39°N

2016 MASTER PLAN

ST. LOUIS COUNTY, MO

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INTRODUCTION

The 39 North Master Plan broadens the St. Louis area's worldwide leadership in agtech with a dynamic innovation district to drive leading-edge research in food, water and energy. Our work to realize a bold vision for the future that will bring new investment and jobs to St. Louis County is only beginning.

St. Louis County in conjunction with the St. Louis Economic Development Partnership (SLEDP) is committed to allocate resources and talent to grow the plant science and agtech sector. The incredible talent we have in the St. Louis region draws companies in the agricultural sector from across the country and the world. In the past few years, the St. Louis region has had numerous major corporate investments in the agtech sector. Bunge North America, a leading agribusiness and food company, is adding 280 new jobs to the existing 550 here in St. Louis County with plans to construct a brand new $70 million headquarters in the region. In Chesterfield, Monsanto is constructing a $500 million Research Campus and Rabobank Group is adding 200 new jobs and a new building. KWS SAAT SE, a German seed producer, opened its North American headquarters within the district at the Bio Research & Development Growth (BRDG) Park.


Girl Scouts
RAGE, CONFIDENCE
1912

THE OPPORTUNITY

The St. Louis region is rapidly emerging as a world leader in academic and corporate agtech research and innovation.

The 39 North Master Plan is a vision to create an innovation district - located in St. Louis County within Creve Coeur - uniquely positioned to advance the region's global leadership in plant sciences and agtech.

The highest concentration of plant science PhD's in the world, over 750, call the St. Louis region home. Highly skilled experts contribute to world-class research institutions including the Donald Danforth Plant Science Center, the Missouri Botanical Garden and academic institutions including Washington University, St. Louis University, and the University of Missouri St. Louis. Leading multi-national corporations including Monsanto, Bunge North America, and Novus International have their headquarters in the St. Louis region and an increasing number of small and mid-size businesses comprise a remarkable regional network of over 400 research and development agtech companies employing over 15,000 people[1].

1.St. Louis Regional Chamber

Leading organizational support and facilities

Access to investment has grown steadily with nearly $1 billion in locally-sourced agtech venture capital funding for start-up companies in the region since 2001[1].

The Donald Danforth Plant Science Center, the Helix Center, Bio Research & Development Growth Park (BRDG) and Monsanto, all within the 39 North innovation district and the City of Creve Coeur, offer companies and researchers access to the organizations and facilities needed to support innovation in plant science, agtech and related industries.

39 North is part of a dynamic entrepreneurial infrastructure in the St. Louis region. Over the last decade, community leaders have come together to remove barriers to mentorship, investment capital, and specialized equipment allowing start-ups and entrepreneurs to thrive from concept to commercialization. A network of non-profit organizations, including BioGenerator and the Yield Lab, connect start-ups to mentors, legal advice and equipment. BioSTL has built a coalition of business, community leaders and local non-profits to promote the St. Louis region to a world audience, which has contributed to continued growth of a comprehensive entrepreneurial ecosystem.

With a comprehensive structure of regional resources, Creve Coeur and the St. Louis region present an excellent opportunity for start-ups who are looking for individualized attention and access to seed funding from a variety of sources unique to the area. Seed funding makes commercialization of innovative ideas possible through a network of angel investors.

A wide spectrum of physical infrastructure houses world-class laboratory space, specialized equipment and greenhouses at the Danforth Center, BRDG Park. CORTEX in St. Louis' Central West End neighborhood offers one million square feet of lab and office space in collaboration with Washington University, BJC HealthCare and other academic and research partners. Innovation centers support a variety of start-ups with flexible and affordable space, such as the Helix Center, T-REX and the Center for Emerging Technologies (CET) in downtown St. Louis.

1. BioSTL. biostl.org/bioscience/assets/


STL AIRPORT
UMSL
MARYLAND HEIGHTS
GRANITE CITY
BUNGE
DANFORTH CENTER
BRDG PARK
CORTEX
T-REX
4 mi
HELIX
UNIVERSITY CITY
BJC HEALTHCARE
CREVE COEUR
OLIVETTE
CLAYTON
DOWNTOWN ST LOUIS
EAST ST LOUIS
MONSANTO
CIC
TOWN AND COUNTRY
SIGMA-ALDRICH
WASH U
KIRKWOOD
MISSOURI BOTANICAL GARDEN

- A Recognized Hub for Plant Sciences
- Major Anchors
- Proximity to Other Institutions
- Quality of Life
- Access to a Skilled & Educated Workforce

15,000
Regional Plant Science Employees[1]

7th
Most Affordable Metropolitan Area in the U.S.[2]

$75B
Global Impact from Regional Agriculture[1]

400
Regional Plant Science Ventures[1]

Agtech: a growing, diverse industry

Innovations in agtech hold answers to solving global challenges in health, food and energy.

Agtech is a broad industry originating from the common thread of the application of the life sciences to discover and understand the inner workings of living things. Agtech companies include firms focused on agricultural production and processing, the delivery and development of pharmaceuticals and medical devices, and research and development laboratories. The biomedical sector in particular is projected to increase employment by 16.5% over the next decade, compared to 3.6% across all industries nationwide[3]. The agtech community depends on a diverse network of related industries such as Information Technology and other business services such as marketing, legal and facilities maintenance that multiply the impact of growth in agtech firms.

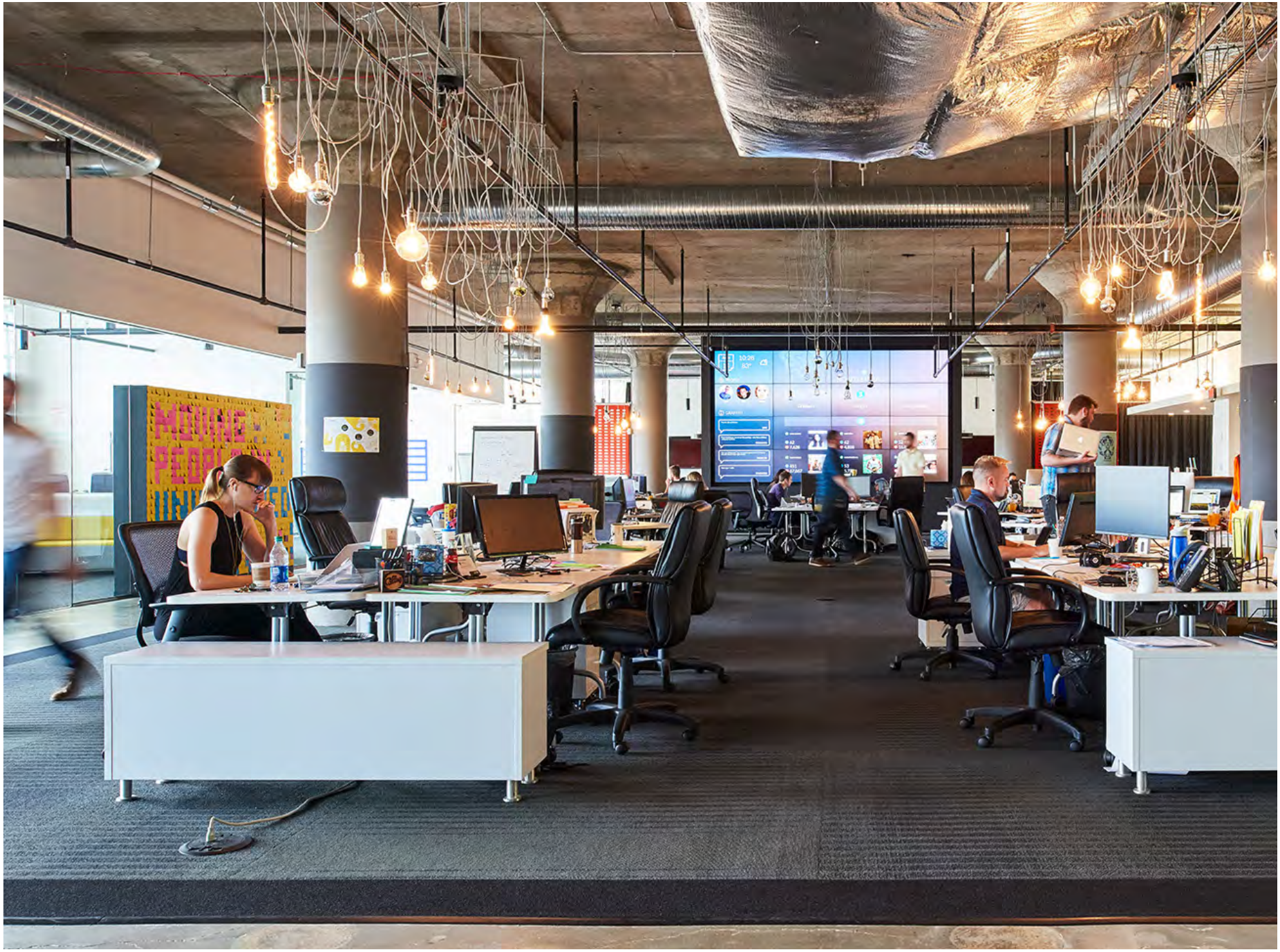
1. Missouri Economic Research and Information Center, St. Louis Regional Chamber
2. Forbes Most Affordable Cities in America, 2015
3. Missouri Economic Research and Information Center (MERIC).

Essential to success is empowering the region's communities through education opportunities.

A strong community for the 21st century

The success of the St. Louis region's innovation system is critical for job creation and leadership in the 21st century.

Opportunities in agtech and related industries can help facilitate a knowledge-based economy for sustainable and long-lasting economic growth. The St. Louis Promise Zone initiative, a catalyst for inclusive community growth in the St. Louis region, is a partner to improve education outcomes, health and wellness and workforce readiness for the region's future jobs in agtech. Local STEM (science, technology, engineering and math) programs enable a continuous pipeline of talent to meet the future needs of the agtech industry. Partnerships between St. Louis Community College and Bio Research & Development Growth (BRDG) Park offer individuals access to degree and certificate programs while providing work experience and employer contacts. Graduates provide existing and emerging companies skilled hands at the bench and access to equipment.



ADVANCING THE OPPORTUNITY

An innovation district in St. Louis County

39 North will establish a framework for a thriving district of research activity, business and entrepreneurship.

New knowledge and ideas are inherently place-based. Information and innovation spread when people and places align, and where opportunities to meet and exchange ideas are abundant. 39 North leverages existing district anchors by defining a place to share ideas within a broader ecosystem of professional resources in the St. Louis region.

Innovation districts are places where anchor institutions, start-ups, business innovation centers and accelerators cluster in a proximate, connected, mixed-use environment. These environments include streetscapes and public spaces that encourage interaction and walkability, active retail uses, a diverse set of walkable housing and hospitality options, parking, and alternative transit. Proximity and place-making bring the components of innovation districts together to attract a talented workforce and promote broad-based prosperity.
The master plan will drive local economic growth, development strategies and workforce inclusion to build on the region's strength in agtech. The impact of the plan extends well beyond 39 North's borders to strengthen existing connections to the region's open space, cultural, and research assets. The district will also increase leadership and competitiveness within the country and worldwide for long-term economic growth of the St. Louis region by growing agtech and related industries.

Advancing the opportunity starts with

- Defining a place where people want to be.
- Leveraging a mix of building types including new construction, existing, and adaptive reuse.
- Providing a mix of uses including residential, retail, office and research.
- Connecting municipal, institutional and commercial anchors.
- Creating high quality public space with a variety of amenities and design encouraging interaction.
- Enhancing mobility to the site and connectivity to regional assets.

Left **@4240**
St. Louis, MO

DEVELOPMENT GOALS

The Master Plan establishes a vision and framework for 39 North as an innovation district through development goals that seek to:

Define the area as a district

- Develop a clear identity to communicate 39 North.
- Strengthen connections within the district and to its surroundings in the city of Creve Coeur, Olivette, and other neighboring communities.
- Visually define the district (e.g. gateways, streetscape and signage).
- Have a structure (and person) that promotes the district.
- Create a sense of place.

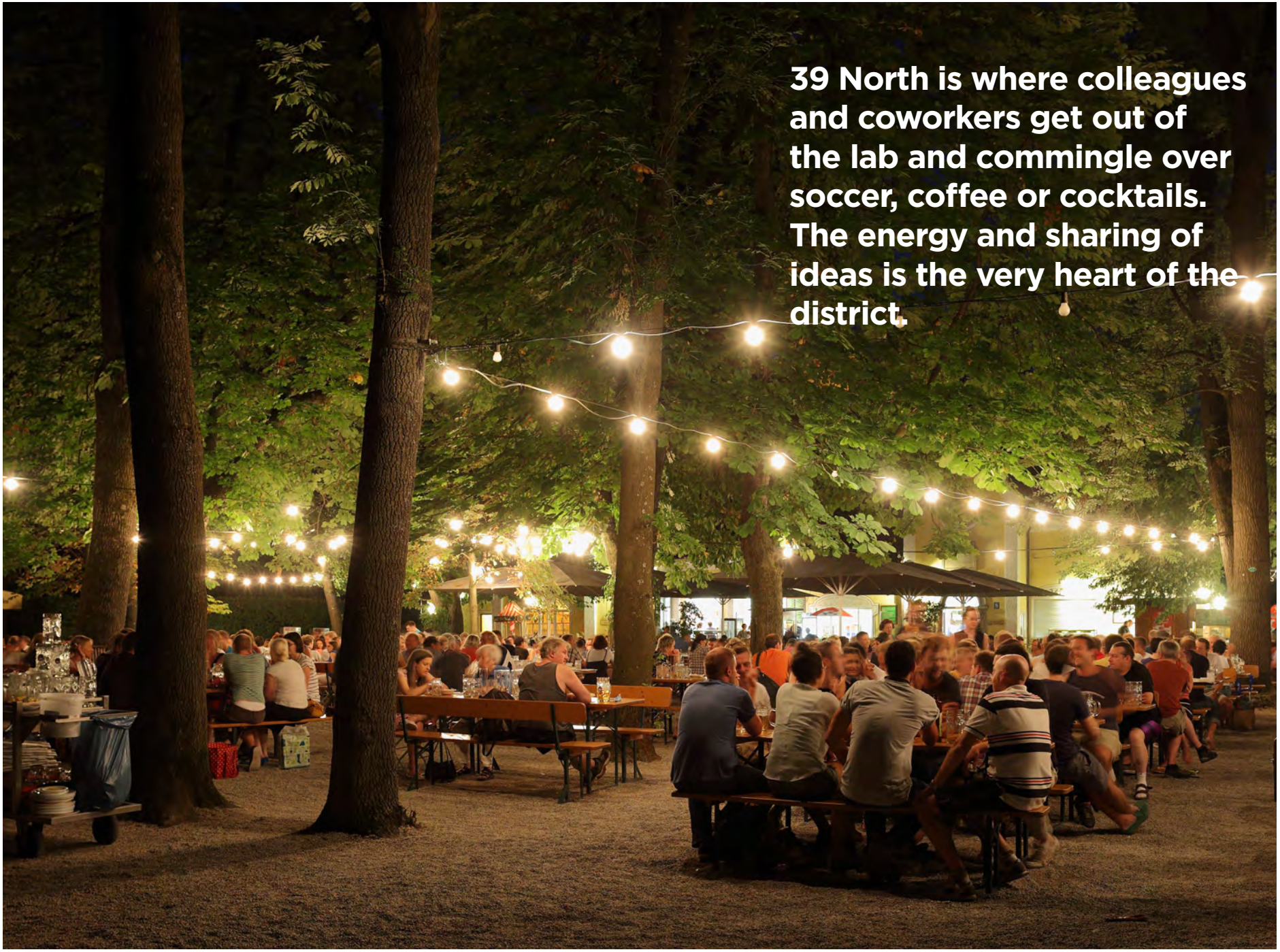
Attract and develop talent

- Expand core resources that attract and support top researchers and companies.
- Provide resources that support workforce development.
- Expand the innovation ecosystem (e.g. education, financing, linkages).
- Leverage the mix of existing building types and promote infill development.
- Encourage amenities and a mix of uses that complement plant science and technology.
- Grow the district and the region.

Provide a physical framework and strategies for growth

- Complement other economic assets in the St. Louis region.
- Support expansion into complementary markets.
- Strengthen the St. Louis region as a global plant science hub.
- Communicate the value proposition of the St. Louis area.

Right **BEER GARDEN**
Munich, Germany



39 North is where colleagues and coworkers get out of the lab and commingle over soccer, coffee or cocktails. The energy and sharing of ideas is the very heart of the district.

TRANSFORMATIVE IDEAS

39 North is a place and an idea. Five transformative ideas will define the district as a vibrant place.

1

Strengthen corridors and establish new traffic patterns

Achieve an interconnected network of internal streets to improve mobility for vehicles, transit and pedestrians within 39 North and improve existing road infrastructure.

2

Connect assets and opportunity sites

Utilize open space and new internal road infrastructure to connect district anchors including Monsanto, the Donald Danforth Plant Science Center, Bio Research & Development Growth (BRDG) Park, Helix Center, and adjacent community assets including the Jewish Community Center, Warson and Stacy Parks and town centers at Creve Coeur and Olivette.

3

Establish a cohesive development framework

Outline a strategy for development of 39 North to accomplish near and long-term success to realize the district in a sustainable manner.

4

Create a mixed-use center of activity

Define the heart of the district with amenities critical to support an ecosystem of innovation both within the district and to the St. Louis region and provide neighborhood amentities to local residents that are welcoming and engaging.

5

Communicate the district

Establish distinctive gateways to the district and make visible to the community the cutting edge research and products that are defining the future of the St. Louis area economy through public art, innovative architecture and landscape design.


Educational Outreach & Science
Research / Start ups
competitiveness Benefits of sustainability - lead by example
Signage Wayfinding
Old Kirkwood
2 story
Contiguous materiality (lamps, trash cans, pavers, plants, etc.)
Venture Cafe'
Education or events that brings the public in
Other technology adjacencies
Plant science + technology can seem remote to a wider public. So whatever brand is used, it is critical for it to be inclusive to non-specialists, inviting to anyone with curiosity. That would help a wider public approach the great →
1. Determine who will maintain the sidewalks, bike trails etc.
Bike/Walkways
Existing C.C. sidewalks Old Olive are not well-maintained
Make a street through the

PROCESS + OUTREACH

Throughout the course of the planning process, the St. Louis Economic Development Partnership (SLEDP) and the planning team consulted stakeholders and community members.

Eight focus groups were formed as part of the planning process. They were comprised of public officials, transportation and utility representatives, education, and industry partners. Focus groups were engaged at each phase of the process, culminating in a presentation to the Core Working Group made up of stakeholders representing the City of Creve Coeur, the Donald Danforth Plant Science Center, Bio Research & Development Growth (BRDG) Park, Monsanto, SLEDP, Wexford Science & Technology, LLC and the Missouri Technology Corporation (MTC).

Three forums engaging the general public, district employees and stakeholders were held at the Danforth Center at key project milestones in the vision development, scenario refinement and draft plan stages of the plan. Members of the public were asked to provide their feedback verbally, through written sticky notes, online via an engagement tool, and through the master plan website, plantsciencemasterplan.com.

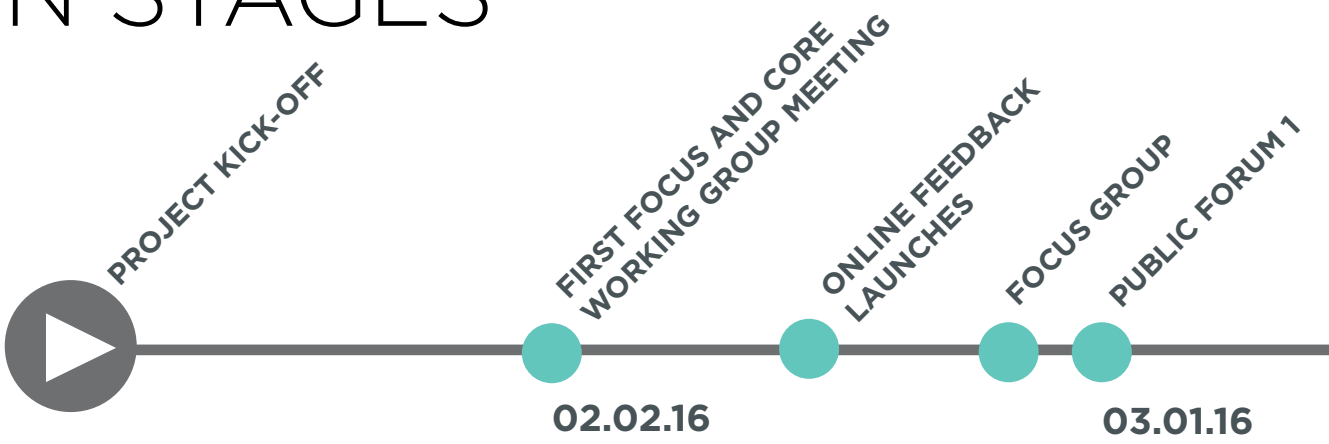
In addition to open forums held at the Danforth Center, SLEDP conducted over 40 "road-show" events during the draft plan stage to bring the draft plan recommendations to the work-places of stakeholders and to meeting places in surrounding communities to receive feedback. Following the workshops, participants were encouraged to fill out comment forms which were compiled for analysis.

Outreach to promote public meetings was initiated through multiple channels of communication including email notifications, the posting of fliers at various locations, postcard mailings and the placement of door hangers in nearby residential communities. The master plan website, plantsciencemasterplan.com, was updated throughout the process with the latest content and key engagement dates.

MASTER PLAN WEBSITE

MASTER PLAN STAGES

Beginning in February of 2016, Master Plan development was a process organized in five stages.



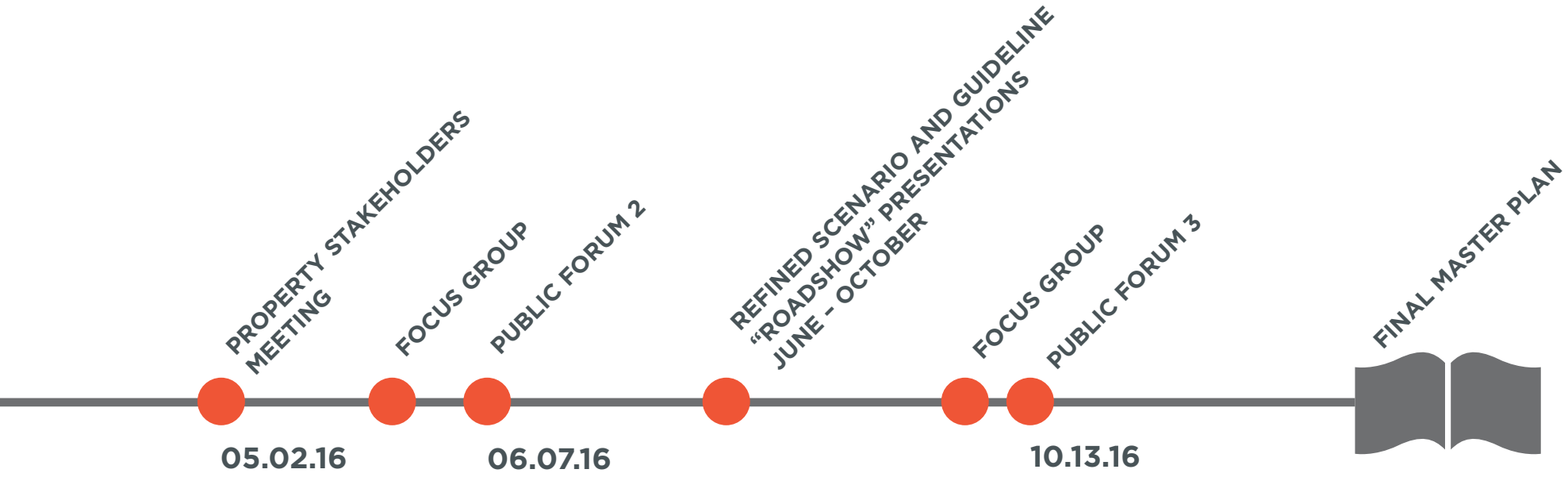
PUBLIC FORUM 1
Donald Danforth Plant Science Center

1. Key issues and development goals

The process began with an analysis of Strengths, Weaknesses, Opportunities and Threats, data gathering and site analysis. Meetings were conducted with key stakeholders, focus groups and core working group to determine development goals to guide the Master Plan.

2. Vision Development Scenarios

The planning team presented initial site analysis and development goals with community members at the first public forum. A draft concept plan and planning principles were developed based on community and stakeholder feedback. Initial development scenarios were developed and presented to the Core Working Group.



3. Scenario Refinement

Refined development scenarios were prepared and presented to stakeholders and the community during the second public forum. Members were asked to identify any questions or concerns, priorities, and challenges to implementation. The presentation included discussion of transformative ideas and a comprehensive vision for the district, initial concepts for a proposed district center, and proposed street modifications.

4. Draft Plan Design Framework

Presentations of refined scenarios were made to a broad audience of community members and stakeholders. Refinement of transformative ideas and scenarios took place. Illustrative graphics were produced along with a draft Master Plan presentation.

5. Final Plan and Documentation

The planning team in collaboration with SLEDP and stakeholders produced the final Master Plan.

bus and bike connectivity

interface with local public schools and STEM programs

unifying and industry-inclusive Brand

Improve walkability

Graduate lab and office space for post-Helix companies

Brew pub, Coffee Shops

green building techniques

The planning team heard many great ideas throughout the planning process.

public art installations

Amenities welcoming to the public

Communicating our successes

utilizing the existing abandoned railway

hotel with an innovation theme

community-inclusive activities

multi-modal connections

Incorporate academic institutions and complementary industries

Three overarching themes emerged from general public and stakeholder feedback.

Improve connectivity

Connectivity and the challenges of accessing the site by car, bicycle and on foot was a common theme interwoven among all of the issues communicated to the planning team. Community members voiced that the Master Plan vision for 39 North should improve walkability to assets in the immediate area, including Monsanto, the Donald Danforth Plant Science Center, Bio Research & Development Growth (BRDG) Park, Helix Center, the Jewish Community Center, and to regional open space assets including Stacy and Warson parks and to downtown centers at Olivette and Creve Coeur.

The abandoned railways running through the north portion of the district were identified as an opportunity for connectivity, as were the existing streets with the possibility of including additional sidewalks, bicycle trails and specifically a direct connection between the Donald Center and the Helix Center. Community members preferred a grade-separated intersection at Old Olive over Lindbergh to improve east-west connectivity across Old Olive versus an at-grade solution. Regardless of the proposed improvement at Lindbergh and Old Olive, there was overwhelming agreement that connectivity should be improved as a feature in the plan.

MULTI-USE PATH
Cultural Trail, Indianapolis, IN

Include amenities

Community members also advocated for amenities to activate the district, with a coffee shop being the most requested, followed by a café and brewpub. Any amenities should be welcoming to the public and serve a community gathering function in addition to serving office and research workers in the district. Art installations in the district were advocated for as an amenity that communicates the activity of the district. Many community members also saw the plan as an opportunity to be a leader in sustainable practices including solar power, stormwater management and native plantings. Successful development should also minimize traffic impacts to the district and nearby communities and address any safety concerns. Community members saw opportunities to engage local school Science, Technology, Engineering and Math (STEM) programs through field trips and collaborations with the district.

Expand research and innovation infrastructure

Expanding research and innovation infrastructure was identified as a priority for the district. This includes elements internal to the district, such as expanding shared research facilities, and elements external to the district, such as initiatives that engage with resources and opportunities in the St. Louis area. It was indicated that many members of the community are unaware of the Donald Danforth Plant Science Center, Bio Research & Development Growth (BRDG) Park and Helix Center, or the cutting edge research done there. Members of the public and stakeholders found that successful outreach and branding should be inclusive to non-specialists.

Top **ACTIVE GROUND FLOOR USE**
Madison, WI

Right **CIC @ CET**
St. Louis, MO

EXISTING CONDITIONS

Market scan

An assessment of residential, commercial office, industrial, and retail uses along with demographic trends shaped the Master Plan development program and ensured its viability. The market scan identified specific opportunities for residential, retail and office development.

VANGUARD HEIGHTS APARTMENTS
Creve Coeur, MO

Left **CLAYTON SKYLINE**
St. Louis County, MO

Key take-aways from the market scan

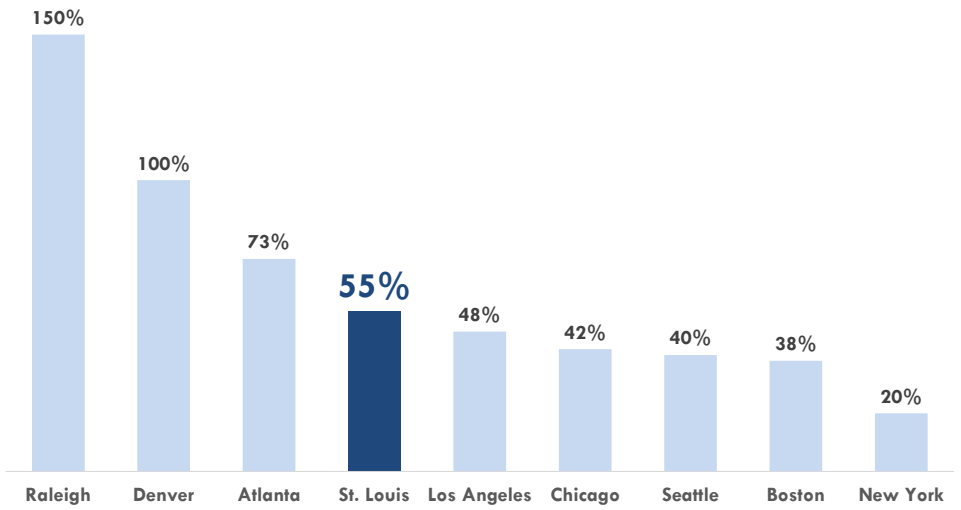
- Agtech firms have a strong future in the St. Louis region.
- A mix of uses will be necessary to drive demand for the project area.
- There is a market for residential, lab/research and development, retail and, potentially, a hotel.
- Suburban character is an asset within the regional agtech market.
- Providing supportive resources to emerging companies can further drive agtech demand.
- Programmatic leadership, institutional, entrepreneurial-supportive resources and corridor-wide branding are essential to supporting the development program.

Industry opportunity

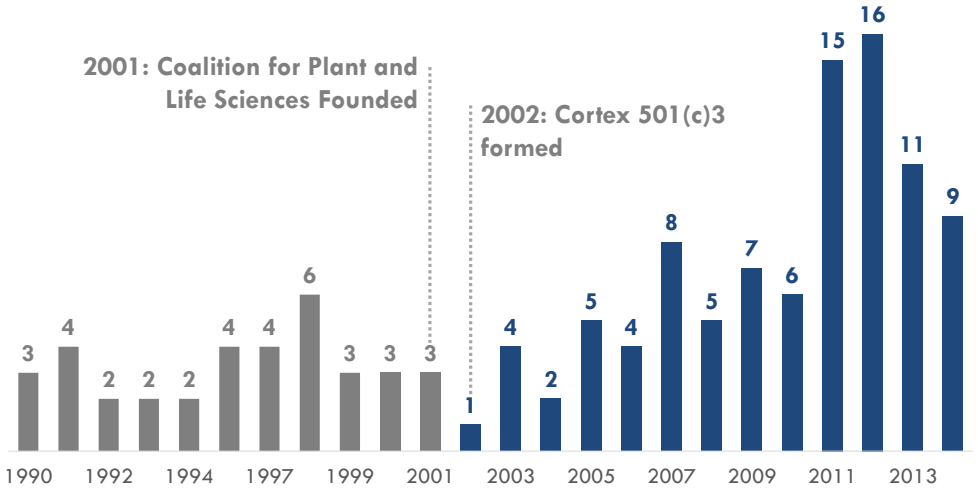
The strength of the St. Louis region's existing plant and agtech industry is instrumental in attracting venture capital, encouraging local and international entrepreneurs to grow their businesses in the region, and driving the region's economic competitiveness.

The St. Louis region has experienced strong average annual investment deal growth, increasing by 55% from 2012 to 2015.

The St. Louis region's entrepreneurial spirit, combined with strong leadership, has translated into a sharp increase in the growth of new regional plant and agtech companies since the formation of key organizations such as BioSTL and the Donald Danforth Plant Science Center nearly 15 years ago. As a result of this leadership, the St. Louis area leads the Midwest in the overall number of plant and agtech companies, and has, by far, the largest concentration of such companies among peer cities such as Kansas City, Des Moines, Omaha, Lincoln, Iowa City, Columbia, and Wichita.



AVERAGE ANNUAL INVESTMENT DEAL GROWTH 2012-2015



ST. LOUIS REGIONAL AGTECH COMPANIES BY YEAR ESTABLISHED

Residential

Multifamily vacancy in the immediate area of 39 North and western suburbs has declined steadily since 2008, resulting in demand for new development. Currently, approximately 350 new multifamily units are being added to the district in response to market demand.

Market Opportunities

» *Potential to attract young professionals & empty nesters*

39 North can attract growing market segments with a denser, walkable urban environment with amenities, open space, and a mix of uses.

» *Projected multifamily housing demand*

39 North is positioned to capitalize on low vacancy rates and local demand for apartment living with multifamily housing that supports the vision for a denser urban district.

Retail

Conversations with current local employees indicate the need for additional restaurants, coffee shops, bars, and neighborhood-serving convenience retail. Retail opportunities in the district can complement the City of Creve Coeur's broader retail strategy, which envisions compact neighborhood centers and walkable streets with destination-oriented "experiential retail" such as clothing and housewares, neighborhood services, bars and restaurants.

Market Opportunities

» *Demand for neighborhood-serving retail*

The market today can support approximately 150,000 square feet of new retail, which could include restaurants, coffee shops, bars, and convenience retail catering to new residents and nearby workers.

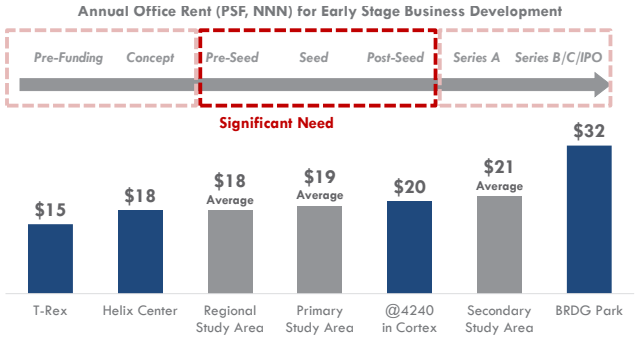
Office

Vacancy rates for Class A office space in the region have declined from 12 to 8 percent, indicating that new tenants are continuing to take up space.

Market Opportunities

» *Conversion of industrial warehouses*

The 39 North can provide appropriately-priced facilities to emerging agtech companies by converting existing light industrial and distribution facilities into "white box" office, flex, and lab space attractive to early and mid-stage companies.

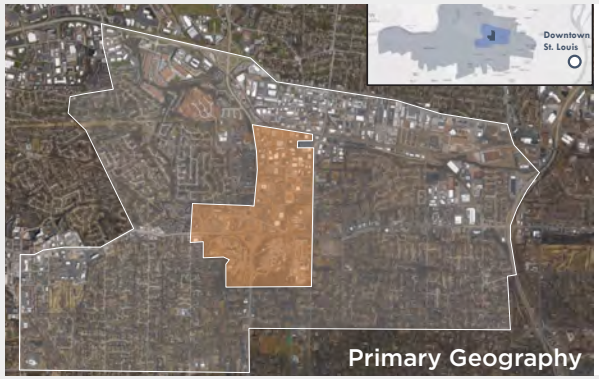


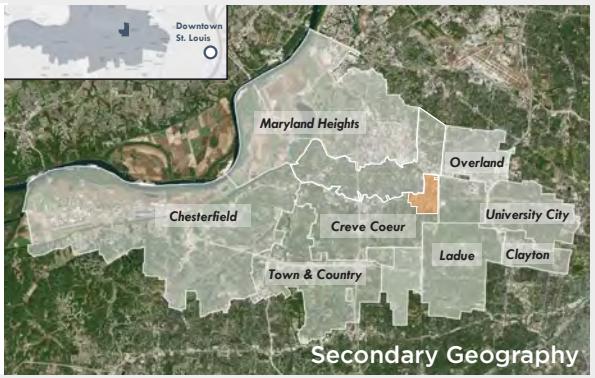
STUDY GEOGRAPHIES

Primary Geography: Five census tracts adjacent to district boundaries

Secondary Geography: Creve Coeur, Ladue, Overland, Olivette, and portions of University City, Clayton, Frontenac, Westwood, Maryland Heights, Chesterfield, Town and County, Country Life Acres, and unincorporated St. Louis County

Regional Geography: St. Louis City & County





DEVELOPMENT HISTORY

1850s to 1940s

Development in 39 North began with Old Bonhomme Road, now called Olive Boulevard, which has continued to be a driver for development up to the present day.

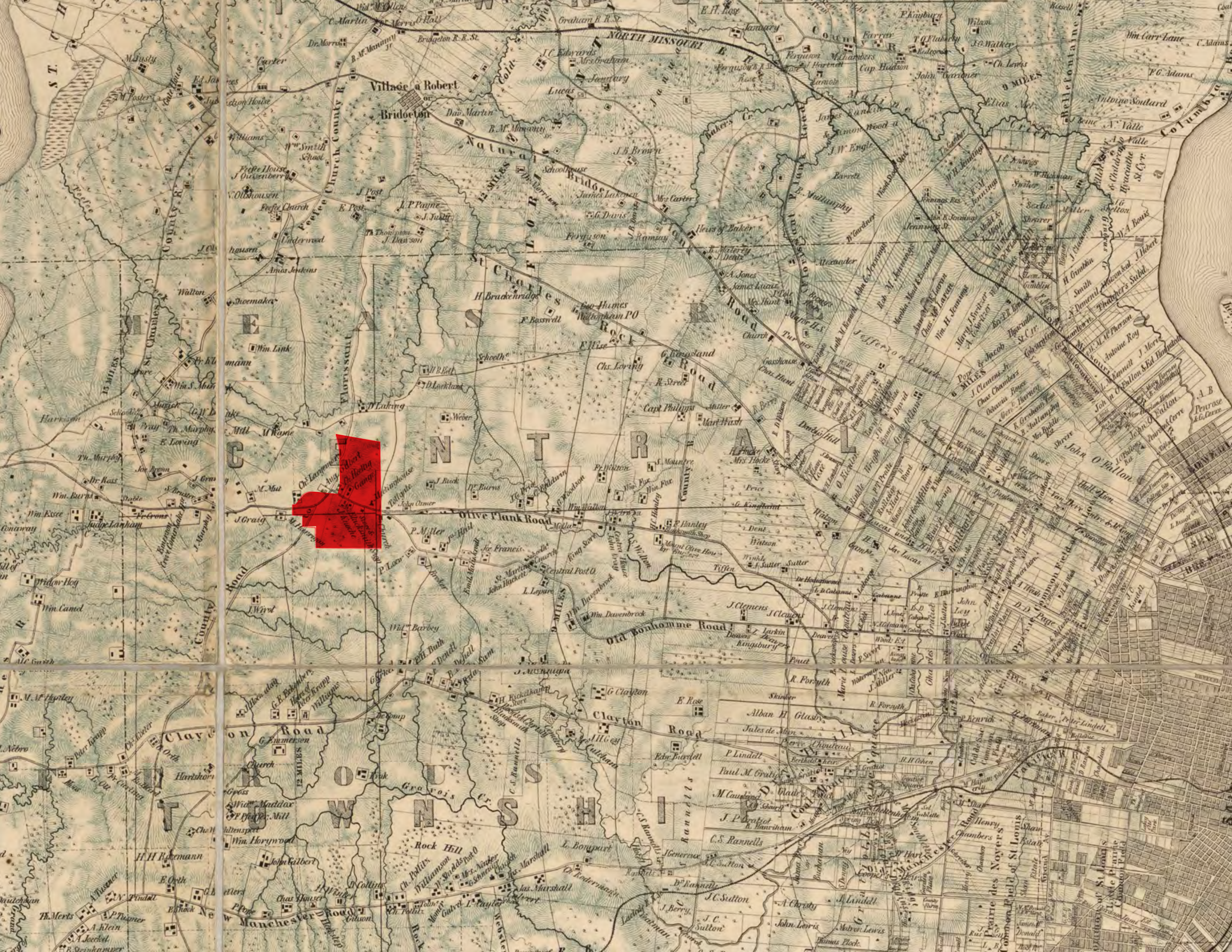
OLIVE PLANK ROAD
present day University City

The corridor began as a river-to-river Native American pathway along the high point dividing watersheds to the north and south. Old Bonhomme Road was upgraded as a toll road by the Central Plank Road Company in 1851 and renamed Central Plank Road connecting Howell's Ferry to the terminus of Olive Street in downtown St. Louis.

Although the toll road failed to be profitable, it drew ambitious and entrepreneurial spirit from those looking to settle in the country. Communities developed and grew along present day Olive Boulevard, including a town center within the district called Stratmann just east of present day Lindbergh Boulevard along Old Olive Street. Stratmann was a commercial hub with a blacksmith shop in 1854 at the northeast corner of Olive Boulevard and Lindbergh Boulevard along with a general store, wagon maker, commission merchant and a post office[1]. The town incorporated into the City of Creve Coeur in 1949[2].

1857 MAP OF THE ST. LOUIS REGION
study area highlighted

1. Creve Coeur and Surrounding Area. Citizens Historical Committee. 1968
2. History of the Creve Coeur Area. City of Creve Coeur. 1976



NORTH MISSOURI R.R.
Village a Robert
Bridgeton
Natural Bridge Road
St. Charles Rock Road
Olive Plank Road
Old Bonhomme Road
Clayton Road
New Manchester Road
CENTRAL
TOWNSHIP
Rock Hill
12 MILES
9 MILES
Central Post O.
Bridgeton R.R. St.
Graham R.R. St.
Jefferson Road

1940s to 1970s

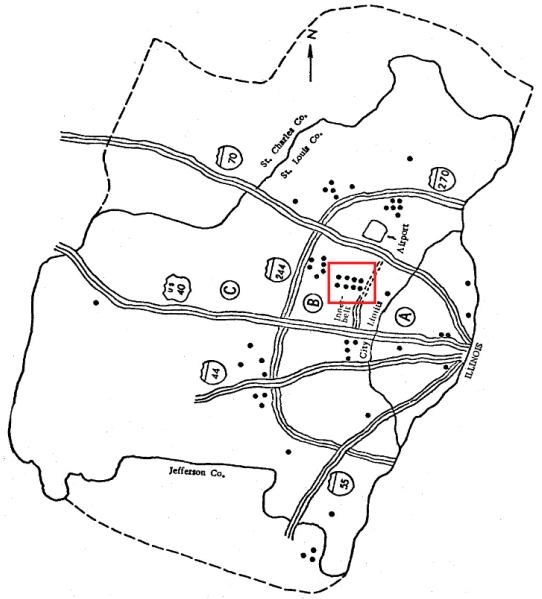
The north side of the district is marked by the old Chicago, Rock Island and Pacific Railroad, a 298-mile line which opened in 1904 running from St. Louis to Kansas City. The section through the study area, known as Lackland Subdivision, is a 33.5 mile rail line owned by Union Pacific and leased by the Central Midland Railway. It is the only part of the Old Rock Island Line that is still in operation[1].

In 1930, construction of Lindbergh Boulevard was completed as a bypass of St. Louis.

WILLIAM DEUSER'S BLACKSMITH SHOP

After World War II, new housing construction boomed in St. Louis County in sharp contrast to the city where higher density was a disadvantage. Westward movement from the city core to St. Louis County between 1960 and 1970 led to a population increase of 29% in the county while the city's population declined 17 percent[2]. With falling transportation costs, industry also became increasingly decentralized. Industrial dispersion in the St. Louis region was also increasing due to demand for more space, security concerns, and the construction of interstate highways. Highway construction programs brought the construction of Highway 40, Interstate 70, and interstate 244 - present day interstate 270 - which helped fuel the relatively rapid growth of Creve Coeur. Highways enabled larger, more inexpensive tracts of land to be available with lower development costs in the suburbs than in the city.

With open land near both highway intersections and an active rail line, 39 North became highly desirable for light industrial uses. Consequently, development began in the northern section of the district in the late 1950's and continued into the 1970's. In the mid 1950's the Monsanto campus began its build-out east of Lindbergh. Olive Boulevard was re-routed with a new interchange at Lindbergh, with the original segment renamed Old Olive Street Road.



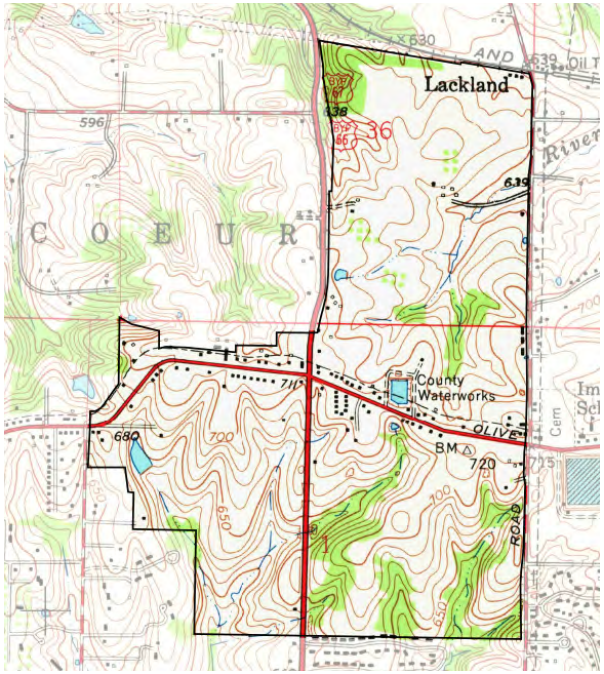
SOURCE: Holland and Wendel, *Development of Industrial Parks*

MAP OF INDUSTRIAL PARKS
1960's, district and surrounding area highlighted

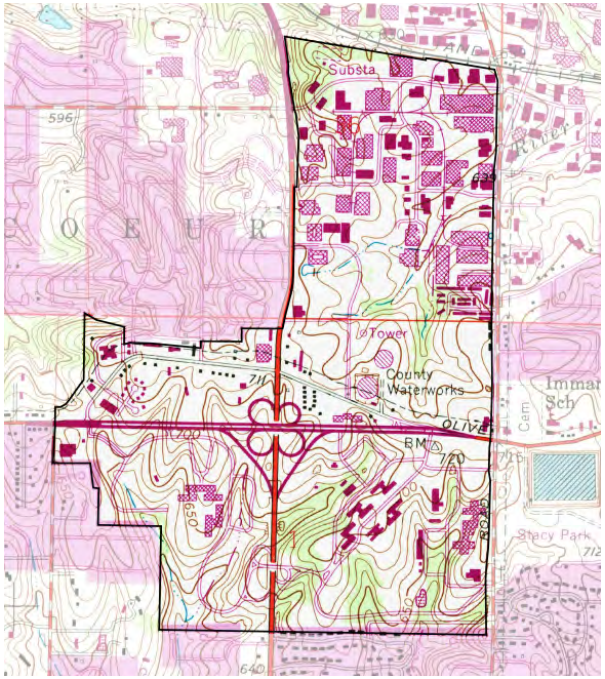
1. Central Midland Railway CMR #386. https://www.up.com/customers/shortline/profiles_a-c/cmr/index.htm
2. St Louis: A City and its Suburbs. Barbara R. WIlliams. 1973

1980s to Today

By the late 1980s, multiple office buildings occupied parcels immediately north of Olive Boulevard and reflected a pivot to the service economy. Construction of the retail center at Old Olive Street and Olive Boulevard began with the AMC Creve Coeur 12 Cinema constructed in 1999. Construction of the Donald Danforth Plant Science Center followed in 2001, Bio Research & Development Growth (BRDG) Park in 2008, the adaptive reuse of an office building to house the Helix Center in 2012, and most recently the Danforth Center's expansion in 2016. Vanguard Heights, a multi-family residential apartment complex along Old Olive was completed in 2016. Today, the northern industrial district remains highly successful with occupancy rates greater than 90%. In the future, the district is poised for incremental transformation to support a growing agtech industry in the St. Louis region.



1954 USGS TOPOGRAPHY MAP



1974 USGS TOPOGRAPHY MAP

PRESENT DAY ILLUSTRATIVE

NATURAL ENVIRONMENT

Hydrology/topography

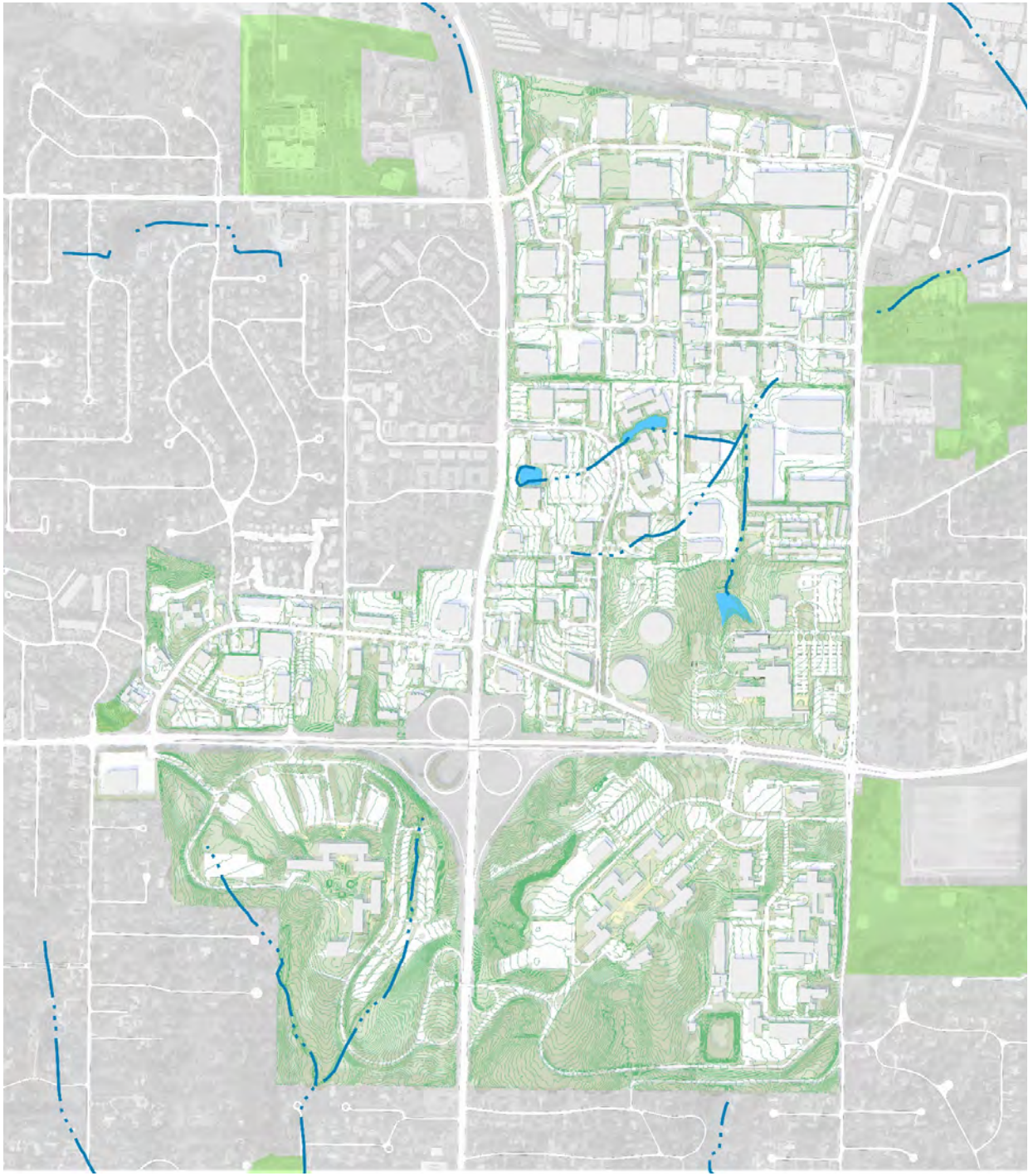
The district is positioned at the top of three St. Louis regional watersheds: Fee Fee Creek to the northwest, University City to the east and Deer Creek to the south. Fee Fee Creek watershed is a tributary to the Missouri River, while the other two minor watersheds are tributaries to the Mississippi River. This hydrological position is an opportunity to make significant, positive impacts downstream with responsible management of stormwater quality and quantity in the district. Benefits of responsible stormwater management include reduced flooding, minimized erosion, less strain on aged, undersized infrastructure, and improved water quality.

Existing vegetation

39 North holds four areas of contiguous natural woodland two acres or larger, including a 30-acre wooded buffer between the Monsanto campus and the southern district boundary, a 14-acre wooded buffer in the southwest corner of the district, and six acres of woodland between the Donald Danforth Plant Science Center and the Missouri American Water campus. Three stormwater retention ponds make up approximately two acres of open water bodies within the district, providing crucial stormwater management functions as well as creating passive recreation areas. The recently restored native prairie between the Danforth Center and Olive Boulevard provides over four acres of native grasses and forbs which exposes district visitors to the important role that prairie grasses and cereal crops play in agriculture along with the contributions of cutting-edge science and technology. These areas within 39 North, along with Stacy Park and Warson Park immediately adjacent to Warson Road, house the biodiversity and ecological systems which the Master Plan intends to promote and celebrate.

Retention pond at the Donald Danforth Plant Science Center

Looking southeast from the Olive Boulevard and Lindbergh Boulevard interchange



HYDROLOGICAL FEATURES

BUILT ENVIRONMENT

Today, 39 North consists of four distinct areas with a variety of uses.

Incorporated into the City of Creve Coeur in 1990, industrial park areas to the north end of the district are characterized by single-story, light industrial uses. Expansive paved surfaces supporting parking and tractor-trailer movement are dominant and limit vegetation. Pedestrian facilities are nearly non-existent.

FOUR DISTINCT DISTRICT AREAS

1. Industrial Park

Building construction dates range from 1957 to the late 1990s with the majority of buildings constructed in the late 1960s to early 1970s. Most businesses are warehousing services in single story, large footprint buildings. Other building uses include plastics and synthetic resin manufacturing, paper manufacturing, printing and publishing services, motor vehicle repair, chemical manufacturing and other fabricated metal production manufacturing. Rail spurs, all but one of which are abandoned, enter the district from the Central Midland Railway and run north-south into the industrial park. Most are visible at road crossings and are in various states of disrepair. This is the area with the highest building density in the district and the greatest number of land owners and parcels.

2. Office Park

The office park area has a wider variety of building heights varying from single story to four stories fronting Corporate Square Drive. A few remaining structures along Old Olive and Lindbergh date to the early 1930s, but a majority of office buildings were constructed in a narrow window of three years from 1979-1982. Office tenants include the St. Louis County Department of Transportation, non-profit organizations including SSM Health, a prominent healthcare provider in the St. Louis region, and other organizations and services firms. Surface parking is a dominant feature in the landscape.

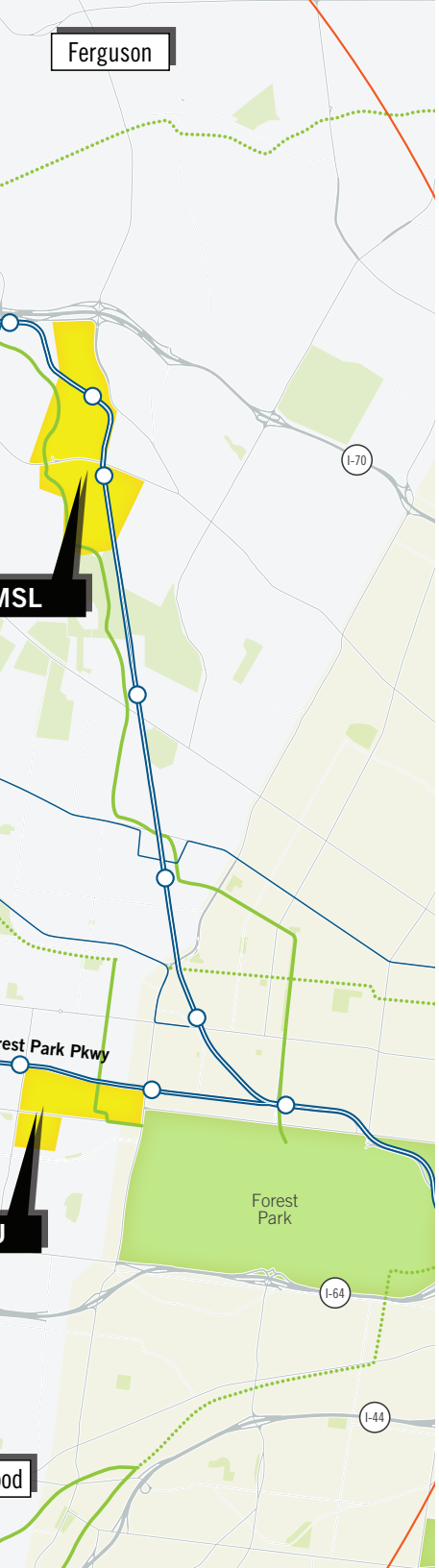
3. Retail

The regional retail center includes the AMC Creve Coeur Cinema and the Creve Coeur Pavilion with a variety of eateries and other retail space built between 1999 and 2002 at the intersection of Olive Boulevard and Old Olive Street at the eastern-most section of the district. The Lou Fusz car dealership occupies the corner of Old Olive Street and Lindbergh Boulevard to the west. In between, various strip centers with a variety of eateries, neighborhood-serving retail and professional services line Old Olive Street. Adjacent to condos at Guelbreth Lane constructed in 1981 is the Vanguard Heights, an apartment building with 174 units that opened in 2016. A 182-unit apartment complex, The Vue at Creve Coeur, is currently under construction at the former site of the Hamilton Christian Church and is expected to be completed for occupancy in early 2017.

4. Monsanto and Donald Danforth Plant Science Center

The nearly 250 acres south of Olive Boulevard is the world headquarters for Monsanto split into east and west campuses by Lindbergh Boulevard with approximately 1.3 million gross square feet (GSF) and 545 thousand GSF of office and lab space, respectively. Both parcels have substantial wooded areas and topography, with surface parking graded and strategically placed around the perimeter of building clusters defining central, formal open spaces. These characteristics give the property a campus feel which extends across Olive Boulevard to the Donald Danforth Plant Science Center and Bio Research & Development Growth (BRDG) Park. The north edge of the Danforth Center property contains significant woodlands and stormwater management features, including a retention pond.


St. Louis International Airport
Missouri River
Creve Coeur Airport
364
Maryland Heights
94
49
Adie Rd
Ashby Rd
Midland Blvd
Overland
Flora Ave
Page Ave
Fee Fee Rd
91
Olive Blvd
Ross Ave
Craig Rd
Schulte Rd
I-270
Woods Mill Rd
141
4 mi
Mason Rd
Olive Blvd
I-170
University City
Olivette
Study Area
Graeser Rd
Dielman Rd
Groby Rd
Delmar Blvd
Ladue Rd
Creve Coeur
Spoede Rd
Lindbergh Blvd
Warson Rd
New Ballas Rd
Conway Rd
I-64
Clayton
Clayton Rd
Town and Country



Regional context

The 575-acre district is located in St. Louis County within the City of Creve Coeur and bounded by Lindbergh Boulevard to the west, Warson Road to the east, the Central Midland Railway right-of-way to the north, and the Monsanto campus to the south. 39 North is adjacent to the city of Olivette immediately to the east and unincorporated areas of St. Louis County to the north. The district is located approximately 25 minutes by car from downtown St. Louis, 15 minutes from Lambert International Airport, 10 minutes from Clayton and six minutes from downtown Creve Coeur. Single-family uses are predominant to the south and east, with light-industrial uses continuing to the north and northeast abutting the railway. Multi-family apartment buildings are prevalent immediately west across Lindbergh Boulevard.

External roadways

The primary routes providing access to 39 North are Olive Boulevard which runs east-west and Lindbergh Boulevard which runs north-south. Lindbergh Boulevard provides direct access to the regional freeway system to the south at I-64 and to the north at I-70. Olive Boulevard provides direct access to the regional freeway system at I-270 to the west and at I-170 to the east. Page Avenue, Missouri Route D, is an east-west state highway approximately one mile north of Olive Boulevard that similarly intersects I-270 and I-170.

Overall, exceptional regional access is a strength for 39 North. The routes leading to freeways, however, can result in congestion during the peak commuter hours.

- 91 Bus route
- MetroLink Station
- Greenway
- Planned Greenway
- I-64 Interstate Highway

Olive Boulevard

Olive Boulevard is a multi-lane arterial highway, median-divided through the district, maintained by the Missouri Department of Transportation (MoDOT) as State Route 340. The east-west highway generally has two through lanes in each direction with auxiliary turn lanes provided at key intersections. The existing cross section is primarily suburban/rural highway in character with wide outside shoulders. The posted speed limit varies from 35 to 40 miles per hour. Traffic signals are currently located at the intersections with Spoede Road, Old Olive Street Road West, Pavilion Drive/Monsanto West, Old Olive Street Road East, Donald Danforth Plant Science Center/ Monsanto East and Warson Road. According to MoDOT traffic count maps, Olive Boulevard east of Lindbergh Boulevard carries approximately 31,000 vehicles per day (vpd). Volumes west of the district are slightly lower at 28,600 vpd.

Lindbergh Boulevard

Lindbergh Boulevard is a four-lane, median-divided arterial highway through the district maintained by MoDOT as US Route 67. The north-south highway generally has two through lanes in each direction with auxiliary turn lanes provided at key intersections. The existing cross section is primarily suburban/rural highway character with wide outside shoulders and the posted speed limit is 40 miles per hour. Interchanges are presently located at Page Avenue to the north, as well as at Olive Boulevard and the Monsanto crossover. Traffic signals are currently located at the intersections with Schuetz Road/Bauer Road and Quailways Drive/Tealbrook Drive.

According to MoDOT traffic count maps, Lindbergh Boulevard south of Olive Boulevard carries approximately 26,200 vpd. The current roadway bisects the district into east and west sections. All of the intersections with the exception of Olive Boulevard, Schuetz Road/Bauer Road and Quailways Drive/Tealbrook Drive are relegated to right-in/right-out only access. Consequently, there is no physical connection for vehicular or bike/pedestrian access between Old Olive Street Road East and West.

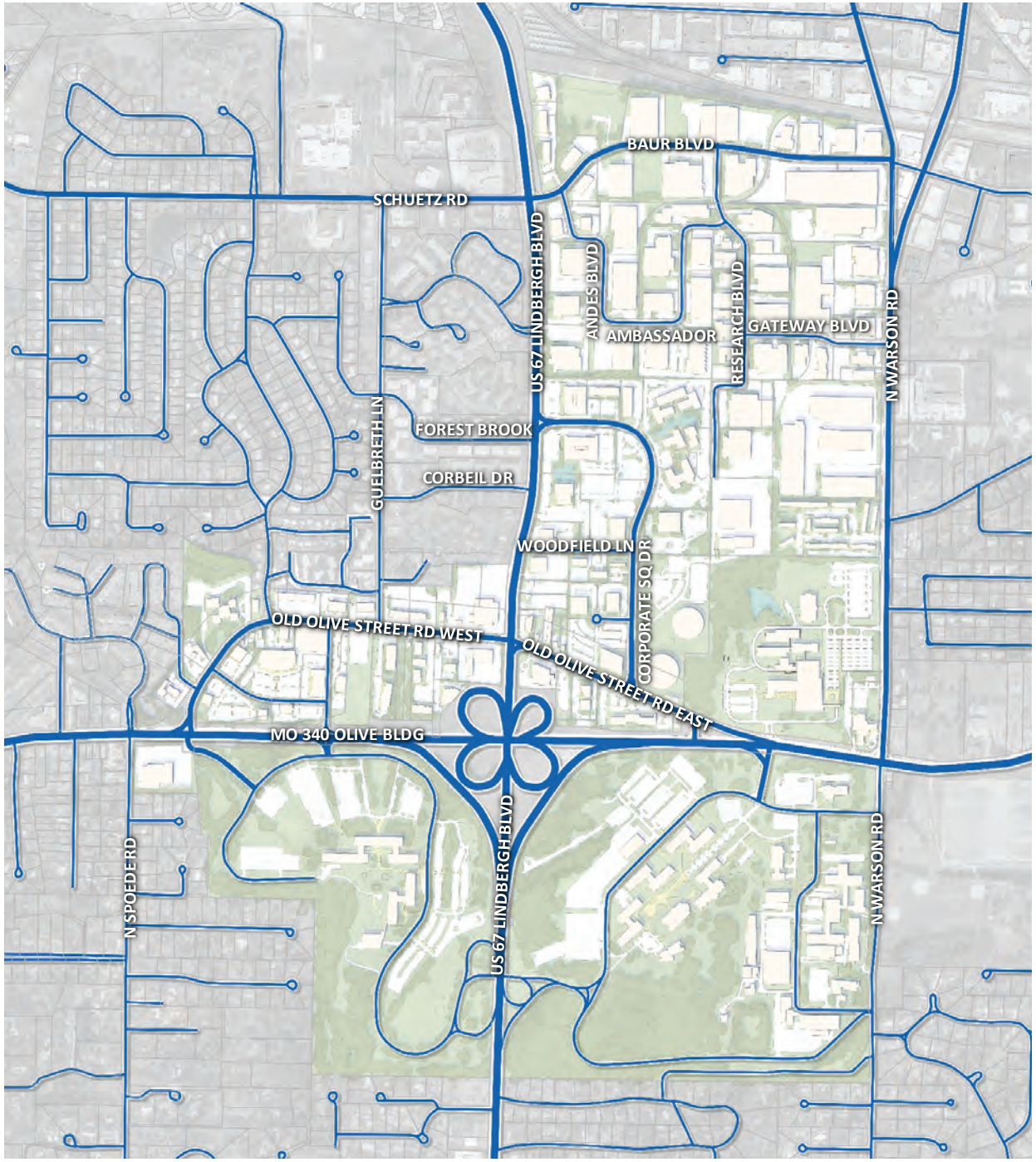
Old Olive Street Road

Old Olive Street Road East is marked with four lanes, two in each direction. A traffic signal is present at the tee intersection of Old Olive Street Road East with Olive Boulevard. Old Olive Street Road West is marked with four lanes from Olive Boulevard to Ravenwood Lane, and three lanes from Ravenwood Lane to Lindbergh Boulevard. The three lane section has one through lane in each direction with a center two-way left-turn lane. The four-lane section allows separate left-turn and right-turn lanes southbound at Olive Boulevard and a separate northbound left-turn lane to Ravenwood. A traffic signal is present at the intersection of Old Olive Street Road West with Olive Boulevard at the corner of the Schnucks Supermarket. Only right-in/right-out movements are allowed at both intersections with Lindbergh Boulevard. Since Old Olive Street Road East and West are currently utilized by MoDOT as state highway interchange ramps, MoDOT is reluctant to change the lane configuration or character of the roadways which now must prioritize vehicle traffic and accommodate large truck movements.

OLIVE BOULEVARD

LINDBERGH BOULEVARD

OLD OLIVE STREET ROAD



Warson Road

Warson Road and the Ashby Road alignment to the north of Gateway Boulevard is a five-lane roadway with a continuous sidewalk on the east side adjacent to the residential areas in Olivette. According to St. Louis County Department of Transportation data from its website, recent traffic counts were on the order of 14,500 vehicles per day (vpd) just north of Olive and 12,000 vpd just south of Bauer Road. The current traffic levels are less than half of the potential capacity of a five-lane roadway segment. The major intersections with Olive and Page are congested during the peak hours when both crossing routes also carry their heaviest traffic loads.

Internal roadways

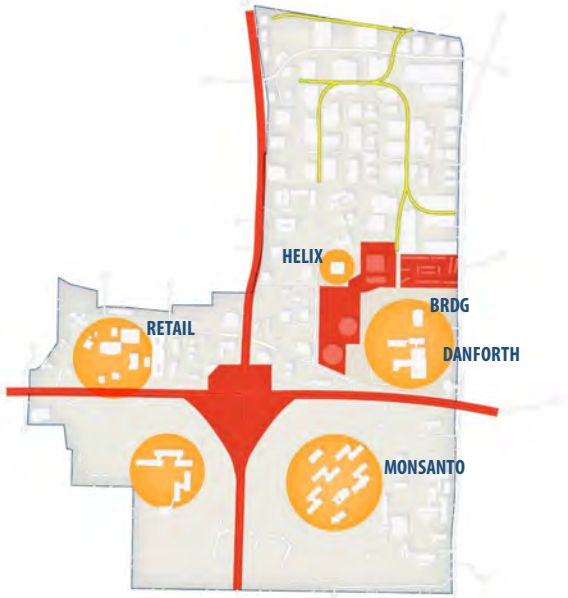
The internal roadways serving the district have limited access to the arterial roadways. Existing internal roadways are also disconnected from each other and do not form an adequate "grid" of streets. For example, when traveling from one section of the Bauer Industrial Park to another, vehicles are often required to access Lindbergh or Warson to do so. Security restrictions at The Missouri American Water Company's property have restricted access from Old Olive Street Road East to the north into the district. The cross sections of these roads are typically wide, unmarked pavements.

WARSON ROAD

CORPORATE SQUARE DRIVE

Mobility, connectivity and barriers

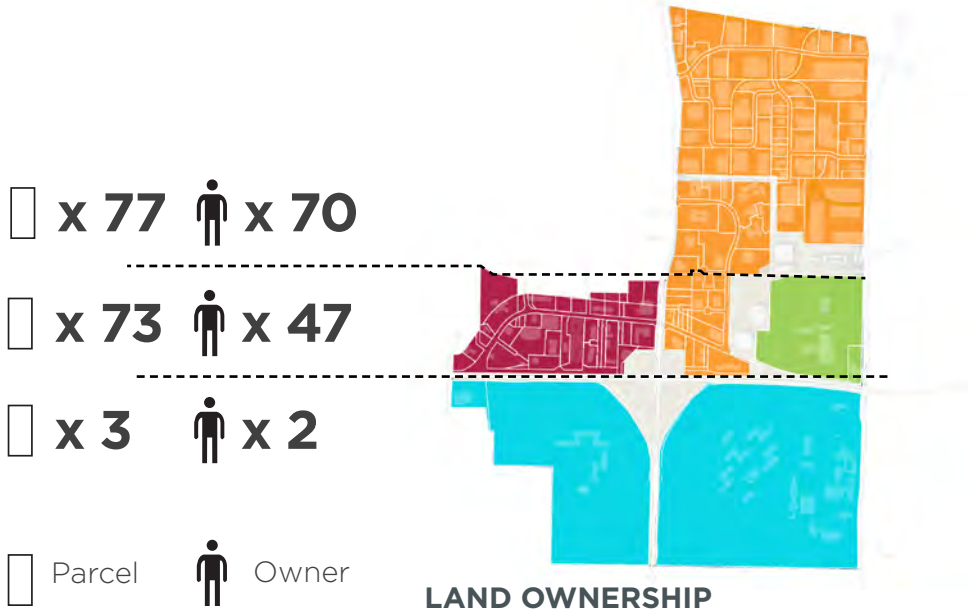
Connectivity between the four distinct areas of 39 North is a primary constraint. Access by vehicle between areas is not intuitive and is inconvenient. In many instances, access is impossible on foot or by bicycle between major anchors, including the Regional retail to the west as well as between the Donald Danforth Plant Science Center, Monsanto, Bio Research & Development Growth (BRDG) Park, and the Helix Center. Access to regional assets including the Jewish Community Center, Warson and Stacy Parks and adjacent residential neighborhoods in Creve Coeur and Olivette is also challenging. Lindbergh and Olive Boulevards represent significant barriers that discourage interaction and connectivity within the district with minimal and uncomfortable crossing opportunities for pedestrians and confusing circulation for vehicles. Many fenced areas and retaining walls throughout the district make direct and intuitive access by vehicle or on foot impossible. The American Water property, which is required to be fenced for security reasons, presents a barrier for connectivity between the Helix Center and BRDG Park and the Danforth Center. While the Helix Center is only a third of a mile from the Danforth Center, for example, to walk from one to the other a pedestrian would currently need to travel nearly double that distance along roads absent of sidewalks.



MAJOR ANCHORS AND BARRIERS

Land ownership

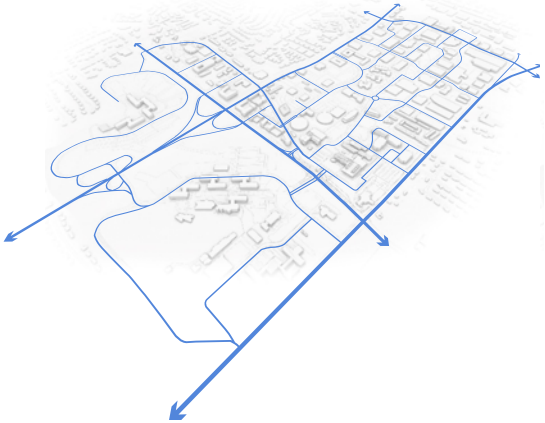
The number of land owners decreases from north to south in the district. South of Olive Blvd., there are only two owners - Monsanto and the Schnucks Supermarket - in contrast to the light industrial area where there are 70 owners and 77 properties. The majority of parcels are under 5 acres, and only 12 parcels are between 5 and 11 acres.



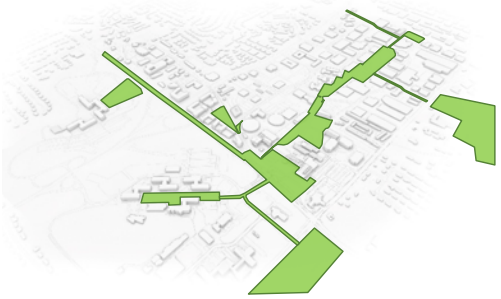
LAND OWNERSHIP

MASTER PLAN FRAMEWORK

Together, four interconnected frameworks comprise the plan and guide implementation.



TRANSPORTATION FRAMEWORK



OPEN SPACE FRAMEWORK

DEVELOPMENT FRAMEWORK

SUSTAINABILITY FRAMEWORK

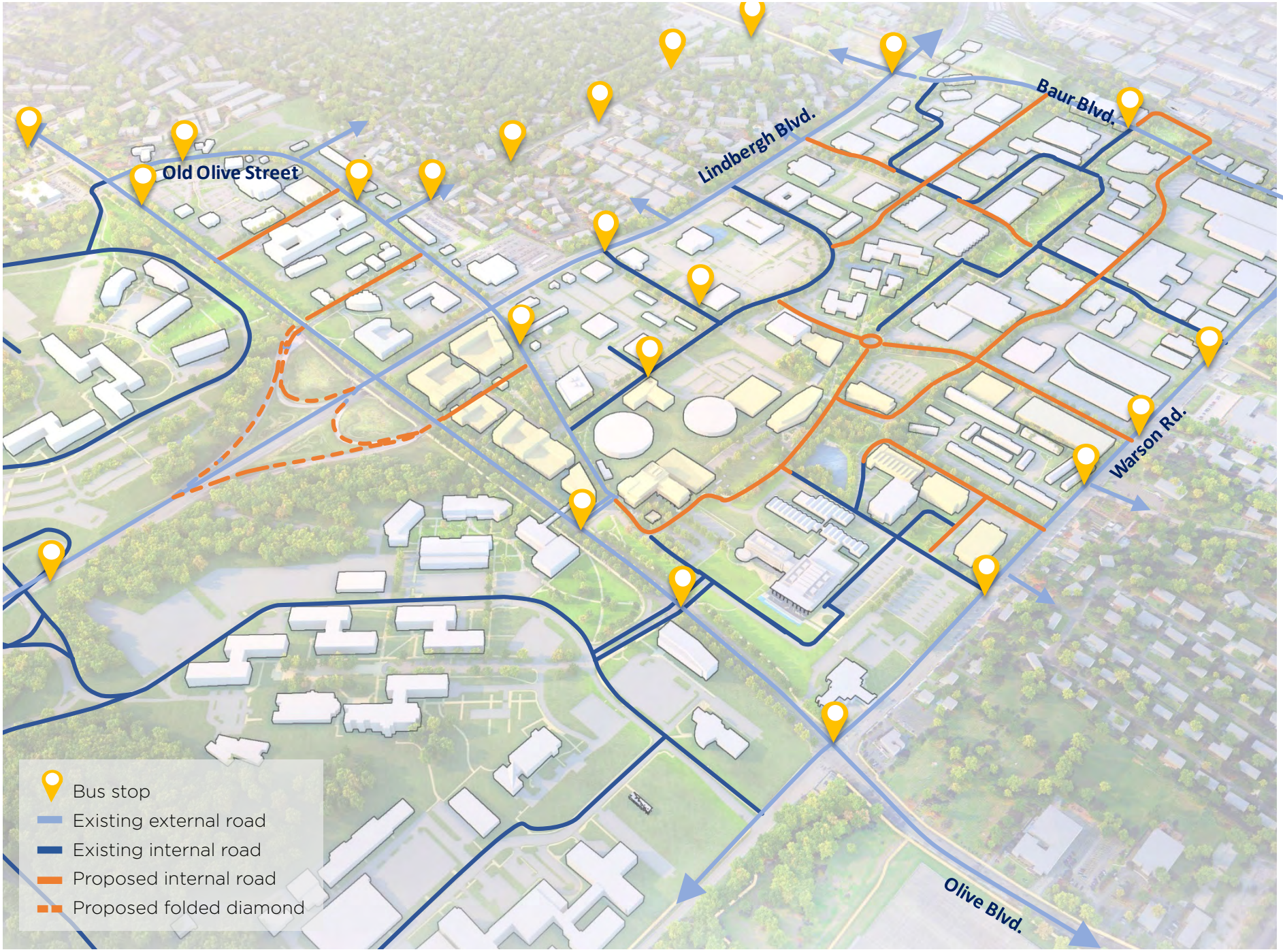
TRANSPORTATION FRAMEWORK

Transportation infrastructure is critical on both the regional scale to connect 39 North to the greater St. Louis region and the district scale to connect major anchors. Successful transportation infrastructure will provide more intuitive, efficient and comprehensive vehicular access in tandem with a multi-faceted pedestrian, bike and transit network. Together, enhanced multi-modal infrastructure will enable development and continued success for 39 North in the future.

The Master Plan proposes establishing a street grid to connect the existing segments into a cohesive network. A new connection is proposed to bisect Missouri American Water Company property which must address security needs to protect the drinking water supply. Some of the new street segments are proposed on abandoned rail spurs that already weave through the district. All of the new and existing local streets in the district are proposed to include one lane in each direction, on-road bike accommodations and sidewalks on both sides. Some of the streets would include on-street parking on one or both sides.

Within the district are a series of abandoned rail spurs which provide an opportunity to create needed connections. All the spurs lead to the active rail line to the north which has been identified as a potential future MetroLink line.

RAIL SPURS AND STREET NETWORK


Old Olive Street
Lindbergh Blvd.
Baur Blvd.
Warson Rd.
Olive Blvd.
Bus stop
Existing external road
Existing internal road
Proposed internal road
Proposed folded diamond

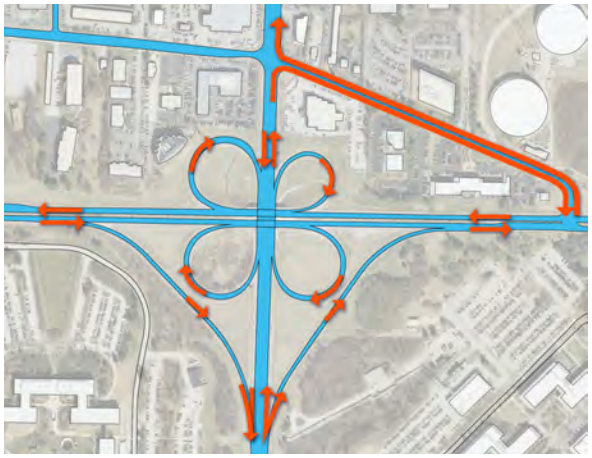
Olive Boulevard and Interchange

The cloverleaf interchange located at the intersection of Lindbergh Boulevard and Olive Boulevard does not accommodate all traffic movements. Traffic movements from westbound Olive to northbound Lindbergh and from southbound Lindbergh to westbound Olive must use the Old Olive Street Road connections and make their turns well in advance of the interchange location. Consequently, the Missouri Department of Transportation (MoDOT) owns and maintains both Old Olive Street Road East and West as state highway ramp connections.

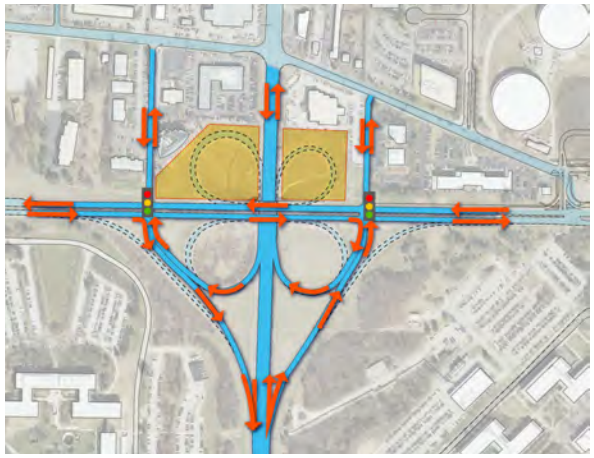
The Master Plan recommends that the existing interchange be reconfigured into a folded diamond design to eliminate the circular ramps on the north side of the interchange and serve all movements to the south of Olive Boulevard via two traffic signals, spaced approximately 1,200 feet apart. Northbound to westbound and southbound to westbound movements would make left turns from the ramps at the traffic signals, and westbound to northbound and westbound to southbound would make left turns from Olive Boulevard at the traffic signals.

The folded diamond reconfiguration of the interchange would create significant positive impacts for the state highway system and throughout the district. First, all traffic movements would be served at the interchange, and Old Olive Street East and West would no longer be used as state highway ramps. Both segments of Old Olive Street can be transferred for local maintenance and the character of those roadway segments can be transformed from state highways to local streets. Second, the weaving areas currently created by the cloverleaf ramp arrangement would be eliminated, thereby improving vehicular safety and pedestrian safety. Third, there will be an ability to create new north-south connector streets from Olive to Old Olive on both sides of Lindbergh at the signalized ramp intersections.

The Master Plan also proposes to change the cross section of Olive Boulevard to replace the shoulder sections with curb and gutter, reducing the cross sectional width of the highway to facilitate a street more conducive to non-motorized users at the edges. Reclaiming the shoulder areas would allow for bike and pedestrian facilities within the existing right-of-way footprint. The Master Plan proposes to extend the multi-use path at the Donald Danforth Plant Science Center to the West towards downtown Creve Coeur.



EXISTING INTERCHANGE



PROPOSED INTERCHANGE

The existing interchange type is known as a full cloverleaf and has four loop ramps, one in each quadrant. Each ramp replaces what would otherwise be a left-turn. Diagonal ramps accommodate right-turn movements. The oddity of this interchange is that it lacks typical diagonal ramps in the NE and NW quadrants. Those connections would need to be made in advance of the interchange via Old Olive Street Road.

PROPOSED INTERCHANGE

The Master Plan proposes retrofitting the existing condition into a “folded diamond” interchange. This configuration would provide full access at the improved interchange. All four ramps on the south side could be repurposed. There would be two signals on Olive Boulevard. The cloverleaf ramps would be removed altogether on the north side creating two new development opportunities.

EXISTING CONDITIONS

EXISTING CONDITIONS

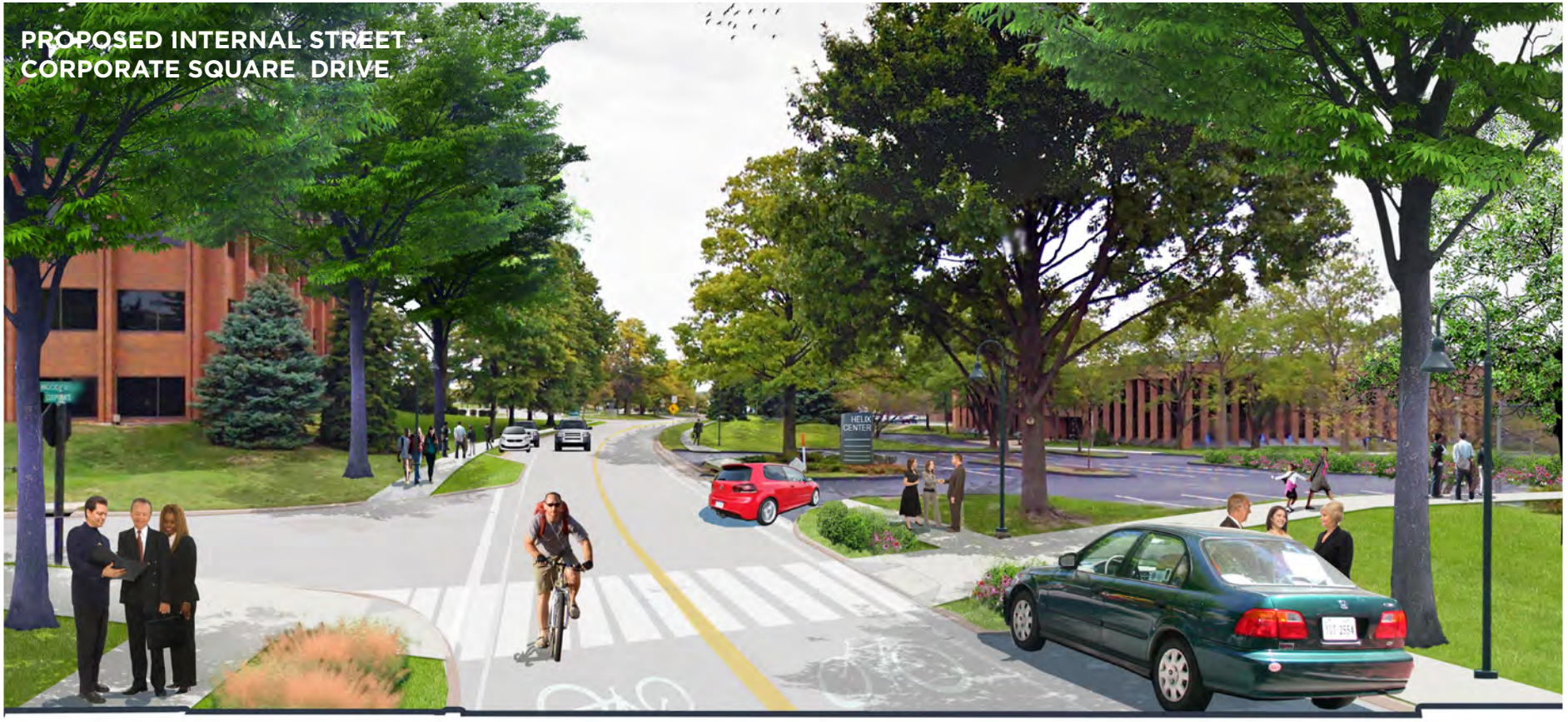
Internal Street Transformations

Within 39 North are a series of abandoned rail spurs which provide an opportunity to create needed connections. All the spurs lead to the active rail line to the north which has been identified as a potential future MetroLink line.

PROPOSED INTERNAL STREET - ABANDONED RAIL SPUR

SIDEWALK 8’	TRAVEL LANE 22’	ON STREET PARKING 8’	SIDEWALK 6’
STREET R.O.W 44’			

The Master Plan proposes adding sidewalks, bicycle signage, pedestrian crossings and parallel parking within the existing street right-of-way. Planting areas buffer the pedestrian from vehicular traffic and allow the opportunity to incorporate a native landscape and green infrastructure.



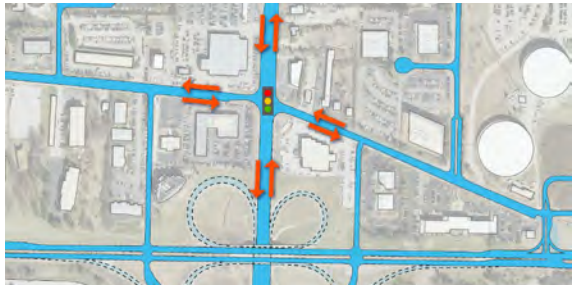
SIDEWALK 6’	ON STREET PARKING 8’	TRAVEL LANE 22’	ON STREET PARKING 8’	SIDEWALK 6’
STREET R.O.W 50’				

A Mixed-Use Old Olive Street

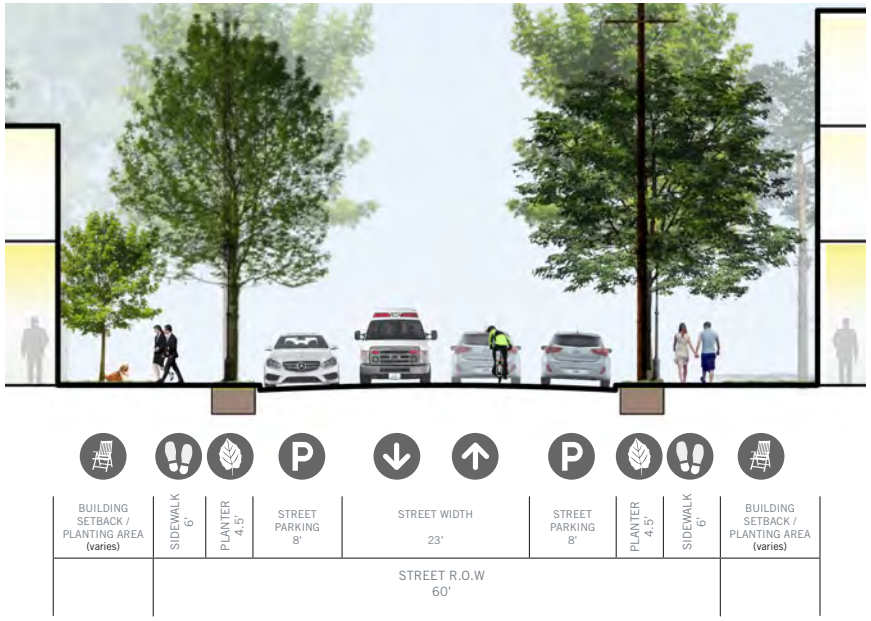
If the proposed folded diamond interchange is completed, the Old Olive Street Road East and West roadway segments would no longer serve a state highway function, and MoDOT has expressed a desire to transfer those to city jurisdiction. Under city jurisdiction, the form and character of Old Olive Street Road East and West could be significantly changed. Both roadways could be reconfigured with one through lane in each direction, raised medians with breaks for left-turn lanes at key intersections and added bike lanes and wide sidewalks on both sides.

Two options could be considered for connecting Old Olive Street Road East and West across Lindbergh Boulevard. The preferred option based on input received throughout the planning process would lower Lindbergh Boulevard so that a grade- separated crossing (bridge) could connect Old Olive Street Road East and West. The second option considered would be a traffic signal at the intersection with added left-turn lanes on all four approaches. The identification of potential impacts to underground utilities is the critical element that will need to be investigated as a next step. The proposed folded diamond interchange to the south at Olive Boulevard will remove the weaving segments on Lindbergh Boulevard, thereby improving operations and safety.

A grade separation between the two roads by depressing Lindbergh and bridging Old Olive overhead.



An at-grade signalized intersection.



Left **PROPOSED SECTION**
Old Olive Street Road

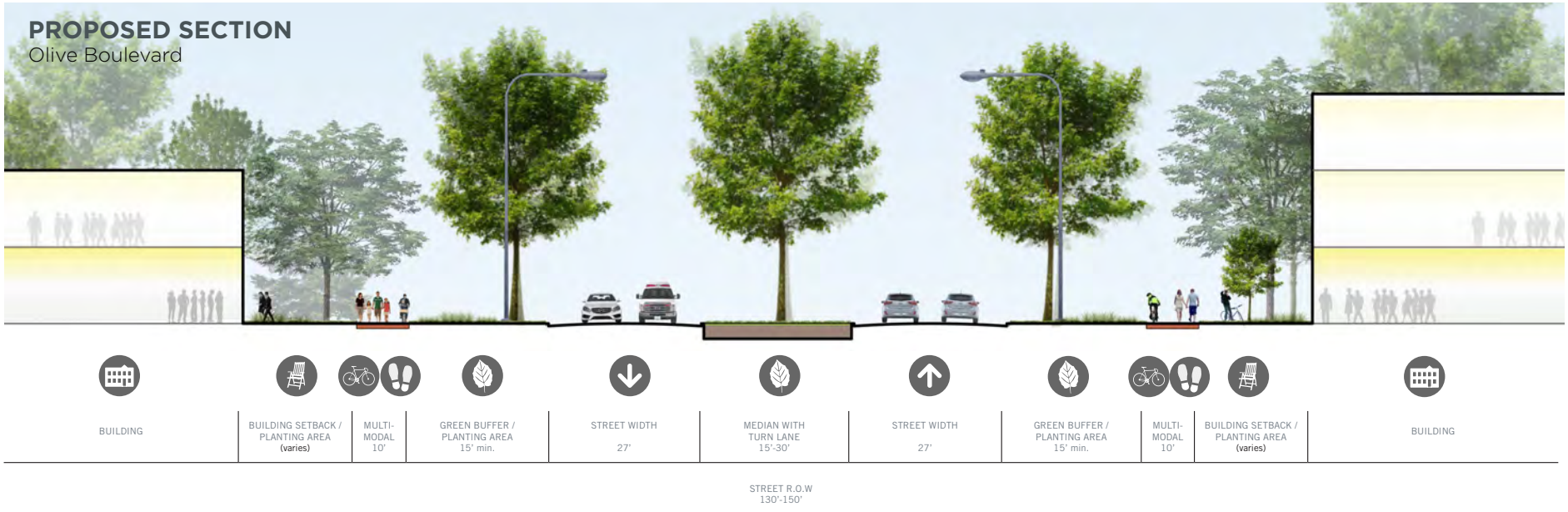
Top **GRADE-SEPARATED OVERPASS**
Georgia Tech, Atlanta GA

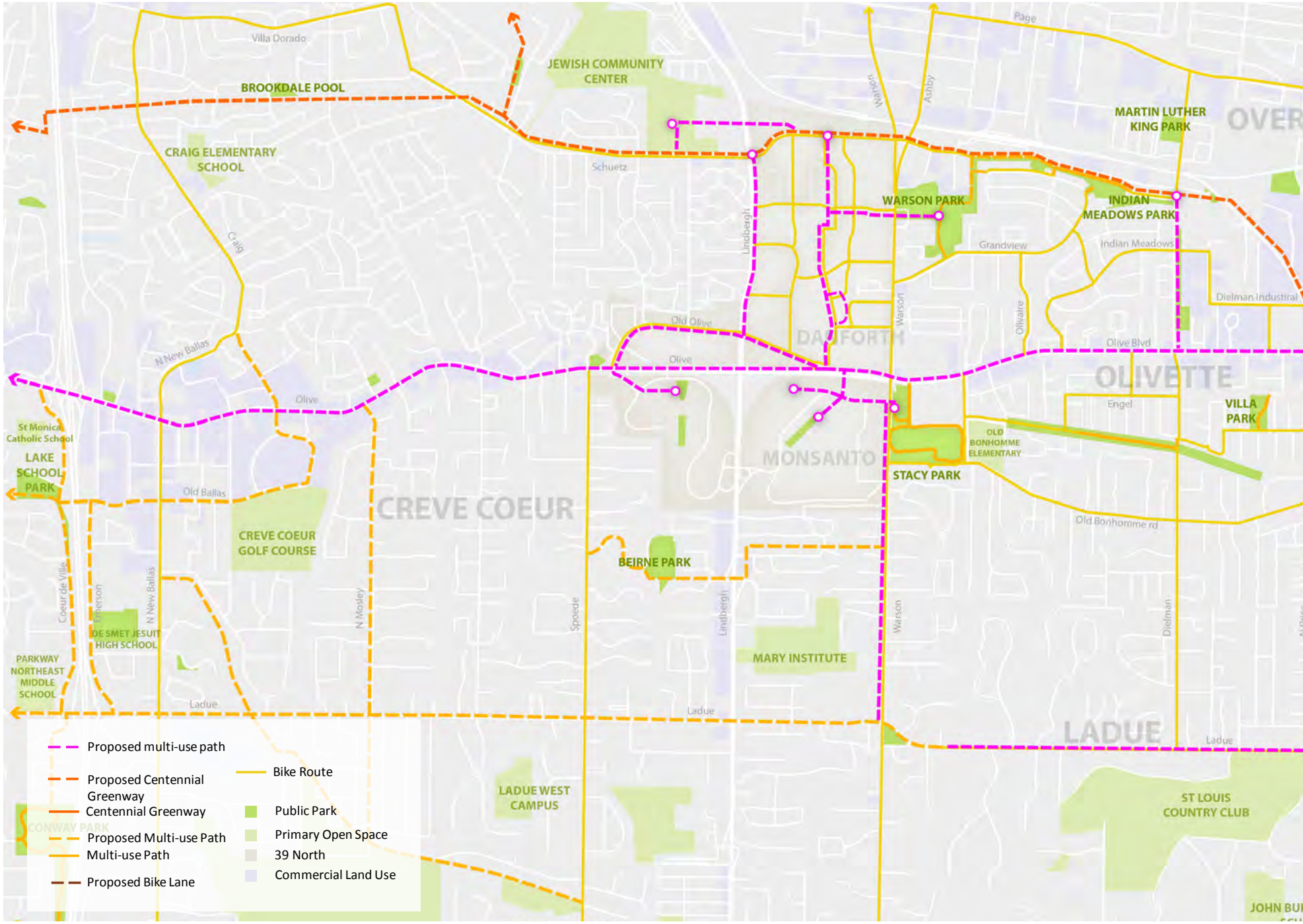
Warson Road

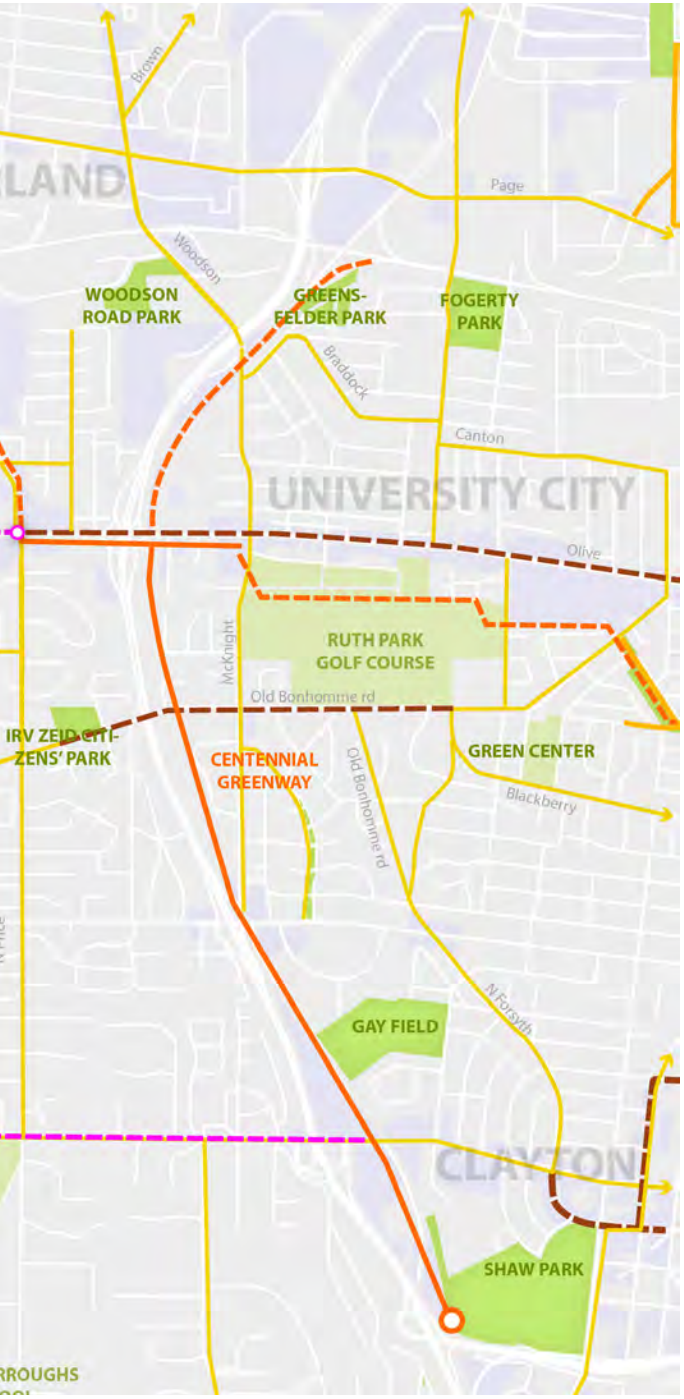
Participants in the Master Plan process focused on addressing capacity constraints at major intersections on Warson Road as well as any current or new intersections serving possible development sites in the study area. Preferably, new intersections on the west side of Warson Road should either align opposite an existing intersection on the east side or be separated by at least 250 feet. Creation of four-legged intersections is preferred to allow signalization, where warranted, to serve both sides. Since Warson Road is already five-lanes, intersection improvements would likely address the need for southbound right-turn lanes. Geometric improvements on the northwest and southwest intersection corners to accommodate the physical size of large trucks, traffic signalization, additional lanes on the current or new west approaches (separate eastbound left-turn and/or right-turn lanes or possibly dual left-turn lanes), and pedestrian upgrades are recommended.

One potential signal location would be near Warson Park. The addition of a signal at that location would support safer pedestrian crossings at that key location. Any traffic signals along Warson Road should include ADA compliant crosswalks with pedestrian indications, push buttons and ramps. There should also be consideration given to completing the sidewalk along the west side of Warson Road to make it continuous from Olive to Bauer. For safety and security, the district may also wish to upgrade the roadway and pedestrian scale lighting features.

The Gateway Bike Plan indicates "wide outside lanes" for the segment from Olive to Page. There is a full shoulder on the east side of Warson Road from Olive to Grandview, so that segment could be restriped with the wide outside lanes with no need to widen the pavement. A proper restriping would likely require an overlay or micro-surface treatment. North of Grandview, widening would be required to have wider outside lanes. Consequently, consideration of additional options for accommodating bikes may be worthwhile.



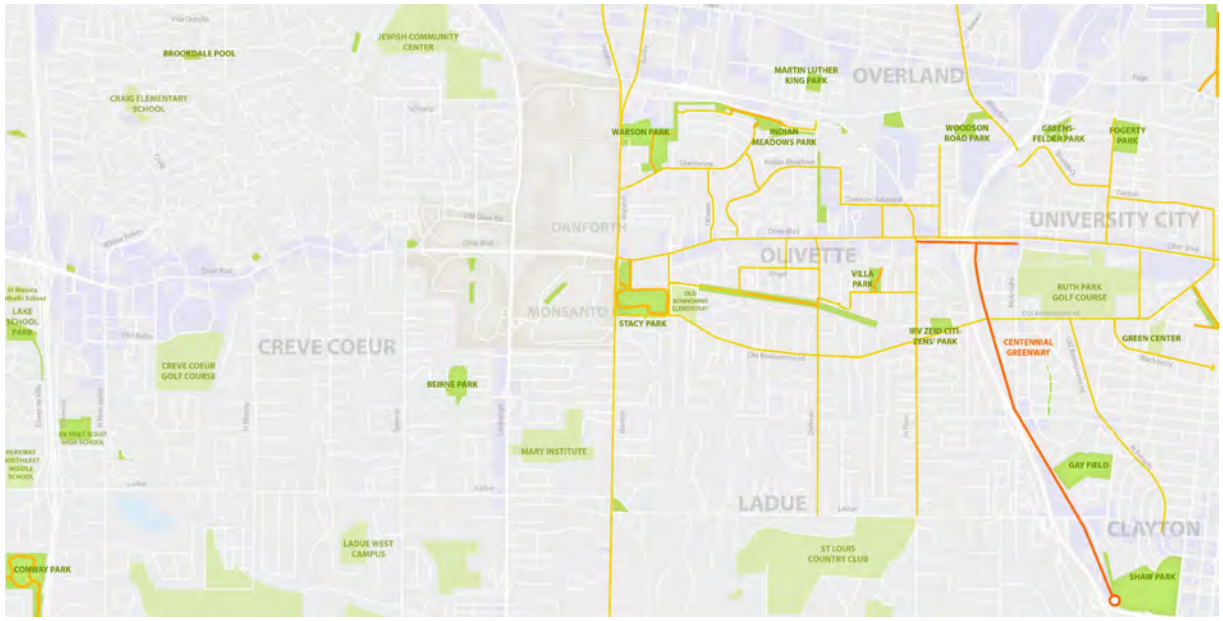

Villa Dorado
BROOKDALE POOL
JEWISH COMMUNITY CENTER
CRAIG ELEMENTARY SCHOOL
Schuetz
Craig
Lindbergh
Warson
Ashby
Page
MARTIN LUTHER KING PARK
WARSON PARK
INDIAN MEADOWS PARK
Grandview
Indian Meadows
Dielman Industrial
Old Olive
Olive
Olivaire
Olive Blvd
DAUFORTH
OLIVETTE
Engel
VILLA PARK
N New Ballas
St Monica Catholic School
LAKE SCHOOL PARK
Old Ballas
CREVE COEUR
MONSANTO
OLD BONHOMME ELEMENTARY
STACY PARK
Old Bonhomme rd
CREVE COEUR GOLF COURSE
BEIRNE PARK
Coeur de Ville
Etherson
N Mosley
Spoede
DE SMET JESUIT HIGH SCHOOL
PARKWAY NORTHEAST MIDDLE SCHOOL
MARY INSTITUTE
Ladue
LADUE
LADUE WEST CAMPUS
ST LOUIS COUNTRY CLUB
CONWAY PARK
Proposed multi-use path
Proposed Centennial Greenway
Centennial Greenway
Proposed Multi-use Path
Multi-use Path
Proposed Bike Lane
Bike Route
Public Park
Primary Open Space
39 North
Commercial Land Use



Regional multi-modal connections

A comprehensive network of regional bike and pedestrian pathways would make it possible to bike from Clayton and University City to the district and to downtown Creve Coeur on a continuous multi-use pathway. 39 North is an important component of this broad, interconnected regional network of bicycle infrastructure.

The Master Plan recommends building on existing and proposed bike and pedestrian facilities. The proposed Centennial Greenway expansion along Baur Boulevard is intersected with a primary multi-modal pathway along the proposed central open space extending to Monsanto and further south to residential neighborhoods. A proposed multi-use pathway on Olive Boulevard would extend east-west connecting Olivette and Creve Coeur through the district. Improved connections to regional recreation assets like Warson and Stacy Parks would allow access for district workers and community members alike. A grade-separated bridge over Lindbergh Boulevard is proposed in the north edge of the district to improve access to the Jewish Community Center.



OPEN SPACE FRAMEWORK

AMERICAN TOBACCO CAMPUS
Durham, NC

Open space shapes the places that bring people and ideas together.

The open space framework is a comprehensive, cohesive vision for 39 North's landscapes that redefines the way people travel, gather and interact within the district.

A comprehensive open space framework includes both physical and cultural principles that comprise compelling places conducive to sharing ideas and community involvement. Programming open spaces for community members and workers in the district alike can inspire creativity and awareness of innovative research and development. Open space in the district is an integral part of a broad regional network of green space supporting pedestrian and bicycle connectivity. Community-driven planning efforts will continue to refine the specific identity and features that comprise a unique and inspiring series of spaces.

Open space in 39 North should:

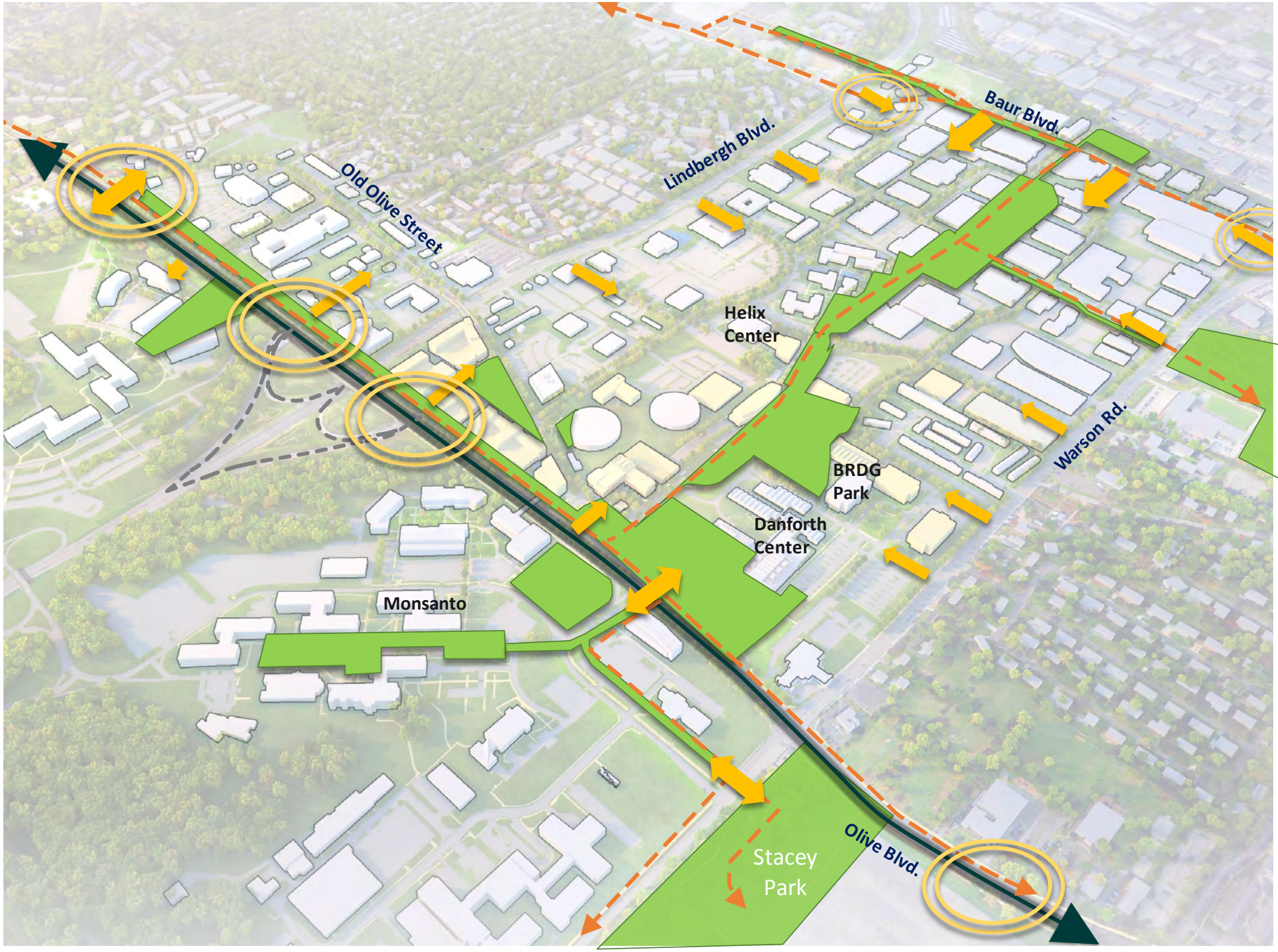
- Be an inclusive, welcoming community asset.
- Include event spaces with engaging programming that promotes culture, creativity and innovation.
- Advance new research and the mission of the district's companies and organizations.
- Include contextual, high-quality landscape furniture and features.
- Prevent crime and prioritize safety.
- Promote pedestrian, bicycle and transit access.
- Facilitate accessibility, remove barriers and work with natural topography.

- Define new district gateways and enhance existing ones.
- Incorporate sustainable strategies and creative stormwater management techniques.
- Be context-sensitive to industrial uses.
- Be coupled with active building frontages where applicable.
- Support continued evolution of the space and future flexibility.
- Include active and passive recreation opportunities.
- Create collaborative learning spaces for local schools and universities.
- Encourage "collision" points that enable impromptu knowledge sharing.

Top **SHENYANG ARCHITECTURAL UNIVERSITY**
China

At Shenyang Architectural University in China, rice fields are harvested on campus to promote the University's role in addressing food production and sustainable land use.

Right **PUBLIC SCULPTURE ART**
Clayton, St. Louis, MO


Baur Blvd.
Lindbergh Blvd.
Old Olive Street
Helix
Center
BRDG
Park
Warson Rd.
Danforth
Center
Monsanto
Stacey
Park
Olive Blvd.

Central Open Space

A central open space is proposed to unify 39 North and enhance north-south connectivity. The space would include a variety of active and passive uses, integrate green infrastructure to reduce storm water and accommodate multiple modes of transportation. The space is planned to be incrementally achieved through a series of implementation projects.

A framework for a continuous series of centrally-located open spaces spanning the entirety of 39 North would best support the district. A series of open spaces will connect district anchors to the south - Monsanto, Donald Danforth Plant Science Center, Bio Research & Development Growth (BRDG) Park, and the Helix Center - with industrial uses to the north. The central open space radiates active uses at a proposed mixed-use center directly west of the Danforth Center through a variety of dynamic landscape features that provide new multi-modal connectivity. Intended for incremental implementation, the central open space will engage light industrial uses to the north and catalyze future development with a mix of adaptive reuse of existing buildings and new construction.

The central open space is part of a regional network. A multi-use pathway threaded through the district connects proposed bicycle and pedestrian improvements along Olive Boulevard with the proposed extension of the Centennial Greenway along Baur Boulevard, a transit hub along the potential West County MetroLink expansion, and to the Jewish Community Center via a proposed pedestrian bridge over Lindbergh Boulevard. The central open space also extends connections to forested parkland in Stacy and Warson Parks and to the Monsanto campus areas. In addition to establishing new regional connectivity, the central open space will provide important stormwater management for the region's three watersheds within the district.

CENTRAL OPEN SPACE
Framework diagram

- Open space network
- Primary multi-modal connection
- District entrance
- District gateway

@4240 OPEN SPACE
St. Louis, MO

Southern Sections

The central open space would emanate from the existing open space on the Monsanto campus. Swaths of forested areas would transition to a restored native prairie north of Olive Boulevard, where at-grade crossing improvements and a possible elevated crossing would connect open space on the Monsanto campus to the Donald Danforth Plant Science Center. A mixed-use center for the district adjacent to the Danforth Center would define an active plaza space overlooking the restored native prairie. Proposed pathways and a new road would continue north from the district mixed-use center, following the topography to establish a direct pedestrian and vehicular connection to the Helix Center. Three proposed buildings would frame an open space preserving mature trees with pathways circling the existing retention pond. The pond is re-envisioned as an amenity and passive recreation area in addition to its important role for stormwater management in the district. A pavilion on the north side of the pond is envisioned to be a central feature in the landscape.

Directly east of Helix Center, the existing American Water control center and shelter would be redeveloped into a dynamic new open space fronting a proposed addition to the Helix Center. The signature open space within 39 North would activate the Helix Center and redefine its relationship with the Danforth Center and future redevelopment. Active uses could include a pavilion structure with a gathering space and small café with dining terrace.

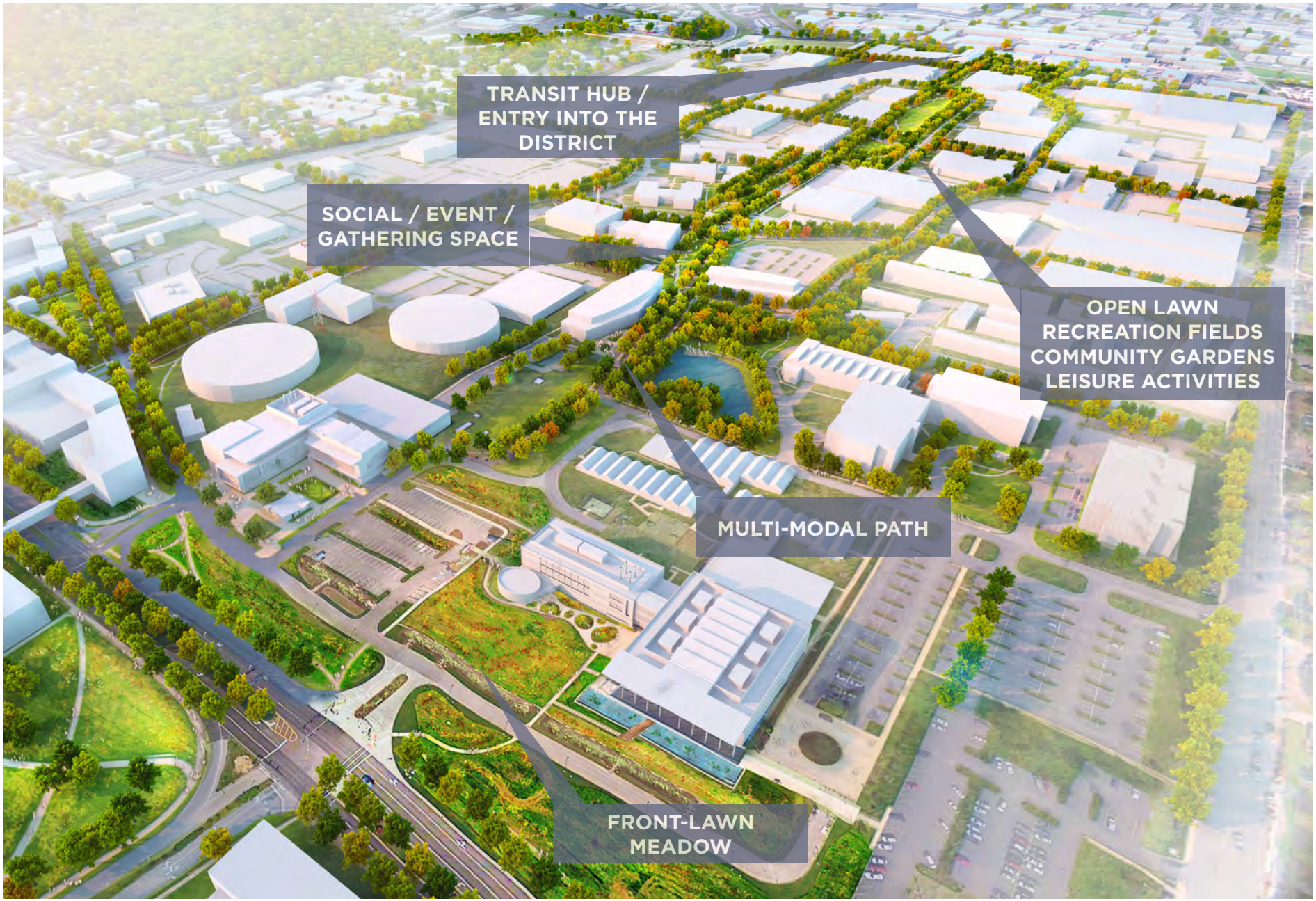
Northern Sections

North of the Helix Center, the proposed central open space would engage with existing office buildings and predominately one story light industrial buildings with a characteristically open landscape that incorporates both passive and active recreation opportunities. Stormwater management features and a robust tree canopy would provide increased tree cover and enhanced environmental functions to the north portion of the district. Uses could include open lawn areas, community gardens, and fields for leisure activities.

Combined with a proposed enhanced internal network of streets and sidewalks, a comprehensive pedestrian network would provide workers in 39 North options for exercise and leisure that promotes healthy lifestyles. In the future, the central open space is an opportunity to connect to the potential West County MetroLink expansion service with a plaza and transit-hub adjacent to Baur Boulevard. If an extension of MetroLink is realized, a direct multi-use path connection would provide 39 North and its anchors with walkable access to light rail transit linking the district to downtown St. Louis.

Old Olive

A public plaza and green space adjacent to Old Olive Street Road is envisioned to be an extension of activity at the mixed-use center directly west of the Donald Danforth Plant Science Center. First floor retail uses with apartments fronting the open space would contribute to a lively streetscape and programmed open space uses. A proposed elevated crossing over Lindbergh Boulevard would further extend activity on Old Olive towards the existing AMC Cinema and adjacent retailers to the west to comprise a continuous mixed use corridor along Old Olive Street Road. With significant improvements proposed for the Olive Boulevard/Lindbergh Boulevard interchange, portions of Old Olive Street Road would no longer be used as access ramps, thus reducing vehicular traffic and putting the focus back on the pedestrian. Proposed new dedicated bicycle lanes and enhanced sidewalks would help create a safe and vibrant pedestrian experience.



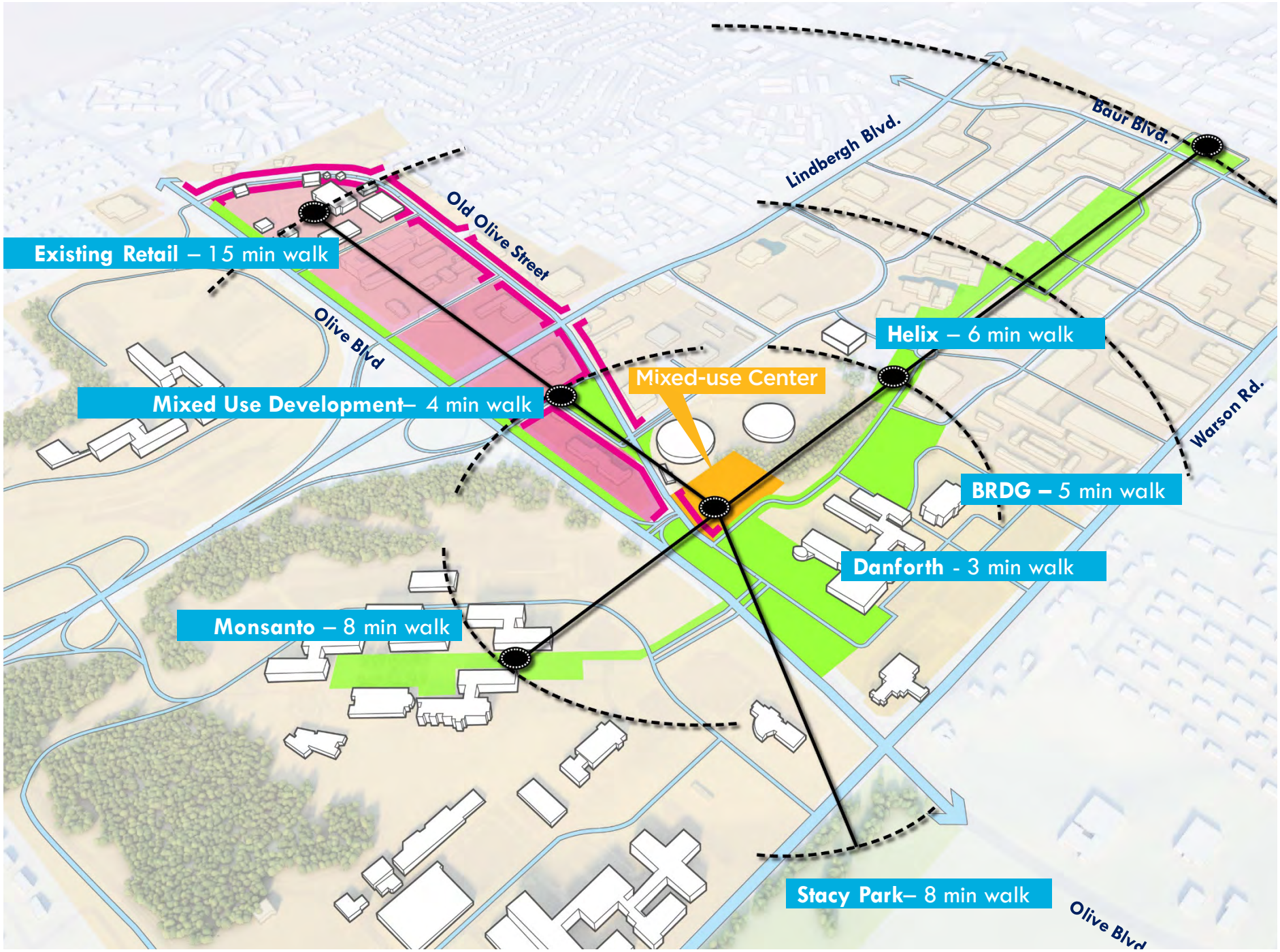
CENTRAL OPEN SPACE LOOKING NORTHWEST

DEVELOPMENT FRAMEWORK

A framework for development guides a strategic mix of active uses and the density and scale of future development.

Development in 39 North is an opportunity to drive economic growth in the St. Louis region by creating environments that encourage enduring innovation and entrepreneurship. The development framework is an aspirational, massive undertaking that links transportation, open space and sustainability initiatives to outline a near-term, 10-year and long-term vision. A comprehensive internal grid of streets would define clear blocks within the district and the central open space would define new edges and relationships with both existing and proposed future buildings. The market study shapes the mix of uses and the timeframe for development that dovetails with the implementation plan which identifies governance strategies, phasing and funding strategies that will influence the execution of the vision.

10-YEAR DEVELOPMENT VISION HIGHLIGHTED AND FUTURE CENTRAL OPEN SPACE


Existing Retail – 15 min walk
Old Olive Street
Olive Blvd
Lindbergh Blvd.
Baur Blvd.
Helix – 6 min walk
Mixed-use Center
Mixed Use Development– 4 min walk
Warson Rd.
BRDG – 5 min walk
Danforth - 3 min walk
Monsanto – 8 min walk
Stacy Park– 8 min walk
Olive Blvd

Mixed-use center of activity

In the near term, a mixed-use center activating the district is envisioned to the west of the Donald Danforth Plant Science Center and east of Lindbergh Boulevard. Strategically located along the central open space with easy access from an extension of Old Olive Street Road and a six-minute walk to Helix Center, three-minute walk to the Danforth Center and an 8-minute walk to Monsanto and Stacy Park, the mixed-use center would be a walkable amenity for district workers and the community alike. Bottom floor uses could include amenities such an interactive learning center connecting local school districts to the innovative science occurring in the district. Upper levels could extend program space for the Danforth Center and innovation center space for start-ups. A pavilion adjacent to an open plaza is envisioned as a café encouraging interaction between district workers and the community as a walkable heart to the district.

The mixed-use center is envisioned as a near-term opportunity that continues the transformation of Old Olive Street Road as a continuous mixed-use corridor enhanced with the proposals outlined in the transportation framework. Improvements to the intersection at Old Olive Street Road and Lindbergh Boulevard that would extend pedestrian and vehicular access to the existing regional retail and entertainment center at the western-most section of Old Olive is critical to the success of the mixed-use corridor. A mix of office and residential uses framing a proposed open space west of Lindbergh Boulevard would be interfaced with a new connector road. This, coupled with the proposed folded diamond interchange, allows for more intuitive pedestrian and vehicular circulation.

ROCKVILLE TOWN SQUARE
Rockville, MD


PLANT SCIENCE AND TECHNOLOGY
INTERACTIVE LEARNING CENTER
cafe

PROPOSED DISTRICT MIXED-USE CENTER

EXISTING CONDITIONS

Development Guidelines

Guidelines for development ensure that there is a cohesive vision for high-quality urban design with appropriate relationships between buildings, open space and roads.

Primary Frontage

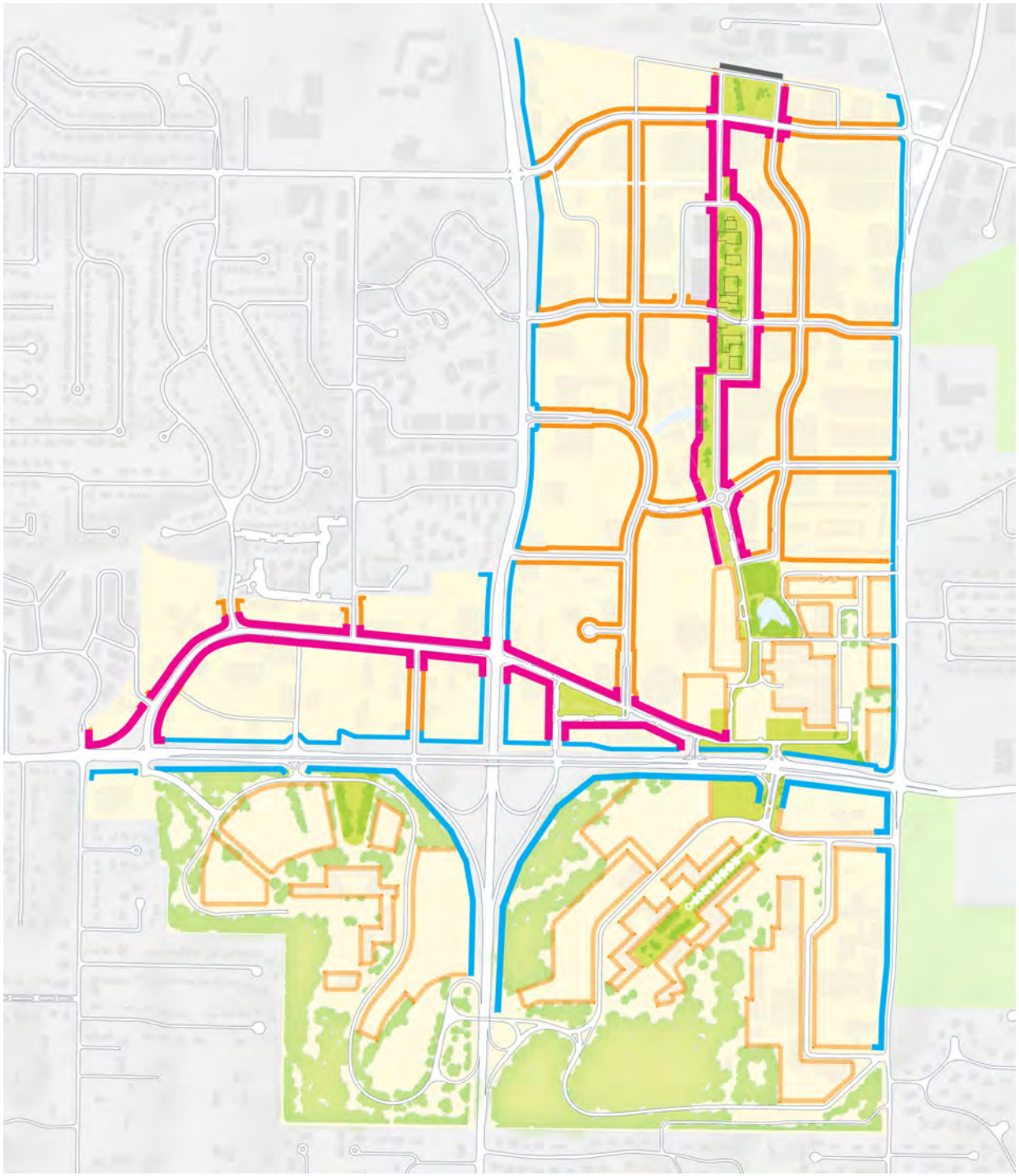
Primary frontages include the proposed central open space and Old Olive Street Road. Building facades should address the public realm and ground floors should have active and engaging uses.

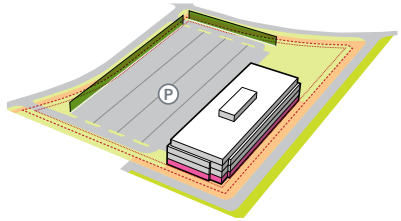
Secondary Frontage

Secondary frontages consist of existing and proposed right-of-ways. These frontages are important to reinforcing a safe and connected network of open spaces and streets. In the Campus Area, secondary frontages also define green spaces and major pathways.

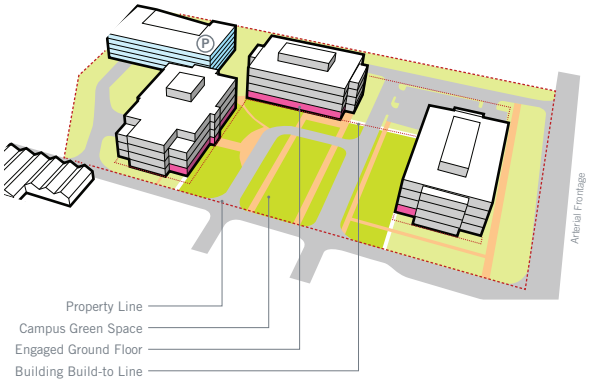
Arterial Frontage

Arterial Frontages address major streets within the district. They are important to shaping first impressions of the district.



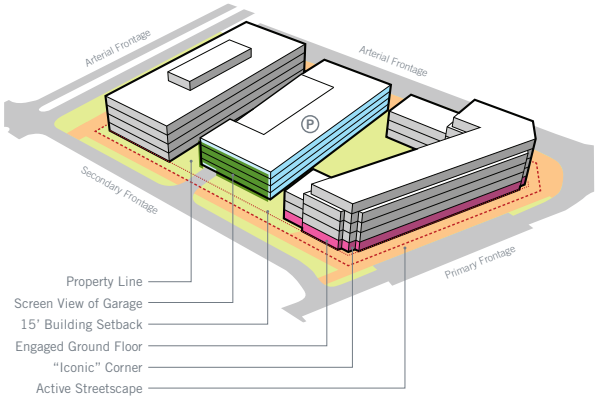


Low Density Alternate



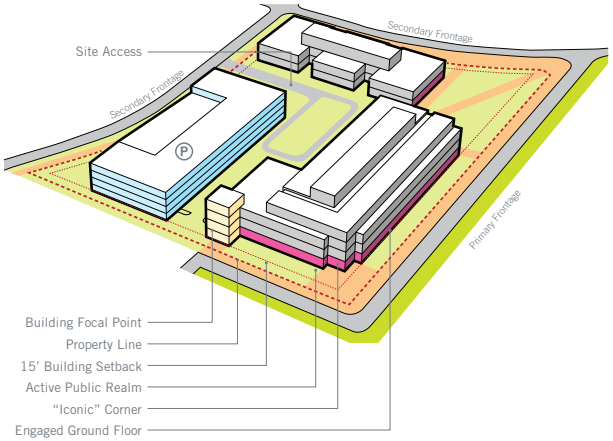
Campus Area

- This area would be defined by being pedestrian and bike friendly, with buildings organized around interconnected green space.
- Parking should be located toward the perimeter.
- 50% of the land should be preserved for open space to maintain the campus setting.



Old Olive Street Road Area

- This area is located along Old Olive Street Road.
- Buildings would address the street with retail and services on the ground floor. Transparency at the ground floor is encouraged to promote a sense of openness and to connect the indoor activity of the building with the exterior streetscape zone.
- Parking should be located within the center of the block. This will give the area an active feel that works well for walking from place to place.



Light Industry / Commercial / Research Area

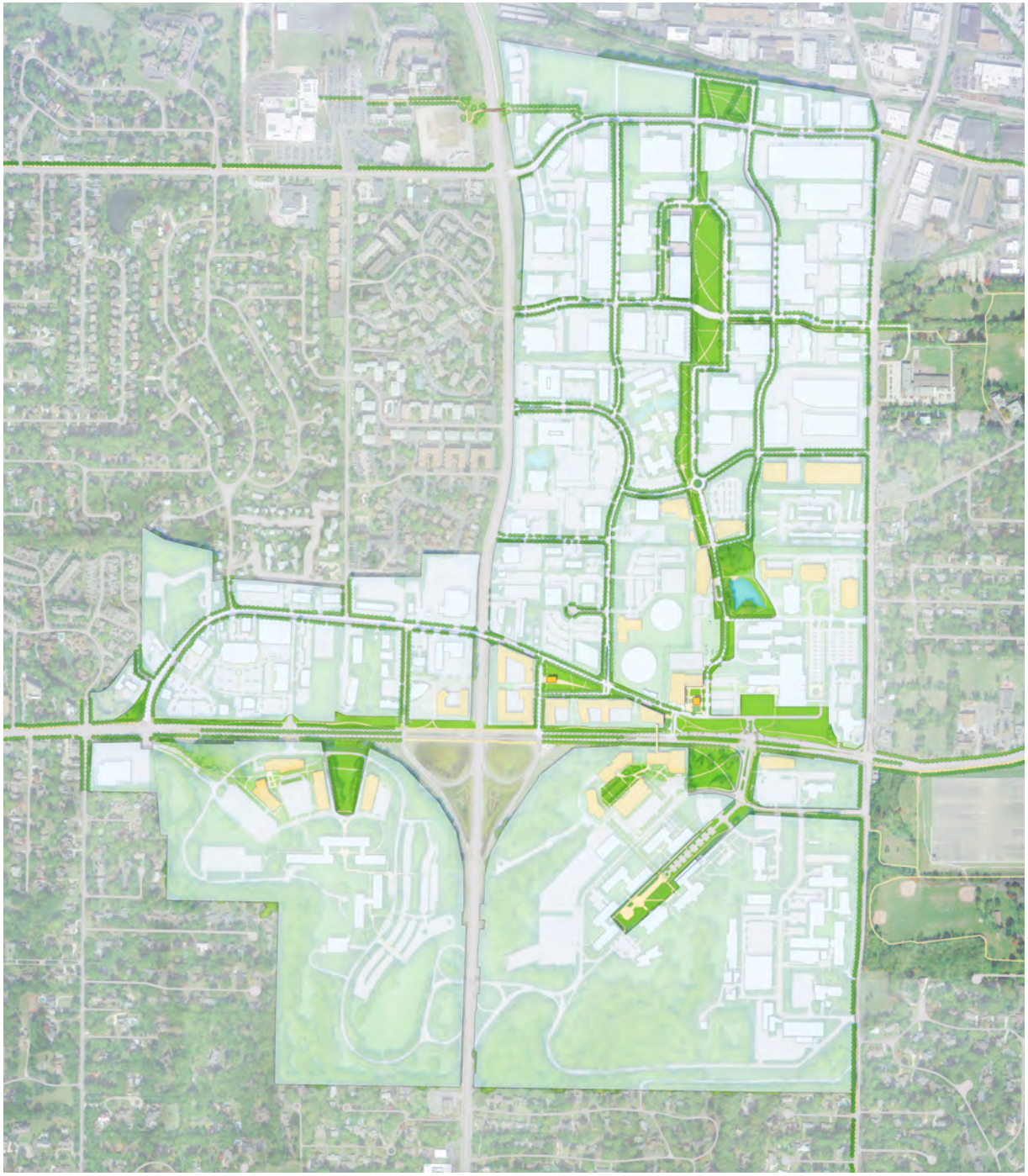
- Currently this area is a blend of commercial and light industrial uses. The Helix Center is also located in this area.
- A blend of building scales and forms within this area is fundamental to design vibrancy. Larger building masses should be broken down into multiple vertical and horizontal volumes.
- Buildings that terminate streets, open spaces and view corridors would provide symbolic gestures and orienting devices in the area and should be treated as architecturally significant.

Donald Danforth Plant Science Center

Currently two new buildings and a parking structure are planned as part of the Bio Research & Development Growth (BRDG) Park expansion. The current campus character of the Danforth Center property should be preserved and enhanced as part of the central open space spine to complement adjacent mixed-use activity on Old Olive Street Road.

American Water Site

An opportunity exists to collaborate with American Water to realize a vision for a direct connection to the Helix Center from the Donald Danforth Plant Science Center and BRDG Park and to a grid of streets northward in the light industrial district. The presence of American Water is an asset to the district and a relocation of facilities directly east of the Helix Center to the adjacent property owned by the water utility is envisioned. The water tanks west of the Danforth Center must remain and be adequately secured. Reconstruction of American Water facilities adjacent to the existing water tanks would allow for new development sites fronting the proposed northern connection road and a central open space to define a dynamic, actively programmed park. Opportunities for development are also identified adjacent to the Danforth Center retention pond.



Northern District

In the mid- to long-term development framework, the northern light industrial district would transition from light industrial to office and lab uses to support plant science and related industries within the district. A mix of new construction and renovation of existing warehouse buildings would allow for a wide range of space types and characteristics. Buildings fronting the central open space running north through the district should have active uses where possible.

Olive Boulevard and Monsanto

Additional development sites on the Monsanto campus fronting Olive Boulevard are identified as potential long-term building sites. Development fronting Olive Boulevard would strengthen connections north to development on Old Olive Street Road and the Donald Danforth Plant Science Center, enhance district gateways and increase pedestrian activity on Olive Boulevard.

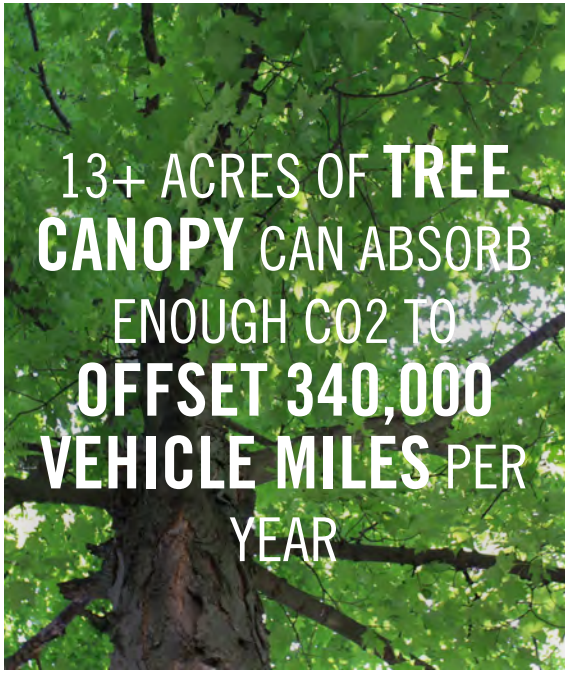
left **EXISTING SITE PLAN**

right **PROPOSED BLOCK PLAN**


A 138%
INCREASE IN
OPEN SPACE
TO 38.5 ACRES
PRESERVES AND
IMPROVES
PERMEABILITY


4.2 ACRES OF
RESTORED
PRAIRIE AT
DONALD DANFORTH PLANT SCIENCE CENTER
SEQUESTERS
GREEN HOUSE GASES
TO OFFSET
540 GALLONS OF
GASOLINE ANNUALLY


11+ MILES OF PROPOSED NEW
AND IMPROVED TRAILS CREATE
WALKABLE AND BIKEABLE
NETWORKS


13+ ACRES OF TREE
CANOPY CAN ABSORB
ENOUGH CO2 TO
OFFSET 340,000
VEHICLE MILES PER
YEAR


ELIMINATE
32 MILLION
GALLONS OF
STORMWATER
RUNOFF
ANNUALLY


1.5 MILLION GROSS SQUARE FEET
OF POTENTIAL ADAPTIVE REUSE

SUSTAINABILITY FRAMEWORK

The vision for revitalizing and developing 39 North is guided by principles of sustainable design. In order to be truly lasting, a sustainable development requires the same level of intelligent management used to govern economic capital to also be applied to human and environmental resources.

Left **ANTICIPATED OUTCOMES OF SUSTAINABLE PRACTICES**

Sustainability framework overview:

Human/Social/Lifestyle
- » Education and Outreach
- » Transit/Accessibility
- » Housing Diversity
- » Healthy Living
- » Job Creation/Retention
- » Destination/Sense of Place
- » Cultural Preservation
- » Community Impact

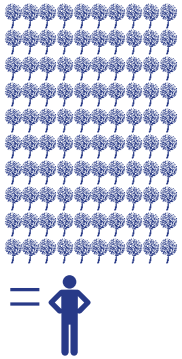
Environmental Systems
- » Biodiversity
- » Preservation / Open Space
- » Hydrology / Stormwater Management
- » Soils

Building/Design/Use
- » Renewable/Alternative Energy
- » Consumption
- » Design Considerations
- » Operations and Maintenance
- » Hazard Mitigation

Bicycling significantly reduces transportation emissions while also reducing traffic congestion and the need for petroleum. A 10-minute walk promotes heart health, improves brain function, eases depression, improves bone health, burns calories, helps one breathe easier, increases mindfulness, reduces stress and improves balance.

Bicycle and Pedestrian Connectivity

More than 11 miles of new and improved sidewalks and trails are proposed, supporting healthier lifestyles, providing alternative choices for modes of transportation, and reducing automobile dependency. These improvements would not only create a truly walkable and bikeable network directly connecting major anchor institutions within the district, but would also provide safe and efficient connections to the broader network of trails, parks, and attractions in the St. Louis region.



100 TREES are needed to **ABSORB** the amount of **CO2** **ONE PERSON** generates IN A YEAR

The annual volume of **STORMWATER INTERCEPTED** using the proposed management practices **EQUALS** **5,000+** showers per day

Adaptive building re-use can result in up to **46%** LESS **ENVIRONMENTAL IMPACT** when compared to new construction of equivalent energy performance.[1]

Air Quality

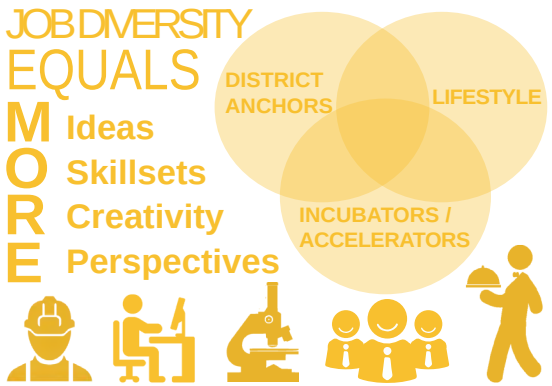
Improvements to the landscape and networks that support a reduction in auto-dependency would have profound effects on the district's air quality. An increase in tree canopy coverage (13+ acres of tree canopy) and attention to native landscapes (5+ acres of restored prairie) can absorb the carbon dioxide (CO2) emitted from a vehicle driving 350,000 miles per year. In addition to carbon sequestration, increasing tree canopy coverage and native prairie restoration can result in temperature reduction and other microclimate benefits. These benefits include the removal of air pollutants and particulate matter, ozone, sulfur dioxide, nitrogen dioxide, and carbon monoxide, and energy savings within buildings.

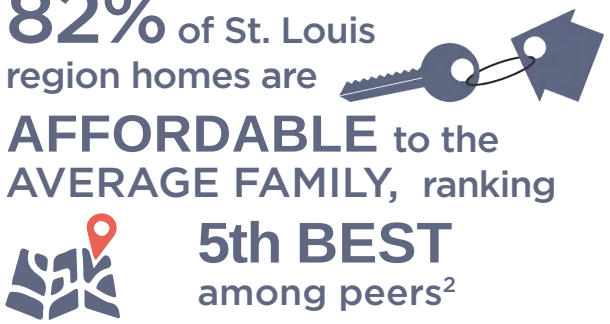
Stormwater Management / Water Quality

Increasing permeability and managing stormwater runoff in the district can eliminate over 32 million gallons of stormwater runoff annually. This is equivalent to filling the district's Missouri American Water tanks over 3 times! Best management practices that intercept stormwater runoff before entering sub-surface pipes and infrastructure provide an opportunity to improve water quality and reduce velocity. Rain gardens and native landscapes filter pollutants from the water prior to entering the region's streams and rivers. Capturing runoff can also alleviate downstream flooding and surges on existing infrastructure.

Sustainable Building Practices

Over 1.5 million gross square feet of development is identified for adaptive reuse in the 10-year vision plan for the district. Adaptive reuse offers significant opportunities for energy efficiency and reduces the material inputs and waste associated with new construction by reusing materials that would otherwise be demolished and discarded. The Environmental Protection Agency (EPA) has estimated that more than 50% of waste in landfills is due to construction and demolition. Reduction of material inputs also reduces pressure on ecosystems around the world from which new materials are sourced. Adapting existing structures also benefits more than the environment. Existing buildings already have the district's character embedded into them. These structures are assets as is, they maintain the social capital and identity needed to sustain and celebrate the success of the district to date.





Open Space

About thirty-eight acres of 39 North is dedicated to open space. Multi-functional, interwoven open spaces would create a continuous thread throughout the master plan vision. Connected green spaces would provide a framework for an expanded bicycle and pedestrian network, increase in tree canopy, and a palette for district branding and identity. Unique experiences would be created and foster a dynamic mix of uses from community gardens to social event areas and rain gardens to enhanced natural areas. These open spaces would act as community assets that bring people together through places and programming. They act as "collision" points where adventitious social interactions occur; where people who live, work, and play in the district can share their thoughts and ideas to facilitate innovation. The open spaces would link both users and ecosystems to neighboring parks, such as Warson and Stacy to the east.

Job Creation/Retention

Research and tech jobs make up a large portion of those currently employed within 39 North. These jobs are integral to the success that has occurred to date as well as to the district's future success. In order to develop a true vibrant live, work, play community, there is a need to not only retain and attract professionals within the existing research and tech industries, but to also create jobs in other industries such as service, retail, sales, healthcare, construction, etc. Broadening the variety of job opportunities within the district will promote workforce retention, even as employees may move from one industry or company to the next. This plan aims to generate a diversity of career, part-time, and volunteer opportunities along with access to employment opportunities and on-the-job training.

Housing Diversity

There are currently few housing options within the boundaries of 39 North, with a majority of the housing stock being multi-family. To attract a diverse work force and build a scaffold for further job creation, the growing district will need a diversity of housing options. The district master plan identifies the need to provide affordable, luxury, and market rate housing options; and options that are accessible for people of all ages, abilities and races. This variety of housing is critical to creating an economically stable and attractive live, work, play community.

[1] "The Greenest Building: Quantifying the Environmental Value of Building Reuse", Preservation Green Lab, National Trust for Historic Preservation, 2011

[2] "Where We Stand: The Strategic Assessment of the St. Louis Region," East West Gateway Council of Governments, page 42. July 29 2015.

BRANDING + IDENTITY

The 39 North brand communicates to the world the story of the district in a manner that's concise, compelling and shareable. The brand also announces distinctly and unambiguously how the district defines itself to its key audiences relative to its competition and clarifies what it stands for.

39 North is an active, inspiring and unique place where the world's brightest minds in food, water, energy and the environment converge, collide and collaborate to solve our biggest challenges and advance the human condition.

The district as a sense of place, its assets and why people will be drawn to it.

+

The power in bringing those assets and people together.

+

The result of that coalition, and the impact it can have on the world.


39°N

39 NORTH LOGO

Brand Pillars

Brand pillars create an efficient and effective way to tell the brand story in a consistently compelling manner. They help ensure that all brand communications are distinct and relevant within the realm of the market they are intended to serve. They are lofty and aspirational, and reflect – but do not necessarily define – the character of the brand. These brand pillars are mainly for internal guidance, and their value rises in direct proportion with how easily they can be remembered and embraced by everyone in the organization.

Logo

Driven for innovation and discovery in food, energy, medicine and technology, the droplet shape translates across sectors. As a district that is building and adding to its community, the brackets become a framing device that can float above imagery — plant life, circuit boards, a place setting in a restaurant — allowing the logo to constantly evolve and foster more personal connections with 39 North.

Right **POSSIBLE LOGO VARIATIONS**

Converge	Collide	Cultivate
A CONGREGATION OF HUMAN CAPITAL, INFRASTRUCTURE AND INSTITUTIONS THAT COULD ONLY HAPPEN HERE AND NOW. A PLACE WHERE PEOPLE WANT TO BE BECAUSE OF ITS ENERGY, ASPIRATION AND SENSE THAT ANYTHING IS POSSIBLE.	THE WORLD'S BRIGHTEST MINDS AND MOST DARING ENTREPRENEURS WORKING, SOCIALIZING AND THRIVING IN A COMMON SPACE. COLLISIONS LEAD TO COLLABORATION. COLLABORATION LEADS TO INNOVATION AND BREAKTHROUGH.	A PLACE WHERE RESOURCES AND RELATIONSHIPS YIELD MORE THAN NEW PRODUCTS AND INNOVATIONS; IT'S A NURTURING ENVIRONMENT CONTINUALLY CULTIVATING NEW WAYS TO DISCOVER SUSTAINABLE SOLUTIONS TO THE WORLD'S GREATEST FOOD, MEDICINE AND ENERGY CHALLENGES.
INSPIRATION. EXCITEMENT. UNIFICATION. CULMINATION.	COLLABORATION. INNOVATION. LEARNING. DISRUPTIVE.	CHALLENGING. COMMITMENT. INFLUENTIAL. FORESIGHT.


PLANT SCIENCE AND TECHNOLOGY

IMPLEMENTATION STRATEGY

NEW INFRASTRUCTURE

+

AMENITIES

+

MIX OF USES

=

HIGHER RATE OF DEVELOPMENT[1]

Objectives for the implementation strategy

» *Infrastructure*
Invest in transportation and open space improvements that would drive investment to 39 North.

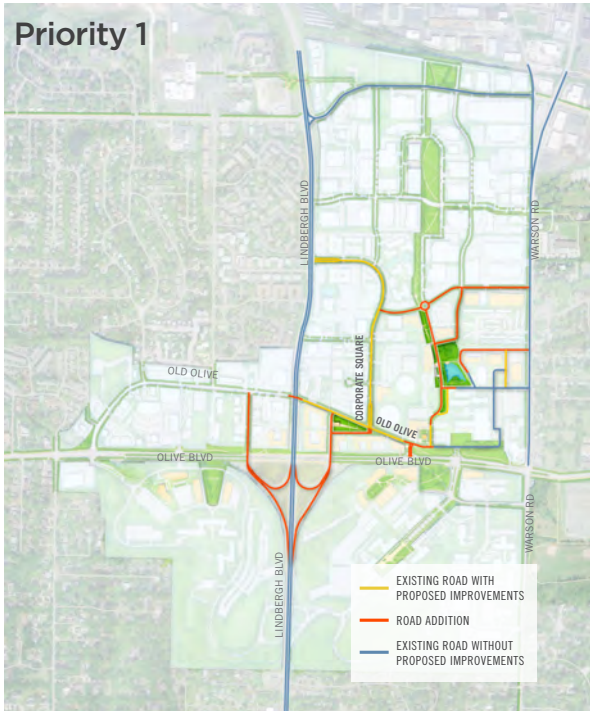
» *Development Incentives*
Provide necessary resources and tools to direct desired development.

» *Changes to Regulatory Framework*
Remove barriers to future growth.

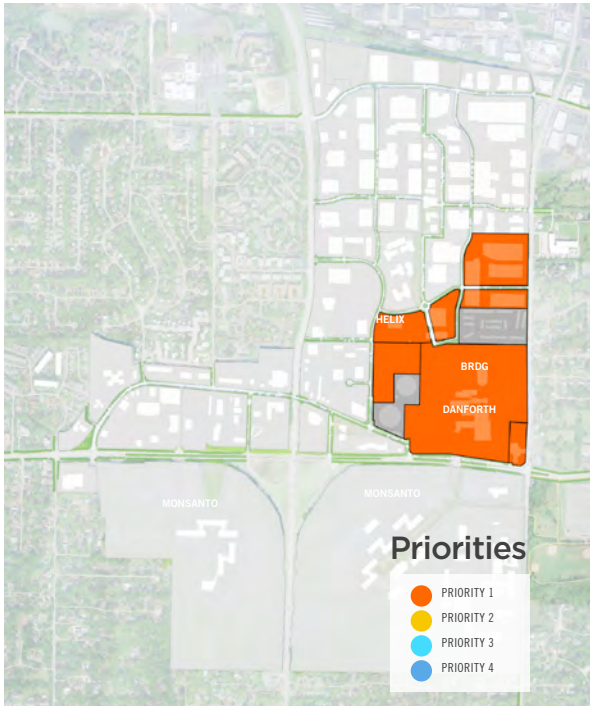
» *Ecosystem to Support Business Growth*
Foster collaborative environment to promote new business attraction.

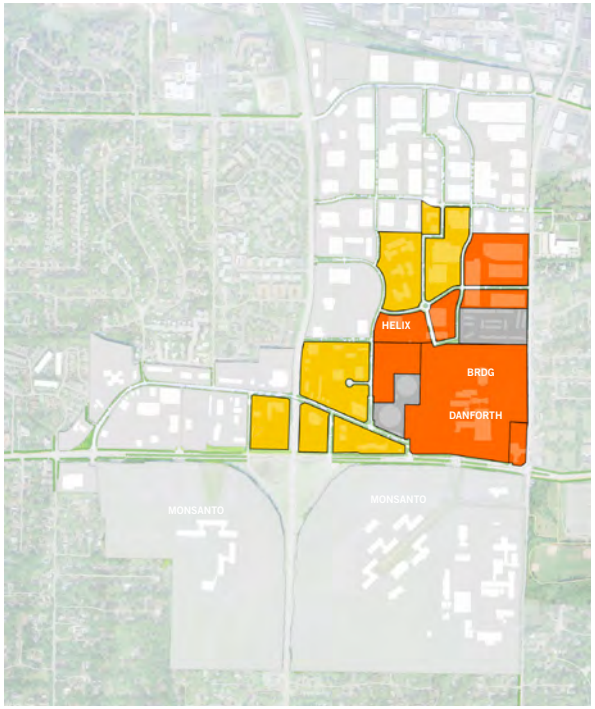
1. When compared to anticipated rates without the inclusion of new infrastructure, amenity and mixed-use investments.

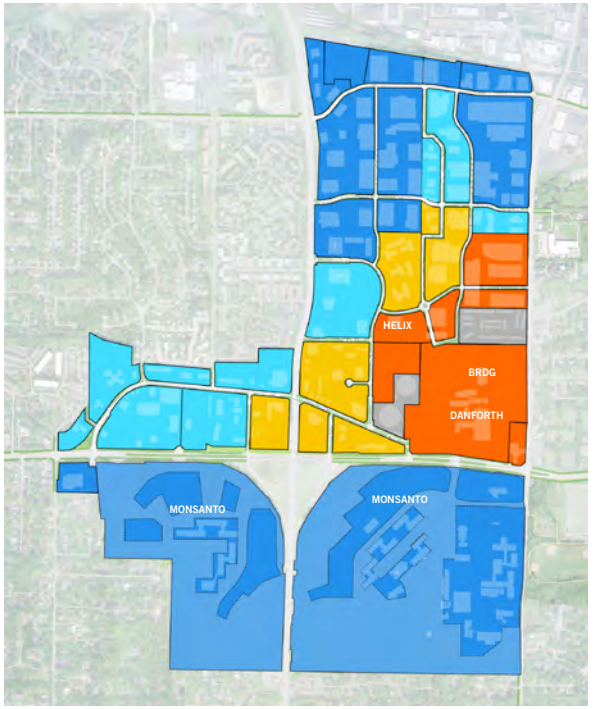
Roads and Open Space



Parcel Development



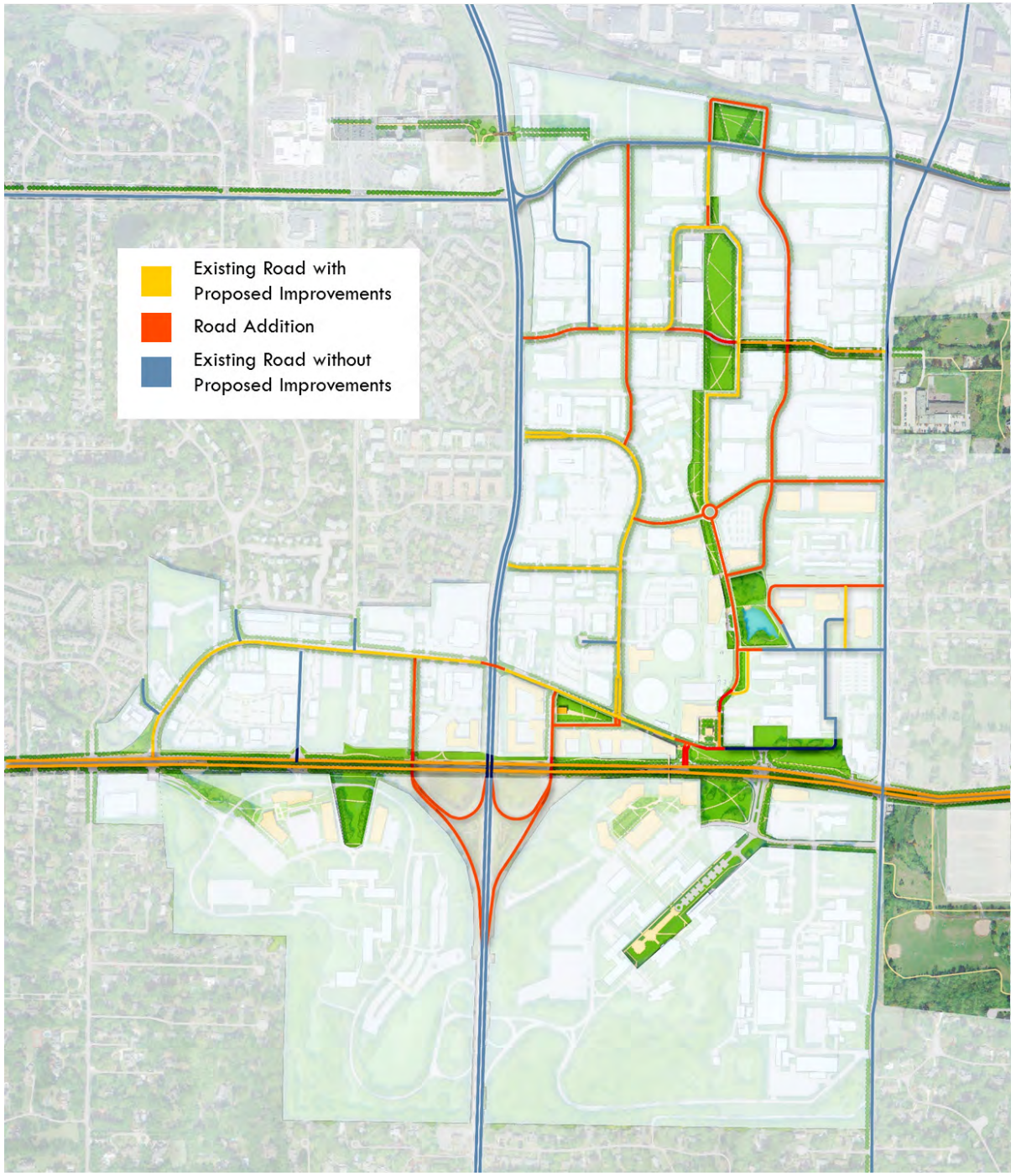




Phasing

A phased, 10-year buildout of 400 residential units, nearly 550,000 square feet of office space, and approximately 85,000 square feet of retail space is envisioned.

Development would first prioritize investments that build on and connect existing strengths, including the Donald Danforth Plant Science Center and the Helix Center. Second phase developments would connect to the existing mixed-use area adjacent to 39 North and increase visibility along major transportation corridors. The final phase would extend improvements north throughout the district. Catalytic investments in new infrastructure, amenities, and a more diverse mix of uses in 39 North would spur an accelerated rate of development.

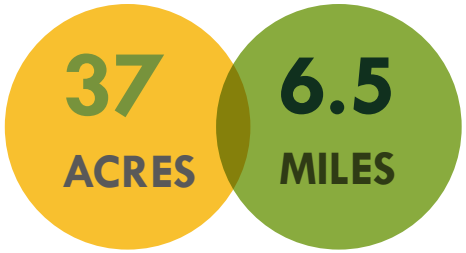


ROADS AND OPEN SPACE
Full build out

Funding

Implementing the vision for 39 North would require multiple categories of funding and support sourced from local, state, and federal governments, along with corporate contributions and philanthropic donations.

A range of options for funding these different investment needs are available to advance the district:



Transportation
~$47 m

Parks & Open Space
~$23 m

Development
~1 m sf

Business Support
Grow district plant and agtech ecosystem

Transportation Improvements

Six and a half miles of new and improved highways, roads, and streetscapes are proposed for the fully-developed district. Significant funding from St. Louis County, MoDOT and the U.S. FAST Act will require regional prioritization to secure transportation funds. The district may also consider a Transportation Development District (TDD), leveraging an assessment on new retail as it is developed to support site improvements for development.

Open Space Improvements

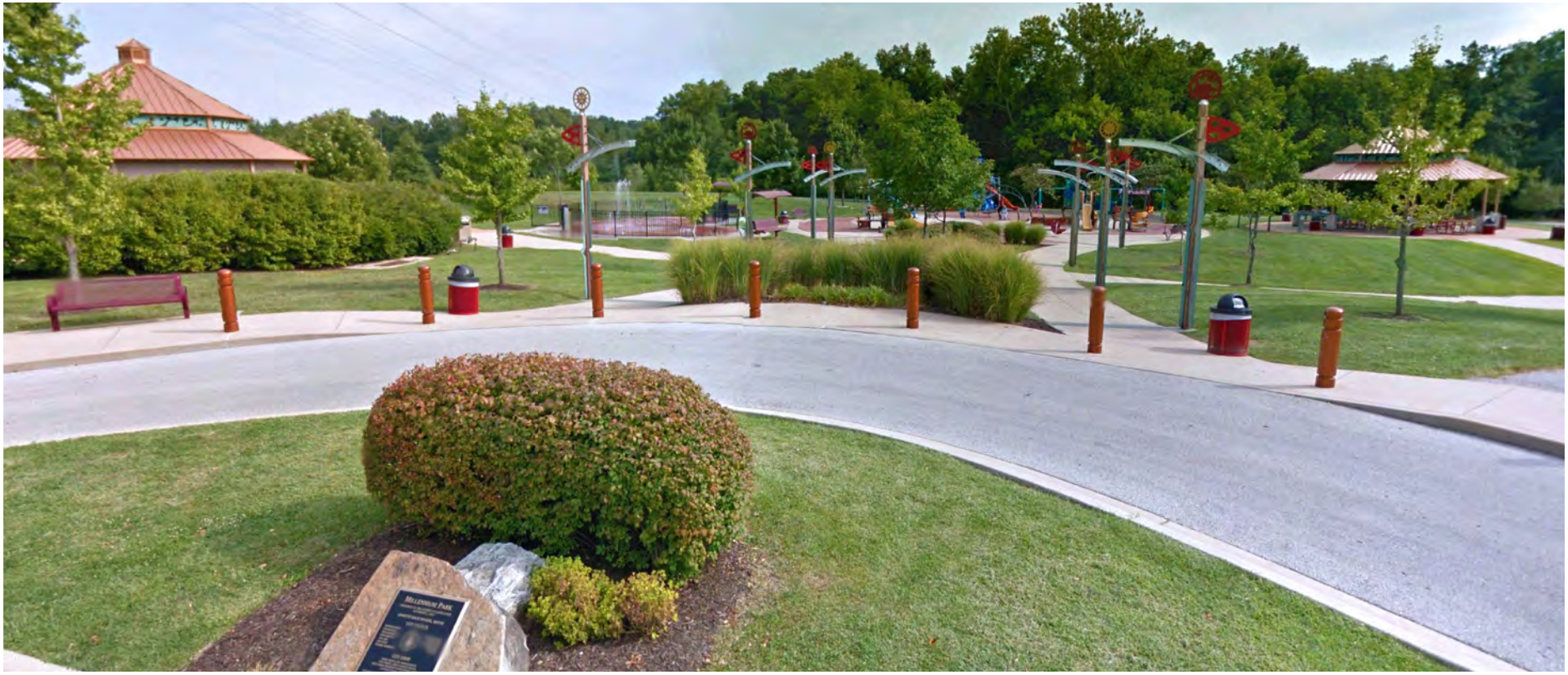
Planned open space investments in 39 North would include event spaces, pathways, leisure spaces, and gardens, with associated construction costs as well as (in some cases) acquisition costs. The Great Rivers Greenway Regional Parks and Trails District was established in 2000 to develop open spaces that enhances connectivity with the Creve Coeur Connector trail and planned Centennial Greenway, among other regional projects. Great Rivers Greenway receives over $20 million annually in public funding. This may be a funding source for open space within the innovation district, as may the City of Creve Coeur, which recently financed the acquisition and development of Millennium Park.

CASE STUDY: CLAYTON EXPANSION

In June 2016, the State of Missouri approved $10.3 million in BUILD funds for infrastructure investments and physical improvements for Centene Corporation's $770 million expansion in Clayton

bottom **MILLENNIUM PARK**

The City of Creve Coeur recently retired $4 million in debt that provided financing for the acquisition and development of Millennium Park.



Vertical Development

Funding for land acquisition, building infrastructure, and fit-out could be provided by multiple local and state development incentives. For example, it is possible St. Louis County could offer tax abatements for vertical development, including Chapter 100 for developments that promote job creation and investment. The state could provide tax credits for infrastructure and physical improvements for projects that surpass $10 million in investment and hire at least 500 employees through the BUILD Missouri program. Funding for equipment and construction may be possible through the Missouri Technology Corporation. Once development is advancing, the district could consider establishing a tax increment financing (TIF) district to support individual projects and contribute to adjacent infrastructure funding.

Business Support

Grants that can provide a wide range of support for small business growth in the district are available from multiple sources across all levels of government. Federal agencies including the National Institutes of Health (NIH), National Science Foundation (NSF), and the Department of Defense (DoD) offer small business research and tech transfer grants. The State of Missouri offers grant matching programs for startup science and tech companies, and local public and private accelerators, innovation centers, competitions, and ecosystem supporters offer startup grants between $50,000 and $100,000. They also offer relocation assistance and subsidized office space. At the local level, the St. Louis Economic Development Partnership and BioSTL provide business training and capacity building, marketing and advocacy, and secure access to funding necessary to support local plant and agtech entrepreneurial and venture capital initiatives.

Corporate contributions and philanthropic donations may also be available to support the development of 39 North. Major employers including Monsanto, Emerson, Anheuser-Busch InBev, Wells Fargo, Boeing, Nestle Purina, and Enterprise Holdings have supported capital development and open space projects in the St. Louis region. In 2012, the top 10 local corporate grant makers gave nearly $60 million to St. Louis-area organizations. Examples of corporate and philanthropic investments include the Monsanto Fund's contributions of $25 million for non-profit capital development projects, and the Crawford Family Foundation's gifts of $50 million for open space improvements and the establishment of research institutes.

2015 winner of the Accelerate St. Louis Challenge which awards a total of $120,000 in cash prizes for St. Louis start-ups.

Goverance

Centralized leadership will guide the development of the district, in collaboration with partner organizations and the broader innovation ecosystem. The source of leadership will evolve as the district grows.

Implementation Responsibilities & Partners

There is a variety of initial actions and ongoing responsibilities that will be necessary to advance 39 North. While many local partners have already been instrumental in advancing district planning, a governance strategy will provide a formal structure and clear direction for implementing the district's Master Plan. The governance strategy will require robust collaboration and partnerships around a range of real estate development, vision implementation, and business and workforce attraction responsibilities, all of which will be instrumental in ensuring the district's future success.

Multiple public, private, and institutional entities in the St. Louis region are well-positioned to participate in the implementation of these roles and responsibilities. Core stakeholders, including the Donald Danforth Plant Science Center, Bio Research & Development Growth (BRDG) Park, Monsanto, BioSTL, the City of Creve Coeur, and the St. Louis Economic Development Partnership, have already offered significant feedback in the development of future governance. Other potential partners include the Cortex Innovation Community, regional academic leaders including the University of Missouri St. Louis, St. Louis Community College, St. Louis University, and Washington University in St. Louis, in addition to Missouri Botanical Garden, Helix Center, and St. Louis County. Coordinated participation and support from entities will be instrumental to ensure the district's future success.

Promise Zone partnership

The district is designated as part of the St. Louis Promise Zone, a federal program that is a catalyst for ongoing collaboration and change that will ensure that regional growth is inclusive in the St. Louis region. Throughout implementation, advocates should work with the Promise Zone program to invest in the transformative development in the district to improve educational outcomes, workforce readiness and reduce serious crime.

Roles & Responsibilities

Real Estate Development

Land Use & Planning
Infrastructure
Building Development

Vision Implementation

Ongoing Management & Stewardship

Business & Workforce Attraction

Marketing & Branding
Employer Recruiting
Workforce & Business Development

Leadership

NEAR TERM

ST. LOUIS ECONOMIC DEVELOPMENT PARTNERSHIP
serving st. louis city and county

LONGER TERM

NEW INDEPENDENT NON-PROFIT ENTITY

Collaboration

PARTNERS

INNOVATION ECOSYSTEM

Future Governance

Mobilization of the appropriate partners and resources to undertake these responsibilities requires a governance structure for implementation that accomplishes four key goals:

» Achieve Both Accountability and Focus: Provide collaborative decision-making, along with clear lines of focused leadership to executive responsibilities.

» Maximize Resources by Leveraging Existing Capacities: Where possible, avoid duplicating strong capacities that exist within established public or private entities.

» Support Brand and Ecosystem Development: Maintain a high-quality brand attractive to private industry and provide supportive resources that are essential to drive growth.

» Secure Diverse Funding Streams: Secure creative public and private funding mechanisms from new and existing sources.

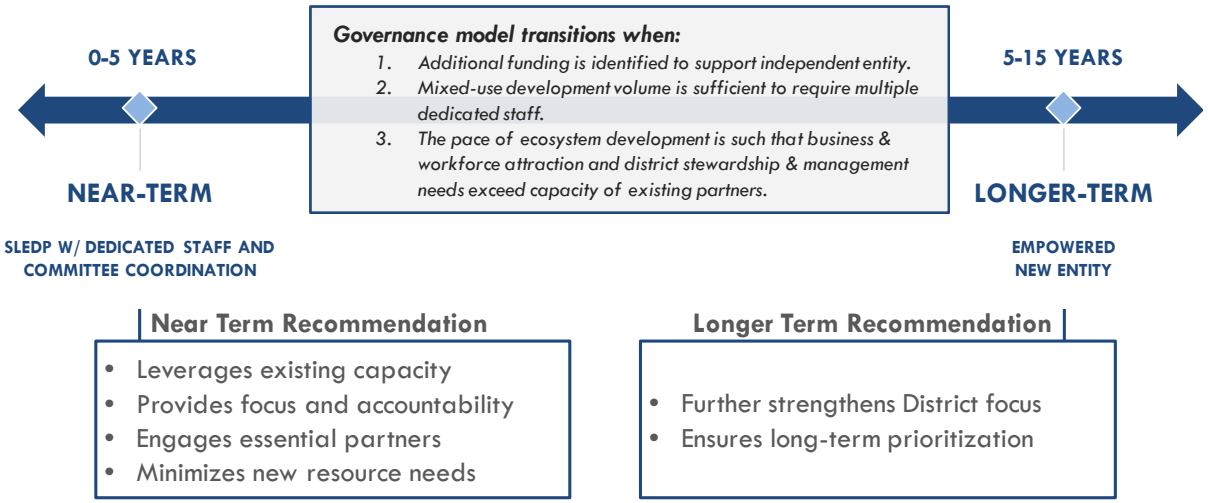
The organizational structure for implementing the Master Plan will evolve over time, with two distinct phases envisioned:

Near-Term Strategy (0-5 Years)

In the near term, dedicated staff at the St. Louis Economic Development Partnership (SLEDP) will manage district implementation in coordination with a Steering Committee, of essential stakeholders, all of whom shaped creation of the Master Plan. This structure is advantageous in the near term as it leverages the existing capacity of a key regional organization; provides focus and accountability by establishing a clear leader; engages essential local partners; and minimizes the need for identifying new funding resources. The SLEDP staff may work within a group named for the district, in order to increase district visibility for both marketing and future fundraising purposes.

Longer-Term Strategy (5-15 Years)

In the longer term, an empowered non-profit entity should be created to ensure the continuation of 39 North's mission. A transition to a dedicated entity once significant momentum has been established enables further strengthening of the implementation focus for the district; ensures long-term local and regional prioritization;



maximizes future opportunities for funding; and builds the visibility of 39 North. The transition to a new empowered entity should be considered when: (1) Additional funding is identified to support the independent entity; (2) mixed-use development volume is sufficient to require multiple dedicated staff; and (3) the pace of ecosystem development is such that business and workforce attraction and district stewardship and management needs exceed the capacity of existing partners. The creation of a Community Improvement District (CID) that leverages an assessment on retail sales in the area may provide a vehicle for funding to support district maintenance and programming in the future, in addition to philanthropic contributions.

Key actions and next steps necessary for the St. Louis Economic Development Partnership and Steering Committee to advance district creation are outlined below:

Category	0 to 2 Years	3 + Years
Land Use & Planning	• Advance regulatory approvals	
Infrastructure	• Secure funds for Priority 1 infrastructure • Secure site control • Undertake design & commence construction	• Complete Priority 1 construction • Secure Priority 2 funds • Undertake design of Priority 2 improvements
Building Development	• Refine target program and development strategy • Solicit development partners for Priority 1 development sites • Establish district incentives package • Engage property owners	• Commence construction for Priority 1 sites • Refine approach for Priority 2 development
Ongoing Management & Stewardship	• Advance SLEDP and committee structure	• Advance public programming
Business & Workforce Attraction	• Establish branding strategy and marketing campaign	• Advance public educational partnerships • Expand ecosystem support

ACKNOWLEDGMENTS

The Master Plan was shaped by the ideas and dedication of a diverse coalition of stakeholders and community members. Guided by the Master Plan, implementation of 39 North will continue to engage stakeholders and community members to implement the vision and promote the continued growth of agtech in the St. Louis region.

Core Working Group

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Tim Rodgers	Rodgers Townsend
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APPENDICES

Proposed Intersection drawings

Olive Boulevard at Lindbergh Boulevard Folded diamond with new connector streets

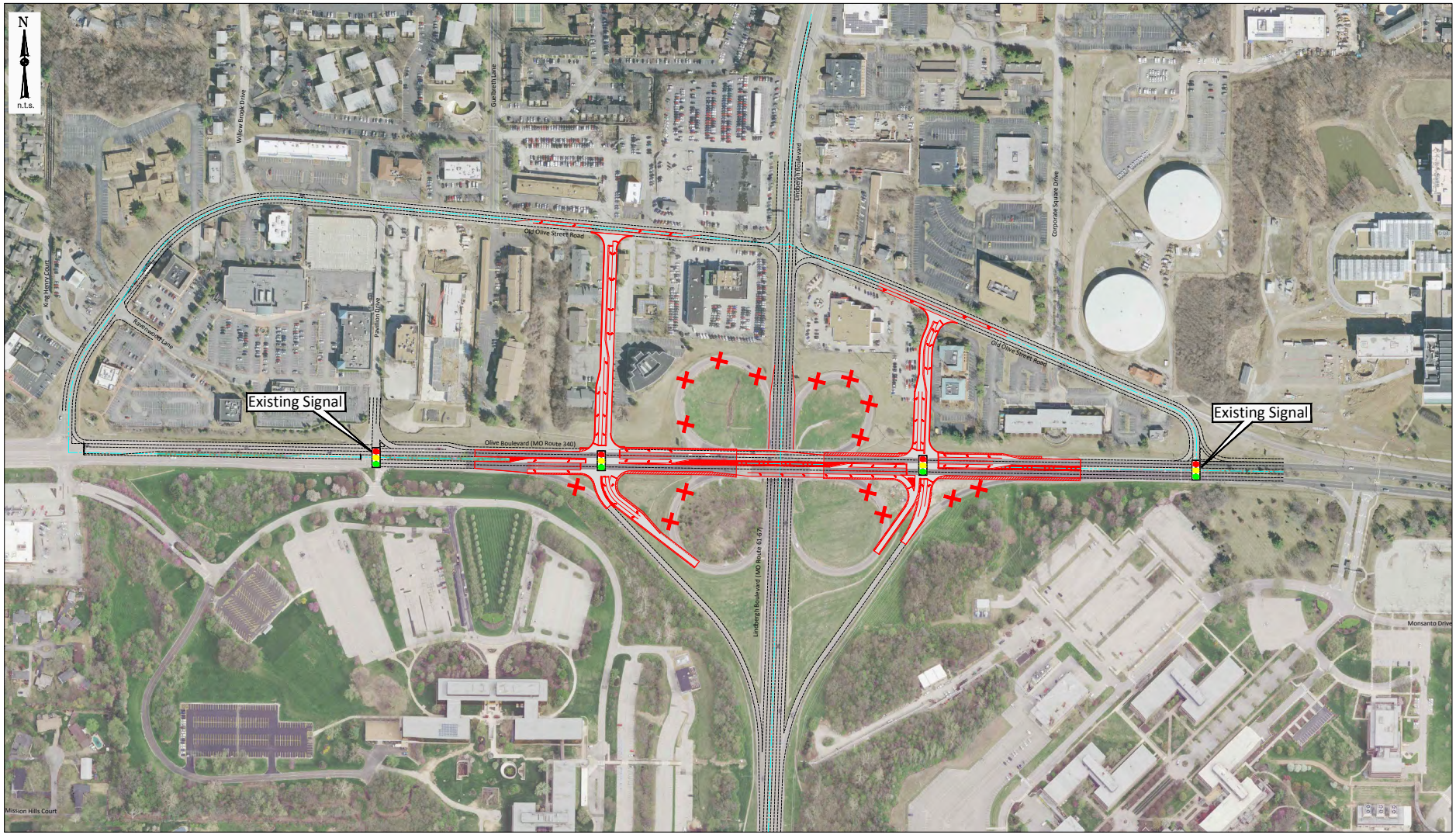


Exhibit A: Folded Diamond with New Connector Streets

Job# 033-16
08/29/16

Old Olive Street Road at Lindbergh Boulevard at-grade full access intersection with signal

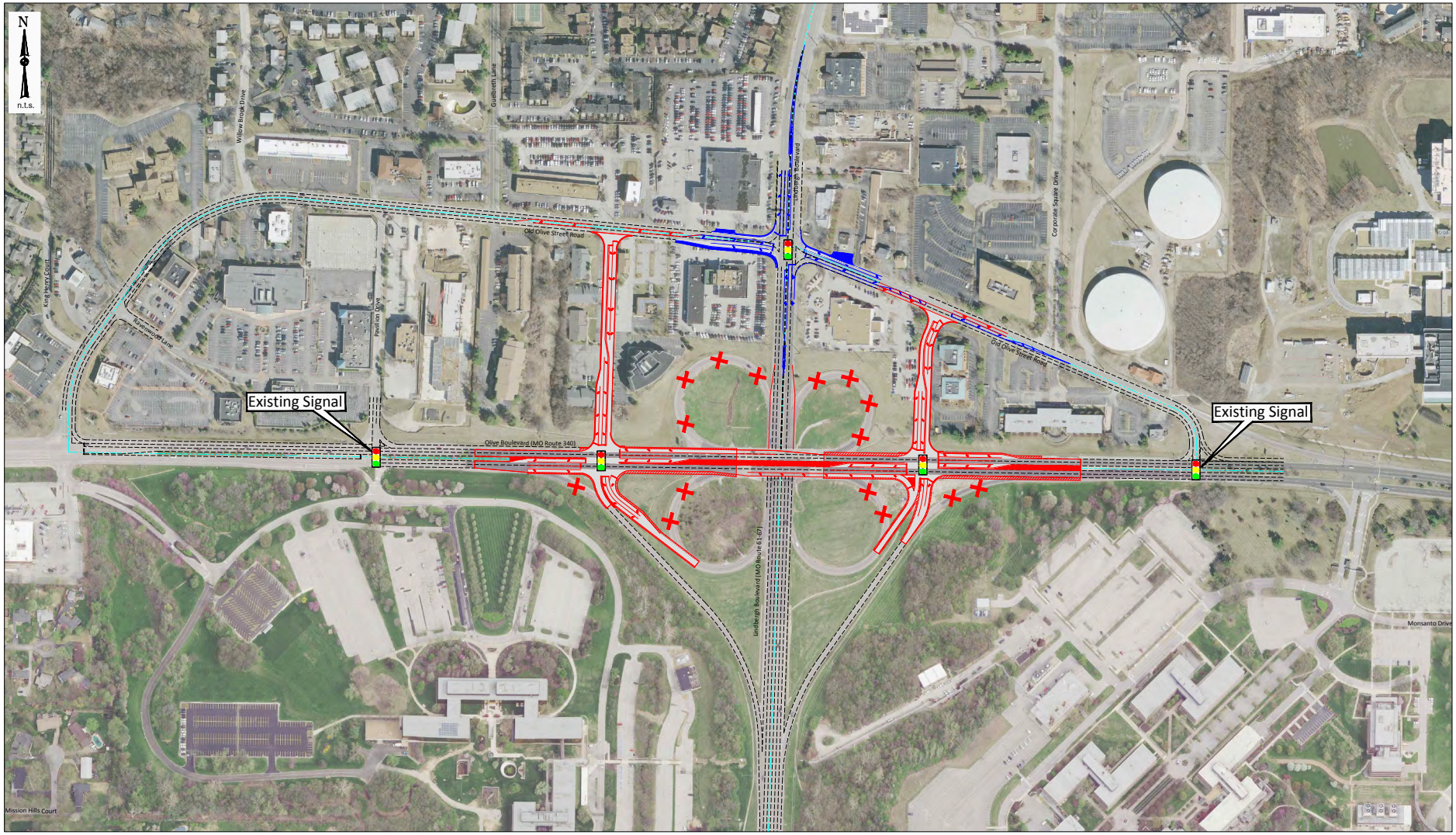


Exhibit B: Old Olive at Lindbergh At-Grade Full Access Intersection with Signal

Job# 033-16
08/29/16

Old Olive Street Road at Lindbergh Boulevard grade separated

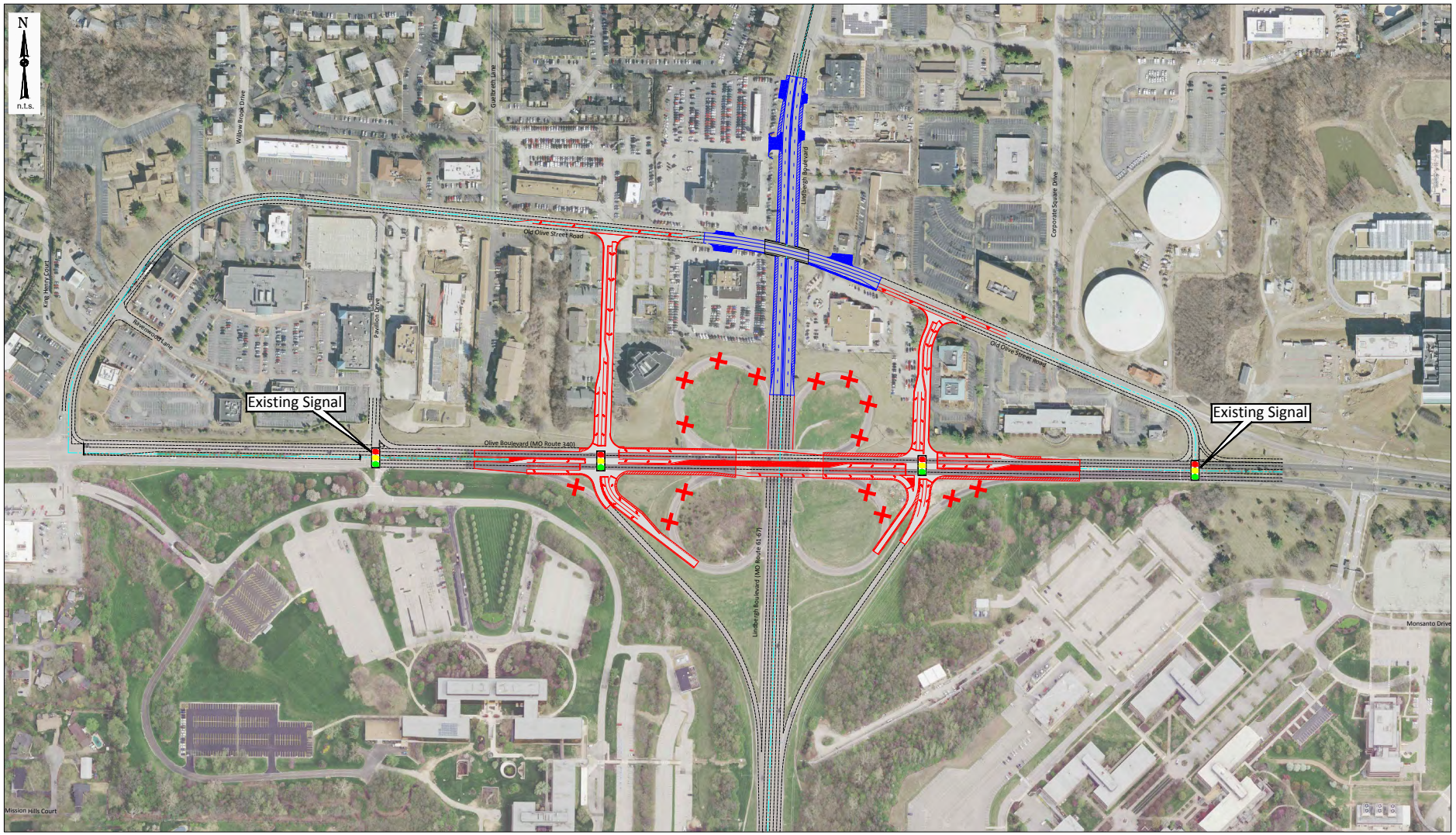


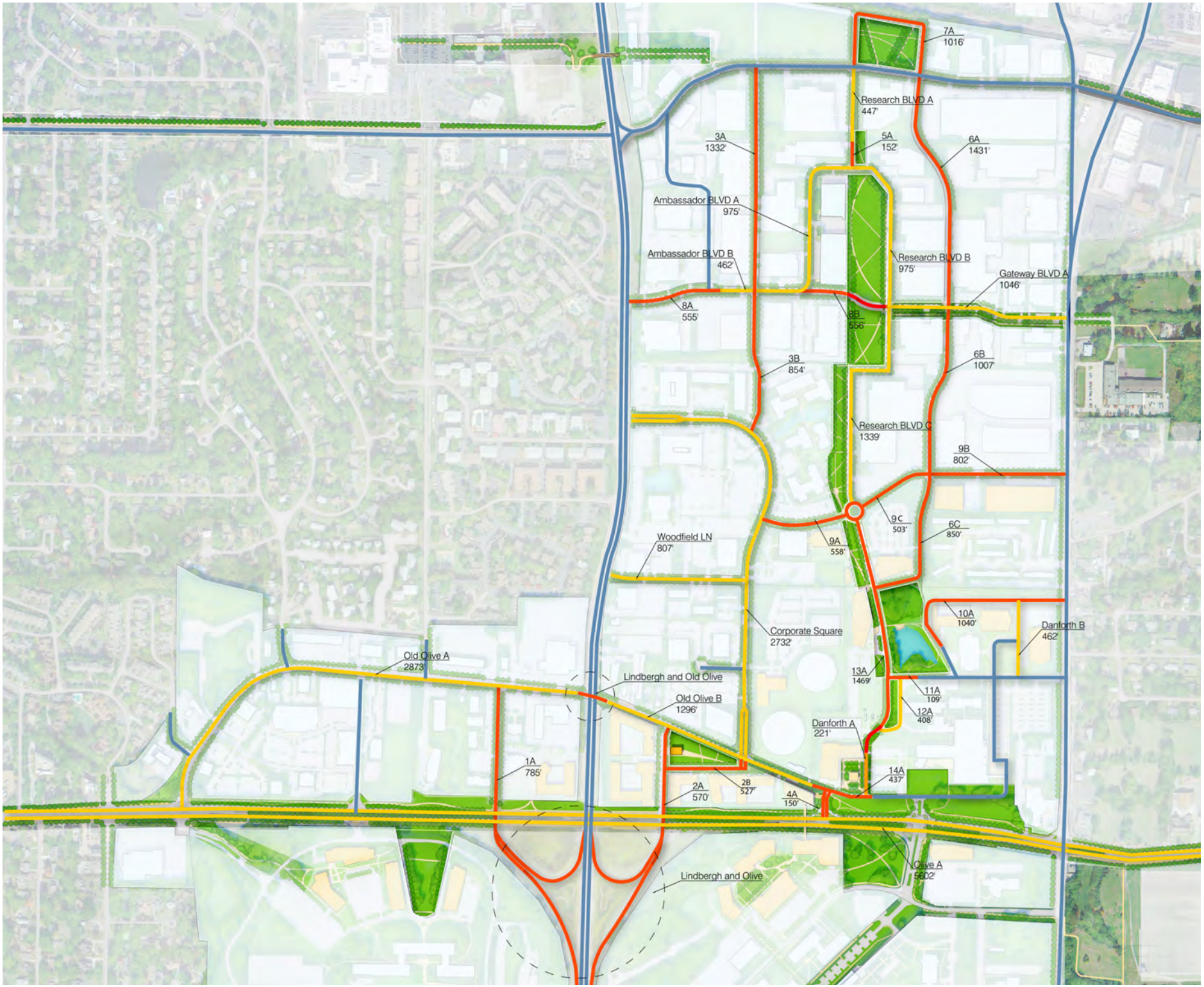
Exhibit C: Old Olive at Lindbergh Grade Separated

Job# 033-16
08/29/16

Potential Infrastructure projects

Road Improvements and Additions					
Segment	Linear Feet	type	Priority	Easement Acquisition (SF)	construction cost estimate
1A	785	new	1	39,250	inc. in lindbergh olive intersection below
2A	570	new	1	27,720	inc. in lindbergh olive intersection below
2B	527	new	1	26,350	$ 690,370
3A	1,332	new	3	53,280	$ 1,744,920
3B	854	new	3	34,160	$ 1,118,740
4A	150	new	1		$ 234,000
5A	152	new	1	4,780	$ 199,120
6A	1,431	new	3	60,100	$ 1,874,610
6B	1,007	new	2	42,300	$ 1,319,170
6C	850	new	1	42,700	$ 1,113,500
7A	1,016	new	3	50,800	$ 1,330,960
8A	555	new	3	28,840	$ 727,050
8B	556	new	3	24,720	$ 728,360
9A	558	new	1	27,900	$ 730,980
9B	802	new	1	40,100	$ 1,050,620
9C	503	new	1	25,150	$ 500,485
10A	1,040	new	1		$ 1,034,800
11A	109	new	1		$ 142,790
13A	1,469	new	1		$ 1,924,390
14A	437	new	1		$ 572,470
Total Additions	**14,703**				**$ 17,037,335**
Old Olive A	2,873	improvement	2		$ 2,987,920
Old Olive B	1,296	improvement	1		$ 1,347,840
Total Old Olive	**4,169**				**$ 4,335,760**
Olive BLVD A	**5,602**		2		**$ 3,025,080**
12A	408	Improvement	1		$ 269,280
Danforth A	221	improvement	1		$ 125,970
Danforth B	462	improvement	1		$ 263,340
Woodfield LN	807	improvement	2		$ 734,370
Corporate Square	2,732	improvement	2		$ 2,486,120
Research BLVD A	447	improvement	1		$ 406,770
Research BLVD B	975	improvement	1		$ 887,250
Research BLVD C	1,339	improvement	1		$ 1,218,490
Ambassador BLVD A	975	improvement	3		$ 887,250
Ambassador BLVD B	462	improvement	3		$ 420,420
Gateway BLVD A	1,046	improvement	3		$ 951,860
Internal Improvements	**9,874**				**$ 8,651,120**
Lindbergh and Old Olive	Intersection	new	1		$ 4,995,855
Lindbergh and Olive	Intersection	new	1		$ 5,660,527
				Grand total	**$ 43,705,677**

*All cost estimates are for planning purposes and do not include utility work or acquisition costs.

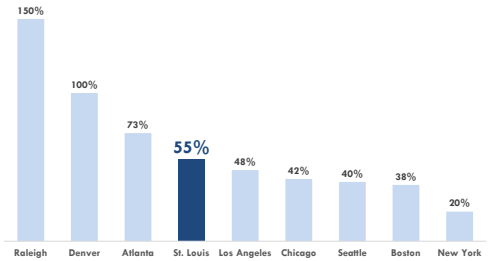

7A
1016'
Research BLVD A
447'
3A
1332'
5A
152'
6A
1431'
Ambassador BLVD A
975'
Ambassador BLVD B
462'
Research BLVD B
975'
Gateway BLVD A
1046'
8A
555'
8B
556'
3B
854'
6B
1007'
Research BLVD C
1339'
9B
802'
9C
503'
6C
850'
Woodfield LN
807'
9A
558'
10A
1040'
Danforth B
462'
Corporate Square
2732'
Old Olive A
2873'
Lindbergh and Old Olive
13A
1469'
11A
109'
Old Olive B
1296'
12A
408'
Danforth A
221'
1A
785'
14A
437'
2A
570'
2B
527'
4A
150'
Olive A
5602'
Lindbergh and Olive

Market Scan

Industry Overview

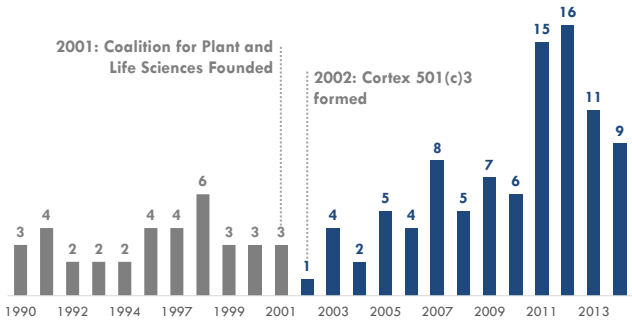
The strength of the St. Louis region's existing plant and bioscience industry is instrumental in attracting venture capital, encouraging local and international entrepreneurs to grow their businesses in the region, and driving the region's economic competitiveness. As noted in reports from Battelle/BIO[1] and the St. Louis Economic Development Partnership[2], thriving businesses, entrepreneurial support systems, and significant plant and bioscience ecosystem anchors – including the Donald Danforth Plant Science Centers, Cortex Innovation Community, Monsanto, BioSTL, BRDG Park, and the Helix Center Biotech Incubator – position the St. Louis region as a national leader in plant and bioscience innovation.

Figure 1: Average Annual Investment Deal Growth 2012-2015[3]



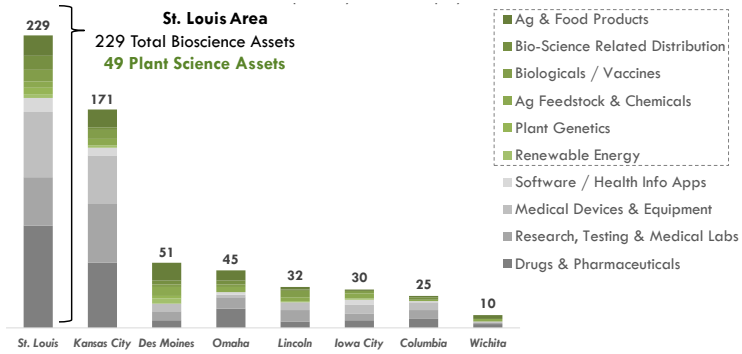
The St. Louis region has experienced strong average annual investment deal growth, growing by 55% from 2012 to 2015. The St. Louis region's entrepreneurial spirit, combined with strong regional leadership, has translated into a sharp increase in the growth of new regional plant and bioscience companies since the formation of key organizations such as BioSTL and Cortex nearly 15 years ago.

Figure 2: St. Louis Regional Bioscience Companies by Year Established[4]



As a result of this leadership, the St. Louis area leads the Midwest in the overall number of plant and bioscience companies, and has, by far, the largest concentration of such companies among peer cities.[5] These companies are located throughout the region, reaching from the T-REX Incubator in Downtown St. Louis across the County to the recent Monsanto expansion in Chesterfield, and provide a critical node along the state-wide plant and bioscience corridor stretching from St. Louis, through the University of Missouri in Columbia, to Kansas City.

Figure 3: Bioscience Companies by Subcategory (MSA) Unadjusted by Scale of Employment



The targeted expansion of a mixed-use urban innovation district provides a significant opportunity to leverage local and regional strengths and further improve access to industry leaders, mentorship, business development and support services, angel funding and venture capital.

Key Findings:

- **STRENGTH OF EXISTING ANCHORS** – The District can maintain robust connections between the Danforth, Monsanto, & Cortex scientific communities, and provide access to mentorship, capital funding, and appropriately-priced space to continue entrepreneurial ecosystem growth.
- **LOCAL AND REGIONAL BIOSCIENCE LEADER** – The District can aim to leverage local and regional plant and bioscience corridors to attract a diverse set of plant and bioscience firms with strong support from public leadership for a healthy innovation ecosystem.

[1] Battelle/BIO. State Bioscience Jobs, Investments, and Innovation. 2014.
[2] St. Louis Economic Development Partnership. Strategic Plan for Economic Development. 2014.
[3] Mattermark. Where to get funded in 2016 that isn't Silicon Valley. 2016.
[4] Heartland Civic Collaborative Life Sciences Task Force. August 2015.
[5] Heartland Civic Collaborative Life Sciences Task Force. August 2015.

Real Estate Market Assessment

An assessment of residential, commercial office, industrial, and retail uses, along with demographic trends, shaped the Master Plan development program and ensured its viability. The assessment compared trends within three concentric study areas detailed below to understand current and anticipated development trends.

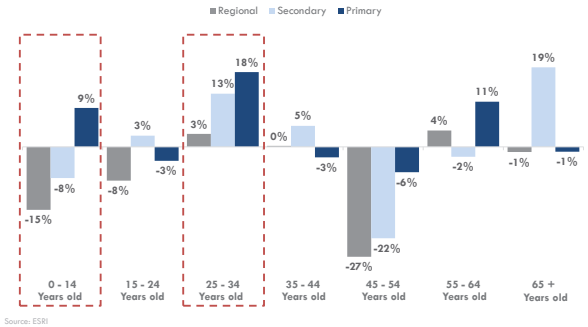
- **Immediate Surrounding Area** (primary study area – 9 ½ sq. mi.), including the five census tracts immediately surrounding the District.
- **Western Suburbs** (secondary study area – 120 sq. mi.), including most suburban municipalities in western St. Louis County.[6]
- **Region** (regional study area – 574 sq. mi), including both St. Louis County and St. Louis City.

[6] Secondary Study Area includes Creve Coeur, Ladue, Overland, Olivette, University City, Clayton, Frontenac, Westwood, Maryland Heights, Chesterfield, Town and County, Country Life Acres, and Unincorporated St. Louis.

Socioeconomic Analysis

Population growth in the immediate area has far outpaced the western suburbs and St. Louis city. This is driving demand for local multifamily housing. Between 2000 and 2013, the district's immediate area's population grew by nearly 10 percent to approximately 20,000 residents. In the same period, the western suburbs grew just 2 percent, while the region shrunk by 3 percent. Even more striking is that the immediate area saw a gain in young adults aged 25 to 34 that was six times larger than the St. Louis region overall, and increased its population of children under the age of 15 by 9 percent compared to a decline of 15 percent for the broader region.

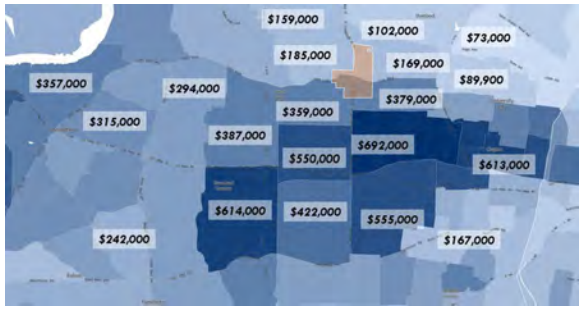
Figure 4: Population Growth by Age (2000-2013)[7]



These young professionals are anticipated to support residential demand. The District can benefit from these local population growth trends by delivering the product types, density, and amenities that attract the key young professional market.

Both the immediate surrounding area and western suburbs have highly-educated populations, with a majority holding a bachelor's degree or higher. Both the immediate surrounding area and western suburbs also share a significant number of higher-income households, where residential demand is in large part driven by the strength of the local school districts that cover the District. These neighborhoods – where home values range from $350,000 to nearly $700,000 – are located less than a 10-minute drive of the District, and demonstrate the potential of the District to attract similar higher-earning segments of the population.

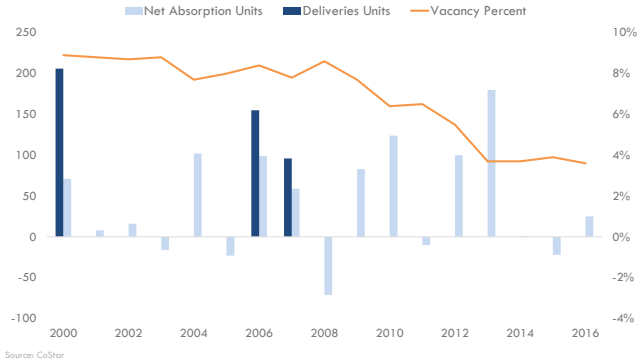
Figure 5: Median Home Values[8]



Residential Analysis

The housing stock in the immediate area contains a significantly higher number of multifamily units than the western suburbs and broader region, with 40% of all housing units near the District located in multifamily buildings.[9, 10] Multifamily vacancy in the immediate area and western suburbs has declined steadily since 2008, yet no new product was delivered between 2008 and 2016, resulting in pent-up demand for new development.

Figure 6: Western Suburbs Study Area (Multifamily)[11]



However, today approximately 700 multifamily units in three new developments catering to young professionals and empty nesters are planned or under construction nearby, indicating that the market is now responding to pent-up residential demand. The performance of these projects will demonstrate the ability of comparable multifamily development in the District to attract similar tenants, and particularly those working within the District itself. The District's proximity to new multifamily residential developments can provide the vibrancy and retail activity necessary to create a successful mixed-use neighborhood appealing to talented workers who attract employers and drive innovation.

[7] ESRI Business Analyst Online
[8] Social Explorer; ACS 2014 (5-Year Estimates)
[9] Multifamily housing is defined as any housing structure with 3 or more units.
[10] ESRI Business Analyst Online
[11] CoStar

Retail Analysis

Existing residents and workers within a 3-mile radius of the Donald Danforth Plant Science Center can support nearly 150,000 square feet of additional new food, beverage, and retail establishments. Conversations with current local employees indicate the need for restaurants, coffee shops, bars, and neighborhood-serving convenience retail.

Figure 7: District Retail Gap Analysis (3-mile radius)[12]

Retail Category	Total Demand	Total Existing Sales	Unmet Spending Potential	Capturable Spending Potential	Capturable Square Feet
*Retail	$660 M	$605 M	$55 M	$11 M	100K SF
Restaurant	$270 M	$150 M	$125 M	$25 M	45K SF
Total	**$930 M**	**$755 M**	**$180 M**	**$36 M**	**145K SF**

* Excluding General Merchandise Stores.

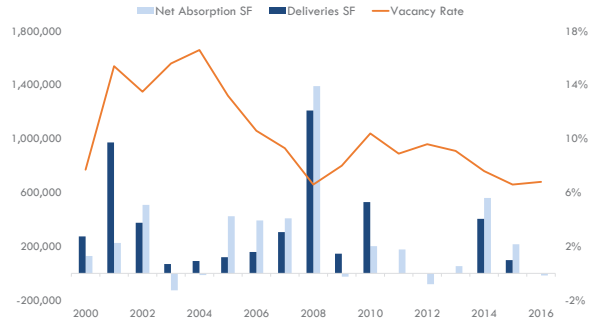
Assumes Capture Rate of 20%

Retail opportunities in the District can complement the City of Creve Coeur's broader retail strategy, which envisions compact neighborhood centers and walkable streets with destination-oriented "experiential retail" such as clothing and housewares, neighborhood services, and bars and restaurants. For the District, the Master Plan envisions a stronger focus on convenience retail serving nearby workers and new residents, with a central node to enhance connectivity and provide basic neighborhood services such as banks, personal care services, bars and restaurants.

Commercial Office Analysis

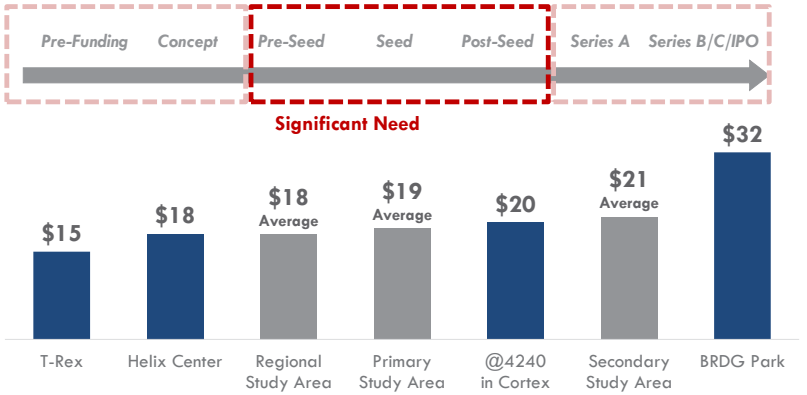
New office development has been slow to return to the St. Louis region since the recession. Since 2010, the region – consisting of nearly 40 million square feet of Class A office space – has delivered less than 2 million square feet of Class A space. Approximately 1 million square feet of this development has occurred in the western suburbs since 2010, yet none has been developed in the immediate area surrounding the District. However, since the recession, vacancy rates for Class A office space in the region have declined from 12 to 8 percent, indicating that new tenants are continuing to take up space.

Figure 8: Regional Class A Office[13]



New plant and bioscience companies and startups require specialized spaces at different stages of their business development cycles. While larger established companies with substantial financing may prefer newly constructed office and lab space, many start-ups operate on smaller budgets, leading to fierce competition for subsidized spaces such as Helix Center and T-Rex. As a result, there is a gap in the market for moderately-priced space catering to plant and bioscience companies that have graduated from subsidized spaces but cannot afford the rents demanded by the region's premier facilities.

Figure 9: Annual Office Rent (PSF, NNN) for Early Stage Business Development[14]



[12] ESRI Business Analyst Online

[13] CoStar

[14] CoStar, Colliers

Fitting out existing building stock within the District into suitable lab and office space can be accomplished at a range of price points depending on specific tenant needs. Given the condition and layout of the majority of buildings in the northern portion of the District, converting industrial warehouse and distribution facilities into moderately-priced "white box" office, flex, and lab space for emerging start-ups offers potential for creating appropriate spaces for new plant and bioscience companies, though subsidies will be needed to make some conversions feasible at the $18-$20 per square foot rents that newer companies can afford to pay.

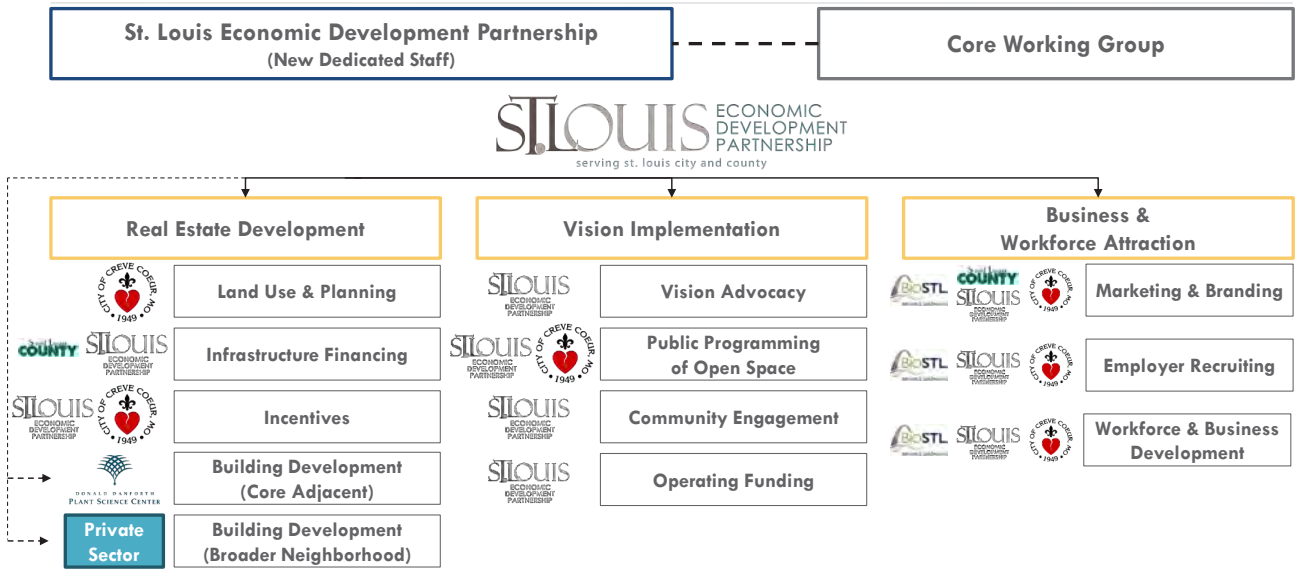
Market Opportunity:

- **POTENTIAL TO ATTRACT YOUNG PROFESSIONALS & EMPTY NESTERS** – The District can attract growing market segments with a denser, walkable urban environment with amenities, open space, and a mix of uses.
- **PROJECTED MULTIFAMILY HOUSING DEMAND** – The District is positioned to capitalize on low vacancy rates and local demand for apartment living with multifamily housing that supports the vision for a denser urban district.
- **DEMAND FOR NEIGHBORHOOD-SERVING RETAIL** – The market today can support approximately 150,000 SF of new retail, which could include restaurants, coffee shops, bars, and convenience retail catering to new residents and nearby workers.
- **CONVERSION OF INDUSTRIAL WAREHOUSES** – The District can provide appropriately-priced facilities to emerging plant and bioscience companies by converting existing light industrial and distribution facilities into "white box" office, flex, and lab space attractive to early and mid-stage companies.

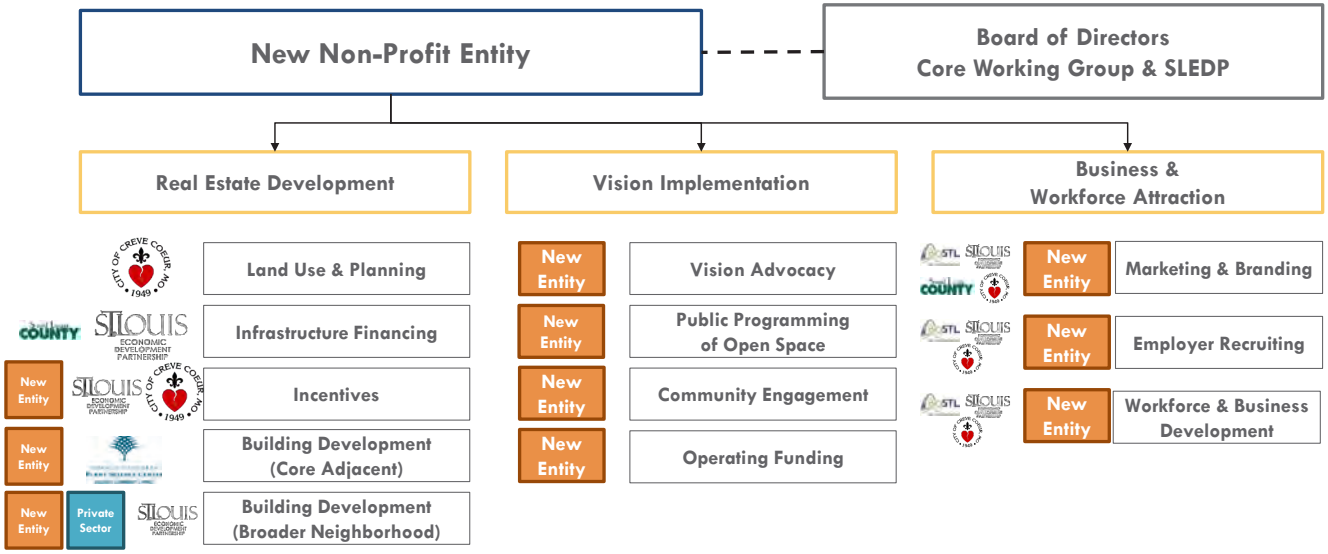
Governance

Recommended Organization Charts

Near term:
Dedicated Staff and Committee Coordination



Long term:
Empowered New Non-Profit Entity



Real Estate Development

Developing a mix of uses that supports the needs of the innovation ecosystem requires consideration of the following factors, and must consider public and private site control.

Land Use & Planning

- Zoning & right-of-way creation
- Program guidance (density & mix of uses)
- Phasing (timing of development opportunities)

Infrastructure

- Capital funding/financing
- Construction (open space, streets)

Building Development

- Incentives (construction & equipment purchases)
- Mission-based facilities development (collaborative spaces & programming)

Vision Implementation

Implementing a sustainable vision for the master plan requires coordination with the broader public.

Ongoing Management & Stewardship

- Vision stewardship
- Public programming of open space
  - Routine maintenance
  - Special events
  - Public safety
- Community engagement
  - Neighborhood events and outreach
- Operating Funding
  - Revenue generation

Business & Workforce Attraction

Industry and tenant attraction strategies must consider the following factors.

Marketing & Branding

- District brand development
- District marketing
- Employer recruitment

Lead Cultivation

- Incentive management (to developers & bioscience companies)
- Stakeholder coordination

Workforce & Business Development

- Ecosystem programming
- Entrepreneurial support
- Technical assistance
- Workforce development
- Educational partnerships

Scenarios

Case studies provide an opportunity to further refine the roles and responsibilities in each scenario.

Creating an empowered new entity will require significant financial and regulatory start-up funds that may be available in the future.

SCENARIO 3 CONSIDERATIONS

Once district has proven development momentum and capacity to support revenue generation, an independent and purpose-driven entity can be considered.

Scenario 1: Loose Coordination with Dispersed Responsibility

Over the past three decades, Kendall Square has been transformed from a largely vacant and underutilized industrial district to one of the world's foremost biotech and IT innovation districts.

Kendall Square
The Future Lives Here

OVERVIEW

Formerly industrial neighborhood reclaimed by growing biotech and IT incubators and companies with the support of MIT and the Cambridge Redevelopment Authority (CRA). Now, the district is seeing plans for mixed-use redevelopments introducing housing and recreational components and larger tech and pharmaceutical firms such as Google, Amazon, Novartis, and Biogen opening cutting-edge R&D centers.

ANCHORS

- **MIT:** Poised to complete Kendall Square's transformation with a six building development plan with space for research and development facilities, offices, residences, restaurants, and shops.
- **Cambridge Innovation Center:** Began in 1999 by subdividing large office buildings to create affordable space for tech entrepreneurs to collaborate – now incubates startups with a total of over $7 billion in venture capital.


Kendall Square, 1969


Kendall Square, 2015

Scenario 1: Loose Coordination with Dispersed Responsibility

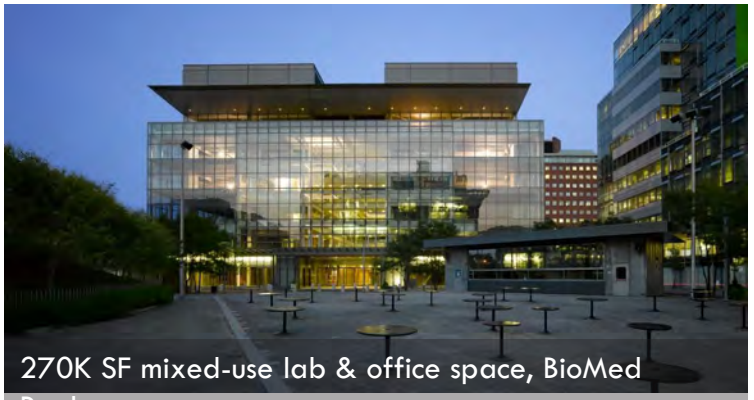
The Kendall Square Association was formed in 2009 as a membership-based organization by local business and institutional leaders to provide resources and support for the innovation district.

Kendall Square
The Future Lives Here

GOVERNANCE

- The Kendall Square Association (KSA) promotes the area by convening public, private, and institutional stakeholders to **collaborate on shared economic development goals and provide community programming and branding for the district.**

- **The KSA is governed by a board of directors representing key stakeholders.** Current major initiatives include four major redevelopment projects in Kendall Square:
  - MIT Kendall Square Initiative ***(MIT)***
  - Alexandria Center at Kendall Square ***(Alexandria Real Estate Equities)***
  - 88 Ames Street ***(Boston Properties/Cambridge Redevelopment Authority)***
  - Kendall Square Urban Renewal Plan ***(Cambridge Redevelopment Authority)***


270K SF mixed-use lab & office space, BioMed


Alexandria Center at Kendall Square

Kendall Square Association: Organization Structure

Branding

- Developing a strong brand by working with a diverse group of local newspapers.
- Crafting a stronger sense of place through a wayfinding system.

Community

- Developing partnerships with local non-profits.
- Sharing information on upcoming development projects.
- Working with city officials and staff to shape policy.

Economic Dev.

- Planning for transportation improvements.
- Enhancing state and regional government relations.
- Advancing workforce development initiatives.

Collaboration

- Identifying concerns of Kendall Square's employment base.
- Showcasing innovative and entrepreneurial work.

Scenario 2: Existing Entity with Focused District Management Responsibility

In 2010, the City of Fremont initiated a community plan for the Warm Springs Innovation District – a thriving, mixed-use employment center focused on innovation and advanced manufacturing.

OVERVIEW

880-acre plan envisions adding up to 4,000 housing units, 12,000 jobs, and amenities to the district. It will also offer competitively priced office space tailored for biotech companies and manufacturers that have already begun to cluster in the area. The community plan combined changes in zoning with requirements for the design and development of public realm and transportation infrastructure.

ANCHORS

- **Tesla:** 5.3m SF of manufacturing and office space opened in 2012 on land previously used for large-scale, traditional auto manufacturing.
- **Thermo Fisher Scientific:** Recently opened a $85 million, 350k SF "Center of Excellence" with 500 employees on a 22-acre property.
- **BART Station:** Plan includes $900 million Warm Springs - South Fremont station and 5.4 mile track extension, connecting to regional centers.

Low-medium density planned typology

Rendering of future district build-out

Scenario 2: Existing Entity with Focused District Management Responsibility

The City of Fremont applied for and received a grant from the Economic Development Administration (EDA) to develop an economic diversification plan for the area surrounding a recently closed auto assembly plant.

CITY OF Fremont

GOVERNANCE

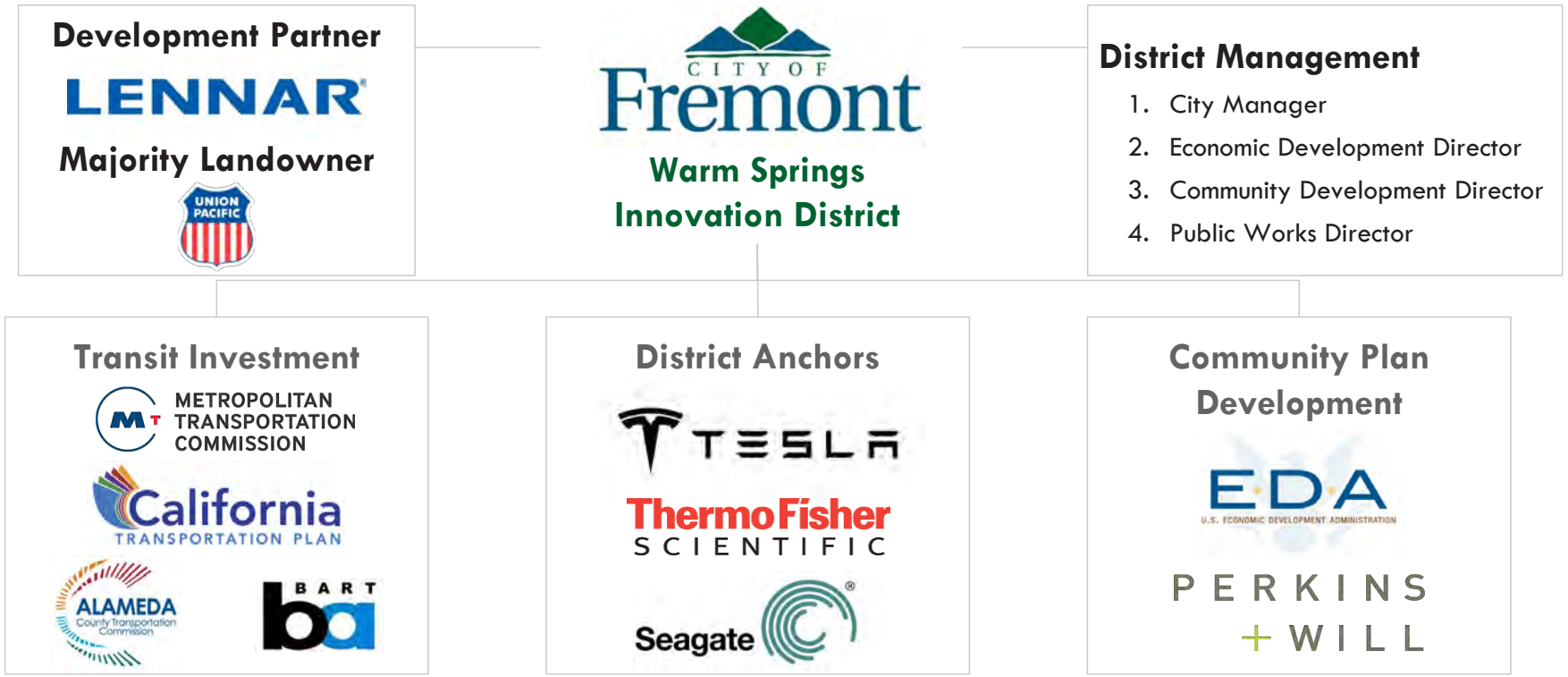
- Fremont's New United Motor Manufacturing (NUMMI) shut down in 2010, putting nearly 5,000 workers out of work.
- In response, City officials took action to prepare the city for an economically diverse and sustainable future by applying for and receiving a $333,000 EDA grant to develop a recovery plan.
- Completed in 2012 by Perkins + Will, the Warm Springs/South Fremont Community Plan incorporated recommendations for land use alternatives, economic development strategies, and transportation and infrastructure assessments.
- The City adopted the Plan in 2014, rebranding the 880-acre area the "Warm Springs Innovation District"

PROPOSED NEW ENTITY

The final Urban Land Institute (ULI) report recommended a new public/private entity empowered with Tax Incremental Finance (TIF) creation and the ability to assess district fees that would be tasked with directing the development of the district during the short-term and long-term project build-out.

Scenario 2: Existing Entity with Focused District Management Responsibility

Warm Springs Innovation District: Organization Structure



Funding Opportunities

Funding opportunities are categorized by high-level assessments of feasibility and magnitude

Feasibility

Low

- **District does not meet requirements for most funding opportunities,** or funding streams have declined in recent years.

Medium

- **Funding opportunities are available,** but may be prioritized for maintenance of existing infrastructure or require regional coordination.

High

- **Multiple funding opportunities are widely available to support District priorities** and have been used for similar needs within the region.

Magnitude

Small

- **Funding opportunities are targeted to pilot projects or face significant budgetary constraints,** restricting use in the District.

Medium

- **Funding opportunities can fund a portion of capital improvements,** but additional sources will be required.

Large

- Funding opportunities often **fully support large-scale capital improvements.**

Federal Open Space — Similar to State funding, federal funding for open space projects are largely focused on large-scale forestry and land conservation.

Feasibility: Low

- Congress created the **$15 million Outdoor Recreation Legacy Partnership (ORLP)** program, administered by the National Park Service (NPS), to expand outdoor play in areas with great need and promote outdoor recreation in urban communities across the nation.
- In 2015, Congress temporarily reauthorized the **Land & Water Conservation Fund with $450 million in funding per year,** dedicated to providing critical funding for to protect parks, wildlife refuges, and recreation areas at the federal, state, and local level.

Magnitude: Small

- In 2015, NPS awarded $3 million in grants through ORLP to eight pilot projects in urban communities across the country.

State Open Space — The State of Missouri funds land acquisition costs for the conservation of natural resources, which will likely not apply to the District.

Feasibility: Low

- Missouri's **statewide tax for conservation purposes raises approximately $100 million every year** for the Department of Conservation – however, the funds are to be exclusively used for the management, restoration, conservation, and regulation of the bird, fish, game, forestry, and wildlife resources of the State.
- Missouri's Department of Natural Resources **land acquisition budget is funded exclusively from a state parks earning fund** (camping, lodging, tours, merchandise). Funds are used for soil and water conservation and state park purposes.

Magnitude: Medium

- The State spent over $50 million between 1998 and 2008 to protect over 54,000 acres of land across the state, ranking 42nd in the country in spending per capita.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

City & County Open Space — The City of Creve Coeur has recently financed the acquisition and development of local open space to great success.

Feasibility: High

- **The Great Rivers Greenway Regional Parks and Trails District** works to build, promote, and sustain linear connections between parks across the metropolitan region.
  - Funds are distributed to over 40 greenways within the Great Rivers District, including the **Centennial Greenway** that could link to the Creve Coeur Connector trail.
- General obligation bonds voted on in a referendum could **provide long-term debt to finance land conservation,** up to 10% of assessed valuation.
- St. Louis County allocates **$28 million annually for a park maintenance fund.**

Magnitude: Medium

- The City of Creve Coeur recently retired $4 million in debt that provided financing for the acquisition and development of Millennium Park.
- In 2000 & 2013, voters in the County of St. Charles and St. Louis, and the City of St. Louis passed propositions in public referendums to levee sales taxes that provide an average of $21 million annually to the Great Rivers Greenway.

Federal Transportation

Projects funded by the FAST act require prioritization from the regional metropolitan planning organization – the East-West Gateway Council of Governments.

Feasibility: Medium

- **The FAST Act authorizes $205 billion** over 4 years between 2016 through 2020 for highway and highway safety programs
- FAST Act funds are allocated through a **performance-based system tied to regionally prepared and approved Transportation Improvement Programs (TIP's).**

Magnitude: Large

- In 2015 – under the $105 billion federal MAP-21 Act, Missouri received over $900 million in funds from the Federal Highway Administration – ranking 14th in terms of funds received.

State Transportation

Nearly 90% of MoDOT's new $4 billion 5-year spending plan is tied to maintenance due to recent budget cuts that until recently shrank the agency's annual budget by 75%.

Feasibility: Medium

- MoDOT's road and highway funds are used to construct, connect, and widen, or otherwise improve and maintain the state highway system.
- The District's **proximity to MoDOT-maintained highways including I-270, Route 67, and Route 340** strengthen opportunities to compete for funding.
- MoDOT approved a spending plan through a public referendum of nearly **$4 billion in construction work for 855 projects** statewide through 2021, however nearly 90% of the construction is tied to maintenance.

Magnitude: Large

- $118 million in capital funding was approved in July 2016 to upgrade portions of the north corridor of I-270 in St. Louis County, including pavement and bridge improvements.

CITY OF CREVE COEUR
Highway I-270 at Route 340

City & County Transportation

The District may be able to receive funding for highway and streetscape capital construction and improvements from the County's $100 million in annual funding.

Feasibility: High

- **St. Louis County's Special Road & Bridge Fund** funds the O&M and construction costs for the county road and bridge system and designated arterial roads **with an annual budget of $50 million.**
- **The County's Highway Capital Construction Program has a $41 million budget,** supporting capital highway and construction activity using federal funds.
- **St. Louis County Community Reinvestment Funds** can be used to acquire easements, demolish structures and improve streetscapes.

Magnitude: Medium

- In Lemay, a County Community Reinvestment Fund spent nearly $4 million to acquire easements for 70 properties, purchase and demolish derelict structures, and improve streetscapes at Lemay Ferry Road.

LEMAY, ST LOUIS
Lemay Ferry Road Enhancements

Private Funding Sources Open Space, Vertical Development, & Business Support

Corporate contributions and philanthropic donations may also be available to support the development of the district.

Feasibility: Medium

- Corporate support for capital development and open space projects in the St. Louis region is common from major employers including **Monsanto, Emerson Anheuser-Busch InBev, Wells Fargo, Boeing, Nestle Purina, and Enterprise Holdings.**
- In 2012, the top 10 corporate grant makers with local roots **gave nearly $60 million to St. Louis-area organizations, while individuals gave about $4,300 in charitable contributions** per return.
- As evidenced in the scale of Forest Park's $130 million *Forever Campaign*, individuals, foundations, and corporations are **eager to contribute large sums to parks and open spaces.**

Magnitude: Medium

Crawford Family Foundation

$20 million for establishment of Taylor Family Institute for Psychiatric Research.

$30 million endowment for the ongoing maintenance and operations of Forest Park.

Monsanto Fund

$10 million in capital for the development of research center

$15 million to support the center's campaign and research efforts for high-yield-crops.

Local and State Vertical Dev.

The District is eligible for multiple local and state vertical development incentives that are tied to job creation.

Feasibility: Medium

- The City and County of St. Louis can offer tax abatements for vertical development, including **Chapter 100** for developments that promote job creation and investment and **TIF programs** for infrastructure.
- The City and County also provide a significant number low-interest and long-term loans through the **SBA 504 loan program** along with **permitting assistance** for land acquisition, district build-out, and adaptive reuse projects.
- **The Missouri Technology Corporation provides funding for equipment and construction** through its High-Tech Industrial Expansion Program, among others.
- Through the **BUILD Missouri Program,** the State provides tax credits to projects that surpass $10 million in investment and hire at least 500 employees.

Magnitude: Large

- In June 2016, the State of Missouri approved $10.3 million in BUILD funds for infrastructure investments and physical improvements for Centene Corporation's $770 million expansion in Clayton.

CITY OF CLAYTON
Cetene Corp. 3.3m SF mixed-use expansion

Local, State, & Federal Business Support

Grants that can provide a wide range of support for small business growth are available from multiple sources across all levels of government.

Feasibility: High

- **Federal agencies** including the National Institutes of Health, the National Science Foundation, and the Department of Defense offer small business innovation research and tech transfer grants for **up to $4.7 million** two to three times a year.
- **The State of Missouri** offers a grant matching program for up to $100,000 in matching funds for startup science and tech companies twice a year.
- **Accelerators, incubators, competitions, and ecosystem supporters** including the Helix Fund, Arch Grants, BioGenerator, Arch Angels, Billiken Angels, BioSTL, The Yield Lab, T-REX, and Accelerate St. Louis offer entrepreneurs and bioscience-related startups on average between **$50,000 and $100,000 grants along with relocation assistance and office space.**

Magnitude: Medium

- In 2013, Aerovalve LLC – a startup specializing in energy-efficient air valve technology – received a $25,000 NSF grant that was matched with $50,000 in funding by the Helix Fund.

2015 winner of the Accelerate St. Louis Challenge
Startup Connection: $120k total in prizes

Sustainability Guidelines

HUMAN / SOCIAL / LIFESTYLE

Education/Outreach	• Identify local and regional university partners and provide physical space for collaboration • Provide outreach opportunities with neighboring school district curriculums • Integrate interpretive educational opportunities for site visitors, users, occupants, residents, etc.
Transit / Accessibility	• Improve multi-modal transit options to/from master plan area • Improve safety of all transportation modes • Strengthen physical connections and accessibility to site amenities (parks, destinations, open space) • Provide transportation alternatives to reduce automobile-dependency
Housing Diversity	• Affordable Housing vs. Market Rate: Provide a diversity in housing type and price-point to diversity resident population • Single Family vs. Multi Family: Provide a diversity in housing type and price-point to diversity resident population
Healthy Living	• Consider local food production for access to healthy food for residents, restaurants, commercially consumed food • Incorporate trails for active living and recreational use. Possible dual purpose for connectivity • Active vs. Passive Recreation: Strengthen connection to outdoors and the natural environment
Job Creation / Retention	• Generate diversity of job creation, access to employment and on-the-job training, career development opportunities • Cultivate environment for idea-sharing, collaboration, etc.
Destination / Sense of Place	• Develop a clear sense of identity/brand • Provide anchors, sticky places, and breadcrumbs to lead people to a variety of destination types (dining, entertainment, art, 24-hour)
Cultural Preservation	• Protect culturally significant places • Highlight historically significant features
Municipal Impacts	• Consider impact of increased resident population on local school district (Ladue) and community resources • Impact of strain on adjoining parks in other municipalities (Creve Coeur tax base vs. Olivette) • Long-term maintenance and operational costs, strain on existing capacity

ENVIRONMENTAL SYSTEMS

Biodiversity

- Increase diversity of plant species (native, adapted, appropriately selected) and consider successional planning
- Protect existing and create new wildlife habitat (tree canopy, understory, open space)

Preservation / Open Space

- Preserve natural systems and restore ecological services (net gain)
- Greenfield Protection: Limit development on greenfield portions of the site. Protect from disturbance.
- Consider viewsheds to/from the master plan area. How can adjacent open spaces contribute to increased property values?

Hydrology

- Responsibly manage stormwater volumes on site and restrict runoff
- Integrate best practices to improve water quality
- Highlight opportunities to impact exponentially "down stream effects" - Top of the watershed(s)
- Recognize historical hydrological patterns and infrastructure
- Celebrate significant community water management (Missouri American Water) source.

Soils

- Focus development on brownfield, ecologically damaged sites
- Mitigate disturbance and manage erosion and unintentional impacts
- Salvage and reuse topsoils and subsoils appropriately (limit cut/removal and fill/import)

BUILDING / DESIGN / USE / PRACTICES

Renewable / Alternative Energy

- Consider alternative energy sources:
  - Wind, Solar, Geothermal, Biomass, Hydro

Consumption

- Reduce overall water consumption (limit irrigation, harvest stormwater, condensation, evapotranspiration, gray water reuse, etc.)
- Reduce overall energy consumption
- Manage/Reduce Waste/ Promote Recycling & Reuse

Design Considerations

- Increase tree canopy
- Reduce heat island effect
- Consider Density / Cluster Development/Mixed-Use
- Incorporate adapted reuse of infrastructure
- Promote green building principles
  - Regionally sourced materials/labor
  - Design for adaptability / disassembly
  - Recycled / salvaged materials
  - Building orientation
  - Permeable vs. Impermeable

Operations + Maintenance

- Develop overall maintenance and operations plan for the district
- Consider long-term life cycle costs and sustainability of design solutions
- Minimize/Control Pesticide / Fertilizer
- Promote use of low/no emission equipment and environmentally friendly practices

Hazard Mitigation

- Plan for natural disaster or civil unrest (emergency action plan)
- Integrate safety/security for people, properties, information systems
- Plan for economic fluctuation