop a metric for predicting where future growth is most likely to occur. New growth between 2000 and 2005 served as the dependent variable. Independent variables included:

- Access to jobs/job centers
- Access to schools
- Access to major roadways and highways
- Proximity to existing developed areas
- Proximity to natural environmental areas
- Proximity to the coast

The result of the logistic regression analysis was a map of development probability, which showed a surface continuum of the likelihood of development.

As a metric for growth, the model employed population projections from Regional Economic Models, Inc. (REMI) to inform how much development would be needed. A measure of gross density, on a county by county basis, determined how many people could be "absorbed" in a given area. Population was assigned first to the areas with the highest development probability. Once a given area was populated, areas with the next highest probability for settlement were filled, and so on until all the population was accommodated.

The model was first run using population projections from 2005 to 2030. The resulting urban area was then used to create a probability map for new development, and growth was subsequently projected to 2050.



TREND SCENARIO ASSUMPTIONS

The trend model included several assumptions based on Florida's traditional pattern of growth. In this "status-quo" scenario, residential development most often occurs in the form of single-family houses on large lots, residents tend to be dependent on automobile travel and highway infrastructure, and consumption of land and water is high. As such, future development was modeled to occur at a level of density that reflects the current built-state of the Super Region.

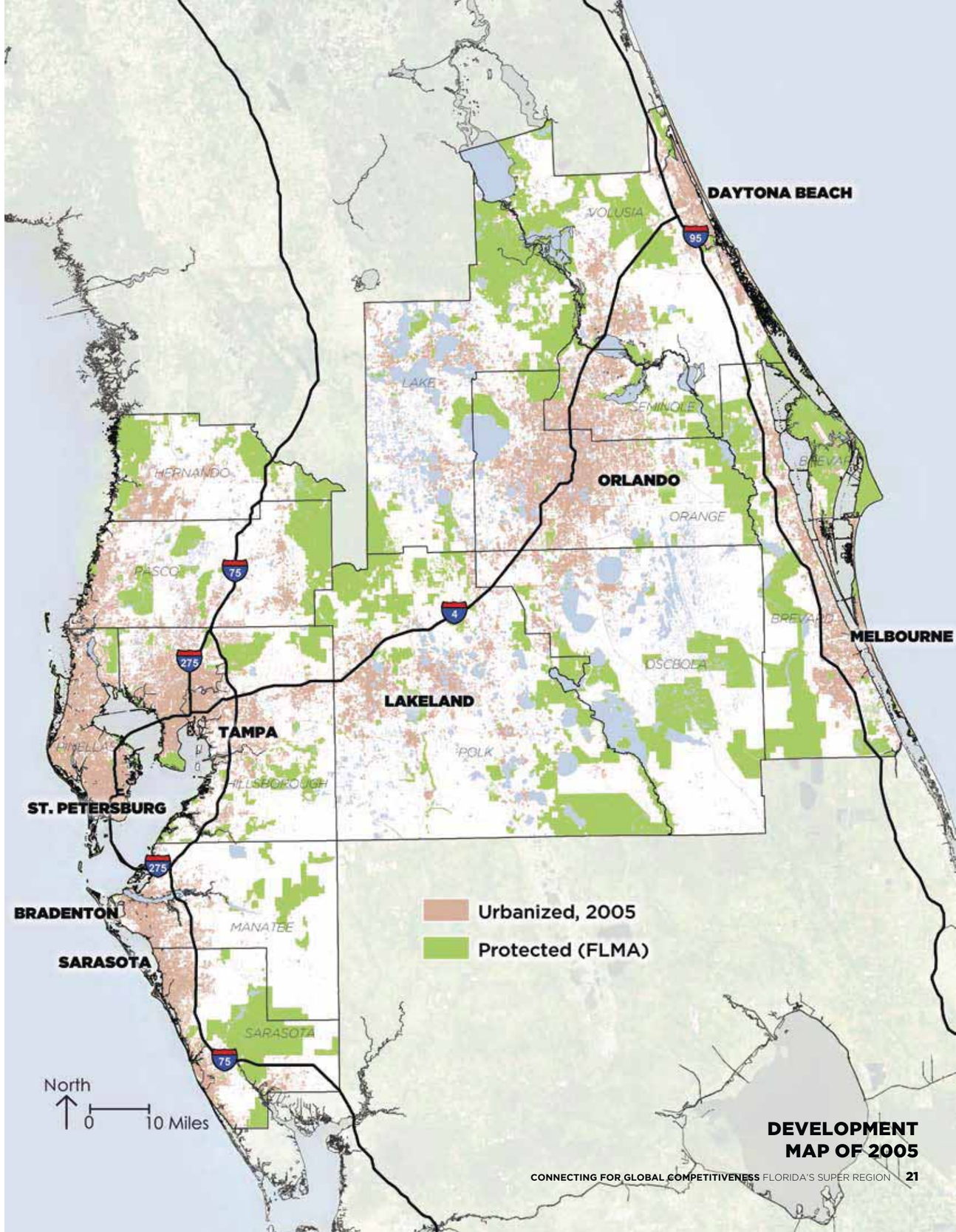
The trend scenario assumed that no development would occur in already protected environmental areas. It assumed no additional protection of agricultural lands, habitats, or sensitive environments that were not already protected.

Three additional assumptions modified the probability of development as predicted by the regression analysis. First, this scenario assumed that all planned Developments of Regional Impact (DRIs) have a 100% probability of being developed by 2030. All current DRIs were included in the model. Second, the scenario assumed that all future job centers, as predicted in a 2010 Robert Charles Lesser & Company (RCL Co.) report, will influence new development patterns by increasing probability of development around them. Finally, the trend scenario assumed that the investment in public transit would be extremely limited or completely negated by inappropriate development patterns. Only new roads influenced the likelihood of development.

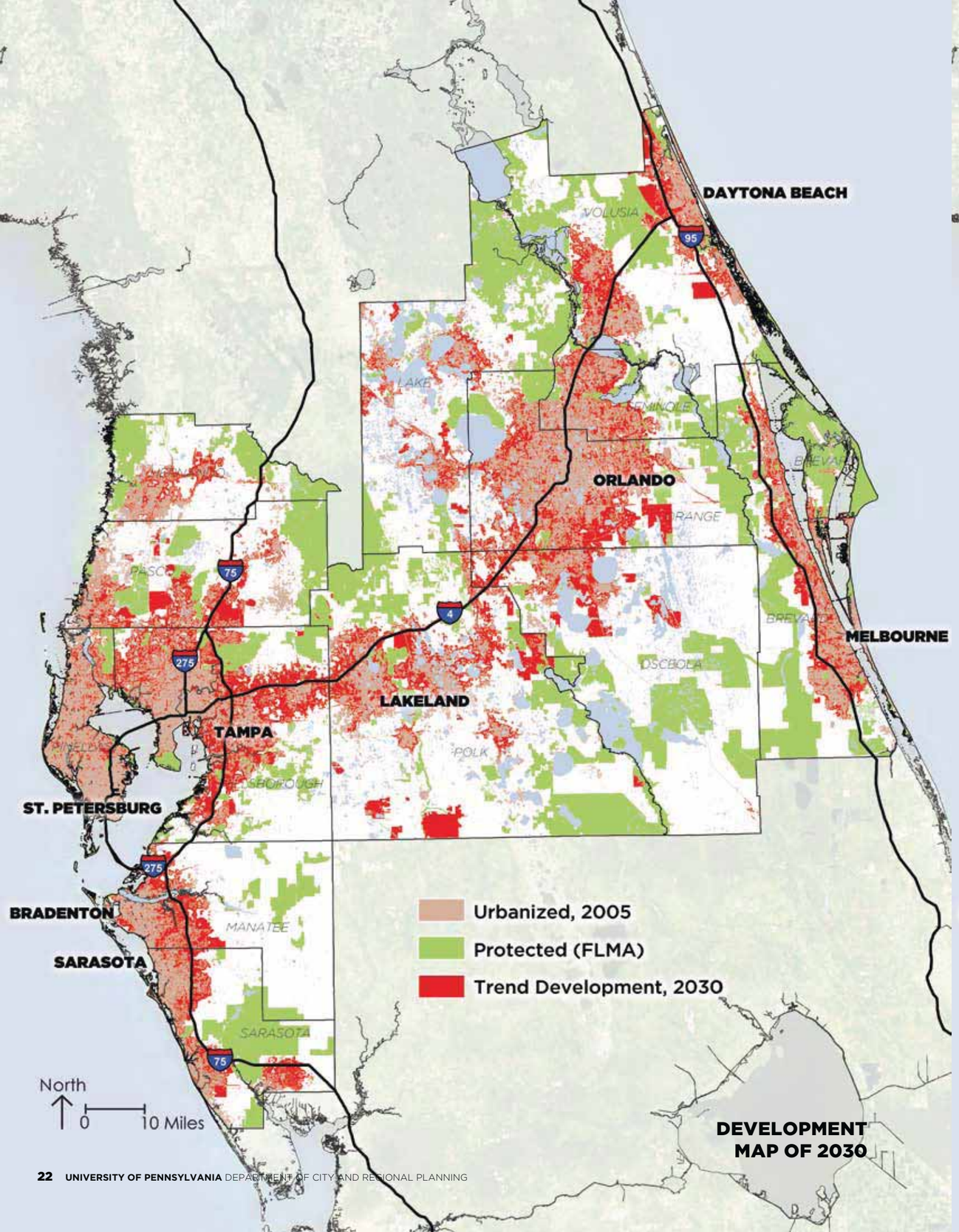
The scenario also represents what could happen when a major investment in transit systems is not accompanied by a restructuring of the built form of accompanying development. Several transit systems are in the design and development phase and conceivably exist in a "status-quo" future like the one modeled. Thus, the trend model effectively represents what happens if these transit systems are constructed but are subsequently rendered ineffective by a lack of institutional follow-through and public policies that ignore the important relationship between transportation and land use. It represents what happens when developers are not convinced of the economic opportunity to design and build around these systems in a transit- and pedestrian-friendly way. The trend model represents what might happen if the urban typologies necessary to support transit remain difficult to develop. It also illustrates a potential reality in which investment around these new stations is not incentivized or where the design of new development continues to induce automobile use by making it the only convenient or obvious mode of transportation. In the trend model, these assumptions characterize the dominant mindset employed to predict growth patterns in Florida's Super Region through 2050.

Table 2-1.
Trend scenario comparison summary.

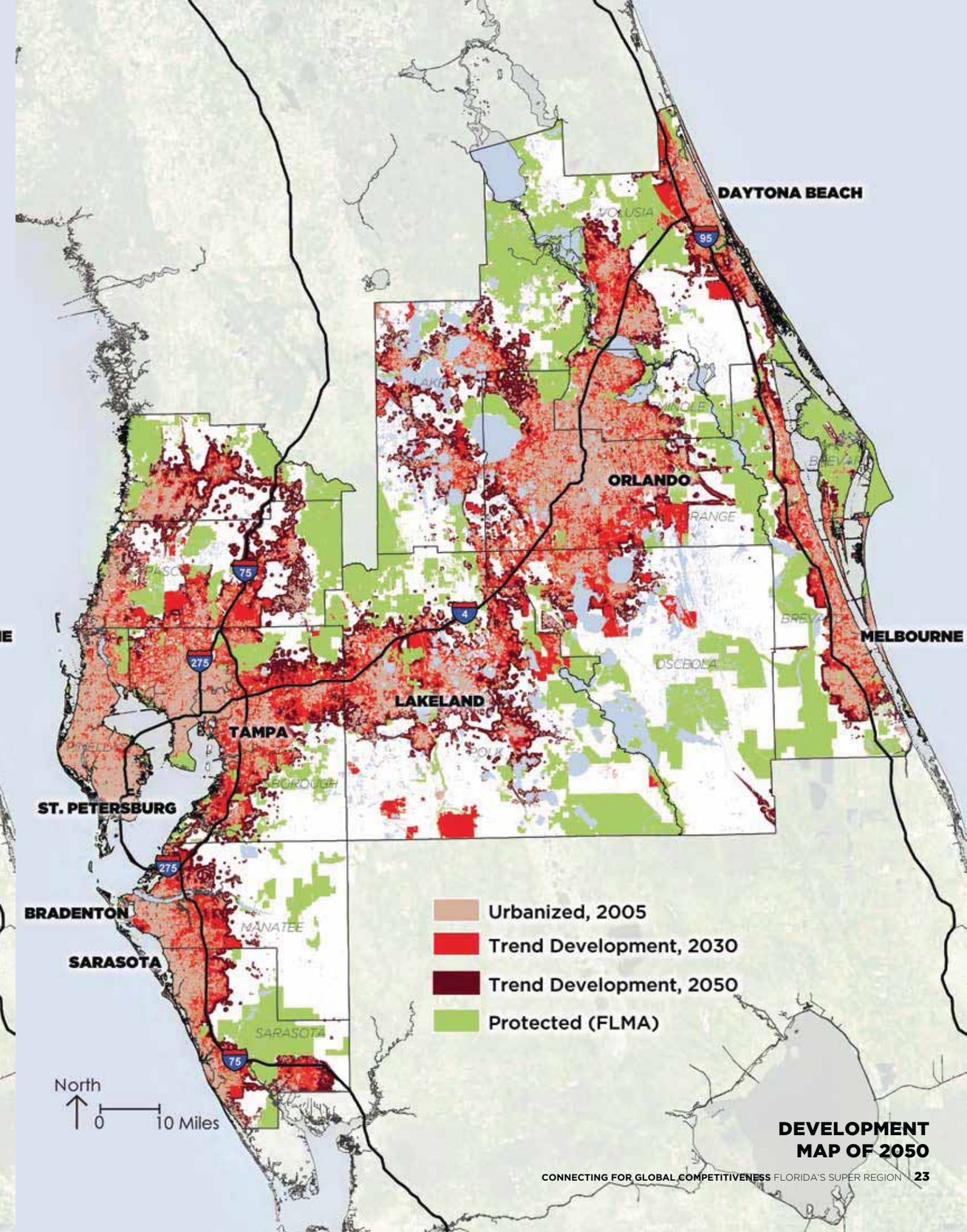
Horizon	Development (acres)	Trend	Population
2005	**Urbanized**	**1.2 million**	**7.2 million**
2005-2030	New Development	1.06 million	+ 4 million
	Infill Development	*0*	
	Environmentally Sensitive Land Lost	*173,000*	
	Priority Conservation Land Acquired	*0*	
2030	**Urbanized**	**2.26 million**	**11.2 million**
2030-2050	New Development	704,000	+ 3.2 million
	Infill Development	*0*	
	Environmentally Sensitive Land Lost	*144,500*	
	Priority Conservation Land Acquired	*0*	
2050	**Urbanized**	**2.96 million**	**14.4 million**
2005-2050	Total New Development	1.75 million	+ 7.2 million
	Total Infill Development	*0*	
	Total Environmentally Sensitive Land Lost	*317,000*	
	Total Priority Conservation Land Acquired	*0*	



DEVELOPMENT MAP OF 2005



DEVELOPMENT MAP OF 2030

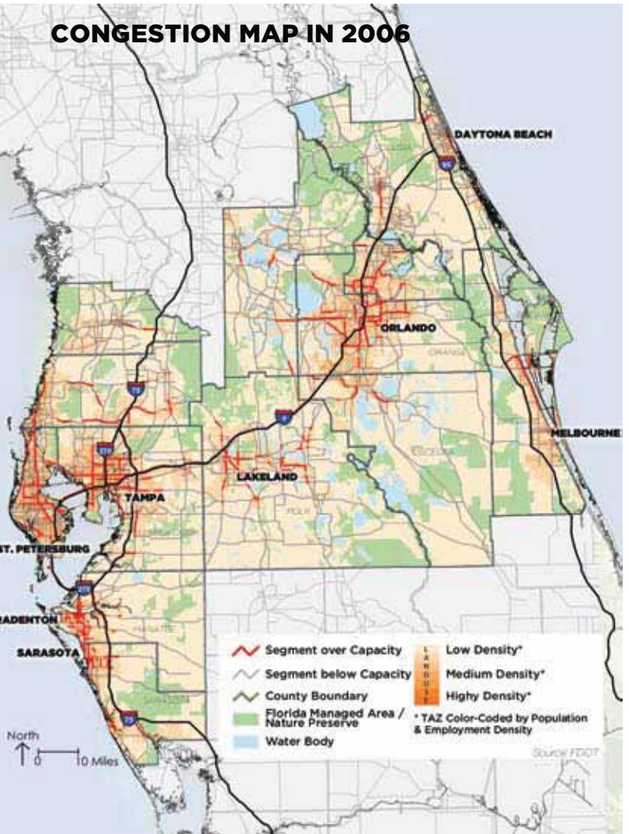


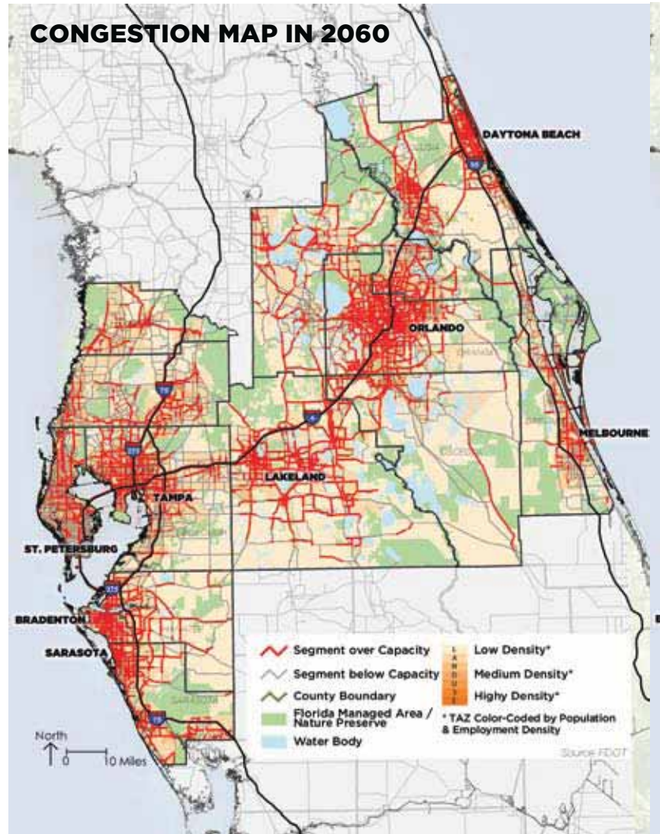
DEVELOPMENT MAP OF 2050

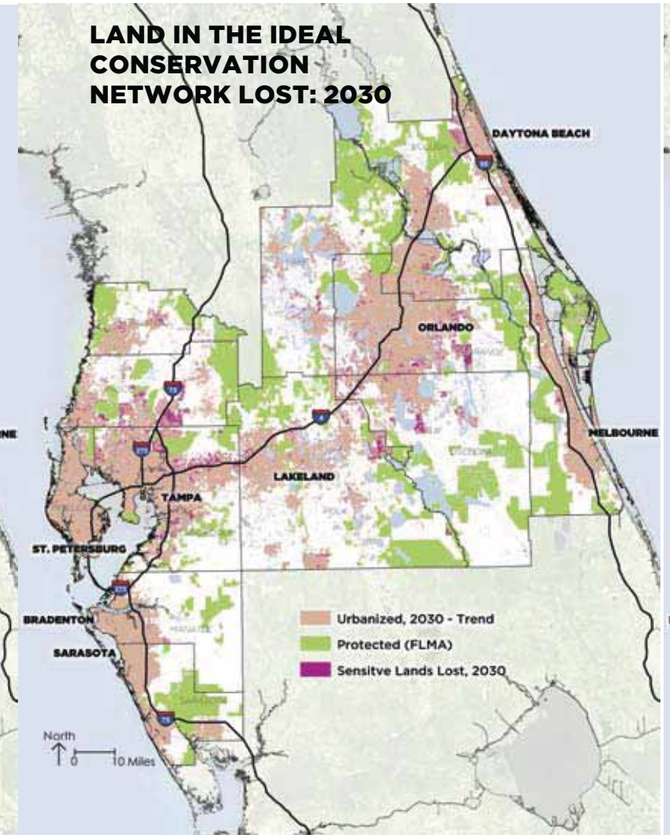
THE IMPLICATIONS OF THE TREND FOR GLOBAL COMPETITIVENESS

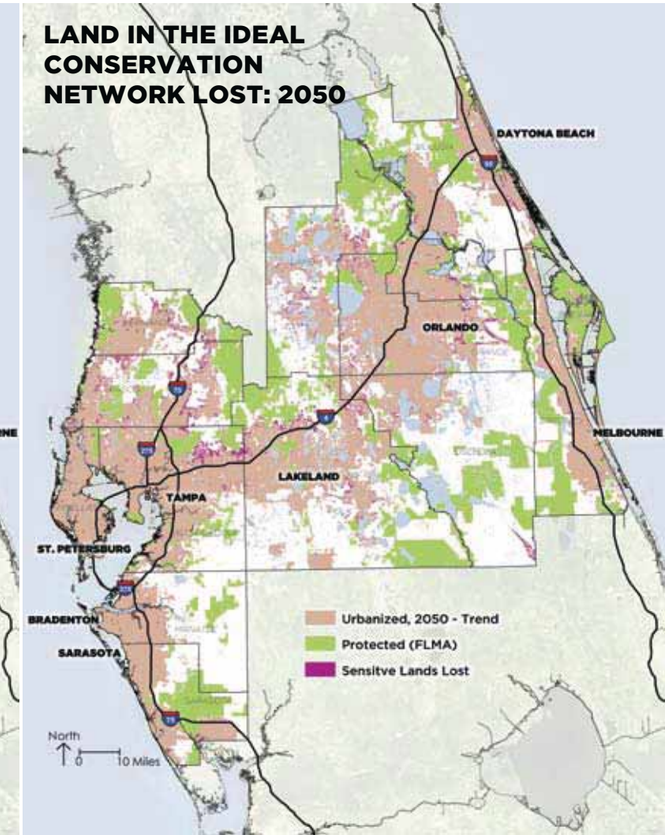
Regions in Western Europe, Japan, Korea, and China have high-speed rail and transit infrastructure that connect their economic assets. Most of these places also have strong environmental protection measures and land development policies that improve the quality of life as growth occurs. Florida's Super Region has the opportunity to compete economically on this global stage. If development follows the trend, however, it will take the Super Region on an expensive and unsustainable path. This will cause the Super Region to fall farther and farther behind its global competitors. For example, if the Super Region continues to rely on highway-based transportation, the roadway infrastructure will be rendered largely ineffective.

Furthermore, a significant proportion of super region's unique environmental assets, identified in the Ideal Conservation network, will be consumed by development. With this, a piece of the super region's global environmental identity will be irrevocably lost.









3 HOW TO CHANGE THE TREND

Changing the trend will not be easy, but, given the public support created by the visioning efforts of *myregion.org*'s "How Shall We Grow" and the One Bay "Livable Communities Initiative," it is possible. These regional partnerships have identified several ways to counter the trend: policies to promote economic competitiveness, transportation improvements, and proactive environmental conservation. When implementing these strategies, it will also be necessary to be proactive in adapting to the effects of climate change and the stress that growth will continue to put on the natural environment.

ECONOMIC COMPETITIVENESS

Port activity. *A ship is loaded with cargo containers at the Port of Tampa.*

Florida's Super Region is already a major center of activity in the state and the Atlantic Gulf region. Now, with funding for high-speed rail (HSR), it is positioned economically, geographically, and politically to become a major center of activity within the United States and the world. The region's evolution into one of the world's leading tourist and retirement destinations has produced assets that will also transform it into a nexus for medical, biotech, and high tech research, oceanography, manufacturing, and education.

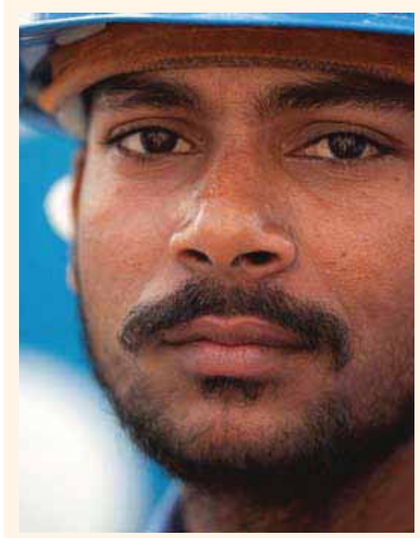
The Super Region has many geographical advantages. With one border on the Gulf of Mexico and another on the Atlantic Ocean, the Super Region can send and receive freight and passengers from around the world via ports on both coasts. The Port of Tampa is the 16th largest in the United States with regard to total tons traded. Orlando International Airport is the 22nd busiest airport in the world according to Airports Council International. These assets show the tremendous potential of the Super Region. Proximity to the Caribbean and to Central and South America have created vibrant cultural diversity, tourism synergies, and extensive trading opportunities. The Super Region's climate also provides delightful weather and year-round sun.

Florida's economic and political powers are substantial. The fourth most populous state in the nation, Florida ranked third among American states visited by overseas travelers, with Orlando in the top five cities overall. Walt Disney World Resort is fifth among the most visited tourist attractions in the country, and is at the top of the list of most-visited theme parks. Also within this Forbes Top 25 list, Universal Studios Orlando ranked 12th, Sea World Orlando was 13th, and Busch Gardens Africa in Tampa Bay was 21st. In a study of the nation's best beaches, Caladesi Island State Park in Clearwater came in first place, and Siesta Beach in Sarasota ranked third.

Florida's current position is remarkable given that, at the turn of the 20th century the state had the slowest growing population and had lost a tremendous portion of its population. Florida has overcome a series of traumas that stalled its economic development: the Great Migration after the Civil War, a series of natural disasters—including a beetle infestation and devastating hurricanes—and the Great Depression. With the invention of the air conditioner and the economic opportunities afforded by World War II, Florida began to see a turnaround. Its newly developing economy attracted job seekers, and developers acquired land at rock-bottom prices due to years of economic stagnation. The weather and location created a perfect opportunity for the placement of military operations, new residential communities, and retirement villages. Walt Disney also saw this as an opportunity to expand his theme park in California by developing Walt Disney World Resort in Orlando, which is now the largest employer in the state.

Census data shows that 60% of Florida's residents were born in another state. In 2009, the state also had the third largest number of illegal immigrants in the United States, and close to 200,000 military retirees lived there. The state also has three of the largest Metropolitan Statistical Areas (MSAs) in the United States. Two of these, Orlando and Tampa, are the major forces of the Super Region. Other regional assets include the aerospace industry, centered at Cape Canaveral, citrus fruit as a major agricultural yield, a well developed interstate highway system and freight rail infrastructure, and an array of higher education

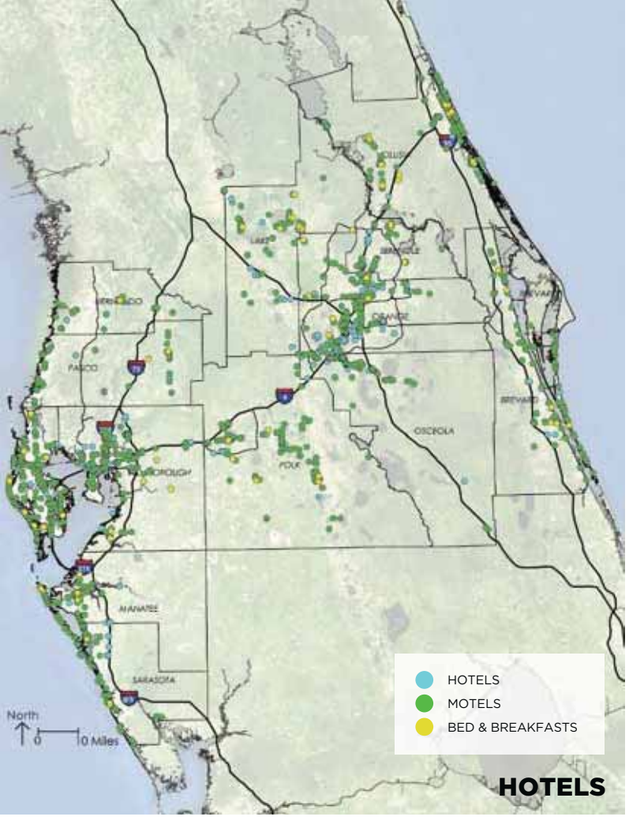
Downtown growth. *Development along the waterfront in Tampa.*

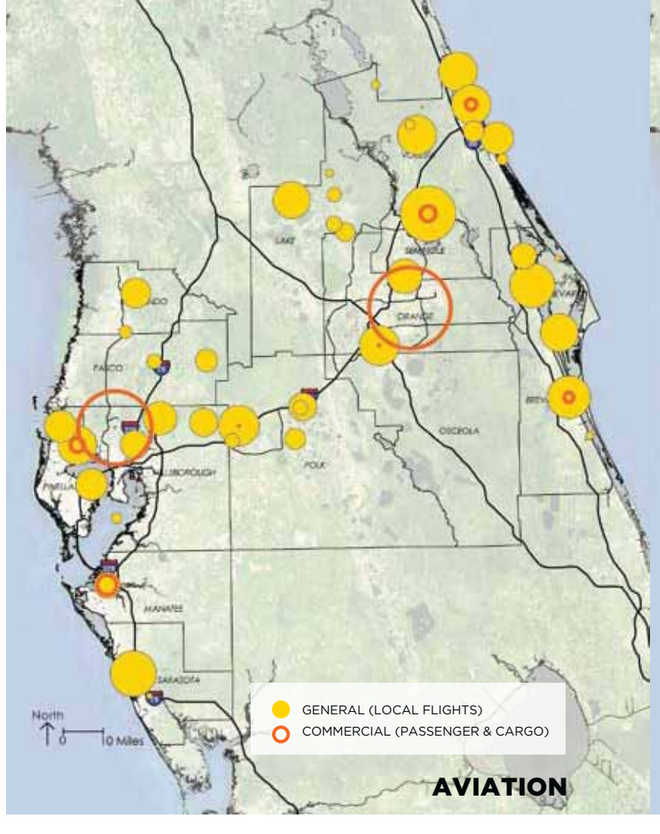


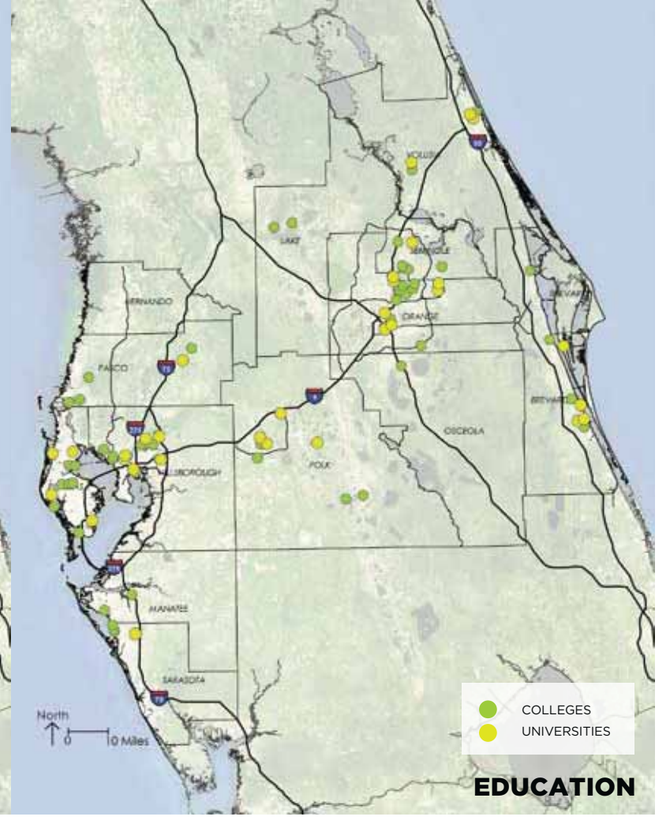
PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

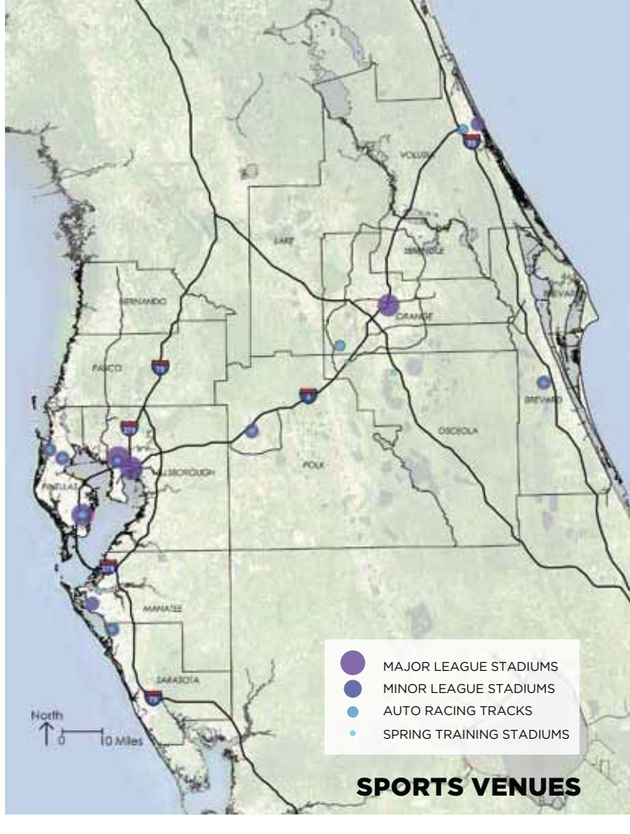
Imagine this scenario:

After immigrating to Florida as a farm hand, this man recently obtained permanent residency. He is now looking for a more permanent job at a ship repair company in Tampa. As a working class laborer trying to build a life for his family, the new integrated transit network allows him to get to and from work without needing to purchase a vehicle. He is excited about the new opportunities this job will provide him, and he looks forward to using transit to explore the region in an affordable and efficient way.









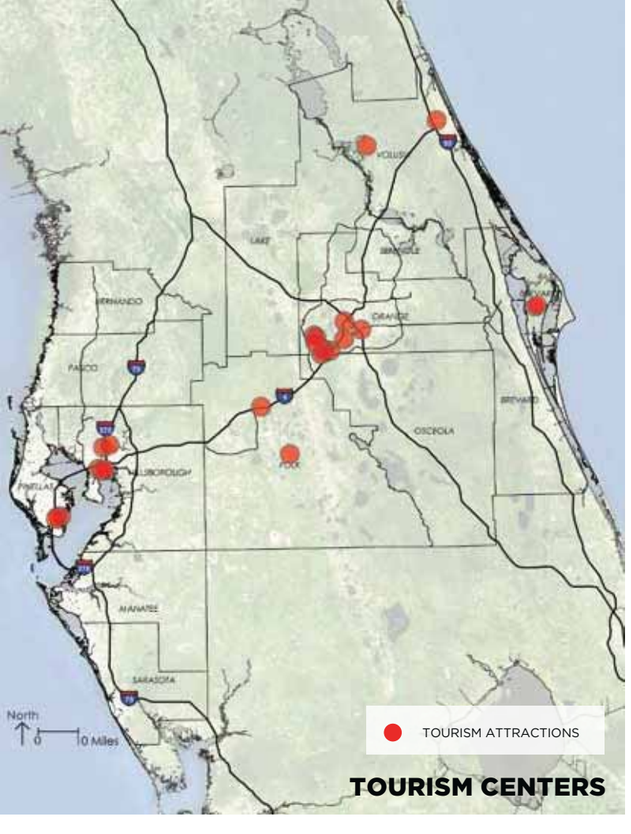
Sports. *An Orlando Magic player goes for the layup.*

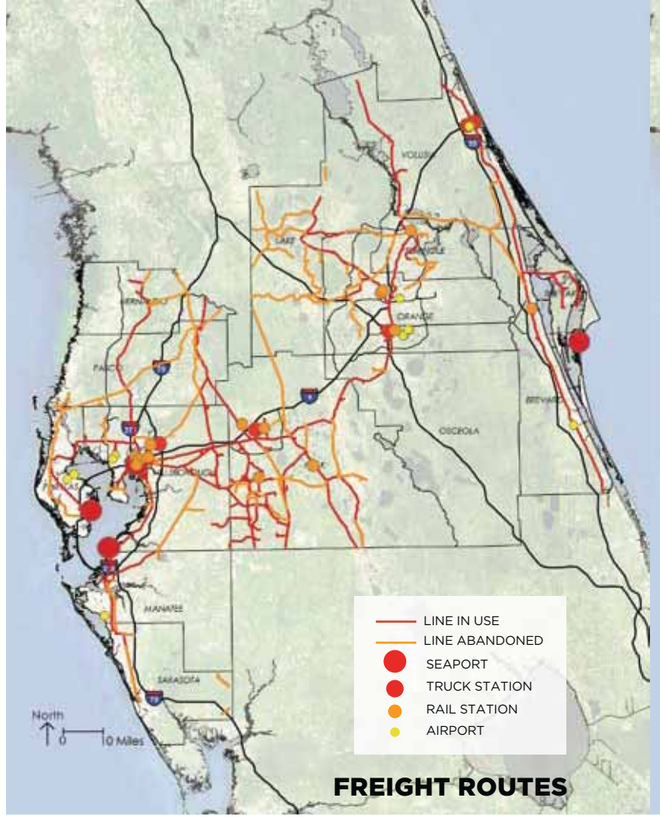
institutions. There is a diversity of sports complexes hosting every major American sports division, both at the professional and the college level. In addition, 60% of the spring training camps for Major League Baseball are located in Florida.

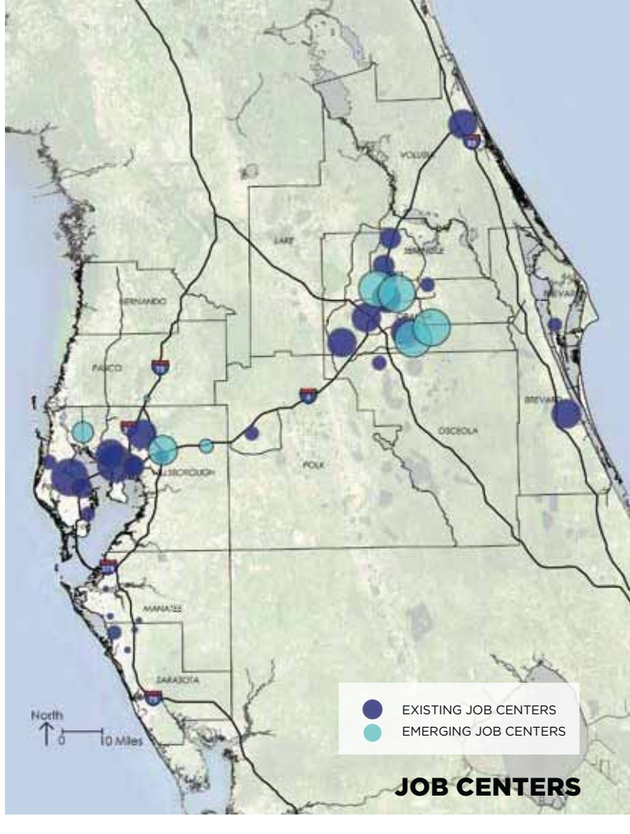
The combination of these assets creates opportunities that occur in few other places. Sheer population numbers can support and cultivate new industries, if given the right support. Many competing regions are promoting new industries, including bio-medical, high-tech, creative imaging, and simulation. Few regions, however, have the potential found in Florida's Super Region for achieving growth in all of these areas. Increased support for new and existing educational institutions will prepare future generations for the unique careers emerging from these industries. At the same time, these institutions can promote and encourage research into the new fields, drawing professionals and experts to the region. Institutions and research parks, such as the Lake Nona development southeast of Orlando International Airport (see section title page), can be test beds for an exciting array of new products for production within the region. The Super Region already has a strong medical sector in terms of healthcare facilities supported by its widespread aging population. Partnered with new bio-medical research opportunities, there is potential for the Super Region to produce and test new medical treatments, drugs, and programs. The proximity of theme parks and military operations resulted in creative-imaging and simulation industries, which will be reinforced as these operations continue to grow. Jobs created by the expansion of these innovative industries have the potential to attract young talent to the region and to retain recent graduates of local schools. This "creative class" seeks cities and communities that support their active lifestyle, and future development within the Super Region should acknowledge the preferences of this new demographic.

Freight rail is another important economic strength of the Super Region. With the expansion of the Panama Canal, Florida ports will be receiving larger container ships. Such an influx of goods has the potential to increase freight-related and light manufacturing industries in the Super Region. In preparation, CSX Corporation—one of three freight carriers that serves Florida—is developing integrated logistics centers (ILCs), including one

Technology and jobs. *A life-size space shuttle on display at the Kennedy Space Center in Port Canaveral.*







Distribution network. *A CSX freight engine at a train yard.*

in Polk County. These "inland ports" concentrate new distribution centers, freight-handling facilities, manufacturing facilities, and warehouses near major freight rail lines. Currently, Florida largely relies on truck transport for freight movement. Freight rail is safer, less expensive, more efficient, and more environmentally friendly than truck transport. A shift to rail transport will also alleviate congestion on highways. An integrated freight rail system will not only increase the speed and amount of cargo that can be moved in the Super Region, but it can also serve as a catalyst to attract major import businesses.

By cooperating across boundaries, counties can translate their specific assets—such as a port, abandoned rail line, or burgeoning job center—into regional assets. Each county can leverage its talent, ideas, amenities, products, and services by connecting these elements to similar ones held by Super Regional partners. For example, recreational and entertainment amenities across the region, rather than providing isolated benefits, can become part of a thriving system that coalesces into a national or global force. Imagine if, across the globe, people knew the Super Region not as the place to visit Disney, but as the place to access an unbelievable array of attractions quickly and affordably. Richard Florida defines this concentration and propinquity of resources as the "clustering force." If specific assets within a sector remain isolated, they will continue to have a minimal impact on the region.

The Super Region can cultivate this cross-fertilization of industry sectors and economic assets. Regional administrative, economic, political, and budgetary coordination is needed to support these collaborative efforts at both the State and the local levels. The key leaders and stewards of the business world must also be educated and encouraged to form partnerships and connections with one another. Existing efforts to begin these conversations by the Tampa Bay Partnership and the Central Florida Partnership should be expanded upon, and the work of these groups should serve as models for future partnerships.

The maps in this section illustrate the distribution of important economic generators across Florida's Super Region. Each constitutes a separate system whose future plans should be coordinated to support the development of the economic competitiveness of the Super Region.

Tourism and entertainment. *A car races by at the Daytona Speedway.*

TRANSPORTATION IMPROVEMENTS

A fundamental aspect of any globally competitive super region is an integrated network of transportation systems. Such a network needs to include interconnectivity between all modes, including highways, airports, spaceports, passenger ships, and transit. In Florida's Super Region, the missing transportation component is publically accessible transit. Transit, including long-distance rail travel, is an integral part of a globally competitive transportation system because it is a sustainable mode that positively impacts land development. In the past, the automobile and its corresponding highway development have shaped the growth of Florida's Super Region. This has resulted in a sprawling, disconnected landscape. There is now an opportunity to redirect development patterns towards a denser and more walkable reality. Transit will also make the Super Region more competitive by affording residents, businesspeople, and tourists easier access to all parts of the region.

The following is an explanation of the three levels of transit service that are essential to a Super Regional transportation network: high-speed rail (HSR), regional rail, and local feeder routes. These transit modes are then applied within the context of Florida's Super Region. Recommendations for an implementation schedule are also suggested.

High-speed Rail

With the awarding of $8 billion in American Reinvestment and Recovery Act funds to HSR projects in January 2010, the United States took a step closer to offering HSR service. The United States Department of Transportation has now adopted a policy of implementing rail service with maximum operating speeds of 150 to 220 miles per hour. To reach such speeds, trains need to travel a significant distance. To maximize the benefits of these speeds, it is necessary to space HSR stops far enough apart so that trains can reach and maintain maximum speeds for a significant amount of time.

While HSR could potentially be used for commuter service, the price and location of stations lends itself more to infrequent trips by residents, businesspeople, and tourists. HSR is critical to super regions because it allows for faster and more efficient travel between major metropolitan centers. It is especially pertinent to connect HSR with airports. Airports are the primary connection points between super regions, and airport HSR service offers a seamless connection between that point of entry and other parts of the region.

High-speed rail. *Shinkansen train in Japan.*

Regional rail. *Bay Area Rapid Transit (BART) commuter rail system in San Francisco.*

Regional Rail

Regional rail service is designed for medium-length trips between a core metropolitan area and its surrounding communities. Due to closer station spacing, maximum speeds are limited to between 50mph and 80mph. One fundamental purpose of regional rail is to bring workers from suburban areas to their jobs in the urban core. As such, the term regional rail tends to be used interchangeably with commuter rail. In the case of commuter rail, more frequent service is offered during the peak periods of worker travel, as this is when demand is greatest. Regional rail is an important transportation service within a super region because it allows residents of areas around major job centers to more easily access their worksites. It also gives employers access to a larger workforce pool. Additionally, as commuters opt to use regional rail service over their private automobile, air quality improves and congestion on highways leading into the city decreases. Regional rail also has the ability to significantly impact land uses around stations. This mode of transportation is a good candidate for transit-oriented development projects.

Feeder Routes

Feeder routes are local transit systems. These systems are critical support systems for regional rail and HSR because once travelers arrive in a city, they need to be able to easily get to their final destination. As such, feeder routes need to be integrated into stations that serve higher-performance modes so that seamless connections are available for travelers. Feeder routes generally feature frequent stops and lower speeds. These systems can take many forms, including street transit, light rail transit (LRT), or bus rapid transit (BRT), and each technology has different characteristics.

Street transit, such as buses or trolleys, is the lowest level of feeder route service, with the most frequent stops and the slowest operating speeds. This type of system is most appropriate in areas where there is relatively low demand for transit or where it is physically or financially impossible to build the infrastructure necessary for other modes. Because of its lack of permanent infrastructure, street transit is also the most flexible type of feeder route, and service can easily be modified to meet shifting demand. At the same time, this lack of permanence means that street transit has an extremely limited impact on development patterns.

LRT and BRT offer a higher level of service than street transit. These modes feature greater distances between stations and can operate at higher speeds because they operate in rights-of-way that are separated from other modes. LRT and BRT require significant infrastructure investments, and they therefore are only financially feasible in areas where there is enough ridership to justify their capital costs. Due to their permanence, however, these modes can have significant impacts on surrounding land uses.

Modes of feeder route transit. *At top, a light rail train in Phoenix, Arizona; and at bottom, a bus in a dedicated bus rapid transit system in Curitiba, Brazil.*

Transit within Florida's Super Region

HIGH-SPEED RAIL

In January 2010, Florida received $1.25 billion in federal funding for the first phase of its HSR system. This phase will create high-speed service between Tampa and Orlando. The service, which is expected to begin operation in 2015, will offer 16

round trips each day. The average operating speed will be just over 100mph, with trains reaching maximum speeds of 168mph. The line will include stops in downtown Tampa, Polk County, Disney/Celebration, Orange County Convention Center, and Orlando International Airport. There are currently five station locations under consideration for Polk County. This studio endorses the future site of the University of South Florida (USF) Polytechnic campus as the preferred station location. This location, which will be discussed in more detail in Section 5, has the potential to be the catalyst of significant future development in Polk County. The development of an HSR station at this location also has the potential to be a model for future greenfield development within the Super Region. Being able to access universities via HSR is also important for the sharing of ideas both within the Super Region and between Florida's Super Region and other super regions.

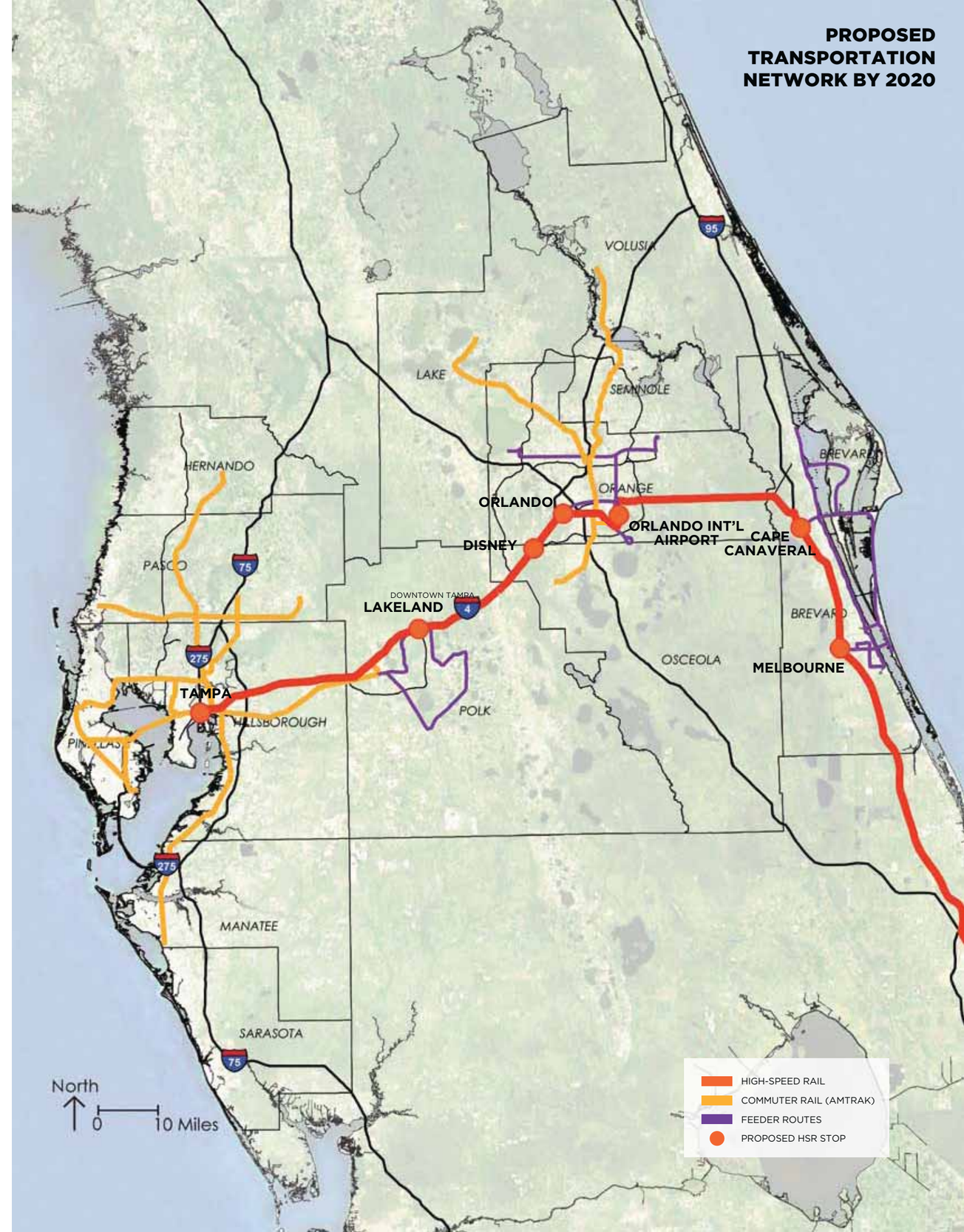
Florida's proposed high speed rail corridor.
Phase I will connect Tampa to Orlando, and Phase II will connect Orlando to Miami using one of two routes still under consideration.

Phase II of Florida's HSR system will connect Orlando to Miami. This link, which is planned to be operational by 2017, will offer 20 round trips each day. The average operating speed will be approximately 114mph, with trains reaching maximum speeds of 186mph. Currently, there are two route options being considered for this link: the Florida Turnpike (the Turnpike) or Interstate 95 (I-95). This studio endorses the I-95 option. The I-95 route is the most logical option for a Phase II right-of-way for several reasons. First, the ultimate goal is to have a state-wide HSR system. Within such a system, a direct route from Jacksonville to Miami would be essential. I-95 is the most direct, and thus the fastest, connection between these two cities. HSR service should therefore move east from Orlando to meet this direct route. Second, the Federal Government has endorsed the use of HSR corridors to promote livable communities. To do this, HSR routes should connect to higher density communities served by local transit. The I-95 route would connect more of these communities than the Turnpike route. While both routes would include intermediate stops in Fort Pierce, West Palm Beach, and Fort Lauderdale, the I-95 option would include additional stops in Cape Canaveral and Melbourne. Finally, the selection of the I-95 route would truly connect Florida's Super Region geographically from the Gulf of Mexico to the Atlantic Ocean. The Turnpike route would travel southeast from Orlando, bypassing the east coast. Connecting the east and west coasts of the Super Region is critical to creating a unified identity for Florida's Super Region.

Phase III would be the completed state-wide HSR system. This phase would include a link north from Cape Canaveral to Jacksonville via Daytona Beach. Jacksonville would then connect to Tallahassee and Pensacola. A northern extension from Tampa would include stops in Ocala and Gainesville before connecting to the Jacksonville-Pensacola link. A southern extension from Tampa would include stops in Sarasota/Bradenton, Fort Myers, and Naples. The system would be completed by an east-west connection between Naples and Fort Lauderdale, thereby once again linking the two coasts of the State. The Super Region needs the complete state-wide HSR system to reach its full potential. While there currently is no official timeline associated with this phase, the studio strongly endorses the completion of a state-wide HSR system as soon as is feasible.

REGIONAL RAIL

Within Florida's Super Region, there are two proposed regional rail systems. The first system is proposed by the Tampa Bay Area Regional Transportation Authority (TBARTA). This system will include rail and bus service in Citrus, Hernando, Hillsborough, Manatee, Pasco, Pinellas, and Sarasota Counties. TBARTA is planned in two phases. The first phase, planned for 2035, will include 116 miles of rail. Major cities serviced by this phase include Tampa, St. Petersburg, and Clearwater. TBARTA's mid-range network also includes a managed express bus lane through Pasco County. This link travels through an anticipated corridor of development and therefore has the potential to attract significant ridership and to service new commercial centers. The second phase, planned for 2050, will include an additional 135 miles of rail service. This phase will feature connections to Sarasota, Bradenton, and Lakeland.



Short-distance TBARTA service, with stops every one-half mile to one mile, is expected to have average operating speeds of 15mph to 25mph. Longer-distance service, with stops every five to ten miles, will feature average operating speeds of 30mph.

The second proposed regional rail system in the Super Region is SunRail. This commuter rail line will service Orlando and its surrounding areas. Phase I, planned for completion in 2013, will run 31 miles from DeBary to Sand Lake Road. Phase II will be completed by 2015, with extensions south to Poinciana and north to DeLand. The system will ultimately be 61 miles long with 17 stations for an average station spacing of 3.6 miles. Average operating speeds are expected to be 45mph. It is necessary for SunRail to connect to Orlando International Airport (OIA), not only to serve the airport but because also to connect SunRail and HSR. Although this connection was not included in the official SunRail plan, it is the studio's recommendation that the first phase of SunRail connect directly to the airport. An existing right-of-way used to service a power station east of OIA joins the SunRail line between Sand Lake Road Station and Meadow Woods Station. Using this right-of-way for passenger service is already under study, and the studio recommends that it become operational in 2015 so that SunRail, HSR, and OIA are connected when HSR begins running.

Another regional rail system being planned for the Orlando region is regular passenger service on the Orange Blossom Line that uses an existing right of way that heads north-west from downtown Orlando. This line is already used for transport to special events.

PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

Imagine this scenario:

As a leading expert on aerospace science and engineering, this scholar often serves as a consultant in the Super Region. Her travels take her to Embry-Riddle in Daytona, the Kennedy Space Center at Cape Canaveral, and Lockheed Martin in Tampa. As she is traveling on a tight schedule, time is of the utmost importance. She enjoys assisting her colleagues and interacting with students, so the more time she can dedicate to her work the better. High-speed rail gets her quickly and efficiently from place to place so she can focus her energy where it is most needed.

FEEDER ROUTES

The studio proposes local feeder routes around all HSR stops. As was mentioned earlier, feeder routes are essential for getting HSR passengers to their final destinations. Local systems for specific sites will be discussed in more detail in Section 5.

Integrated Transportation System

The implementation of HSR, regional rail, and feeder routes has the potential to have a dramatic impact on the mobility of residents, businesspeople, and tourists in Florida's Super Region. The transportation system will advance the Super Region's global competitiveness by connecting the region's seven commercial service airports, three deepwater seaports, two major intermodal freight terminals, and a spaceport. Because of the importance of connectivity between HSR, regional rail, and feeder routes, it is imperative that all modes become operational in coordinated phases. Without such a timeline, the system will lack efficiency and connectivity, and its attractiveness to potential users will suffer.

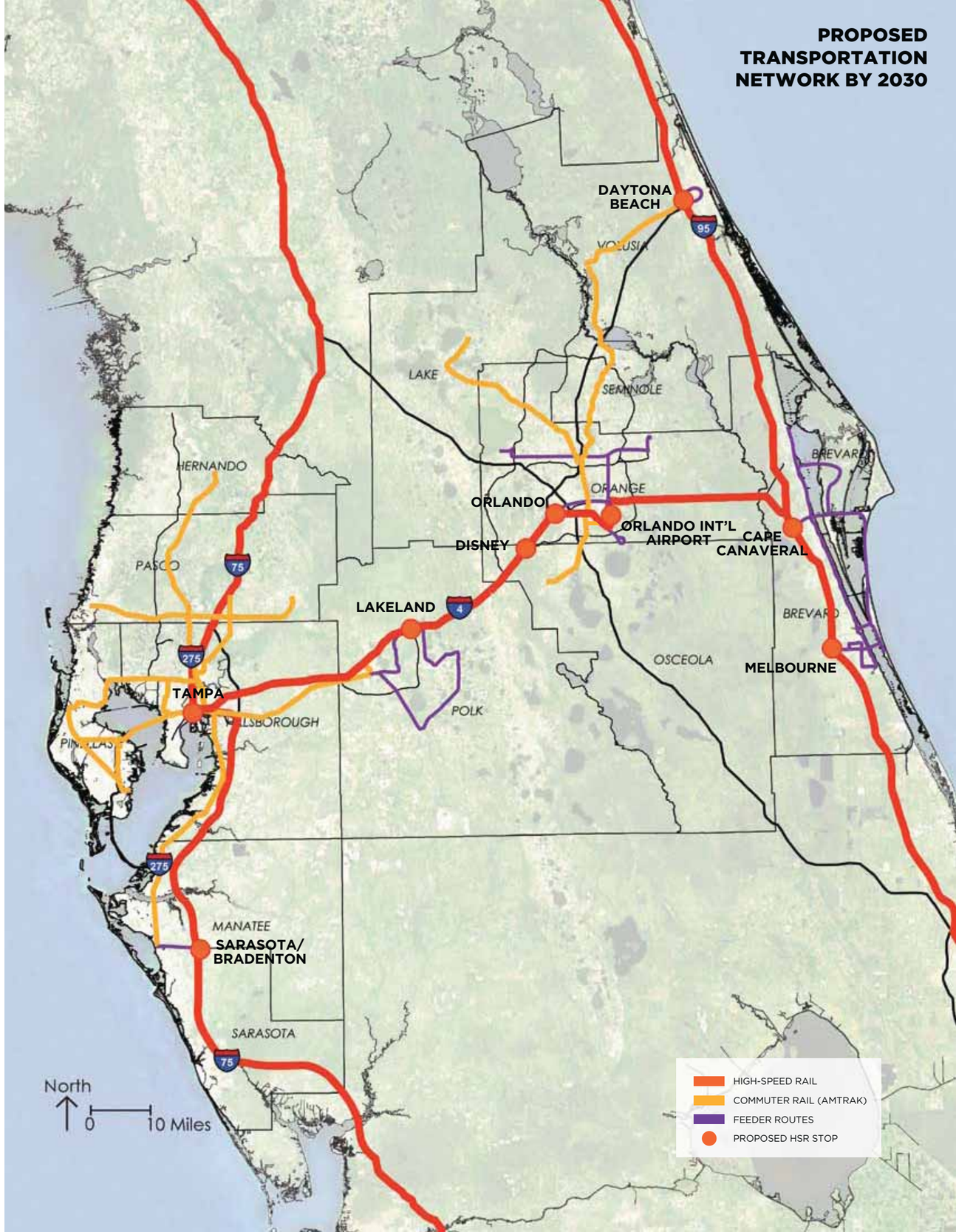
A coordinated transit network also has the potential to redirect future development in a more concentrated way around stations and corridors. The potential effect on regional development was incorporated into an Alternative Model that is discussed in Section 4 of this report. In order to impact land uses in 2030, the initial phase of transit systems will need to be in place by 2020. Similarly, in order to impact land uses in 2050, transit systems will need to be in place by 2030. The studio recommends implementation for each phase as follows:

2020

- HSR Phase I: Tampa to Orlando
- HSR Phase II: Orlando to Miami (via I-95)
- SunRail Phase I and II plus connection to Orlando International Airport and HSR
- TBARTA Phase I plus connection to Tampa International Airport
- Feeder routes in Orlando and Polk County

2030

- State-wide HSR System: Including Super Regional stops in Sarasota/Bradenton, Melbourne, Cape Canaveral, and Daytona Beach
- TBARTA Phase II
- Feeder routes in Sarasota/Bradenton, Melbourne, Cape Canaveral, and Daytona Beach



PRO-ACTIVE ENVIRONMENTAL CONSERVATION

A critical asset of Florida's Super Region is its natural environment. The beaches, lakes, forests, and wildlife provide not just aesthetic pleasure to people in the region but also serve as the backbone for agriculture and tourism in the region and safeguard the future of the water supply. For the region to develop in a sustainable way, it is important to conserve the ecological environment of the Super Region.

Environmental conservation cannot be shaped by political borders. Ecological systems are defined by watershed, species habitat, or environmental continuity or homogeneity. Because these attributes of ecological systems surpass political boundaries, when discussing natural conservation, this studio will treat the Super Region as an integrated environmental system.

Before discussing the PennDesign Studio's environmental analysis of the Super Region, it is important to acknowledge existing conservation efforts. Two land acquisition programs, *Preservation 2000* and *Florida Forever*, allow the State of Florida to purchase and preserve lands of ecological and agricultural importance. Combined, the programs are the largest public land acquisition program of their kind in the United States, and as of 2008 a total of 3.8 million acres of land had been purchased under them. In addition to these State land protection programs, every county in the Super Region also has a local land acquisition program.

A Model for Conservation Priorities

The goal of this studio's environmental analysis is to provide a reference for conservation priorities so that the limited funding for acquisition is spent on the most environmentally sensitive and most at-risk land.

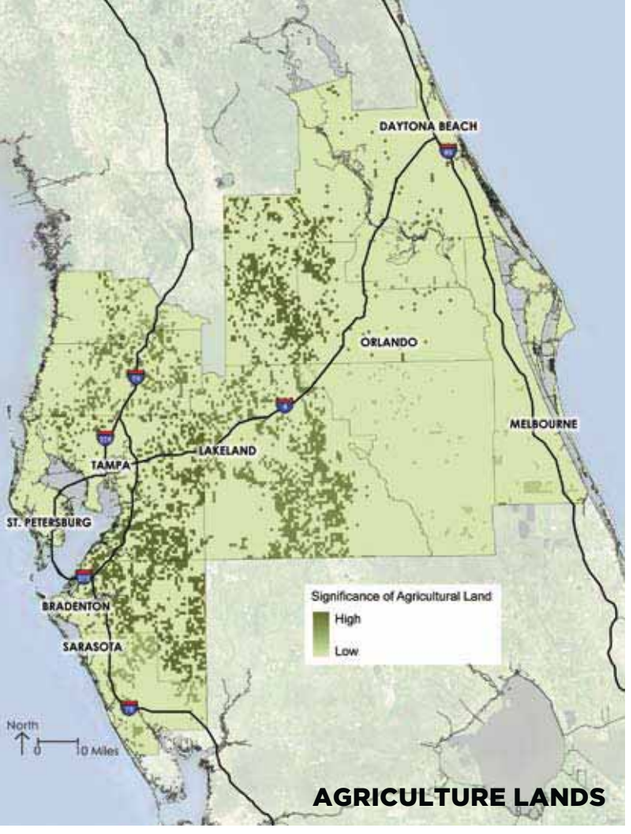
Land with the highest environmental importance, including strategic or rare species habitat, significant wetlands, open water and groundwater recharge areas, sustainable forests, and greenways that connect conservation areas, should be the first lands conserved. Agricultural lands of high productivity and near urban markets also need to be conserved to ensure sustainable food provision for cities. Environmentally sensitive land that is threatened by urban expansion in the near future should also be high on the priority list.

In order to prioritize the lands in Florida's Super Region, the studio developed a list of criteria that covers four categories: biodiversity, water, wetland, and agriculture. Biodiversity includes three sub-factors: habitat where the ecological system is uniquely important for endangered, threatened, or rare species; strategic habitat where targeted species are found but no conservation protection exists; and biodiversity hotspots that serve as habitats for a large number of species. Water also includes three sub-criteria: riparian buffer of significant surface water; natural floodplain; and aquifer vulnerability. For wetlands, there are two sub-criteria. First is size because the environmental significance of a wetland is positively associated with its size. A large wetland is a more complex system with more species, and it better retains and recharges water resources. Thus, wetlands larger than 25 acres are given priority. Second, the studio gave priority to wetlands included in the Florida Natural Area Inventory. For agriculture, two sub-criteria were used: soil quality and land productivity.

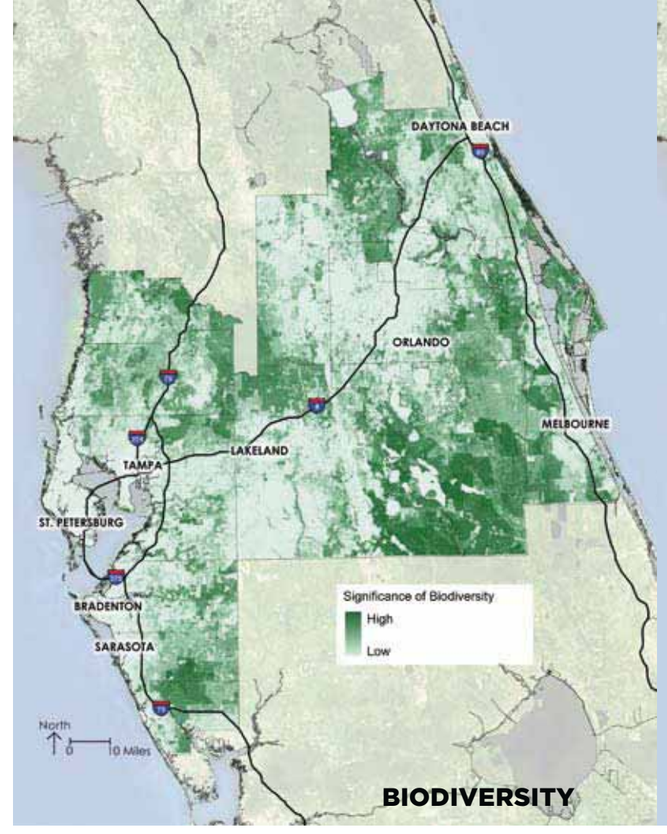
Based on the criteria for conservation priority, the studio built a computer model using Geographic Information System (GIS). The table below contains a list of data sources used to substantiate the model. In this model, each criterion was given a weight indicating its relative importance. The studio overlaid the weighed scores of these criteria to generate a map of the priority lands for biodiversity, water, wetland, and agriculture. These four maps then were overlaid to give an overall picture of the priorities for conservation.

Category	Criteria	Data sources
Biodiversity	Rare species habitat conservation priority	Critical Lands and Waters Inventory Program (CLIP) by Florida Natural Areas Inventory (FNAI); University of Florida GeoPlan Center; Florida Fish & Wildlife Conservation Commission; Florida Forever Conservation Needs Assessment by FNAI
	Strategic species habitat conservation priority	
	Biodiversity hotspots	
Water	Significant surface waters	CLIP
	Floodplain	St. Johns River Water Management District (WMD); Southwest Florida WMD; South Florida WMD
	Aquifer vulnerability	CLIP
Wetland	Wetland priority	CLIP
	Wetland locations	Florida Fish and Wildlife Conservation Commission
Agriculture	Soil quality	Soil Survey Geographic Database for Florida by U.S. Department of Agriculture; Natural Resources Conservation Service
	Land productivity	The Census of Agriculture by U.S. Department of Agriculture

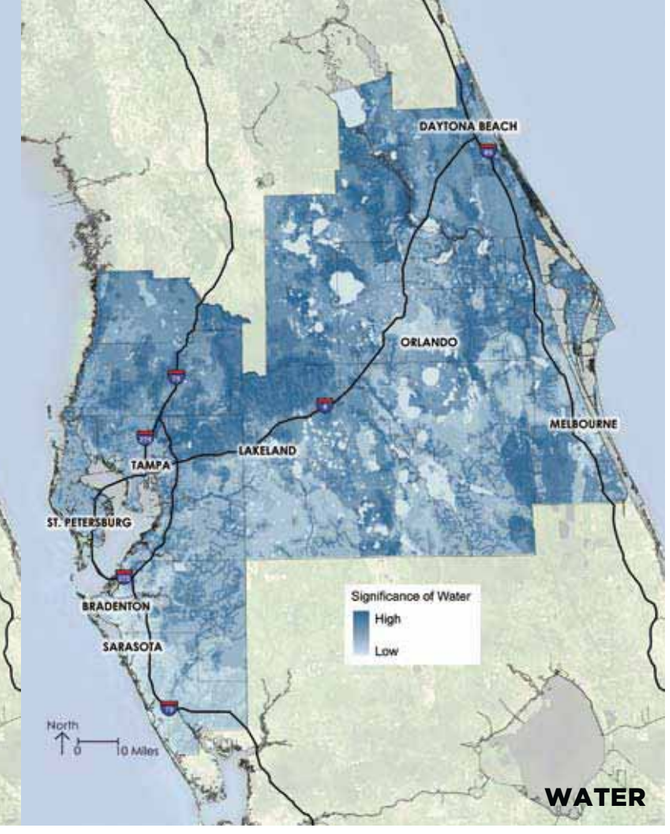
Table 4-1. *Model inputs and data sources.*



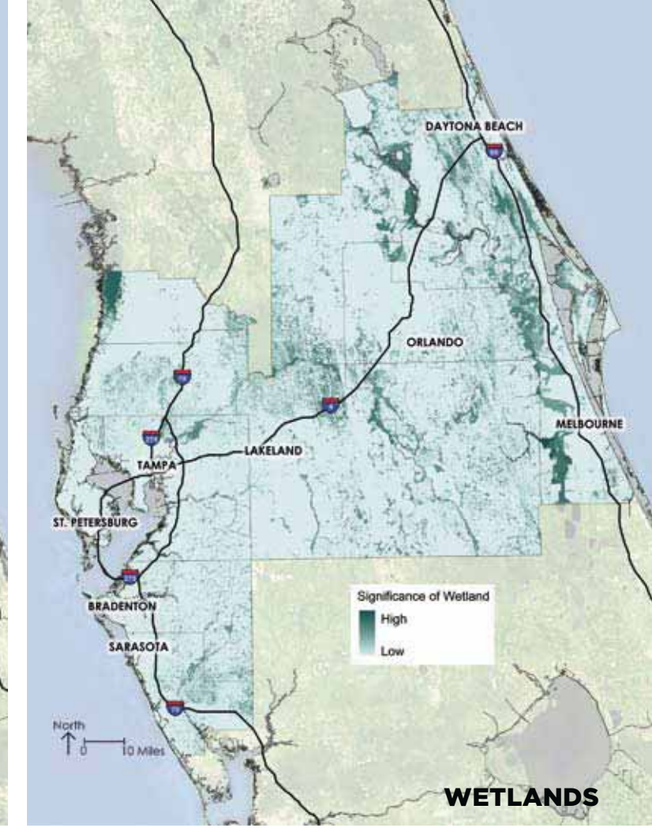
AGRICULTURE LANDS



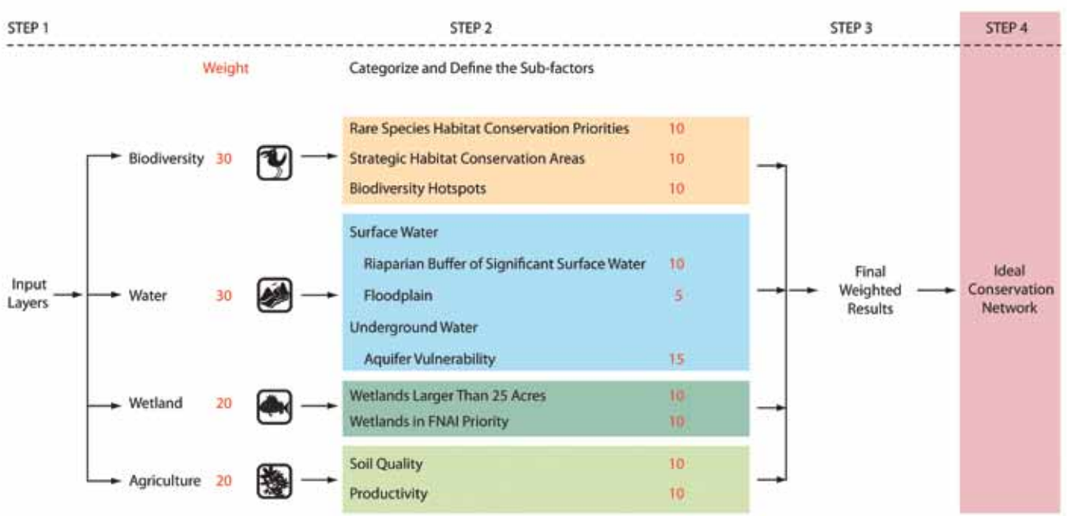
BIODIVERSITY



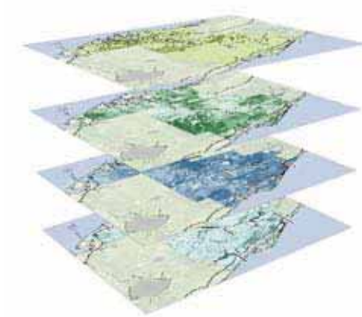
WATER

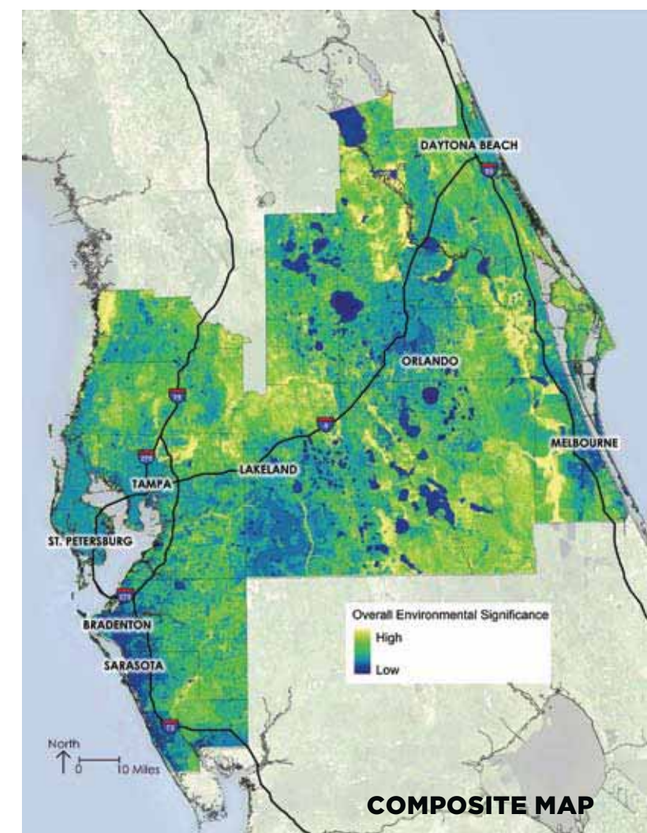


WETLANDS

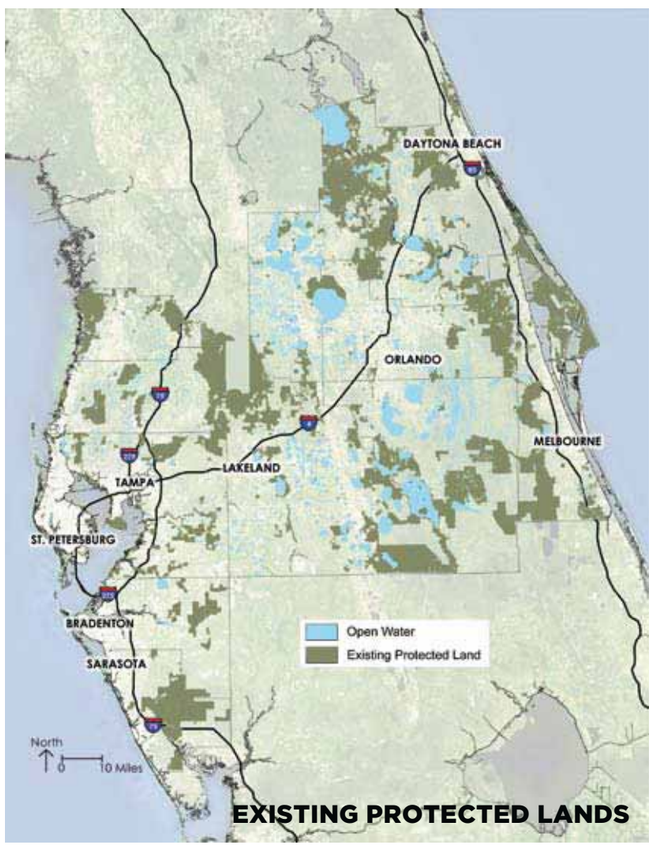


Conservation priorities for the model.





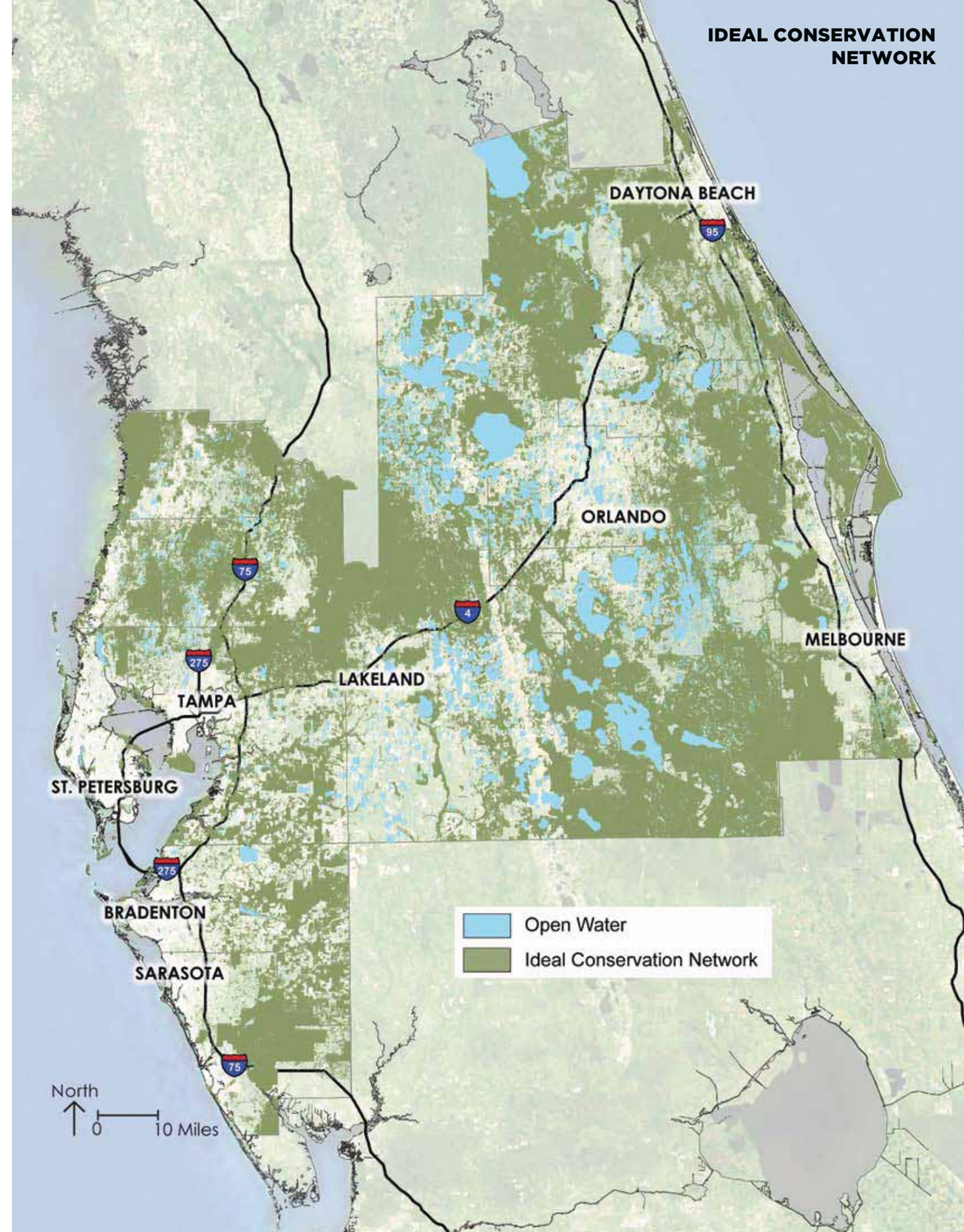
COMPOSITE MAP



EXISTING PROTECTED LANDS

Ideal Conservation Network

Based on the results the conservation model, the studio developed an ideal conservation network that should be protected from future development. The goals of this network are to contain existing protected lands; not to intrude on already developed areas; and to create a connected network that benefits both wildlife migration and recreational activities. Out of the 3 million acres in the ideal conservation network, 1.7 million acres (57%) have already been acquired under state or local conservation programs. A major objective of the ideal conservation network is to expand and connect the existing conserved areas to create a holistic conservation network within Florida's Super Region. The studio recommends first acquiring lands in the ideal conservation network that are adjacent to urban areas because they are environmentally sensitive and threatened by urbanization in the near future.



IDEAL CONSERVATION NETWORK

SUCCESSFUL ADAPTATION TO GROWTH AND CLIMATE CHANGE

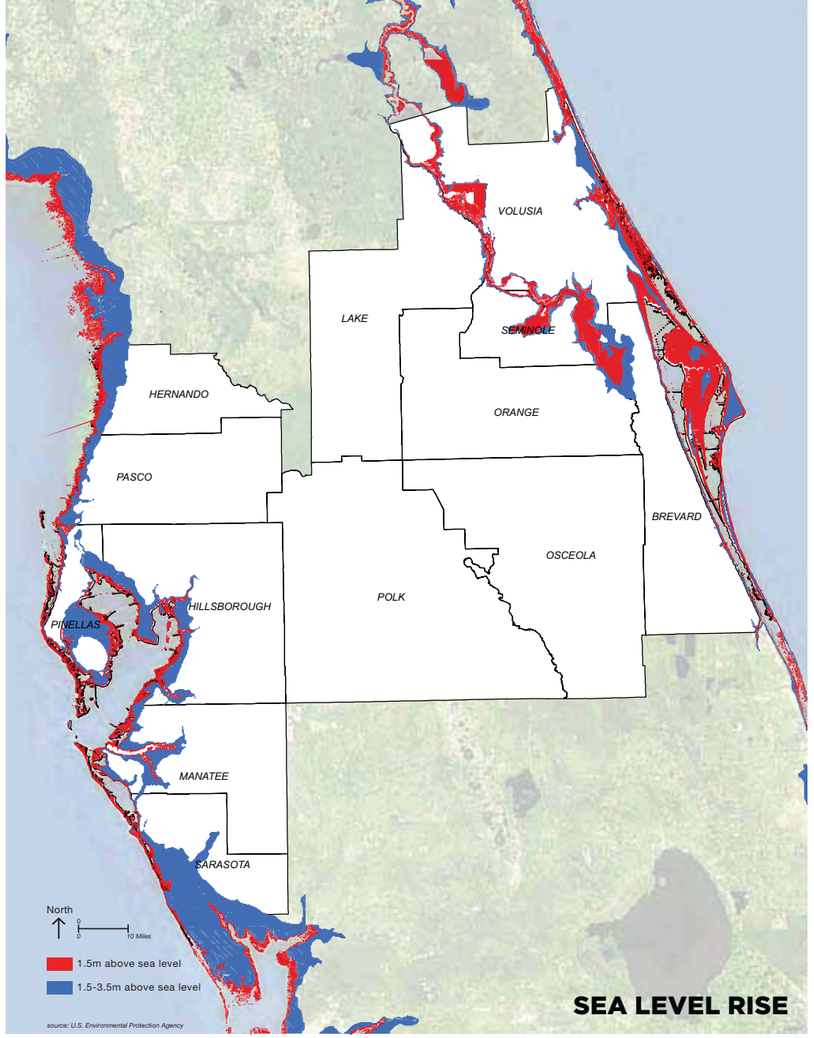
Recently, the effects of global climate change have become increasingly apparent. Researchers have found that due to the increase in greenhouse gases caused by pollution and deforestation, global ocean temperatures have risen 1.3°F over the past century. Climate change scientists are predicting that global sea water temperatures could rise anywhere from 2°F to 11.5°F by the year 2100. Changes in ocean temperature that are already inevitable will cause a rise in sea level, intensified weather conditions, disturbed ecosystems, and changes in agriculture yields. Early indicators of these changes are already being experienced today.

Florida, bordered by the Atlantic Ocean and the Gulf of Mexico, is particularly vulnerable to the effects of climate change. Significant rise in sea level can be particularly damaging to the developed coastlines of the state, leading to loss of beaches and wetlands, flooding, and contamination of the fresh water supply. Intensified weather conditions may cause increased damage from tropical storms, hurricanes, and droughts, which would affect sensitive ecosystems and crop production. Currently, Florida is the fourth most populous state in the nation, and demographers predict that by 2030, it will replace New York as the third. This ever-increasing population will strain the state's resources, and the additional impact that climate change could have on Florida's economy and sustainability is significant. When thinking about the future of the Super Region, it is important to consider planning and preemptive measures that will allow the region to cope with these conditions.

PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

Imagine this scenario:

As one of the world's premiere tourist destinations, the Super Region offers diverse entertainment options for its many visitors, such as theme parks, family-oriented activities, sports events, cultural festivals and centers, and ecological wonders. Tourists are a major force on the region's economy. As the Super Region moves forward, it hopes to maintain and expand its options to keep this important group of people coming back year after year to the Sunshine State!



Sea Level Rise

Although the rate at which seal level rise occurred in the past century has been an average of 1.8 millimeters per year, recent increases in temperature have resulted in a thermal expansion of water. This has increased the average annual sea level rise to 2.8-3.1 millimeters. While this may not seem like a significant increase, the distance of retreat in the coastline can range anywhere from 50 to 100 times the change in sea level, posing an eminent danger to ports and coastlines.

In 2001 and 2009, the United States Environmental Protection Agency published comprehensive reports about sea level rise and its impacts on shorelines. According to the data, there are more than 2,000 square kilometers of low lands forming Florida's coastal wetlands. Although the southern and southwestern portions of the state will be most affected by sea level rise, effects can be seen throughout the coastline. Florida includes 8,744 square kilometers of land at an elevation less than 1.5 meters, and so sea level rise has the potential to negatively impact highly developed land in beach communities.

In the event of a 1.5 meter rise in sea level, the hardest hit portions of the Super Region could be the Port of Tampa and the coastlines and western borders of Volusia and Brevard counties. The area around Cape Canaveral and Cocoa Beach could also be completely submerged. Placement of seawalls and beach nourishment are some protective efforts that can be made, but avoiding densification of coastal areas may also need to be considered.

Water Conservation

The expansion of Florida's urban area will result in an increase in impervious surfaces and areas of compact soil. This hardscape prevents water from reaching the aquifer and keeping it full. This has a negative impact on water supplies and increases the need for storm water infrastructure. Additionally, the reduction of permeable land generally increases the risk of flooding in urban areas. Therefore, the collection and treatment of rainwater is very important to cities.

If the population of the region doubles by 2050, as projected, demand for water could also double, stretching the region's water supply capacities. Thus, the efficient use of water resources is a critical issue. It will be necessary to adopt conservation policies that will hold consumption of purified drinking water to approximately current levels. This should be possible as only about half of the purified water supply in the Super Region is used for purposes that require purification. The rest is used for watering lawns, flushing toilets, and other uses.

One way to conserve water resources is through harvesting and reusing rainwater. Properly treated, rainwater can be used for applications such as irrigation or toilet flushing. Alternatively, the rainwater can be directed to a bio-retention pond, which would allow water to infiltrate the ground and recharge the aquifer.

One of the major advantages of rainwater harvesting is the reduction of surface run-off. When soil is compacted by development, stormwater can hardly infiltrate the ground, causing excess water to flow over the land. Many municipal drainage systems cannot handle large amounts of stormwater, and this results in overflow and urban flooding. Surface run-off also leads to water contamination that negatively impacts the water supply and associated ecosystems. Collecting rainwater slows run-off, aloowing stormwater to be absorbed in the ecosystem in a natural way.

There are several techniques that can be used for rainwater harvesting. Two of the most relevant techniques for Florida are "infiltrating and filtering" and "collecting and harvesting." Portland, Oregon's Green Streets initiative provides a model for incorporating these water conservation techniques into street design.

INFILTRATING AND FILTERING

For the infiltrating and filtering technique, rain gardens are the most important element. They absorb rainwater runoff from impervious urban surfaces and reduce rain runoff by allowing storm water to soak into the ground. Rain gardens deal with water in all forms: still and moving, above and below ground. Rain gardens provide new opportunities to explore how the gathering, transportation, storage, and release of rainwater can not only achieve more environmentally sustainable designs but also can create exciting, engaging, and aesthetically pleasing environments for children and adults.

COLLECTING AND HARVESTING

Rain barrels are the primary technique for collecting and harvesting. A barrel, generally 50 to 90 gallons in size, collects and stores water. This water is then used for small-scale, non-drinkable uses such as washing cars, watering lawns, or flushing toilets. All rainfall collection systems need an overflow allowance for safe storage or disposal of water in times of heavy rainfall. Connections between rain barrels and downspouts are recommended to address overflow concerns.

CASE STUDY: PORTLAND, OREGON

One best practice for Central Florida is the Green Streets program in Portland, Oregon. The Green Streets Initiative, approved in 2007, provides strategies for managing storm water runoff at the source. The goal of the program is to promote and incorporate the use of environmentally friendly street facilities in public and private development. An online, publically accessible report serves as a guideline for implementation. A variety of design typologies were generated to allow for flexible implementation of water curb extensions, street planters, rain gardens, and swales.

The planted infiltration basins filter, cleanse, and slow run-off before allowing it to enter the combined storm-sewer system. By diverting the water to the basins, water is managed on site before being released. The system of basins is projected to reduce 25-year storm events by 70%. Each basin also serves as a garden of native plants. Similarly, landscaped curb extensions were designed to work within existing neighborhoods, a crucial element in the implementation of the Green Streets program at a citywide scale. Together, these bio-retention areas manage 225,000 gallons of storm run-off each year.

Portland's Green Streets Initiative is successful in both its landscape and ecological aspects. In terms of landscape, the introduction of rain gardens improves the quality of living environments. The soil, vegetation, and rainwater combine to shape and diversify urban space. Ecologically, the program increases the amount of water in Portland's aquifer. It also reduces surface run-off, thereby diminishing the risk of urban flooding. The reduction of surface run-off also decreases the demand on the city's sewer system, thus reducing the need to build additional municipal infrastructure.

Energy Conservation

Energy conservation is achieved through efficient energy use or reduced consumption of energy sources. Most energy currently comes from nonrenewable energy sources, including oil, natural gas, coal, and nuclear energy. Because of the limited amount of nonrenewable energy sources on the Earth, it is important to conserve the current supply by using renewable sources so that nonrenewable resources will remain for use by future generations. Renewable energy resources come from a variety of sources, including the sun (solar energy), water (hydropower), hot water springs (geothermal), and crop waste (biomass).

Energy conservation is also important because consumption of nonrenewable sources impacts the environment. Specifically, the use of fossil fuels contributes to air and water pollution. For example, carbon dioxide is produced when oil, coal, and gas combust in power stations, heating systems, and car engines. Carbon dioxide in the atmosphere contributes to global warming via the "greenhouse effect."

Certain forms of renewable energy are becoming increasingly more common as the movement towards energy conservation strengthens. An example is solar energy. Although flat-plate collectors for solar water heating were used in Florida as early as the 1920s, there was a surge of interest in solar heating in North America after 1960. Florida has its own Solar Energy Center that focuses on research and application of solar energy. Flat plate solar systems are used widely in many countries including Israel, Spain, and China. Solar energy can also be used for heat pumps. Solar heat pumps are energy efficient because they heat and cool without emitting harmful CO2 gases.

Energy conservation can be achieved through making use of solar energy in various aspects: architecture and urban planning, agriculture and horticulture, lighting, thermal, water heating, heating, cooling and ventilation, cooking, electrical generation, solar power, solar vehicles, and many others. Florida is the Sunshine State, so efforts should focus on making the best use of this unlimited natural resource rather than depleting limited supplies of other resources.

Solar energy collector.
Example of a solar boiler used in Israel.

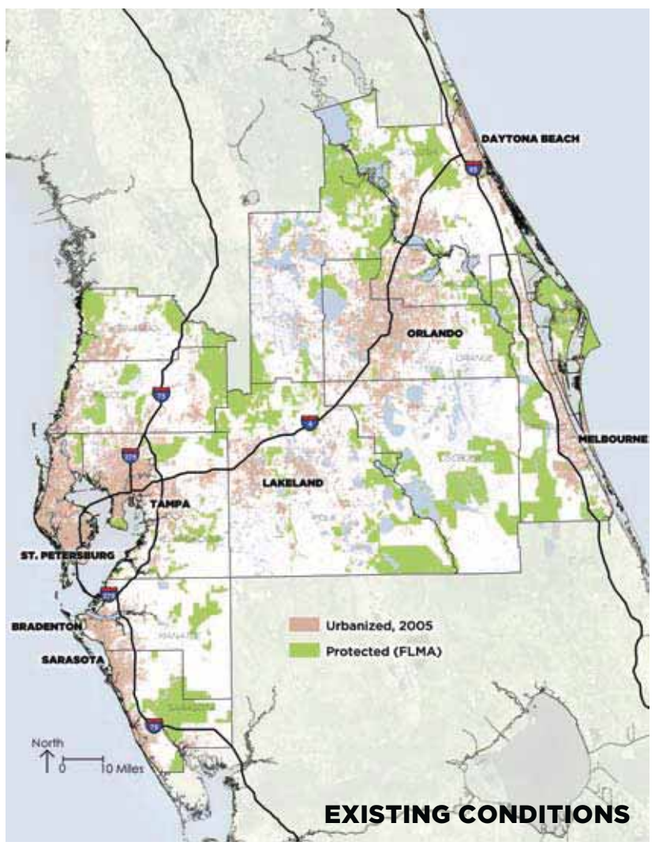
4 THE ALTERNATIVE GROWTH SCENARIO

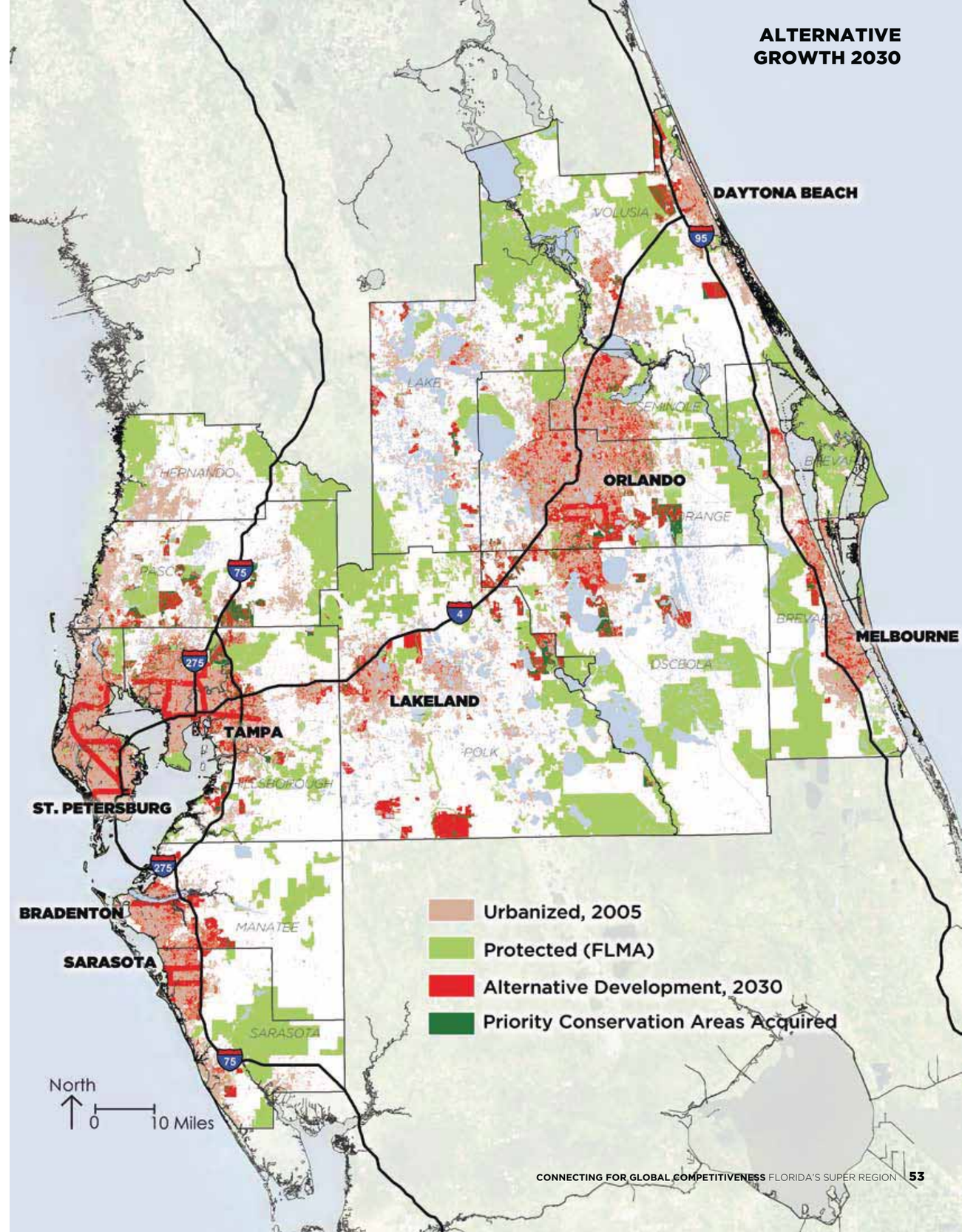
OVERVIEW

What might the future of Florida look like if the collective attitude towards the economy, growth, conservation, and transit embodies the visions articulated by citizens in Central Florida and Tampa Bay? In contrast to the worst case scenario described in Section 2, in which current growth patterns continue for the next forty years, the PennDesign Studio used computer-aided techniques to illustrate a more desirable alternative.

The alternative scenario included several new assumptions, based on the recommendations made in Section 3 of this report, to show how the Super Region might grow differently. The ideal conservation network served to redirect new development away from environmentally sensitive areas. Only those Developments of Regional Impact (DRI) that were proximate or contiguous to existing developed areas were assumed to have a 100% chance of development. Similarly, anticipated job centers not proximate or contiguous to existing development were reallocated to existing urban centers in order to limit sprawl.

Several assumptions related to density and transit systems mark an important difference in the





PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

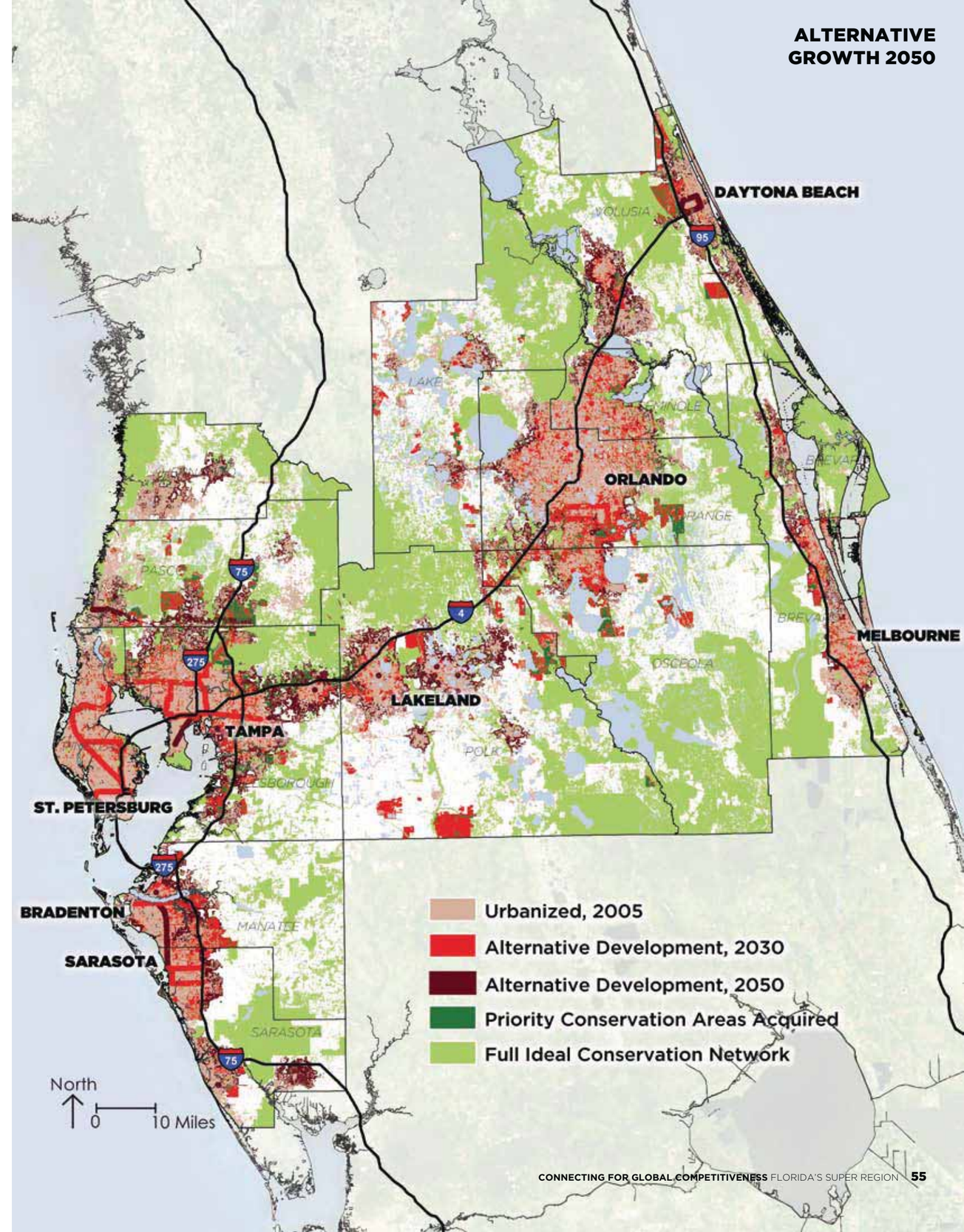
Imagine this scenario:

This enterprising young lady is excited to have recently finished graduate school and started her career in journalism. She was born and raised in Brevard County and attended the University of Southern Florida in Tampa. Now that she is entering the professional world, she wants to stay close to her parents. Living in Melbourne allows her to be in a city that is close to home. She recently started dating someone that she met through college friends. He lives and works in Tampa, so she is excited about the high-speed rail connection that wil allow her long distance relationship to work.

way the population was distributed in the alternative and trend scenarios. A minimum gross density for all new development was assumed to have been adopted by planning authorities throughout the region. This minimum density, which is consistent with average existing densities, requires less land to accommodate the projected population. Additionally, the alternative scenario assumes changes in land use planning that encourage increased intensity of development and redevelopment around new transit systems. In the model, the densities of this transit-oriented development represent generally-recognized minimums that are necessary to support transit systems.

Horizon	Development (acres)	Alternative	Population
2005	**Urbanized**	**1.2 million**	**7.2 million**
2005-2030	New Development	400,000	+ 4 million
	Infill Development	*96,000*	
	Environmentally Sensitive Land Lost	*0*	
	Priority Conservation Land Acquired	*98,000*	
2030	**Urbanized**	**1.6 million**	**11.2 million**
2030-2050	New Development	372,000	+ 3.2 million
	Infill Development	*29,000*	
	Environmentally Sensitive Land Lost	*0*	
	Priority Conservation Land Acquired	*21,500*	
2050	**Urbanized**	**1.97 million**	**14.4 million**
2005-2050	Total New Development	771,000	+ 7.2 million
	Total Infill Development	*96,000*	
	Total Environmentally Sensitive Land Lost	*0*	
	Total Priority Conservation Land Acquired	*119,500*	

Table 4-1. Alternative scenario summary.



COMPARING THE POTENTIAL FUTURES OF THE SUPER REGION

The differences between the trend scenario and the alternative scenario are significant. Given the assumptions of the alternative, which favor transit-oriented development and conservation of environmentally sensitive land, 44% less land is consumed while accommodating the same projected population by 2050. Transit-oriented infill development and redevelopment counted for a significant proportion of new development in the alternative scenario: nearly 25% of new development by 2030 and an additional 7% from 2030-2050. Consequently, the increase in infill helped to conserve a significant amount of natural land area. Whereas 317,000 acres of land in the ideal conservation network were consumed in the trend scenario, nearly 120,000 acres facing development pressure were given conservation priority and protected from urbanization in the alternative scenario.

There are substantive economic benefits associated with reduced land consumption. The trend model assumes that development occurs at the low densities it has in the past, which means that to accommodate the population, development is spatially dispersed. In this scenario, public infrastructure and services have to go farther to serve fewer people, and public tax dollars are therefore spent less efficiently.

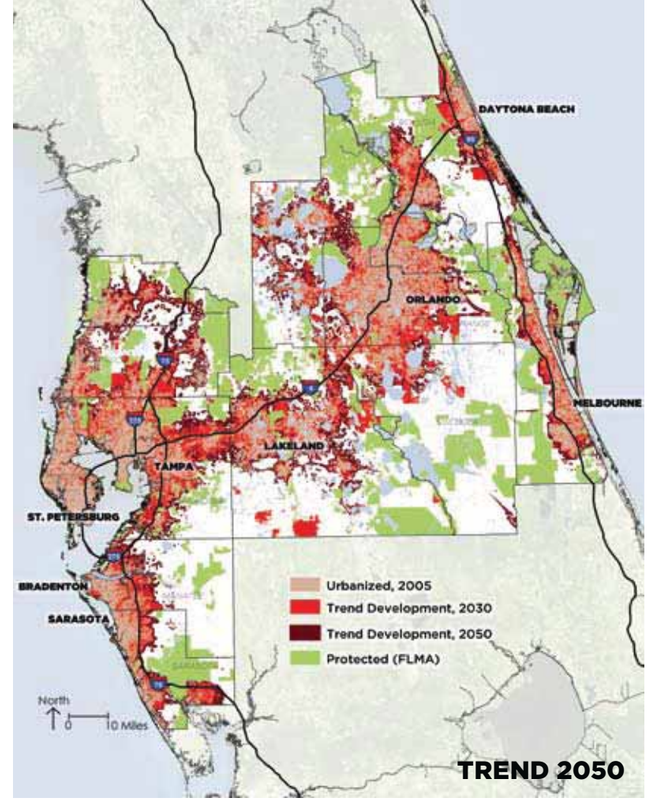
In the alternative scenario, limited land consumption changes the way public tax dollars are spent on public infrastructure and services. Infill and redevelopment take full advantage of existing road, water, and sewer systems. Providing public services—police, fire, trash collection, and public works—becomes easier and cheaper to manage when the geography is physically smaller. Fewer acres of new development means fewer public tax dollars needed for new public infrastructure. As a result, providing public services becomes more cost effective.

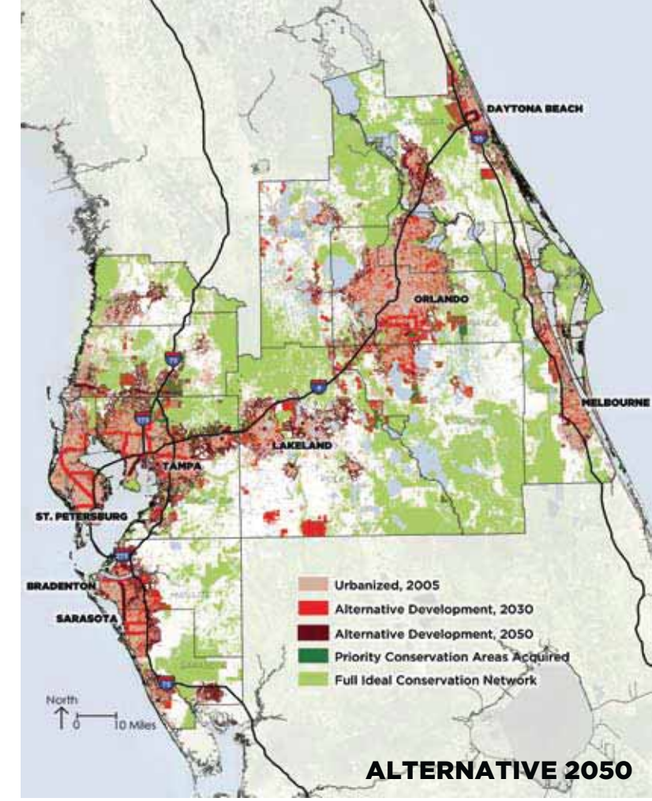
One way to understand the economic difference between the trend and alternative scenarios, is to consider the savings in road construction costs. The 980,000 acres saved from urbanization in the alternative scenario will not need new roads either for access or for internal circulation. Roads occupy an average of at least 20% of developed land area. Using a FDOT estimated cost of $10 million-per-mile for a 2-4 lane "rural" road, the savings quickly add up. By choosing the alternative scenario, Florida's Super Region can collectively expect to save approximately $178 billion by 2030 and $270 billion by 2050 in new road construction costs.

The trend and alternative also differ vastly in their handling of the ideal conservation network. In the trend scenario, a significant proportion of sensitive environmental resources, approximately 10% of all land in the ideal conservation network, is irrevocably consumed by development. The alternative scenario illustrates that population growth can be accommodated while still preserving the unique environmental assets of the Super Region.

The alternative scenario offers clear environmental, transportation, and economic benefits in the short and long term, on both the local and super regional scale. The unique natural environment, simultaneously one of the Super Region's greatest and most threatened assets, is preserved because development patterns are redirected away from it. These compact development patterns lend themselves to different mixes of housing and commercial typologies, which can better meet the needs of a more diverse population. These patterns also support a diversity of transit options, which leads to reduced automobile use and a reduction in the accompanying pollution, congestion, and commuting times. By focusing new development in a more compact form around existing economic centers, existing business are better able to build their market share. Public tax dollars earmarked for infrastructure and public services are concentrated instead of spread thin.

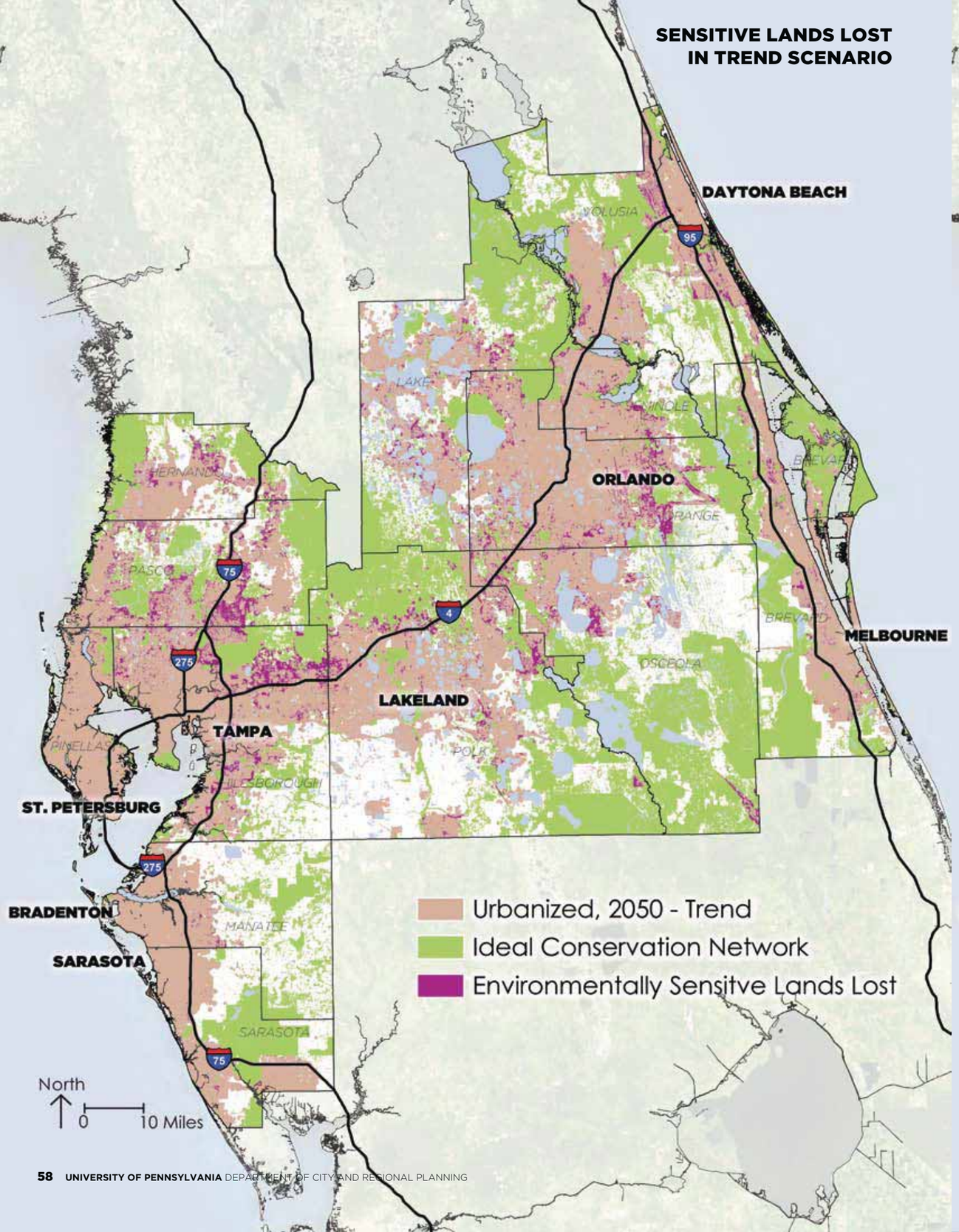
The alternative is a scenario in which the existing centers of the Super Region "grow-up, not out." The alternative scenario demonstrates that instead of relying on spatial expansion to grow the economy, Florida's Super Region can successfully grow its economy by allowing existing centers to further develop and mature.

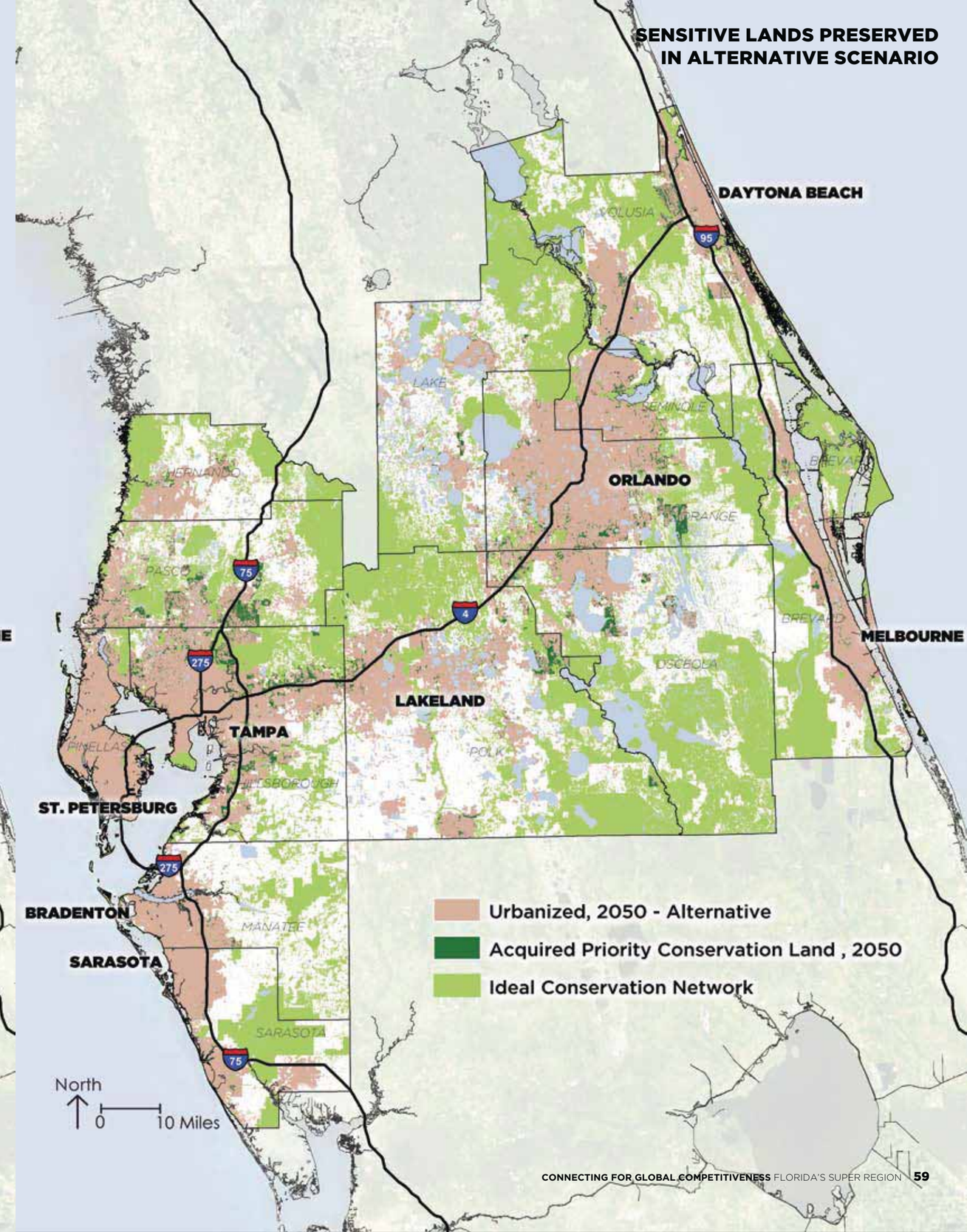




Horizon	Development (acres)	Trend	Alternative	Population
2005	**Urbanized**	**1.2 million**	**1.2 million**	**7.2 million**
2005-2030	New Development	1.06 million	400,000	+ 4 million
	Infill Development	*0*	*96,000*	
	Environmentally Sensitive Land Lost	*173,000*	*0*	
	Priority Conservation Land Acquired	*0*	*98,000*	
2030	**Urbanized**	**2.26 million**	**1.6 million**	**11.2 million**
2030-2050	New Development	704,000	372,000	+ 3.2 million
	Infill Development	*0*	*29,000*	
	Environmentally Sensitive Land Lost	*144,500*	*0*	
	Priority Conservation Land Acquired	*0*	*21,500*	
2050	**Urbanized**	**2.96 million**	**1.97 million**	**14.4 million**
2005-2050	Total New Development	1.75 million	771,000	+ 7.2 million
	Total Infill Development	*0*	*125,000*	
	Total Environmentally Sensitive Land Lost	*317,000*	*0*	
	Total Priority Conservation Land Acquired	*0*	*119,500*	

Table 4-2. Scenario comparison summary.


SENSITIVE LANDS LOST
IN TREND SCENARIO
DAYTONA BEACH
VOLUSIA
95
LAKE
SEMINOLE
HERNANDO
ORLANDO
ORANGE
BREVARD
PASCO
75
4
MELBOURNE
275
OSCEOLA
LAKELAND
TAMPA
PINELLAS
POLK
HILLSBOROUGH
ST. PETERSBURG
BRADENTON
MANATEE
SARASOTA
Urbanized, 2050 - Trend
Ideal Conservation Network
Environmentally Sensitve Lands Lost
North
0
10 Miles


SENSITIVE LANDS PRESERVED
IN ALTERNATIVE SCENARIO
DAYTONA BEACH
VOLUSIA
95
LAKE
SEMINOLE
HERNANDO
ORLANDO
ORANGE
BREVARD
PASCO
75
4
MELBOURNE
275
OSCEOLA
LAKELAND
TAMPA
PINELLAS
POLK
HILLSBOROUGH
ST. PETERSBURG
BRADENTON
MANATEE
SARASOTA
Urbanized, 2050 - Alternative
Acquired Priority Conservation Land , 2050
Ideal Conservation Network
North
0
10 Miles

Vision of Daytona Beach

5 CRITICAL AREAS OF FOCUS

OVERVIEW

In addition to analyzing the Super Region as a whole, the PennDesign Studio also carried out more in-depth analyses of some specific areas where the future presence of high-speed rail (HSR) and other transit systems will create significant opportunities to reshape development.

Two of the most important of these locations are the downtown areas of Tampa and Orlando. Tampa will be an important node for HSR and regional rail. Orlando has multiple SunRail stations and is the center for other supplementary forms of transit. Tampa and Orlando are both expected to serve as important job and residential centers for the Super Region. Many people within and outside of the state will travel to Tampa and Orlando as their first point of origin for connection to other places or as their final destination in the Super Region.

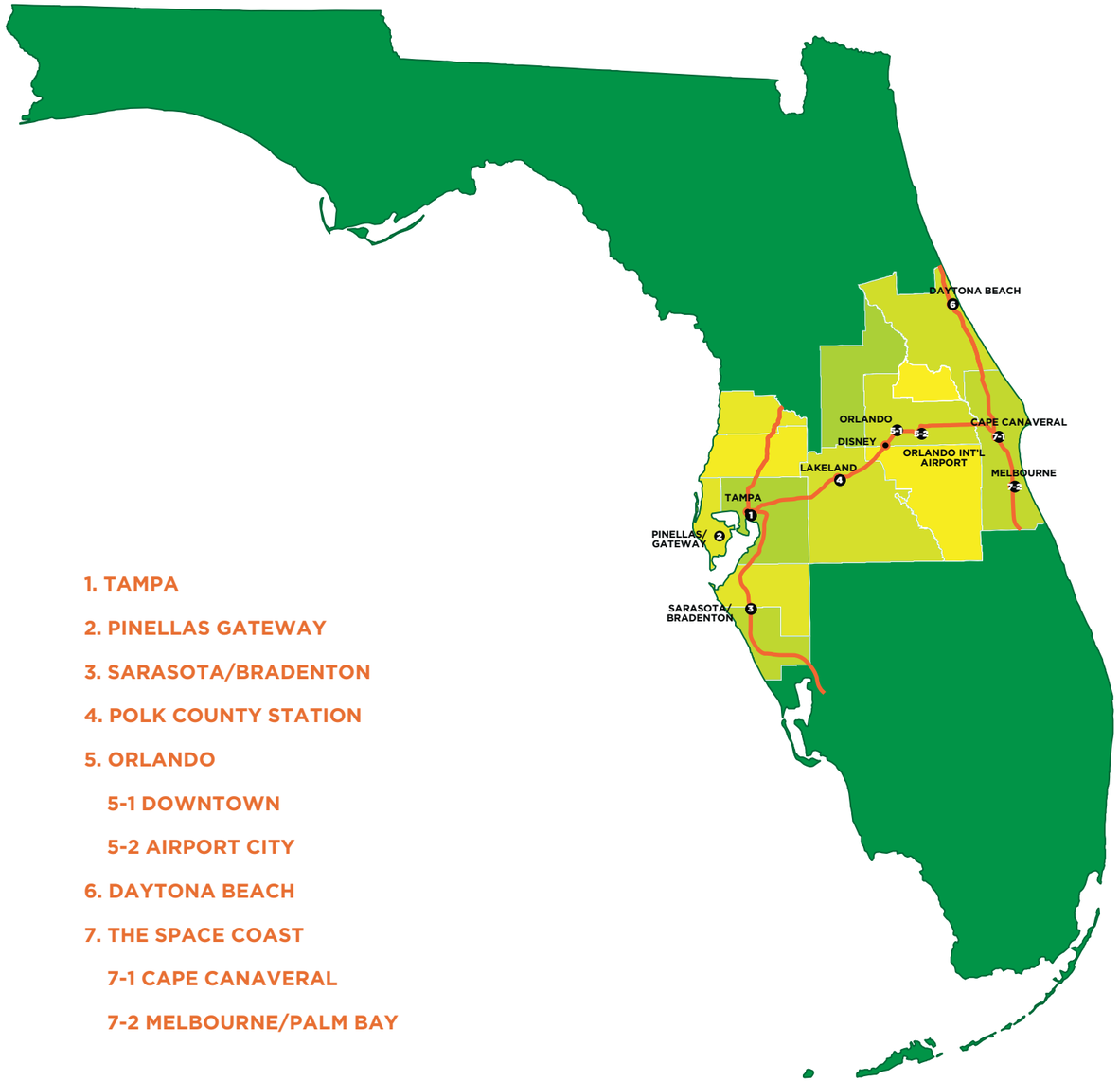
Another very important location is Orlando International Airport (OIA), which will be the major point of connection in the region between air travel and HSR. There is also a new bio-technology center in development just to the southeast of the airport. With the addition of land belonging to the airport, this area, which is in close proximity to HSR service, can become a center of international importance.

The HSR stop in Polk County at the location of the future University of South Florida Polytechnic campus is another important location that should receive special design and planning attention. Other sites include the HSR station areas of Daytona Beach, Sarasota/Bradenton, Cape Canaveral, and Melbourne. In addition, the studio shows plans for intensifying development around the Pinellas Gateway, directly connected by regional rail to Tampa, Clearwater, and St. Petersburg.

PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

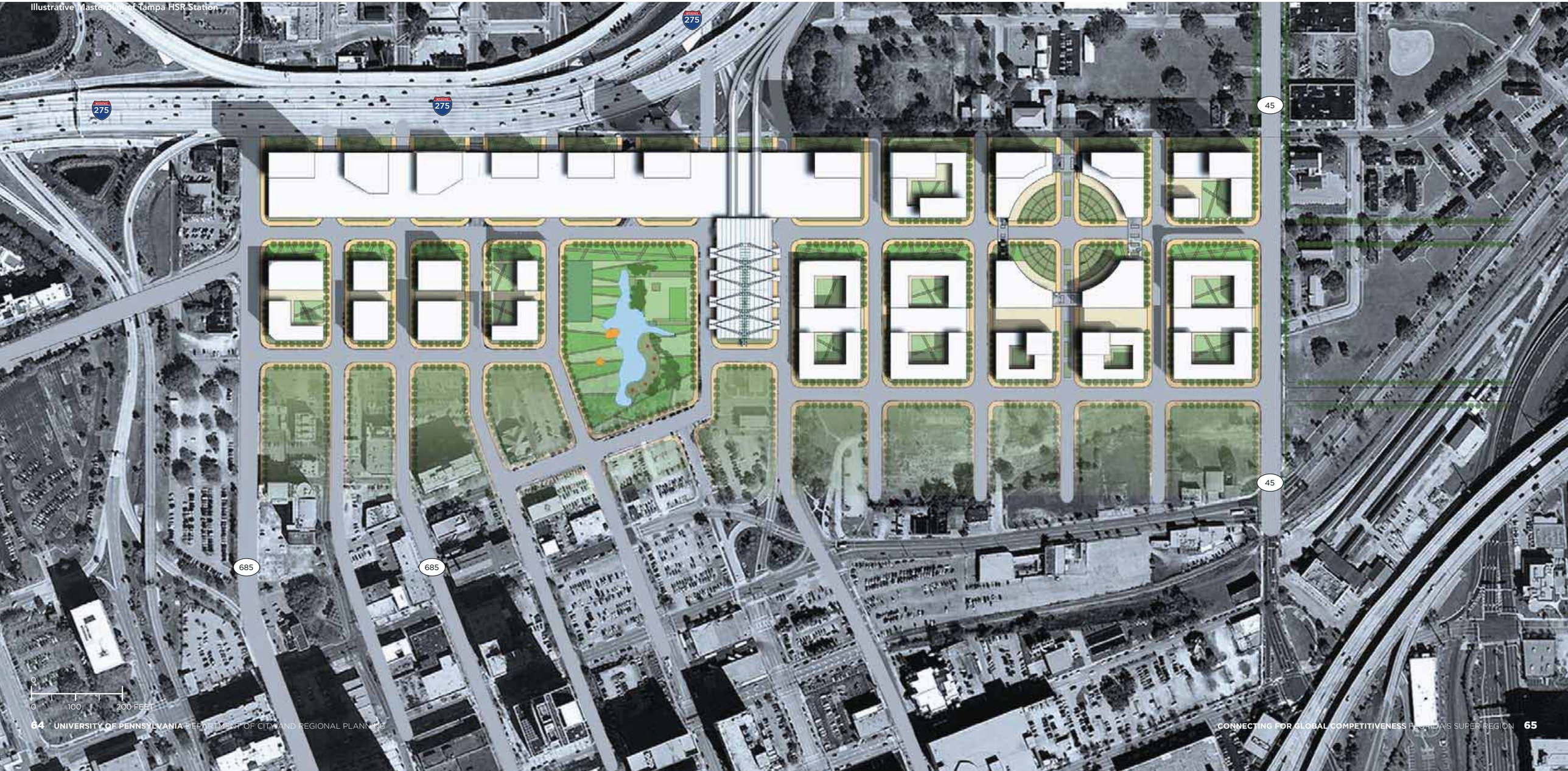
Imagine this scenario:

As a executive of a major Asian biomedical company, this businessman takes quarterly trips to Florida to meet with partners. He flies into Orlando International Airport and attends meetings in Cape Canaveral, Tampa, and the new biomedical research center at Lake Nona. The connectivity between high-speed rail and local transit systems offers a seamless transition between modes. This allows him to get from the terminal to his final destinations very efficiently. After his long flight, he also enjoys the ability to sit back in his seat and enjoy the view all the way to his destination.

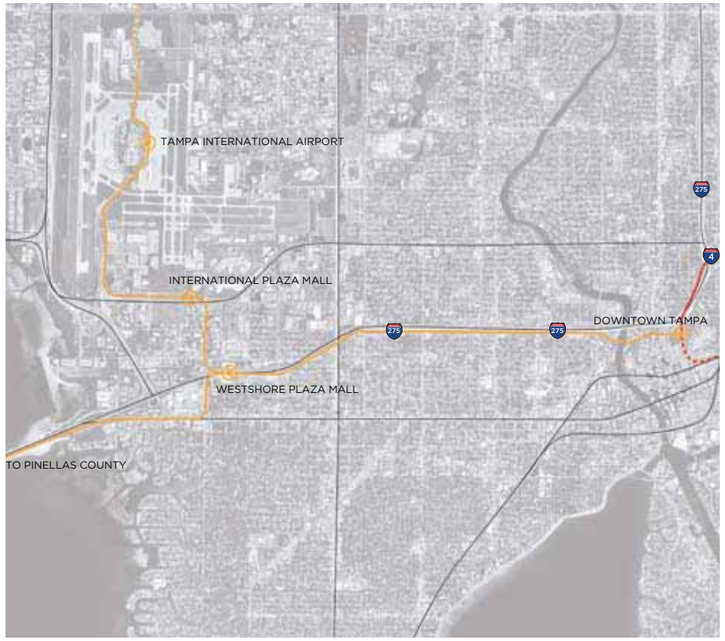


1. TAMPA
2. PINELLAS GATEWAY
3. SARASOTA/BRADENTON
4. POLK COUNTY STATION
5. ORLANDO
   - 5-1 DOWNTOWN
   - 5-2 AIRPORT CITY
6. DAYTONA BEACH
7. THE SPACE COAST
   - 7-1 CAPE CANAVERAL
   - 7-2 MELBOURNE/PALM BAY

TAMPA



Illustrative Master Plan of Tampa HSR Station



Tampa Regional Transit

NORTH

PROPOSED LIGHT RAIL ROUTE
HIGH SPEED RAILROUTE
MAJOR ROADS
PROPOSED HSR STOP

It is expected that Tampa's downtown will become an increasingly important economic center as the HSR network connects it to Orlando, Miami, and eventually the rest of the state. The PennDesign Studio's urban design proposal visualizes a substantial mixed-use development in the northern part of downtown Tampa adjacent to the station. This proposal integrates not only the area already targeted for the HSR station but also the proposed Encore development, which was planned before HSR became a reality.

The PennDesign Studio's plan proposes that the first phase of the Tampa Bay Area Regional Transit Authority (TBARTA) rail system connect the HSR station to Tampa International Airport (TIA) following a route just south of Interstate 275 (I-275). The TBARTA rail would stop at Westshore Plaza and the International Plaza on its way to TIA. At Westshore Plaza, another branch of TBARTA would connect via a reconstructed northbound I-275 bridge to the Pinellas Gateway Center, which is described later in this report, Clearwater, and downtown St. Petersburg. Another TBARTA rail line would connect the HSR terminal to the University of South Florida (USF).

Tampa "Greenloop"

0 500 1000 2000 Feet

NORTH

PROPOSED GREEN CORRIDOR
EXISTING OPENSPACE
WATER
PROPOSED BUILDINGS
INDUSTRY LANDSCAPE

There is an opportunity to complete downtown Tampa's public open space plan by making Laurel Street a green street and by adding other park connections. Laurel Street is already a green street in the Encore development proposal.

The initial engineering studies for the HSR station anticipated an extension of HSR to St. Petersburg. The studio proposal is to make the St. Petersburg connection via a proposed TBARTA route. Thus, the studio proposes a major change to the station layout. The HSR track would be elevated, as previously planned, and extend southward from Interstate 4 (I-4). The train would stop at a platform between North Orange Avenue and North Jefferson Avenue, perpendicular to the highway. This alignment would permit more flexibility for the design of the next phase of the HSR, which will either be extended southward to meet Interstate 75 (I-75) southeast of Tampa or backtrack on I-4 to its junction with I-75. The studio's proposal also incorporates the Encore development, which will be directly accessible from the HSR station. The proposal includes office, hotel, and residential buildings that are similar in scale to existing buildings in downtown Tampa, but they are more concentrated because of their proximity to HSR and TBARTA.

The perspective view shows the TBARTA train leaving the HSR station on its way to the airport. The TBARTA line is elevated at this point as it comes in over the Hillsborough River and has to clear local streets and the ramps for I-4. The HSR station is on level 3, above.

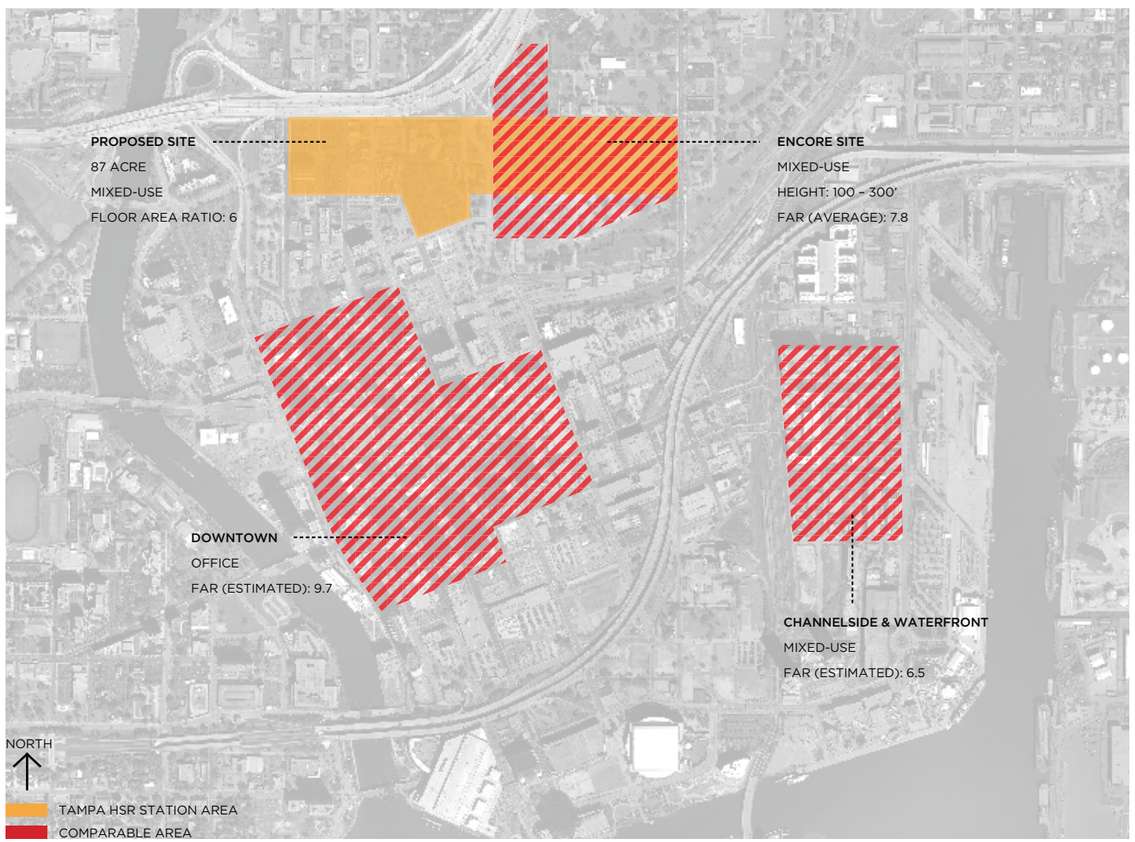
PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

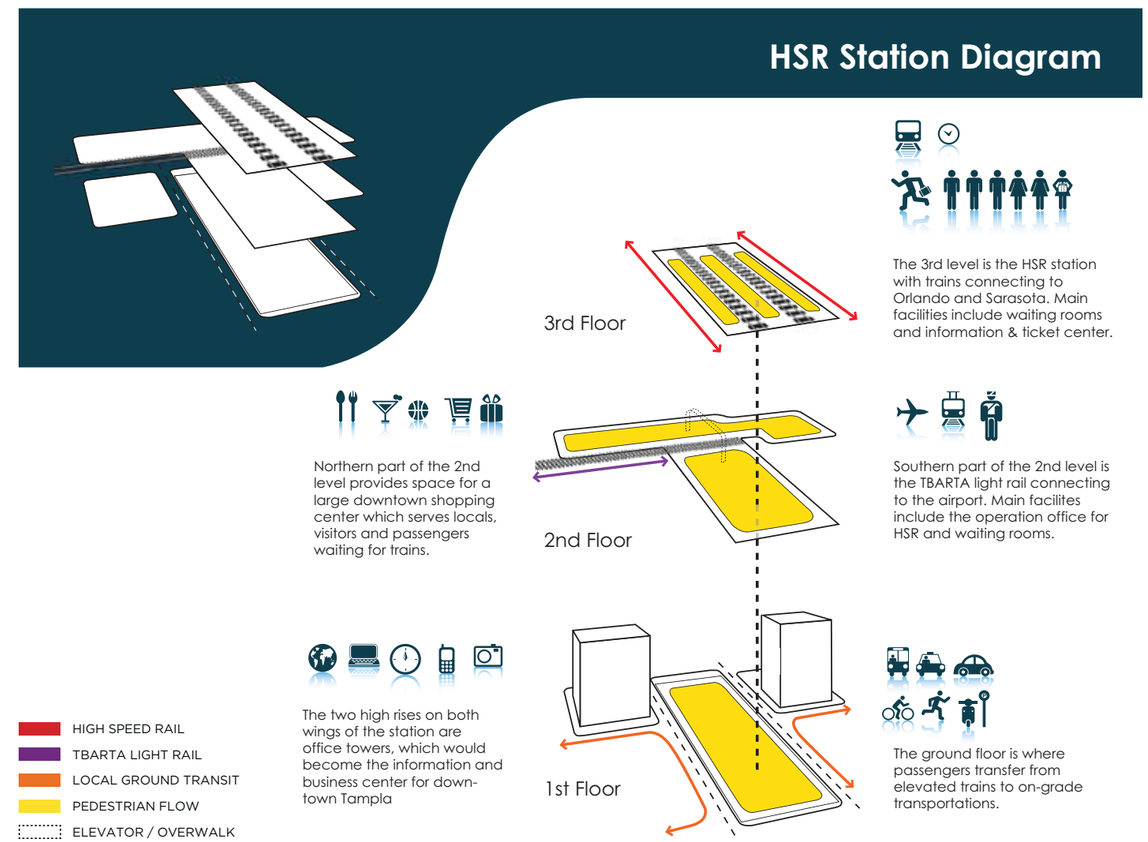
Imagine this scenario:

This family man recently started his own business and is looking to expand his brand across Florida's Super Region. He commutes each day to Tampa for work and is hoping to expand into Pasco, Hillsborough, Citrus, Volusia, and Polk Counties. He often has to travel to Winter Haven to meet with distributors. The high-speed rail and supporting feeder routes allow him to recoup precious driving time during his commute and work as he travels. The fast and efficient service guarantees that he makes it on time to his meetings and home for dinner with his family.

Transit Comparable:
Left: Canary Wharf Aerial
Right: DRL Train at Canary Wharf Station
Transportation for Longdon

Density Comparable





PINELLAS COUNTY

GATEWAY DISTRICT, ST. PETERSBURG, CLEARWATER

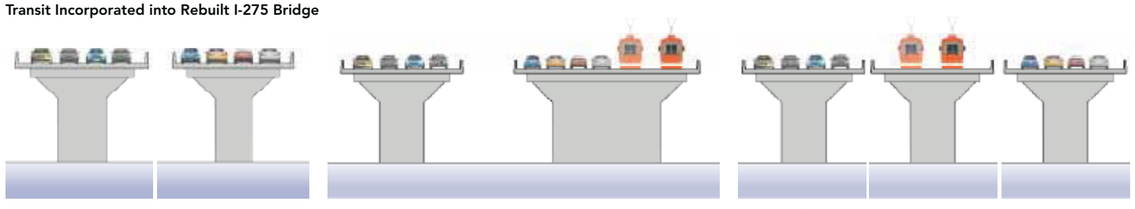
Pinellas County Regional Transit

NORTH
TBARTA RAIL ROUTE
MAJOR ROADS
PROPOSED HSR STOP

The Pinellas Gateway area was identified as an edge city by Joel Garreau in his 1991 book Edge City: Life on the New Frontier. An edge city is a place that has gone from being predominantly rural to having at least five million square feet of office space within 30 years. Edge cities have higher populations on work days, as they are largely employment centers. Edge cities around the United States, notably Tyson's Corner in Fairfax County, Virginia, have been evolving into more balanced, mixed-use communities by adding residential development.

What has enabled this transformation at Tyson's Corner is the extension of the Washington Metropolitan Area Transit Authority (WMATA) Metrorail system through the area. Pinellas Gateway should soon have the same opportunity. The proposed reconstruction of the northbound lanes of the I-275 bridge, augmented by tracks for the TBARTA line, will make Pinellas Gateway the first stop in Pinellas County for TBARTA trains coming from downtown Tampa, Westshore, and Tampa International Airport. The lines will then go on to Clearwater and St. Petersburg.

Transit Incorporated into Rebuilt I-275 Bridge



Current Bridge Condition
Left: Southbound towards Gateway
Right: Northbound towards Tampa
(This bridge is to be replaced)

Proposed Alternative I
Left: Existing Southbound towards Gateway
Right: Vehicular Northbound toward Tampa & North/South Connection Rail

Proposed Alternative II
Left: Existing Southbound towards Gateway
Middle: Existing Bridge Modified for North/South Connection Rail
Right: New Northbound towards Tampa

The PennDesign Studio's proposal locates the Pinellas Gateway TBARTA rail station at the existing Carillon Office Park. A local bus or trolley loop will connect buildings in the office park to the station. The proposal includes new apartment development with ground-floor retail and other active uses along the internal streets where there are currently surface parking lots. The remaining parking lots will be decked to provide on additional level of parking to accommodate demand from existing and new development. The parking structures will feature green roofs to be used as open space by residents.

Through the "greening" of the parking structures, the addition of vegetation along street edges, the extension of the green space along Lake Carillon, and the addition of walking trails throughout, this proposal transforms an edge city into a balanced community with a high quality of life for its residents. Its location will be enhanced by its easy connections to other centers in Pinellas County and to Westshore, downtown Tampa and its HSR station, and the airports in Tampa and Clearwater.

Gateway Road Hierarchy

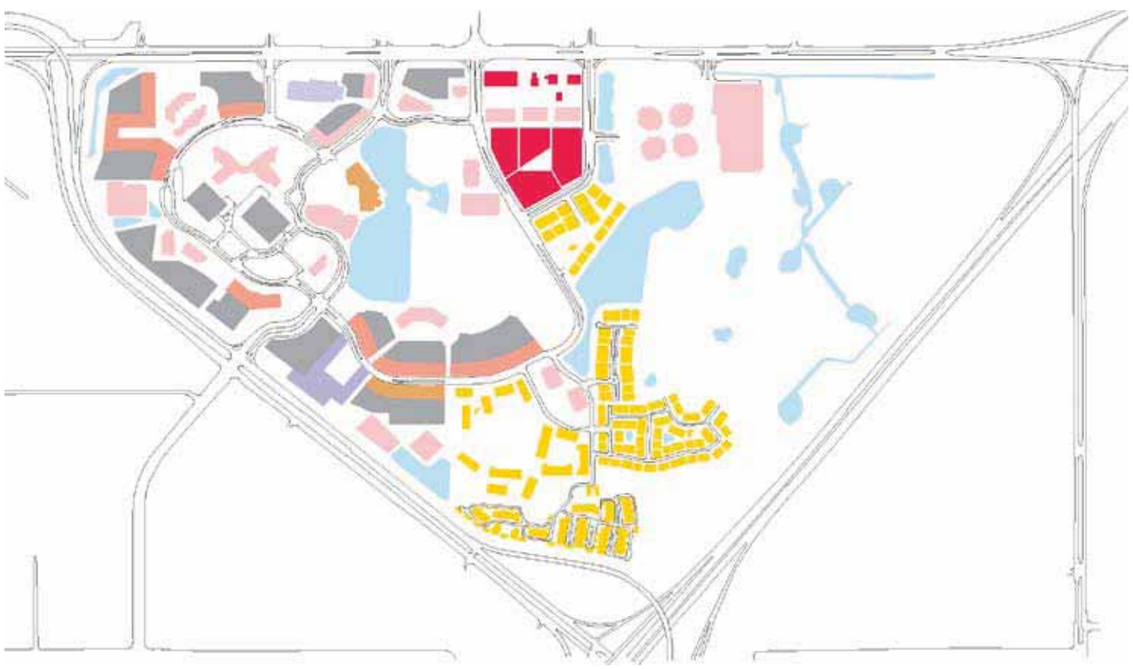
NORTH
HIGHWAY
MAJOR ROAD

Gateway Proposed Transit Route & Green Network

NORTH
TBARTA RAIL ROUTE
LOCAL TRANSIT ROUTE
PROPOSED TBARTA STOP
PROPOSED TRANSIT STOP
EXISTING GREEN SPACE
PROPOSED GREEN SPACE

Illustrative Masterplan of Carillon Station
New buildings (in white) infill surface parking lots and other unused spaces around existing buildings (in gray).

Proposed Street Retail & Decked Parking
This section shows the proposed decked parking area and street retail space. Above the paring area is the roof garden, which expected the residents' daily access.



COMMERCIAL
OFFICE
RESIDENTIAL
HOTEL
MIXED USE
HOSPITAL
PUBLIC
PARKING
WATER

NORTH

Proposed Land Use Map
The land use map shows the new apartment development along the internal streets where there are currently parking lots. It also shows street with ground retail and other active uses.

Tyson's Corner

Tysons Corner is an existing edge city which is adding transit and densifying with new residential.

This proposed development is comparable to the infill being developed at Tyson's Corner where 1,300 new housing units will be completed in 10 to 15 years. The transit in Pinellas County is comparable to the Dallas Area Rapid Transit line, which has been instrumental in creating new "transit villages" at locations along the line.

Left: DART

The Dallas Area Rapid Transit system has been instrumental in creating new "transit villages" at locations along the line.

Right: WMATA

Stations along the Washington Metrorail have been incubators for development of surrounding areas.

SARASOTA & BRADENTON

The third phase of HSR will connect Tampa to Fort Meyers. Along this route, the studio proposes locating a station in the median of I-75, just south of where I-75 meets University Parkway. University Parkway connects directly to the Sarasota/Bradenton International Airport. The PennDesign Studio proposes a light rail connection along University Parkway, with a stop where it connects to TBARTA east of the airport.

The HSR station will be at the western boundary of Lakewood Ranch. The developers of Lakewood Ranch should reserve the part of their site closest to the HSR station for a transit-oriented and mixed use development. Around the rail station, development will be at a higher density, maximizing the number of people within walking and biking distance of the station. Pressure will exist naturally to increase development near the station, but this latent advantage can only be realized through pedestrian-oriented design. The development should also have a mix of uses. The Lakewood Ranch stop will need regional-scale commercial amenities and offices to attract commuters and visitors from across the Super Region. Lakewood Ranch can also provide housing for commuters who wish to live in Lakewood Ranch but commute to Tampa or beyond.

Light rail or bus rapid transit can transport people to and from the HSR stop to the airport along University Parkway with a minimum number of stops. Much of the land around University Parkway is already developed as low-density residential, making it an unlikely place to create a transit corridor. Along University Parkway there are, however, big-box stores with large parking lots that offer potential for transit-oriented infill.

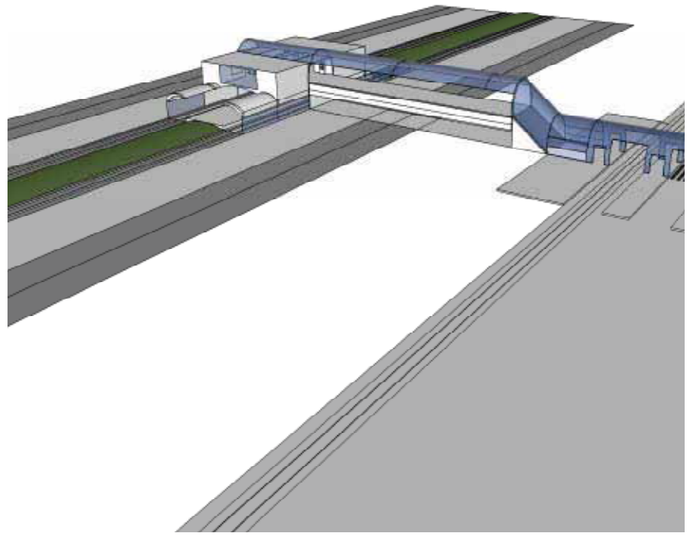
TBARTA trains are proposed to follow an existing rail right-of-way. This studio proposes a stop where that right-of-way intersects University Parkway.

Sarasota Regional Transit Map
The land use map shows the new apartment development along the internal streets where there are currently parking lots. It also shows street with ground retail and other active uses.

Illustrative Master Plan of Sarasota Bradenton HSR Station at Lakewood Ranch

Illustrative Master Plan of Regional Rail Connection Site

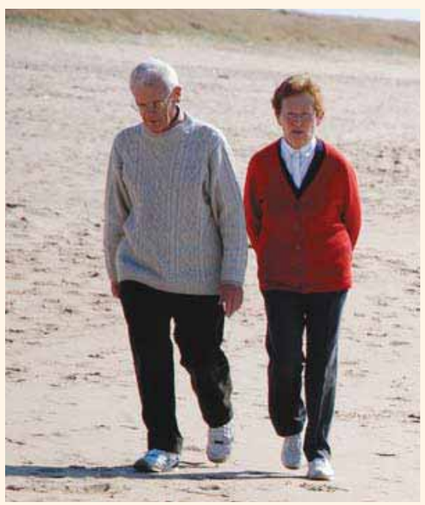
Transit connection. *High-Speed Rail and local rail corridors are separated, but connected by a pedestrian bridge. This walkable connections allows ease of access to surrounding development anchoring the station.*



PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

Imagine this scenario:

After 38 years of marriage, this retired couple loves the pace of their life in the Sunshine State. Sarasota provides a warm climate to support their schedule of bridge games, golfing, and gardening. Their children and grandchildren live in Tampa, which is a short train ride away. This allows for lots of long family weekends when school is out. They appreciate being near recreational activities, great medical centers, and other second life residents.



Development at the Sarasota/Bradenton HSR station could be comparable to the development proposed by this studio for the Polk County HSR station. However, as the Sarasota/Bradenton station will not be built until the third phase of the HSR program, the timing may not favor such intense development. This studio recommends that the third phase of HSR be built as quickly as possible, with the goal of being operational by 2030.

San Diego Light Rail System
San Diego's light rail and bus system serves a regional area similar to the western part of the Central Florida Super Region. The trolley serves not only urban areas but also extends into San Diego's suburbs.

POLK COUNTY
LAKELAND

With plans for the first phase of HSR to extend from Tampa to Orlando, the PennDesign studio proposes the selection of the University of South Florida (USF) Polytechnic site for the Polk County station. This site is located on the Williams Company property near the interchange of I-4 and Polk Parkway. The PennDesign studio's proposal includes plans for a mixed-use development with residential uses, research facilities, and commercial programming. The proposed scheme incorporates the program of the Williams Company property plan and reorients the current design for the USF Polytechnic campus to the center of the development. The hub of commercial activity is concentrated along streets, and a local feeder transit system connects to the HSR stop at the north side of the development. This shifts the site plan away from a form dependent on individual buildings to a walkable street grid that encourages interaction. Research facilities ring the campus, creating a synergy between knowledge-based research and academia, leading to a sharing of resources and information to improve the services produced by each and creating an educational node within the development.

Higher densities can be supported along the major access roads, and lower densities can be supported farther away. This fits all the development from the previous design into a smaller urban footprint, while preserving much of the natural lake and forest area surrounding the development. The proposed densities are based on Florida standards and rely on a residential typology that fits more single-family homes per acre. In terms of transit connectivity, the HSR stop is on axis with the entrance to the USF Polytechnic campus, and a local trolley connects visitors to the major nodes on the site, stopping at retail corridors and the center of each residential district.

An additional regional rail system connects at an intermodal station shared also by the HSR and the trolley. This route connects the development to downtown Lakeland, Winter Haven, and Bartow, which are major employment centers for the area. A shuttle near Winter Haven will transport riders to the future LEGOLAND-Cypress Gardens attraction. By providing these connections to regional attractions and employment centers of the Super Region, this site will become a major hub of tourist, business, and travel activity for Polk County.

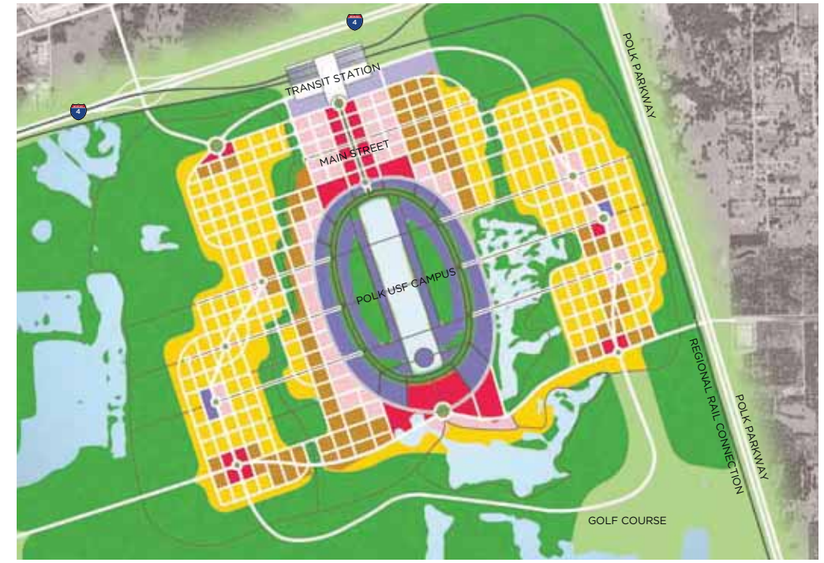
The plans for this site are comparable on a smaller scale to Tsukuba Science Center in Japan, and the block plans are comparable to the way development occurs at the Legacy Town Center in Plano, Texas.

Polk County / Lakeland Regional Transit

PROPOSED LIGHT RAIL ROUTE
HIGH SPEED RAIL ROUTE
LIGHT RAIL STOPS
HSR STATION

NORTH

Land Use Plan at HSR Stop



COMMERCIAL/RETAIL
MIXED USE
SINGLE FAMILY HOMES
TOWNHOMES
PARKING
GREEN SPACE
NATURAL FOREST
INSTITUTIONAL
WATER

NORTH

Neighborhood Boulevard

Pedestrian and retail boulevard connects the HSR station to the USF campus

Pedestrian greenway connects neighborhoods

Higher density mix of residential and retail from 4 stories along the boulevard to just single family homes on the periphery

Dedicated trolley and bicycle rights of way on major boulevard

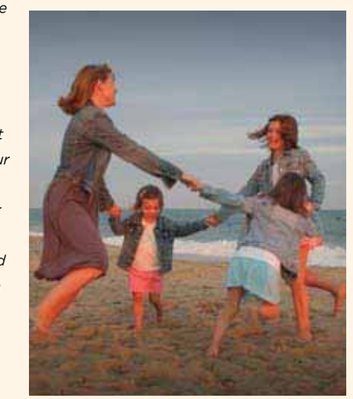
Structured and parallel parking predominates

Illustrative Plan of Tsukuba Science City

PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

Imagine this scenario:

This mother and her children enjoy their lifestyle in Polk County, and their peaceful home in a subdivision is a great place to raise a family. At the same time, they appreciate their relative proximity to both the East and West Coasts. The family is excited about the easy access that high-speed rail offers. Mom enjoys the half-hour ride to Tampa for great shopping excursions with friends. The little girls are excited for their next trip to Disney World and the opening of LEGOLAND. The oldest daughter looks forward to an end-of-school beach party at Coco Beach and her first year at U.S. Space Camp. HSR connects these moments more quickly than driving, and utilizing this new level of mobility will be exciting adventure for all!



ORLANDO
LAKE NONA AIRPORT CITY, DOWNTOWN ORLANDO

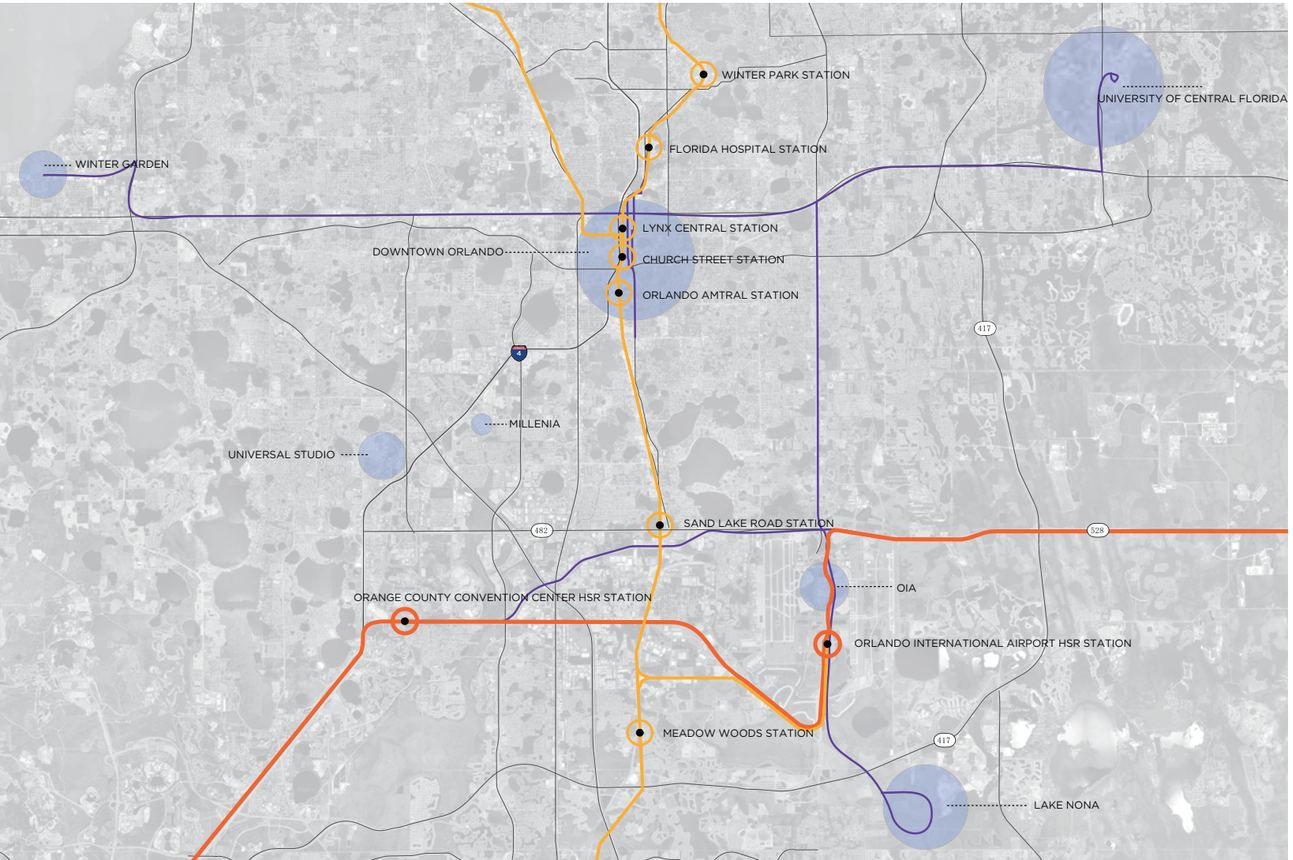
Transit Connections in the Orlando Region

Transit around Orlando will include HSR, regional rail, and local feeder routes. HSR will include stops at the Orange County Convention Center and Orlando International Airport (OIA). Regional rail service will be provided by SunRail and the Orange Blossom Express. Seven of SunRail's seventeen stops fall within the immediate vicinity of Orlando, and the Orange Blossom line will utilize an existing right-of-way from downtown Orlando to the northwest. Feeder routes include a connection between the Orange County Convention Center and OIA. While HSR stops at both locations, the local system will provide service to travelers that live or work between the two stations. Another important feeder route is the east-west connection along Florida State Road 50. This route will offer service between Winter Garden and the University of Central Florida. An intersecting north-south line along Florida State Road 436 will connect this service to OIA and HSR service. This route will also allow access to Downtown Orlando and easy transfers to LYNX bus and SunRail service, which will be further discussed in the Downtown Orlando plan.

Orlando Regional Transit Connection

- PROPOSED LIGHT RAIL ROUTE
- HIGH SPEED RAIL ROUTE
- LIGHT RAIL STOPS
- HSR STATION

NORTH

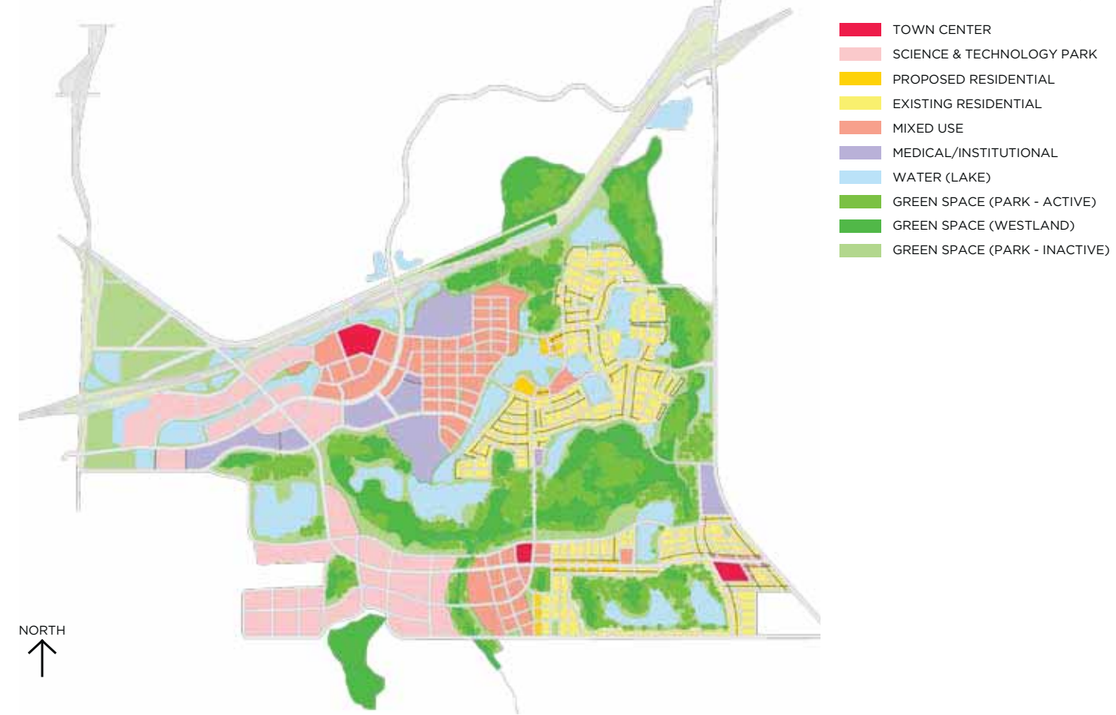


Lake Nona Airport City

Lake Nona is a 7,000-acre, master-planned community located within the city limits of Orlando. In addition to residential neighborhoods, it includes a major technology center based on hospitals, medical research, and bio-technology. Its science and technology park will be the location for the University of Central Florida's College of Medicine and Healthcare Campus, the Florida Research Center, the Orlando Veterans Affairs Medical Center, the Nemours Children's Hospital and Research Campus, and the M.D. Anderson Orlando Cancer Research Center. The HSR station at the south terminal of OIA will put this science and technology park in close proximity to HSR and international air travel. The PennDesign studio proposes that the planned Lake Nona development be expanded to become a larger airport city through coordinated development of 2,000 acres of adjacent airport-owned land.

The PennDesign studio proposal extends the Lake Nona development with a comparable mix of open space, single-family and multi-family

Land Use of Lake Nona Airport City

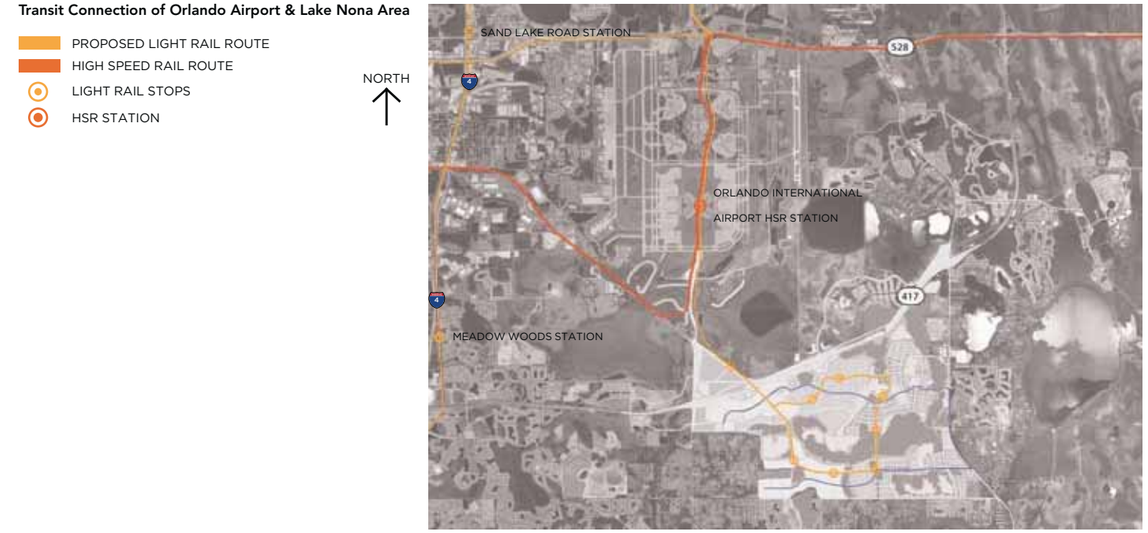


residential areas, and a mixed-use town center. In addition, the new development proposes a 400-acre research include park, which will combine with the existing Lake Nona science and technology park to create a 1,000-acre research center. This development will be connected to one of the world's most important airports via local transit, to the Orlando metropolitan region via SunRail, and to the entire state of Florida via HSR.

The PennDesign Studio proposal expands Lake Nona's light rail system to serve the new research park and the town center. The light rail would follow a loop within the Airport City: entering the Airport City from State Road 417, stopping at the new development's research park and town center, crossing the central park, then following the Lake Nona light rail route and exiting via SR 417. Moreover, the new development will local streetcars and trolleys that connect the residential areas to the rest of the development.

Illustrative Plan of Lake Nona Airport City

Transit Connection of Orlando Airport & Lake Nona Area



This development is comparable to existing globally recognized research parks. Such parks include the Research Triangle Park, located in North Carolina near Durham, Raleigh, and Chapel Hill, and Cummings Research Park, located in Huntsville, Alabama.

Research Triangle Park
Aerial photo showing level of development and natural setting.

Downtown Orlando

Downtown Orlando is a dynamic place with an array of assets on which it must continue to capitalize to ensure its status as global urban core. The Orlando-Kissimmee Metropolitan Area hosts more than two million people and a set of existing and emerging job centers that drive regional economic growth and innovation. Such centers also strongly influence development patterns and are the places that benefit most from mobility and connectivity.

Orlando's Downtown District Project Area has a broad and diverse economy that includes tourism, professional and business services, education, health care, and biotech. The SunRail commuter line, planned to run north-south through this area, begins the work of providing an extensive intermodal transportation system connecting Downtown to critical locations throughout the metropolitan area. To encourage this connectivity, the studio proposes a new intermodal center at the LYNX Central Station SunRail stop. The LYNX Intermodal Center will also be the terminus of the Orange Blossom Express commuter rail line and will be within easy walking distance of a new cross-town transit line on State Road 50. The LYNX Intermodal Center has the potential to set the stage for new levels of commercial and residential building that will encourage compact, transit-oriented redevelopment.

There are significant opportunities for focusing redevelopment efforts in Downtown Orlando. Neither its existing urban densities nor its levels of transit, pedestrian, and bicycle connectivity are in line with those of a global city. Furthermore, the University of Central Florida (UCF), which is a substantial economic resource in the area, is not connected to Downtown. UCF is a major source of the "knowledge workers" that the City hopes to attract as permanent residents. Orlando therefore must make every effort to make Downtown accessible to UCF students without increasing automobile congestion.

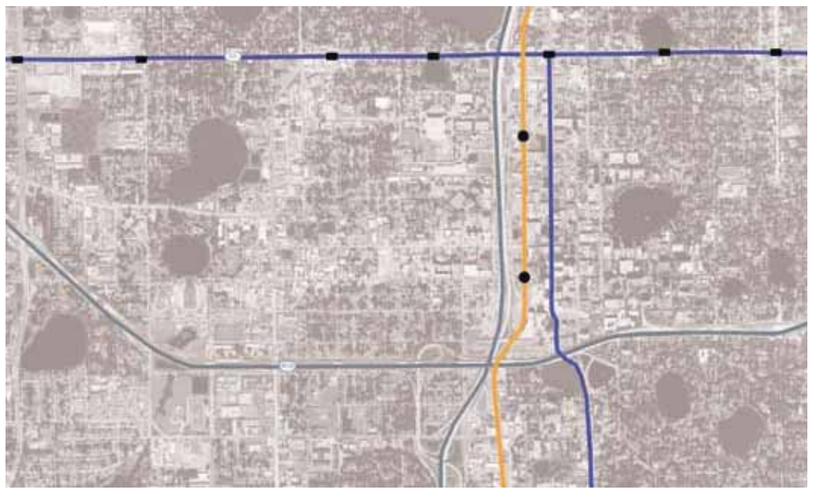
Orlando currently is enhancing its community venues to renew its role as a center for arts and entertainment. Projects include a new Amway Center, a new performing arts center, and upgrades to the Citrus Bowl. Furthermore, the city has proposed a "creative village" concept to guide redevelopment of the original Amway Center site, just west of the LYNX Intermodal Center. The City sees this development as a place where knowledge workers can live, work, learn, and play. Creative villages, which must be locally and globally connected, allow high-tech, digital media, and creative industry companies to integrate with residential, retail, and academic uses. Increased residential and commercial density at the LYNX Intermodal Center will complement this creative village proposal, providing an expanded shopping, dining, and cultural center that will attract people at all stages of their lives.

In order to attain this vision, Downtown Orlando must become more walkable and pedestrian-friendly. The creation of a vibrant public space on the block east of the LYNX Intermodal Center will complement the plaza at the Orange

Transit Connection of Downtown Orlando

- PROPOSED LIGHT RAIL ROUTE
- PROPOSED BUS/TROLLEY ROUTE
- LIGHT RAIL STOPS
- BUS/TROLLEY STOPS

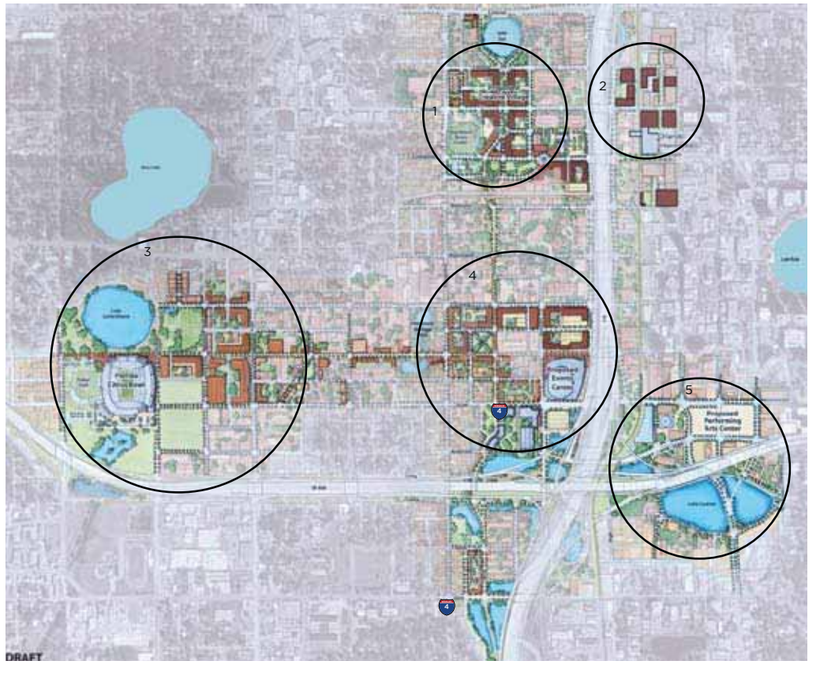
NORTH

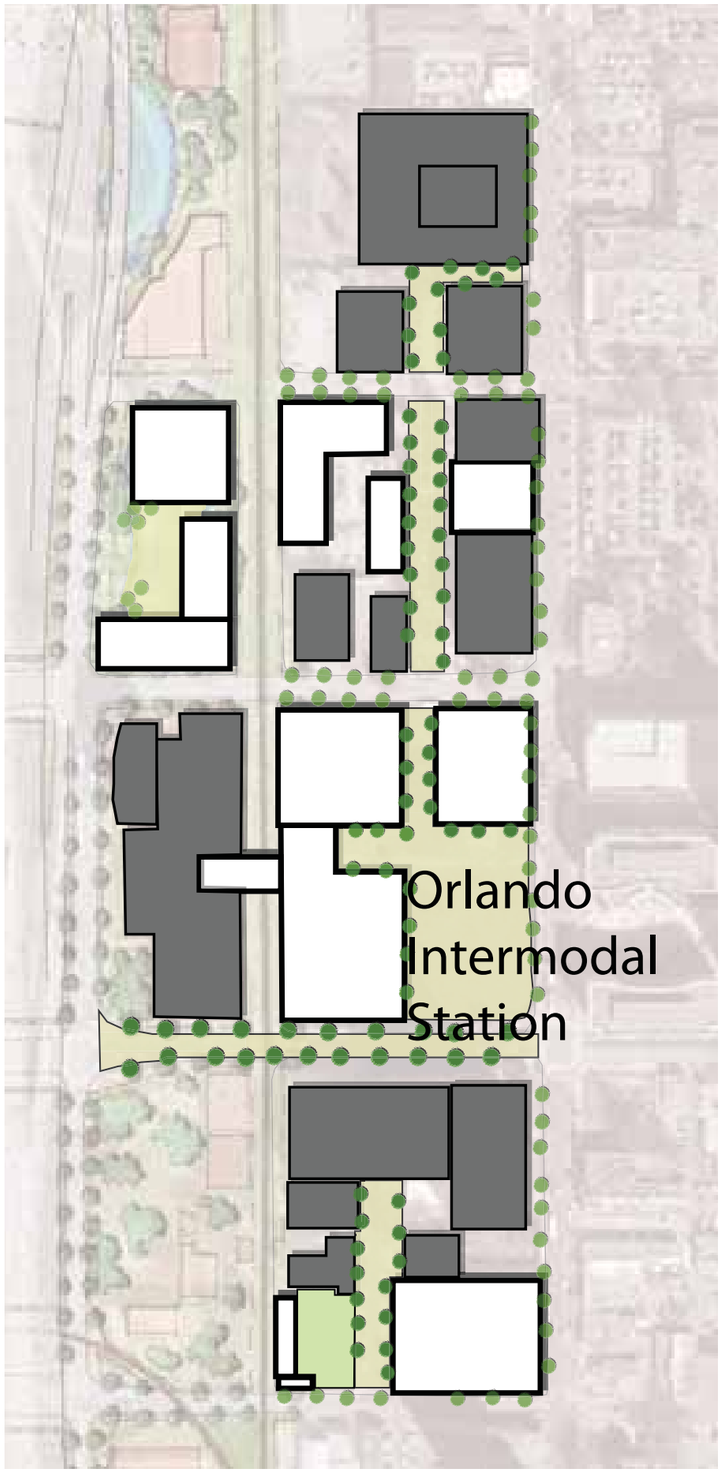


Attractions of Downtown Orlando

1. CREATIVE VILLAGE
2. ORLANDO INTERMODAL STATION
3. PERFORMING ARTS CENTER
4. NEW AMWAY CENTER
5. FLORIDA CITRUS BOWL

NORTH





County Courthouse and make the area more attractive to pedestrians. Increasing densities on the blocks adjacent to the Intermodal Center will also make the area more interesting for pedestrians by encouraging additional commercial and residential development.

To capitalize on this new environment, strong pedestrian and bicycle connections need to be established between the proposed stops on the East Colonial Drive light rail line, the LYNX Intermodal Center, local parks and lakes, and the proposed creative village. Improving the streetscape and wayfinding elements along West Amelia Street and West Livingston Avenue under I-4 will strengthen these connections. Closing one block of West Livingston Avenue between I-4 and State Lane to automobile traffic will also protect pedestrians and strengthen the connection to the creative village.

The future developments in Downtown Orlando are similar to those in the Dallas Arts District. This area features a concentration of exhibits, cultural programming, restaurants, hotels, churches, residences, and business in downtown Dallas. The area is served by local transit, and ample bicycle parking is offered to encourage alternative forms of transportation.

Illustrative Masterplan of LYNX Site

0 — 100 — 200 FEET

NORTH

PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

Imagine this scenario:

After getting his Master of Business Administration degree, this young man began working for a major aerospace technology company in Orlando. He enjoys the bustle of city life and the great weather. A beach bum on his off days, he is a short trip to some of the best beaches in the country. He recently moved to the area and does not have a car. Thus he commutes daily on SunRail. His girlfriend lives in nearby Melbourne, so he looks forward to weekend trips to visit her and lie on on the beach. The high-speed rail allows him to maximize his free time by getting him between locations quickly and in a way that lets him relax during the trip.

Dallas Center for Architecture

Dallas Art Disrict
Aerial photo of the Dallas Art District

DAYTONA BEACH

When HSR is extended from Miami to Jacksonville, there will be an important stop at Daytona Beach. This studio proposes a new multimodal station that connects Daytona Beach to the rest of the Super Region. This will transform the area into a new center for connectivity, research, and tourism. This multimodal hub will allow connectivity between HSR, a light rail extension to Deland along International Speedway Boulevard, and light rail service connections to the beach. The system will be integrated into the extensive local bus network, including a shuttle to the Daytona Beach International Airport. This new transit hub can help create mixed use development immediately adjacent to the HSR station and just south of the airport.

This development will benefit the economy, as it will help keep young professionals in the area by providing a new employment center and housing opportunities. At the same time, Daytona Airport City will draw a new pool of knowledge and expertise to the area. With its proximity to Embry Riddle Aeronautical University and the airport, as well as being one HSR stop away from Cape Canaveral, the site has the potential to become a strong research base for the aeronautical and aerospace industries.

The development will bring positive effects to tourism as well. The station is situated directly south of Daytona International Speedway, a major tourist attraction that draws millions of visitors every year. The increase in connectivity with Orlando and other major tourist destinations will allow even easier access, bringing more visitors to the site. The development will provide places for tourists to spend time, reside, and dine during their time in the city. The light rail system will also allow quick access to the beach for tourists and residents, and it will reduce dependence on privately owned vehicles.

Daytona Beach Regional Transit

NORTH

HIGH-SPEED RAIL
COMMUTER RAIL
FEEDER ROUTES

COMMERCIAL/RETAIL
OFFICE
MEDIUM-DENSITY RESIDENTIAL
HIGH-DENSITY RESIDENTIAL
MIXED USE
INSTITUTIONAL/PUBLIC
NATURAL
ACTIVE RECREATION
PASSIVE PARK
WATER

0 300 600 FEET NORTH

Proposed Land Use Map
A green belt to the north buffers airport activity from the new development area. The light rail runs down the middle of the project site, maximizing transit oriented development potential. The high-speed rail station anchors the west side of the site.

A comparable development is Bloomington Central Station in Bloomington, Minnesota, a new mixed-use "urban village" on the Hiawatha transit line to downtown Minneapolis. It is just one stop from the Minneapolis International Airport. The Hiawatha Line is comparable to the transit that could run on International Speedway Boulevard in Daytona.

Daytona Beach Illustrative Plan

0 300 600 FEET NORTH

THE SPACE COAST
CAPE CANAVERAL, MELBOURNE, PALM BAY

As was discussed in Section 3 of this report, the Florida Department of Transportation (FDOT) has proposed two routes for HSR service from Orlando to Miami. This studio encourages the selection of the I-95 route because it will directly connect the two coasts of the Super Region, it will provide service to more existing communities, and it will be needed to make the future connection from Miami to Jacksonville. This route will include two additional proposed stops that would not be served by the Florida Turnpike route: Cape Canaveral and Melbourne/Palm Bay.

Melbourne and Palm Bay Regional Transit

NORTH
HIGH-SPEED RAIL
COMMUTER RAIL (AMTRAK)
FEEDER ROUTES
PROPOSED HSR STOP
PROPOSED AMTRAK STOP

Melbourne/Palm Bay

Although Melbourne and Palm Bay are not home to the same kinds of economic assets as are found in the Cape Canaveral area, this economic center will continue to play a significant role in the Super Region because of its projected growth rates and opportunities for economic connections with other parts of the region.

The best location for an HSR station that serves Melbourne/Palm Bay is along I-95 at the intersection of State Route 500. This location offers a direct connection to the beaches via Melbourne Causeway. As in Cape Canaveral, Amtrak service and local transit that connect to HSR will create a network of transportation options for residents and visitors.

A primary feeder route in this area will be along SR 500 from the HSR station to the Atlantic Ocean. The route would then split, offering north-south service along the beaches. This route would eventually link up with the Cape Canaveral beach feeder route discussed earlier.

Two circulator routes would come off of this trunk line to the ocean. The first would be north of SR 500 and service the Melbourne International Airport. The second would be south of SR 500 and service the Florida Institute of Technology and Palm Bay.

Cape Canaveral

Cape Canaveral and adjacent localities host assets that are crucial to economic and environmental security in the Super Region. These assets include the Kennedy Space Center and NASA facilities, Patrick Air Force Base, Port Canaveral with its cruise ship terminal, the Florida Solar Energy Center (FSEC) in Cocoa, and Merritt Island National Wildlife Refuge. Space Florida's Spaceport Master Plan 2010 creates a vision for aerospace enterprise growth across the state. The Plan provides for an expansion of Kennedy Space Center. It also includes a long-term development plan for a technology and commerce center, Exploration Park, which will be nearly 200 acres in size.

The best location for an HSR station that serves Cape Canaveral is along I-95 at the intersection of State Route 524. This location offers space for new transit-oriented development and a direct connection along via the Bennett Causeway to the Cape.

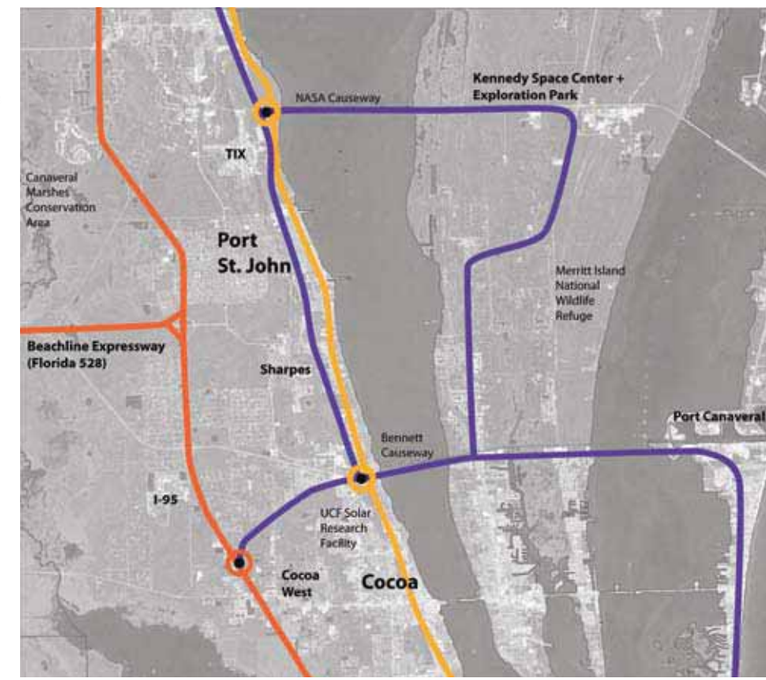
Future Amtrak service along the Florida East Coast Railway (FEC) and local transit that connects to HSR will create a network of transportation options for residents and visitors. Such a system will reduce commute times, lessen traffic congestion, and improve air quality. It will make places more accessible and expand options for living, working, and recreation. It will also provide improved public access to the beach, which will promote economic growth while avoiding sprawl.

A primary feeder route can connect the outer beaches to the mainland along the following loop route: from the proposed HSR station, northeast along SR 524, east across the Bennett Causeway, south along Florida A1A, west across the Melbourne Causeway, and north along SR 5/US Route 1. This route would provide connections to Merritt Island National Wildlife Refuge, Port Canaveral, Cape Canaveral, Cocoa, Satellite, Brevard Community College, and the UCF FSEC.

A secondary feeder route can connect to Kennedy Space Center and locations north: from the proposed HSR station, northeast along SR 524, east across the Bennett Causeway, north on SR 3, west on SR 405, and south on SR5/US Route 1. This route would provide connections to Merritt Island National Wildlife Refuge, Kennedy Space Center, Exploration Park, NASA launch facilities, and the Space Coast Regional Airport.

An additional feeder route can serve Port St. John, Titusville, St. Johns National Wildlife Refuge, Arthur Dunn Air Park, and the East Central Regional Rail-Trail.

Linking these various routes will be crucial to the effectiveness of transit around Cape Canaveral. As such, intermodal stations will play a vital role. This studio suggests two locations for intermodal stations. The first, at the junction of SR 524, SR 5, and SR 528, would accommodate transfers among Amtrak, the feeder routes, and local bus routes. The other, at the junction of SR 5 and SR 405, would accommodate transfers between Amtrak, the secondary feeder loop, and local bus routes, and it would serve the Space Coast Regional Airport and the United States Astronaut Hall of Fame.



Cape Canaveral Regional Transit

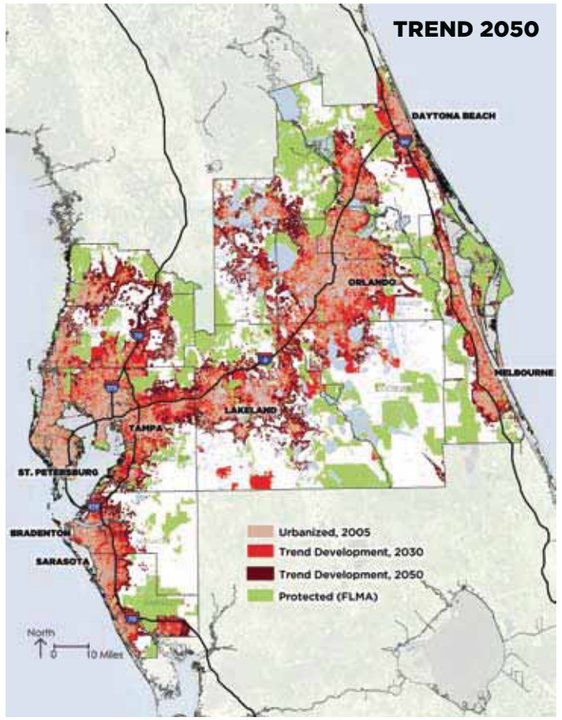
NORTH
HIGH-SPEED RAIL
COMMUTER RAIL (AMTRAK)
FEEDER ROUTES
PROPOSED HSR STOP
PROPOSED AMTRAK STOP

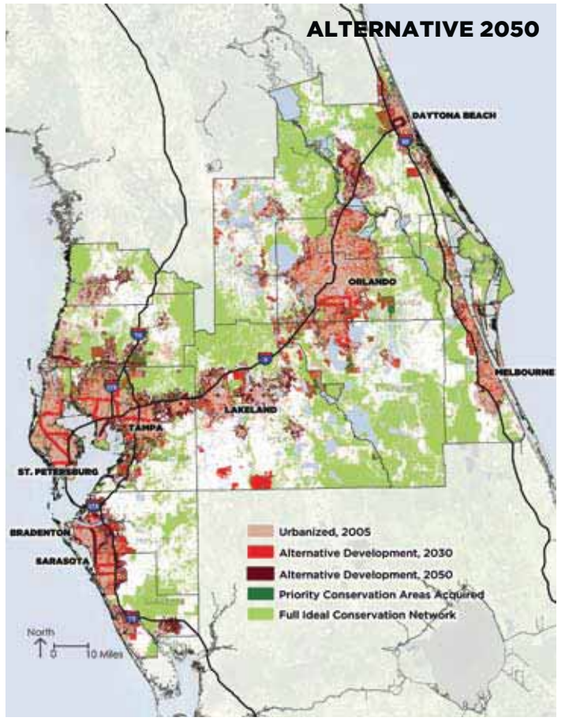
6 CONCLUSION

TWO CHOICES FOR THE FUTURE

There are two potential futures for Florida's Super Region. In the first future, development continues as usual; in the second, a fundamental shift in priorities guides development so that it capitalizes on assets that currently are dispersed across the region. If the status quo continues, the Super Region will lose 317,500 acres (10%) of natural land to greenfield development. As this report has shown, the alternative future represents a development scenario that takes much better advantage of physical infrastructure and is considerably more sustainable. This future accommodates the same population growth in one million (33%) fewer acres of development and preserves nearly 120,000 acres of the Super Region's environmentally sensitive lands.

This alternative future, however, will not happen without intervention. To achieve this better future, communities within the Super Region must coordinate extensively to develop transportation systems, protect natural resources, connect existing economic assets, and strategically locate new assets across the Super Region. Over the next 20 years, these communities must be proactive or else unsustainable and uncoordinated development practices will continue to undermine the ability of the Super Region to compete on the global stage.



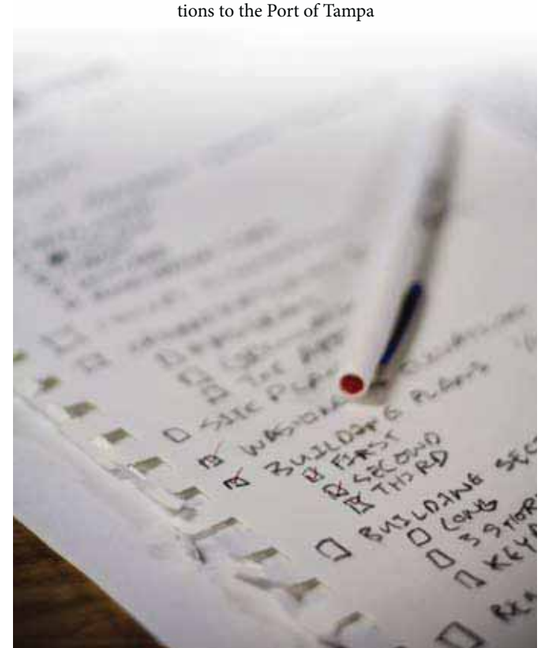


PRIORITY ACTIONS FOR THE SUPER REGION

Essential Actions by 2015

TRANSPORTATION

- Complete HSR line from downtown Tampa to Orlando International Airport (OIA)
- Build SunRail including the extension to the HSR station at OIA
- Build light rail line from the OIA to the Airport City at Lake Nona
- Build TBARTA lines from the Tampa HSR station to Westshore and Tampa International Airport
- Rebuild northbound I-275 bridge, including space for two tracks of TBARTA, to Pinellas County
- Build Pinellas County TBARTA lines to Gateway, Clearwater, and St. Petersburg
- Build Polk County regional rail system linking the University of South Florida Polytechnic campus, Lakeland, Bartow, and Winter Haven
- Complete the CSX Integrated Logistics Center in Polk County and its rail connections to the Port of Tampa



CONSERVATION

- Adopt an Ideal Conservation Network for Super Region
- Prepare a trend development model for the Super Region
- Identify land from the Ideal Conservation Network that is shown by the trend model to be at risk before 2020 and take actions to protect this land

ECONOMICS

- Adopt plans for coordinating and integrating education and workforce development across the Super Region
- Adopt plans for linking local and county tourism plans in a comprehensive tourism strategy for the Super Region
- Adopt land use plans and special development district controls for station areas around HSR, SunRail, and TBARTA stations
- Adopt a super regional strategy that integrates education and workforce institutions, sports destinations, entertainment and tourism destinations, innovative industries, and other economic clusters
- Adopt and implement water and energy conservation plans for the Super Region

Essential Actions by 2020

TRANSPORTATION

- Complete HSR from OIA to Miami via the I-95 route
- Complete light rail routes from downtown Orlando to the University of Central Florida and from the Orange County Convention Center to OIA
- Extend TBARTA from the Tampa HSR station to the University of South Florida
- Connect the Cape Canaveral HSR station to Port Canaveral and Kennedy Space Center via local feeder routes
- Connect the Melbourne HSR station to the Melbourne International Airport and Amtrak via local feeder routes

CONSERVATION

- Identify land from the Ideal Conservation Network that is shown by the trend model to be at risk before 2030 and take actions to protect this land
- Continue implementing water conservation plan
- Continue implementing energy conservation plan

ECONOMICS

- Adopt land use plans and special development district controls around new transit stations
- Continue implementing a coordinated economic diversification and enhancement plan

Essential Actions by 2030

TRANSPORTATION

- Complete state-wide HSR system
- Complete TBARTA rail system
- Connect Daytona Beach to Deland via light rail along Speedway Boulevard
- Connect the Sarasota/Bradenton HSR station to Sarasota-Bradenton International Airport and TBARTA via light rail along University Avenue

CONSERVATION

- Complete preservation of ideal conservation network
- Continue implementing water conservation plan
- Continue implementing energy conservation plan

ECONOMICS

- Adopt land use plans and special development district controls around new transit stations
- Continue implementing a coordinated economic diversification and enhancement plan

PEOPLE OF THE SUPER REGION: WHY CONNECTIVITY MATTERS

Imagine this scenario:

The Creative Class is expected to be the next major force to rock society. These young, energetic, and passionate individuals seek innovative and challenging new careers in lively urban centers. The crave a lifestyle package where they can live, work, and play in a city that is on the verge of the next big thing. These individuals bring new talent, expertise, and social capital to any city in which they choose to settle. New economic activity supported by transit systems provides great potential to attract and harness the benefits of this demographic in the Super Region.

7 APPENDIX

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SUCCESSFUL ADAPTATION TO GROWTH AND CLIMATE CHANGE

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EXECUTIVE SUMMARY

1. THE VALUE OF WORKING AS A SUPER REGION

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