The Southwestern Medical District 2024 Master Plan

September 2024

This Plan documents the process and outcome of:

The Southwestern Medical District 2024 Master Plan

September 2024

UT Southwestern Medical Center | children's health | Parkland | nbbj | ARUP | Kimley»Horn | angeloueconomics

ACKNOWLEDGMENTS

The recommendations in this Master Plan are developed in collaboration with the leadership of the Southwestern Medical District (SWMD) member institutions – Children's Medical Center of Dallas, Parkland Health, and The University of Texas Southwestern Medical Center - and input from community partners.

Southwestern Medical District Board of Directors and Ex Officio

Children's Medical Center - Dallas

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- William Elvey, Executive Advisor, Flagship, Children's Health System of Texas

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- Texas Trees Foundation
- City of Dallas
- Atmos Energy
- Oncor
- North Central Texas Council of Governments (NCTCOG)
- Dallas County
- Dallas Area Rapid Transit (DART)
- Trinity Railway Express (TRE)
- Clifton Place-Maplewood
- Maple Lawn-Oak Lawn Heights

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EXECUTIVE SUMMARY

This final report documents the process and outcomes of the 2024 Master Plan for the Southwestern Medical District (referred to hereafter also as SWMD Master Plan or Master Plan or Plan.)

The Southwestern Medical District (referred to hereafter also as the SWMD or Medical District or District) is made up of three founding member institutions – Children's Medical Center of Dallas, Parkland Health, and The University of Texas Southwestern Medical Center. The three institutions are based in Dallas, Texas, and their missions are focused on education, healthcare services, medicine, and medical research. The purpose of the Southwestern Medical District 2024 Master Plan is to facilitate the coordination of common District infrastructure and open space in the context of the mission, vision, and goals of the SWMD's member institutions.

The 2024 Master Plan process spanned over 22 months. The process was undertaken in two phases. The Phase One study, hereafter referred to as the Framework Plan, provides recommendations for mobility planning, land development planning, and utility infrastructure planning at a "framework" scale. The Phase Two study provides more detailed land use planning and urban design recommendations, supported by economic development analysis, and recommendations on advancing the District's brand, image and identity. This Plan presents a cohesive outcome from both Phase One and Phase Two and is referred to as the 2024 Master Plan.

The 2024 Master Plan builds on the 2009 SWMD Master Plan, current master plans for the member institutions, and several past and ongoing planning projects. Two ongoing projects that will have a considerable impact on the future of the SWMD area are the Urban Streetscape Park Transformation project being led by the Texas Tree Foundation and the District's Harry Hines Boulevard Transportation Master Plan. The recommendations of the 2024 Master Plan have been developed to plan and prepare the SWMD for the anticipated changes expected from these projects and to influence the future design of the Harry Hines Boulevard corridor to ensure the outcomes are mutually beneficial to the SWMD, the Harry Hines Boulevard corridor, the surrounding neighborhood, and the region.

Developed in collaboration with the leadership of the members institutions, the following principles guide the recommendations:

- Establish a **framework of safety and connectivity** between land use, natural systems, mobility network, and infrastructure across the District.

- **Integrate a mix-of-uses** within and around the District that complement and support its world class clinical, research and educational activities.

- Create a comprehensive, **safe, and connected mobility network** that supports vehicular, transit, bicycle, micro-mobility, and pedestrian movement to and through the District.

- Ensure that the District is well supported by modern, state-of-the-art and **resilient utility systems.**

- Respect and connect the District to adjoining **residential neighborhoods.**

- **Preserve, protect and enhance the watershed**, and its branches and creeks, that flow through or along the edge of the District and integrate them into the District's overall open space network.

- **Prioritize safety and promote human comfort** through an increased tree canopy, a reduction in heat island effect, improved air quality and an active, walkable ground-level experience.

The recommendations described in this Plan are guided by these guiding principles, are grounded in analysis of the existing conditions of the District, reflect input from institutional subject matter experts and community partners, and build on several past and ongoing planning studies and projects.

The Plan knits the District holistically as a "place" and should be viewed as a long-term vision that is inherently flexible to accommodate evolving market conditions, funding scenarios, and needs of the District and its members. With this Plan as a road-map, the SWMD and its institutions can strategically channel resources and make informed decisions as the District evolves. The Plan provides a road-map to invest in building resilient and efficient District-wide infrastructure in support of land development strategies for member institutions as well as other public and private entities. Specific action steps and implementation strategies are described within the body of this Plan report.

Overarching recommendations of the Plan are summarized on the following page.

Summary of Recommendations

The map on the right illustrates the 2024 SWMD Master Plan. A high level summary of the recommendations are as follows:

Land Use: The land use strategy defines areas that have been committed to or are desired for the long-term growth of each institution to achieve their clinical, academic and research goals as Institutional category of land use. Land within the District that has been deemed "of interest" to the three institutions has been designated as Institutional Mixed-Use and could be a mix of medical related uses, educational, research, and partnerships with private industry. Areas designated as Mixed-Use will provide more opportunities for services to support the District and attract new residential, office, hotel, retail, educational, civic and cultural uses to the District.

Open Space: The Plan identifies placemaking and urban design opportunities that will preserve natural resources and allow for walkable streets, heat island mitigation, increased tree canopies, programmable open spaces, and enhancing access to nature.

Utilities: The Plan identifies opportunities for the District to strengthen and fortify its system-wide utilities through water management strategies, stormwater, and energy infrastructure enhancements as well as enabling projects to accommodate growth.

Mobility: The Plan identifies strategies to expand access to and through the District via a robust street grid and active transportation infrastructure through walking, biking, and transit to accommodate medical facility growth and sustainable land development patterns. Enhancing the District's multi-modal infrastructure network will result in reduced rates of driving and enhanced public health benefits.

Figure 1: 2024 SWMD Master Plan

Economic Development: The Plan identifies a variety of economic development tools and grant opportunities in support of the Plan's vision to promote economic growth and vibrancy in the District. Specifically, the District should explore the use of these economic development tools - land banking, municipal management districts , public improvement districts, tax increment financing districts, and master developers.

Implementation: The implementation strategy describes key priority projects, future enabling projects, and actions steps (ex. rezoning strategy, land acquisition, seeking grant funding, exploring partnerships, etc.) for the District to undertake.

Governance: Implementing the Plan recommendations will require the SWMD to expand its staff to establish a team of professionals responsible for managing projects and initiatives. Formalizing a District governance structure is highly recommended as a priority action step for the SWMD.

Figure 2: Conceptual Plan Vision Renderings

Master Plan Process

- Planning Process

PLANNING PROCESS

The Need for a Plan Update

The SWMD is made up of three founding member institutions – Children's Medical Center of Dallas, Parkland Health, and The University of Texas Southwestern Medical Center. The three institutions are based in Dallas, Texas, and their missions are focused on education, healthcare services, medicine, and medical research. The three member institutions of SWMD have developed their individual master plans to manage their facilities' development and expansion. Prior to the development of the first SWMD master plan completed in 2009 – "Southwestern Medical District Master Planning Report – A Vision for Tomorrow", each member institution was aware of the work by the other member institutions; however, there was limited coordinated planning between the members.

The 2009 master plan has been instrumental in creating a collaborative environment for guiding decision-making in the SWMD and fostering a positive working relationship with public entities. Since 2009, SWMD has adjusted to meet the needs of the fast-growing North Texas region with several new hospitals and support facilities. Along with this growth, the SWMD has been challenged by profound changes brought on by evolving technological innovations, evolving mobility choices, healthcare demands, cultural and lifestyle needs, plus a greater awareness of the impacts of our built and natural environments on human health. The work of the Texas Trees Foundation (TTF) has shown that the Medical District area stands out as having one of the highest heat islands in Dallas, impacting the quality of life and health of the people working and living in the District.

The SWMD Board of Trustees recognized that an update to the 2009 master plan is necessary to help the District navigate these changes and initiated the 2024 Master Plan.

Process Overview

The Master Plan was initiated by the leadership of the member institutions and facilitated by the Manager of the SWMD. The process was led by urban planning and design firm NBBJ. NBBJ was also responsible for land use planning, urban design, placemaking, open space planning, and landscape design. Angelou Economics was responsible for the market analysis and economic development strategy, Kimley-Horn for the transportation assessment and mobility strategy and Arup for the utility infrastructure assessment and capacity recommendations.

Spanning 22 months, the process was undertaken in two phases. The extended schedule reflected the time added in Phase Two to accommodate adjusting the plan to reflect active plans for key projects in the District, including, the New Pediatric Campus and the new Texas Behavioral Health Center. These and other anticipated projects are noted further in this section of the report.

Phase One (May 2022 - December 2022)

- Data gathering and analysis
- Review of relevant plans and studies
- Framework planning
- Strategic mobility study
- Framework Plan recommendations and report

Phase Two (May 2023 - September 2024)

- Stakeholder engagement
- Coordination with ongoing plans and development
- Economic development study
- Land Use recommendations
- Utilities capacity and resilience scenarios
- Mobility and street design concepts
- Open space and parks concepts
- Zoning recommendations
- Implementation strategies and action steps

The tasks and outcomes of each phase resulted in the final 2024 Master Plan recommendations as presented in this Plan.

Engagement and Coordination

Governance of the Planning Process

Leadership guidance throughout the process and input from institutional and external stakeholders and partners was instrumental in defining the outcomes and recommendations.

The planning team met with the SWMD's three-member institutions throughout the process, including monthly engagement with the Planning Advisory Committee (PAC) and the Four-Person Committee (FPC). The team met with the Board of Trustees at key check-points/ milestones during the process.

- PAC: PAC's role was to review plan developments and provide timely information, insight, and feedback to ensure plan alignment with ongoing projects and original intent set forth by the SWMD. The planning team would make updates based on PAC feedback before sharing with the FPC.
- FPC: FPC's role was to further review plan developments and provide feedback and agreement on concepts before they were

shared with the Board.

- SWMD Board of Trustees: The team met with the Board at key milestones for their information and feedback. The Board provided approval throughout the process.

Internal Subject Matter Experts

Engaging with subject matter experts within the member institutions provided deeper insights into the day-to-day operational challenges and needs of the District that Master Plan needed to consider. The outreach was conduced through focus/working groups and included representation from each member institution around the following subject matters:

- Emergency preparedness
- Security and crime prevention
- Sustainability and resilience
- Diversity, equity, and inclusion
- Utilities
- Branding and marketing

The planning team met with member institutions (and their consultant teams) to review their current and anticipated campus plans and ongoing projects to ensure alignment with District-wide planning concepts.

External Stakeholder

Engagement meetings with the following external stakeholders were conducted to ensure alignment between the Master Plan and ongoing/ future planning with various local, regional, and private entities.

- City of Dallas: Future land use planning (ForwardDallas), local roadways, city water/waste water/stormwater infrastructure
- Oncor: Electric utility infrastructure
- Atmos Energy: Natural gas infrastructure
- DART: Dallas Area Rapid Transit
- TRE: Trinity Railway Express
- North Central Texas Council of Governments: Regional roadways and trails
- Trammel Crow Company: Development vision for private land holding
- Texas Tree Foundation: Urban Streetscape and Park Transformation Project.

Engaging with the neighbors was important to ensure that the Master Plan is in support of community aspirations and does not adversely impact adjoining residential neighborhoods. The planning team was able to engage with key leaders in the Clifton Place-Maplewood and Maple Lawn-Oak Lawn Heights neighborhoods; however, team members were unsuccessful in having discussions with representatives of Arlington Park and Love Field West communities.

Finally, in support of SWMD's partnership with the University of Texas at Arlington (UTA), the planning team engaged with UTA's planning and urban design students in an academic exercise that involved creating a future-forward plan for a part of the District.

Mobility Focused Stakeholder Engagement

As part of the ongoing mobility study within the District, a project website was created for the institutional stakeholders which was open to comment for over two months. The website featured an interactive map activity where staff could leave geographically based feedback on specific areas around the Southwestern Medical District.

The comments were based on seven categories: (1) Traffic Congestion, (2) Road Connections, (3) Safety, (4) Bicycle Routes, (5) Sidewalks, (6) Intersection Improvements, and (7) Other. The interactive map received over 200 comments from the public. The highest feedback received was Safety, Sidewalks, and Intersection Improvements.

Apart from multiple meetings with the FPC and the PAC, the project team met with the City of Dallas and DART/TRE to get input on the proposed double tracking project along Inwood Avenue particularly to find ways of providing a much needed sidewalk connection under the current rail bridge.

Figure 3: Stakeholder Engagement Online Map

Building on Past and Current Planning

The Master Plan builds on the 2009 SWMD Master Plan, current master plans for the member institutions, and several past and ongoing plans and projects. These included the following:

- City of Dallas: Stemmons Corridor – Southwestern Medical District Area Plan as noted above (2010)
- SWMD: SWMD Transportation Concept Plan (2010)
- City of Dallas: Dallas Bike Plan (2011)
- SWMD: SWMD Sub-Station Feasibility Study (2011)
- SWMD: Intra-District Connector System Concept Report (2012)
- City of Dallas: Complete Streets Design Manual (2013)
- SWMD: SWMD Gateway and Way-finding Signage Implementation (2014-2016)
- TTF: State of the Dallas Urban Forest Report (2015)
- TTF: SWMD Public Tree Inventory & Ecosystem Services Benefits Report (2015)
- TTF: SWMD Urban Streetscape Master Plan (2016)
- SWMD: Pedestrian Access Study (2017)
- Oncor: Oncor High Transmission Lines & Towers Re-Routing and Sub-Stations (2018)
- CHST: Children's Health Dallas Campus Facilities Master Plan (2019)
- UTSW: UTSW 2035 Campus Master Plan (2020)
- PHHS: Parkland Health and Hospital System Parking (PHHS) Study Update (2020)
- SWMD: SWMD Fiber Optics Loop Project (2021)
- SWMD: SWMD Street Sign Toppers and Traffic Signal Arm Blades (partial completion 3rd quarter 2021)
- City of Dallas Strategic Mobility Plan (2021)
- City of Dallas: Vision Zero Dallas Action Plan (2022)
- Dallas County: Medical District Drive Expansion Project (estimated completion by October 2024)
- PHHS: Limited Scope Campus Master Plan Update (2022)

There are several projects either underway, planned, or in the proposal stage that have a direct and indirect impact on the SWMD and have informed the 2024 Master Plan. The recommendations of this Plan were developed to not only prepare the SWMD for the anticipated changes expected from these projects, but to also influence the planning of these projects to ensure the outcomes are mutually beneficial to SWMD, the member institutions, the community, and other local and regional partners. Listed below are several of these notable projects:

- New Pediatric Campus
- UTSW Phase 2 Brain-Cancer Center
- UTSW New Rehabilitation Hospital
- UTSW Medical Center Outpatient Tower
- UTSW Imaging Building Expansion
- UTSW New Educational Building
- UTSW Research Building
- UTSW Behavioral Health Center
- SWMD Mobility Strategic Study (undertaken in coordination with SWMD 2024 Master Plan)
- City of Dallas ForwardDallas Comprehensive Land Use Plan Update
- TTF: Harry Hines Boulevard Urban Streetscape & Park Transformation project
- SWMD Harry Hines Boulevard Traffic and Safety Study
- City of Dallas: Maple Avenue Safety Study
- Air quality monitoring being conducted by the City of Dallas and Texas Trees Foundation
- NCTCOG: Harry Hines Boulevard Transportation Master Plan
- City of Dallas: Trinity Strand Trail Phase II – Inwood Road to Hi Line Drive
- City of Dallas Water Utilities: East Bank Interceptor Project
- NCTCOG: Bachman Lake Area Planning Study
- TxDOT: North Stemmons Freeway (I-35E) - Lower Stemmons
- DART: DARTzoom Bus Network Redesign
- NCTCOG: Southwestern Medical District-Love Field Airport People Mover Proposal
- Campus Master Plans from Children's Health System of Texas, Parkland Hospital, and UT Southwestern Medical Center

Out of the listed projects, several current capital projects and master planned projects will have a direct physical impact on the District. These are discussed on the following page.

Planned and Ongoing Building Projects

Current building projects in planning or construction include:

1. The New Pediatric Campus on Harry Hines Boulevard bounded by Mockingbird Lane/Treadway Street, Forest Park Road and the UTSW Cancer Care Outpatient Building.
2. The UTSW Medical Center Imaging Building Expansion and new Healthcare Clinic Building
3. The New UTSW Medical Center Outpatient Tower, at the intersection of Harry Hines Blvd and West Mockingbird Lane.
4. The UTSW Research Building east of Inwood Road.
5. The planned UTSW Educational Building south of the Rookery.
6. The planned expansion of Parkland Hospital's Emergency Department, located on Harry Hines Boulevard at the northwest corner of the hospital.
7. The planned State Psychiatric Hospital on the southwest corner of Medical District Drive and Harry Hines Boulevard.
8. Partial demolition of the former Parkland Memorial Hospital for future expansion of Parkland Health.
9. The 26-acre Pegasus Park received Federal Advanced Research Projects funding to be developed as a Biotech and Life Science Hub "to attract innovative companies and organizations across science, technology, healthcare, and social impact."
10. While not a medical institution project, Crow Holdings continues planning their site development north of Market Center Boulevard between Stemmons Freeway and the TRE rail line.

Figure 4: Ongoing & Proposed Development Projects

Planned and Ongoing Infrastructure Projects

In addition to the building projects, there are a number of roadway infrastructure projects in planning or design.

1. Texas Trees Foundation's Harry Hines Boulevard redesign and streetscape including the "green park" at its intersection with Inwood Road. This project will transform Harry Hines into a multi-modal, tree-lined, improved roadway. The design will also include the redesign of the Inwood Road / Harry Hines interchange with the goal of having a large park space.
2. Planning and redesign of the Harry Hines Boulevard/West Mockingbird Lane grade separated interchange.
3. Planning and redesign of the Harry Hines Boulevard/Medical District Drive at grade intersection.
4. Planning and redesign of the Harry Hines Boulevard/Market Center Boulevard/TRE rail line intersection, either at grade or grade separated.
5. Medical District Drive between I-35E and Southwestern Medical Avenue is under construction and includes widening the roadway to six lanes, a new traffic signal, adding new sidewalks and bike lanes, and double tracking the TRE bridge above the roadway.
6. Along with the bridge improvements over Medical District Drive, TRE is in design for improvements to its existing trestle over Inwood Road with plans to add a second parallel track to extend its double-tracking throughout the Medical District. The need to provide pedestrian sidewalk access here is currently under discussion.
7. The Trinity Strand Trail extension has recently been completed along Market Center Boulevard, Harry Hines Boulevard, Medical District Drive, and under the DART light rail line.
8. Bomar Avenue-Manor Way realignment at Maple Avenue intersection.
9. Butler Street and Hudnall Street intersection realignment at Maple Avenue to streamline traffic flows and prove better access to the District.

Figure 5: Ongoing & Proposed Major Infrastructure Projects

The District Today

- About the Medical District
- Land Use Analysis
- Open Space Analysis
- Utilities Analysis
- Mobility Analysis
- Economic Development Analysis

ABOUT THE MEDICAL DISTRICT

Background

The SWMD is a 501 (C)(3) non-profit founded to promote the missions of its three member institutions as well as promote improvement of properties and services of its corporate members, the beautification of specified public areas, coordination in the growth and expansion of campus facilities, and working with public and non-profit entities.

Located approximately three miles northwest of downtown Dallas and two miles southeast of Dallas Love Field Airport, the broader SWMD area covers over 1,000-acres roughly bounded by North Stemmons Freeway on the southwest, Harry Hines Boulevard at Lucas Drive along with Medical District Drive on the southeast, Maple Avenue on the northeast, and a combination of West Mockingbird Lane, Wyche Avenue, and Inwood Road on the northwest. Those properties owned by the three member institutions account for approximately 400 acres of the broader 1,000-acre SWMD area. Together, the three-member institutions make this District the second largest employment center in the city of Dallas and the largest medical district in North Texas. In 2023, SWMD's three member institutions employed over 41,000 people combined, and its clinics and emergency departments handled over 3.3 million visits. That year there were just under 3,800 students, residents, and fellows in the Medical District.

Part of SWMD's success has been the functionality, proximity and continuity of its member institutions' campuses that fosters seamless and intense communication among physicians, researchers, students, and staff. Each member institution has a role in the District and how it serves in the health needs of the greater community, but together the three member institutions work in a collaborative manner that utilizes their individual strengths and expertise.

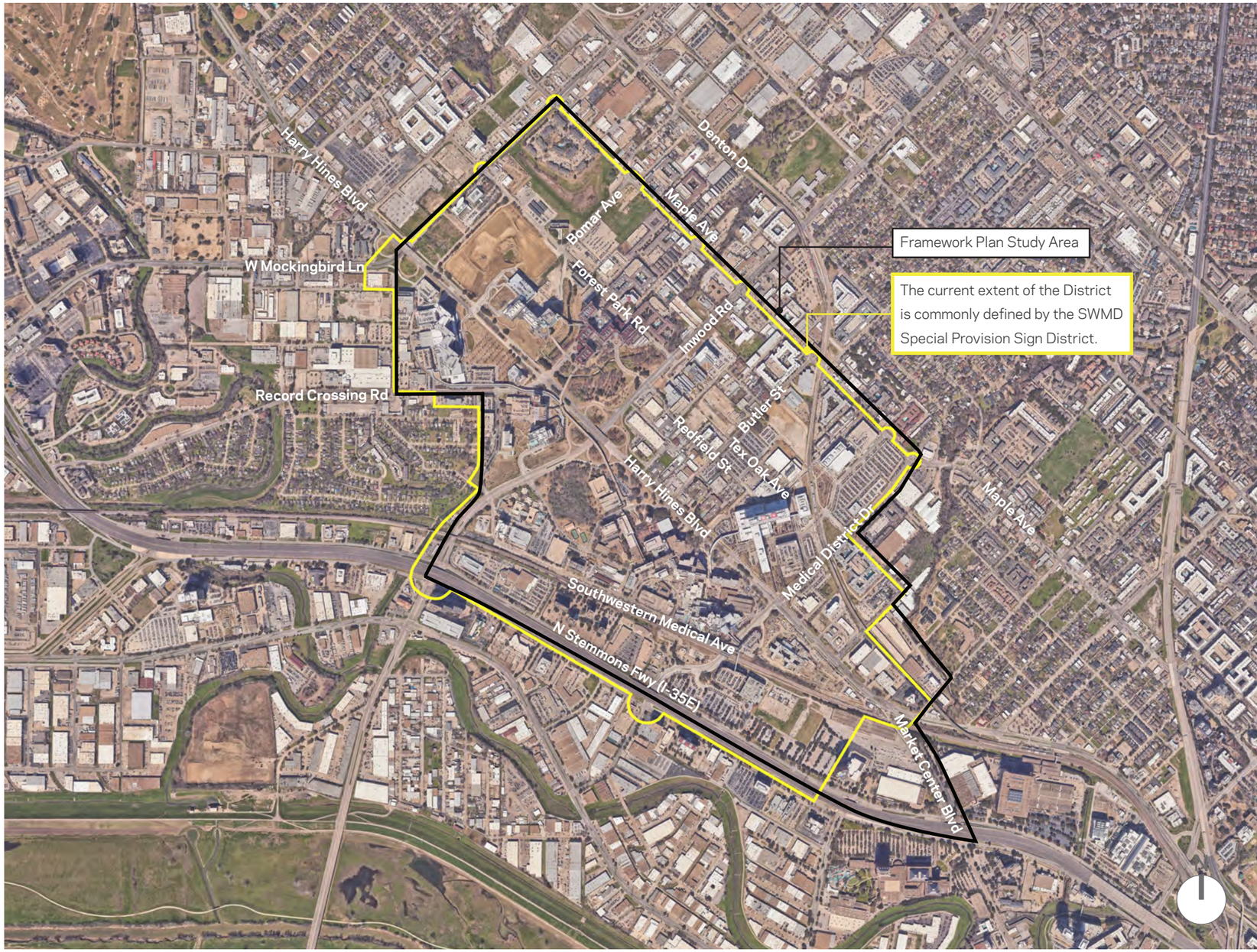


Figure 6: Aerial View of the Southwestern Medical District

LAND USE ANALYSIS

Current State

Currently, the three member institutions occupy or own much of the land in the SWMD. There have been pockets of redevelopment around the institutions, mostly multi-family residential located along Forest Park Road and Maple Avenue.

Infill development has also occurred south of Medical District Drive to Cedar Springs Branch with multi-family residential, a Ronald McDonald House, office and storage facilities. Uses along Harry Hines include hotels, fast food and storage facilities.

The Salvation Army occupies several sites between Harry Hines Boulevard and Redfield Street, as well as a number of smaller industrial type uses.

Uses between Stemmons Freeway and the rail line include automotive and office. Crow Holdings owns a large piece of land, north of Market Center Boulevard that they plan to redevelop with a mix of uses.

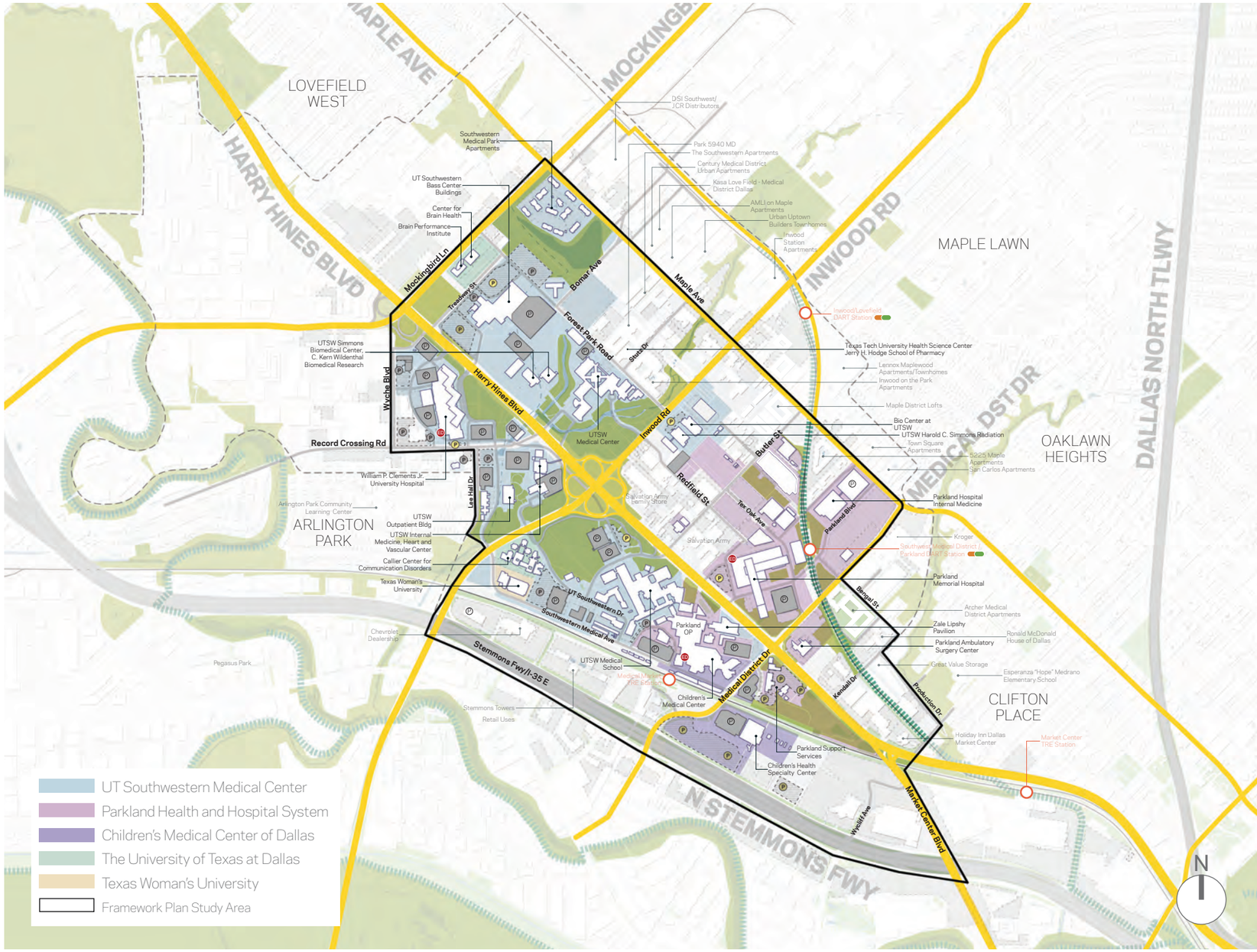


Figure 7: SWMD Existing Facilities

Existing Conditions and Trends

Similar to the SWMD, other areas around the District are redeveloping with a mix of uses. The existing neighborhoods around the District - Clifton Place-Maplewood, Oaklawn Heights, Maple Lawn, Lovefield West and Arlington Park - have provided a fairly stable single family neighborhood environment that is attracting multi-family residential and limited neighborhood supporting services.

This "seam" between the District and the existing neighborhoods is where much of the infill development is occurring. The continued success and potential expansion of Dallas Love Field Airport is also fueling growth and investment, especially north of West Mockingbird Lane.

The greatest areas of opportunity for growth and redevelopment around, and of interest to, the SWMD area include:

- The area north of West Mockingbird Lane between the (former) Elm Fork Channel and Dallas Love Field
- The area between Record Crossing Road and West Mockingbird Lane, west of William P. Clements Jr. University Hospital to the former Elm Fork Channel
- The area south of West Mockingbird Lane between Maple Avenue to the DART line/Denton Drive to Bomar Avenue
- The entire Maple Avenue corridor, especially on the east side
- The north side of the Cedar Springs Branch open space corridor
- The North Stemmons Highway (I-35E) frontage from Inwood Road to Market Center Boulevard, including the Crow Holdings property

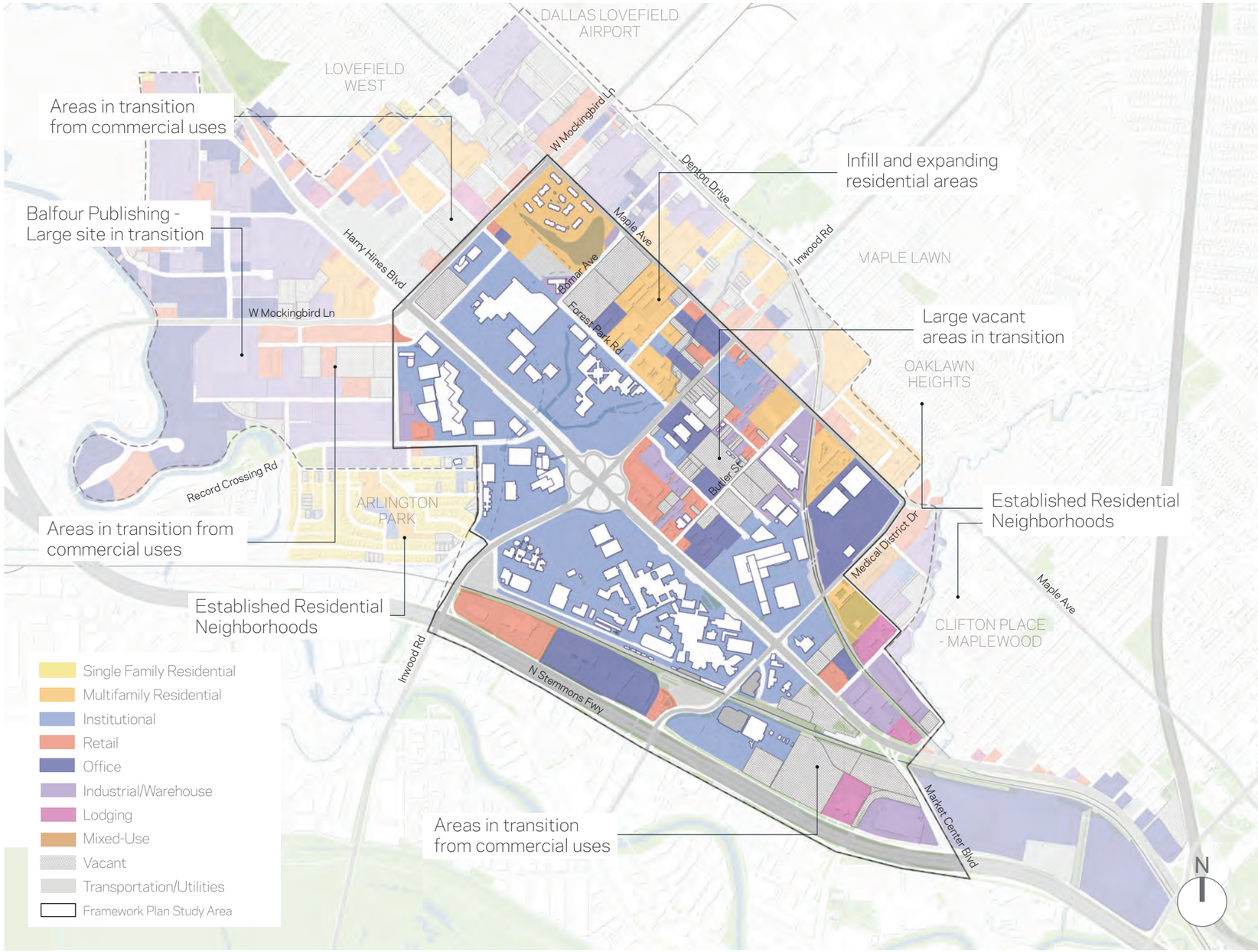


Figure 8: Existing Land Use

Large Lot Ownership

With respect to growth areas in and outside the current district boundary, it is important to consider land ownership especially in cases where large acreage of land is controlled by one owner. These properties represent the largest redevelopment opportunities and would have the biggest impact on the District. The District should consider control or strongly participate in how these large parcels of land are redeveloped to benefit all parties.

DLF Hines LLC

Ben E Keith Company

Crow Holdings Site

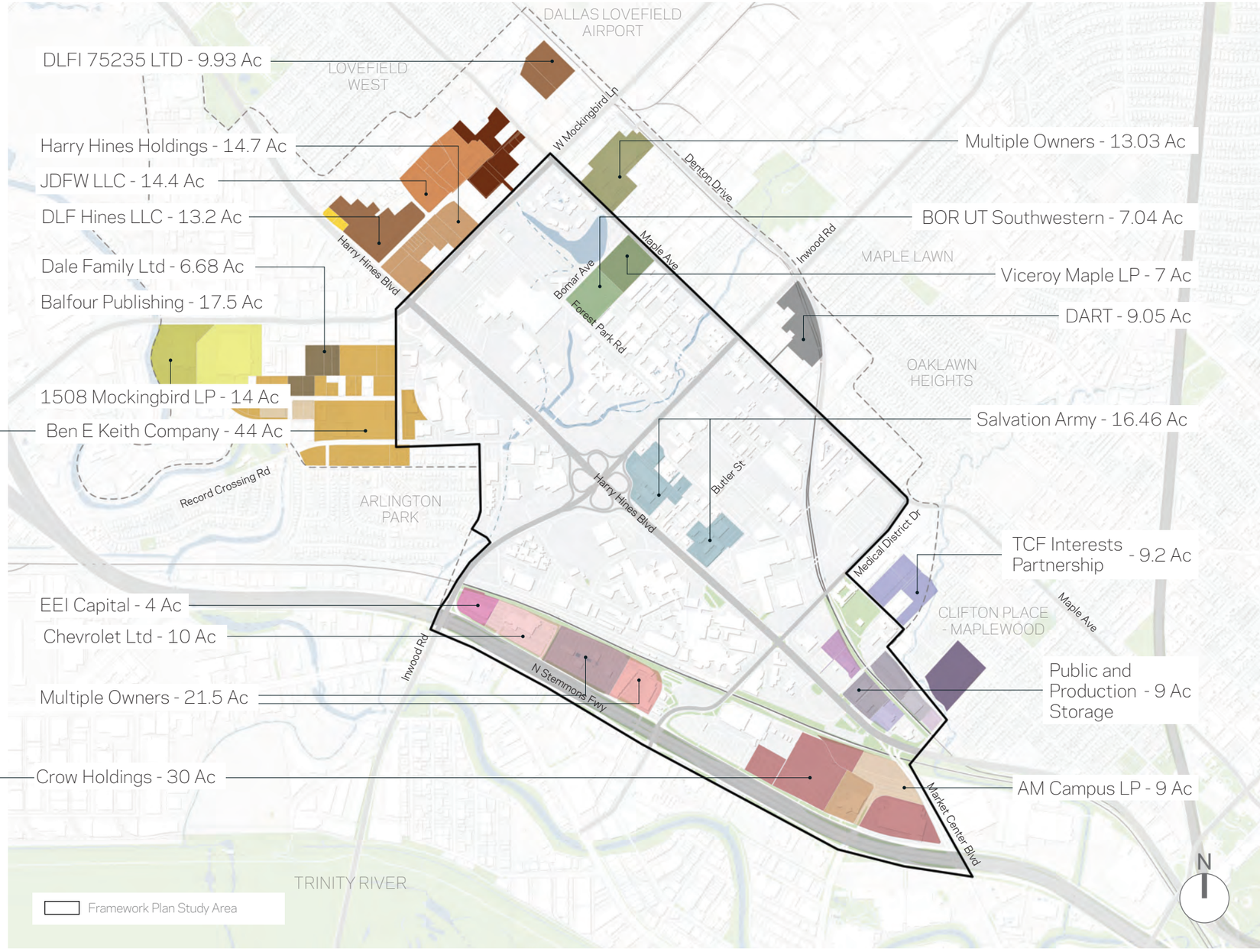


Figure 9: Current Large Lot Ownership

OPEN SPACE ANALYSIS

Existing Conditions

The existing open and green space in the District is primarily limited to the drainage areas of West and East Knights Branches that bisect the District as they connect to the former Trinity River Channel and Trinity River/Dallas Floodway. Access to and along these drainage areas is limited with targeted landscape investment to the areas around the Harry Hines Boulevard/Inwood Road intersection. East Knights Branch does connect with Weichsel Park to the east. The UT Southwestern Medical Center (UTSWMC) bird rookery is a key component of this open space network and while an inviting woodland respite to the UTSWMC campus, it is largely unaccessible as an established bird nesting area.

While Cedar Springs Branch is another key drainage area that bisects the area south of the SWMD, it is primarily a natural vegetated environment with no access to, along or across it. The industrial uses along it, especially from Maple Avenue to Harry Hines Boulevard, have no direct relationship with it and effectively wall it off and limit its use as an open space corridor.

The other open green space in the District lies primarily along Harry Hines Boulevard and has been formed over time by the three medical institutions as they have developed individual medical facilities with attractive landscaped “front yards” on Harry Hines Boulevard. The result has been the creation of a linear green space along Harry Hines Boulevard, undulating in depth from the street depending on the design of the project and intersecting with the west and east Knights Branches to establish the key “address” for the SWMD.

Figure 10: Existing Open Space Around the Medical District

Pervious Open Space Analysis

The SWMD has limited open green space compared to the many buildings and expansive structured and surface parking lots, resulting in a large percentage of impervious surfaces, impacting stormwater runoff, and heat island effects. One of the goals of this master planning process was to counter these problematic issues.

To reinforce this issue, the amount of open green space in the District has been calculated as only 14.5 % of the total land area in the District. By contrast, the surrounding residential neighborhoods, with their tree lined streets, landscaped lots and neighborhood parks yield a much higher pervious open space percentages, with more stormwater infiltration and a ground plane that reduces heating impact. While the District will never be able to function like a residential neighborhood, there is great room for improvement over the existing statistics and an increase in open green space throughout the District.

Southwestern Medical District

14.5 %

PERVIOUS OPEN SPACE OF TOTAL AREA

West Love Field

46.2 %

PERVIOUS OPEN SPACE OF TOTAL AREA

Arlington Park

62.9 %

PERVIOUS OPEN SPACE OF TOTAL AREA

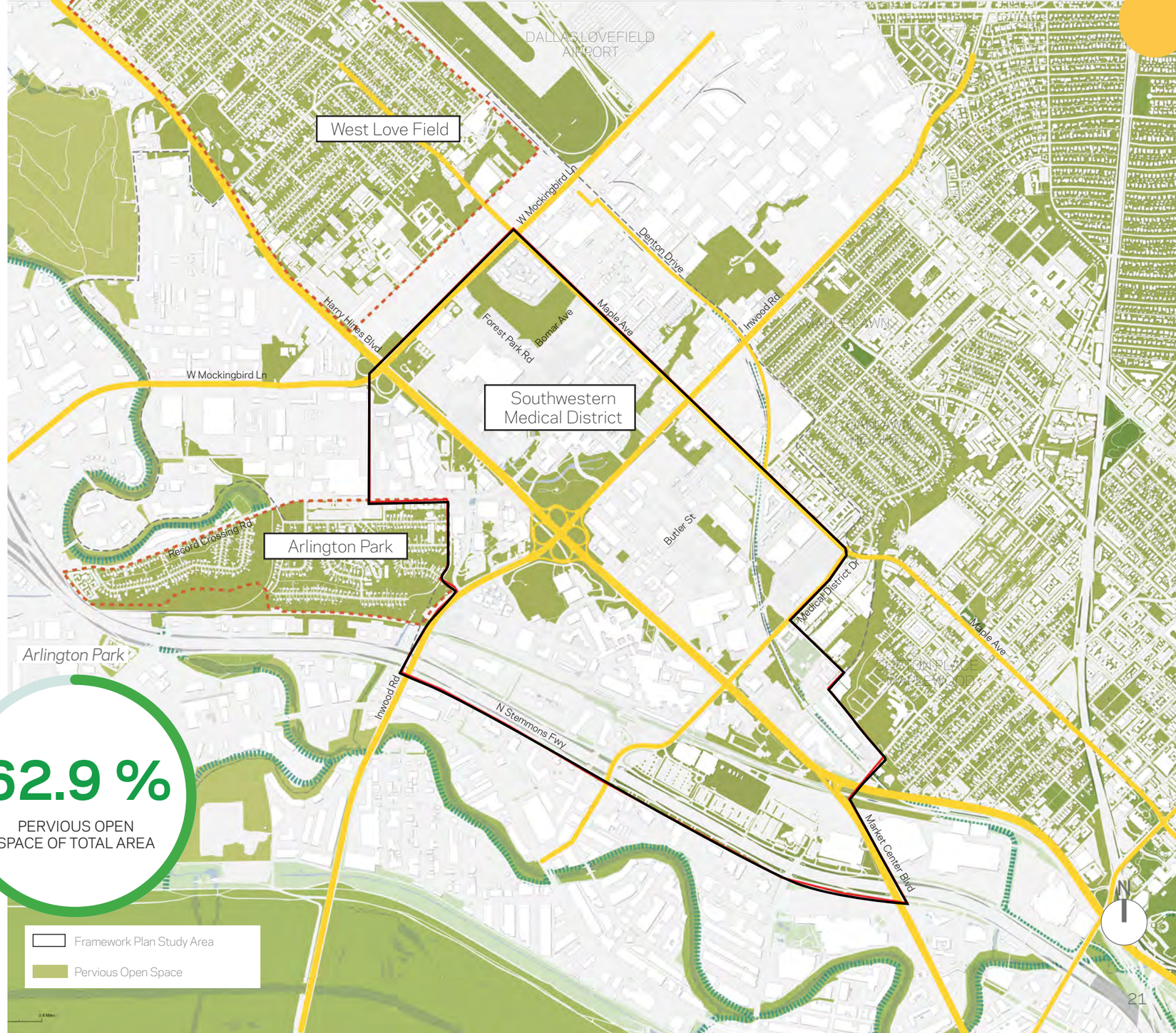


Figure 11: Pervious Open Space In and Around the District
NOTE: Information based on Google Earth imagery and is not considered a true survey.

Tree Cover Analysis

In addition to considerations on the impact of open green space on the environmental quality of the District, amount of tree cover is also a consideration on heat island impacts. In equal contrast to measuring the open green space in the District vs. the adjoining residential neighborhoods, a measure of tree cover has been calculated. The SWMD area contains approximately 5.2 % tree cover resulting in a high heat island effect. The surrounding residential areas have twice the tree cover and a much more hospitable living environment.

Much like what was noted in the Pervious Green Space Analysis section of this Plan, the District will never be able to function like a residential neighborhood, but there is immense opportunity for increasing tree cover and reducing the heat island effect throughout the District.

Southwestern Medical District

5.2 %

TREE CANOPY COVER OF TOTAL AREA

West Love Field

9.7 %

TREE CANOPY COVER OF TOTAL AREA

Arlington Park

11.1 %

TREE CANOPY COVER OF TOTAL AREA

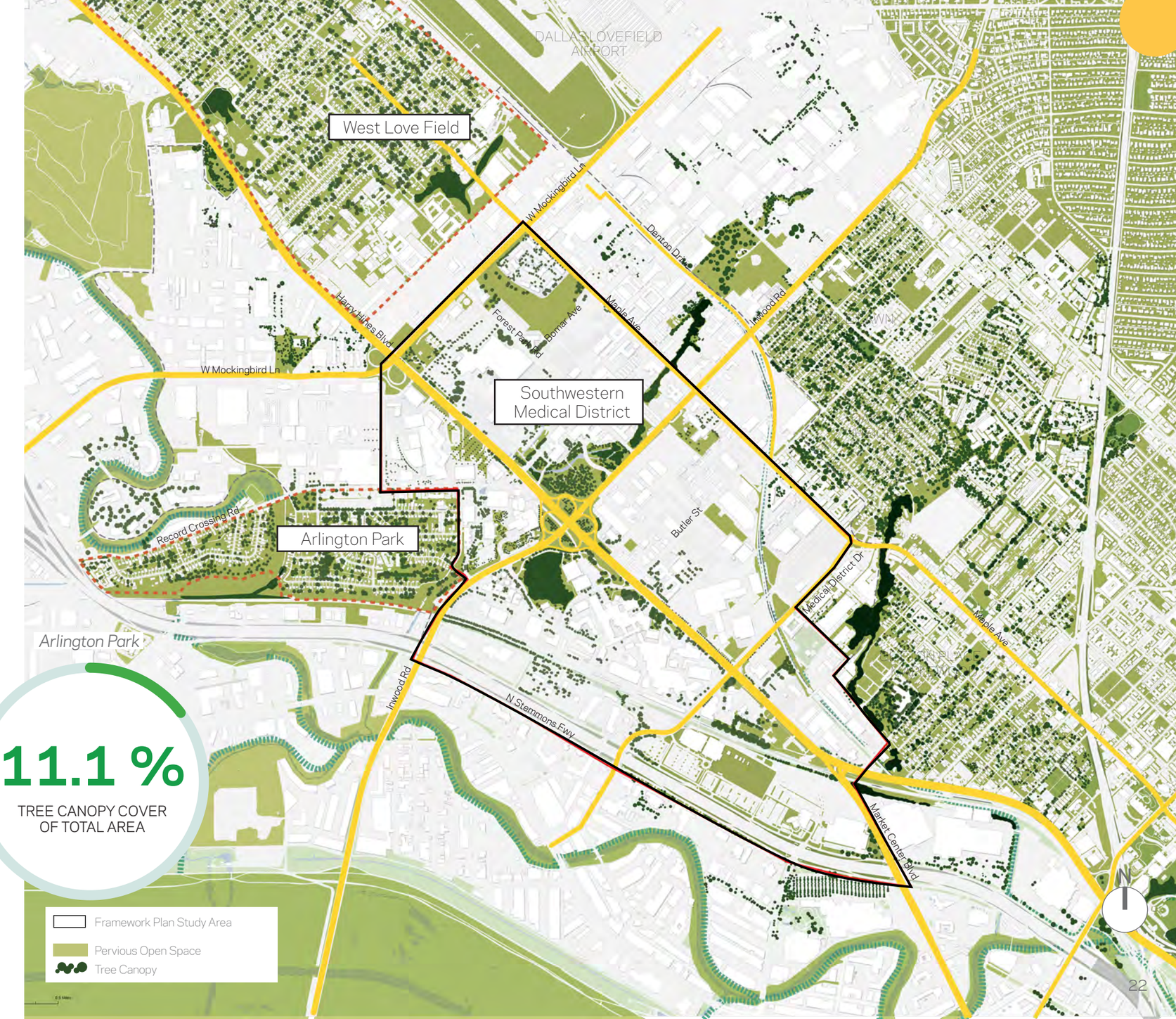
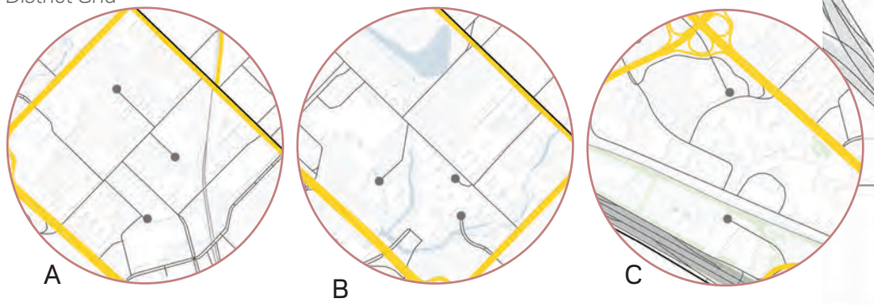


Figure 12: Tree Cover Analysis
NOTE: Information based on Google Earth imagery and is not considered a true survey.

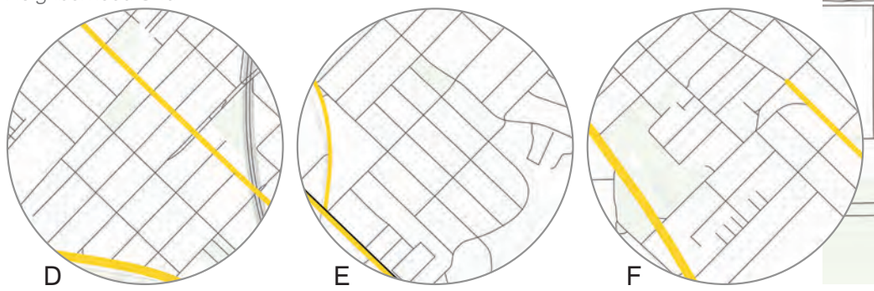
District Street Grid

The District is surrounded by residential neighborhoods such as Love Field West (**F**), Oaklawn Heights (**E**) and Clifton Place-Maplewood (**D**). These areas follow a tighter street grid with smaller block sizes creating an environment that is easy to access, pedestrian friendly, and human scaled. In contrast to these neighborhoods, the District (**A, B, & C**) and its adjacent commercial/warehousing uses (**G**) follow a very sparse grid with enormous building massing that doesn't allow the District to form a cohesive fabric. While the District cannot follow a dense residential street grid, it can certainly benefit from a more human scaled street network that will increase pedestrian access and create an integrated campus.

District Grid



Neighborhood Grid



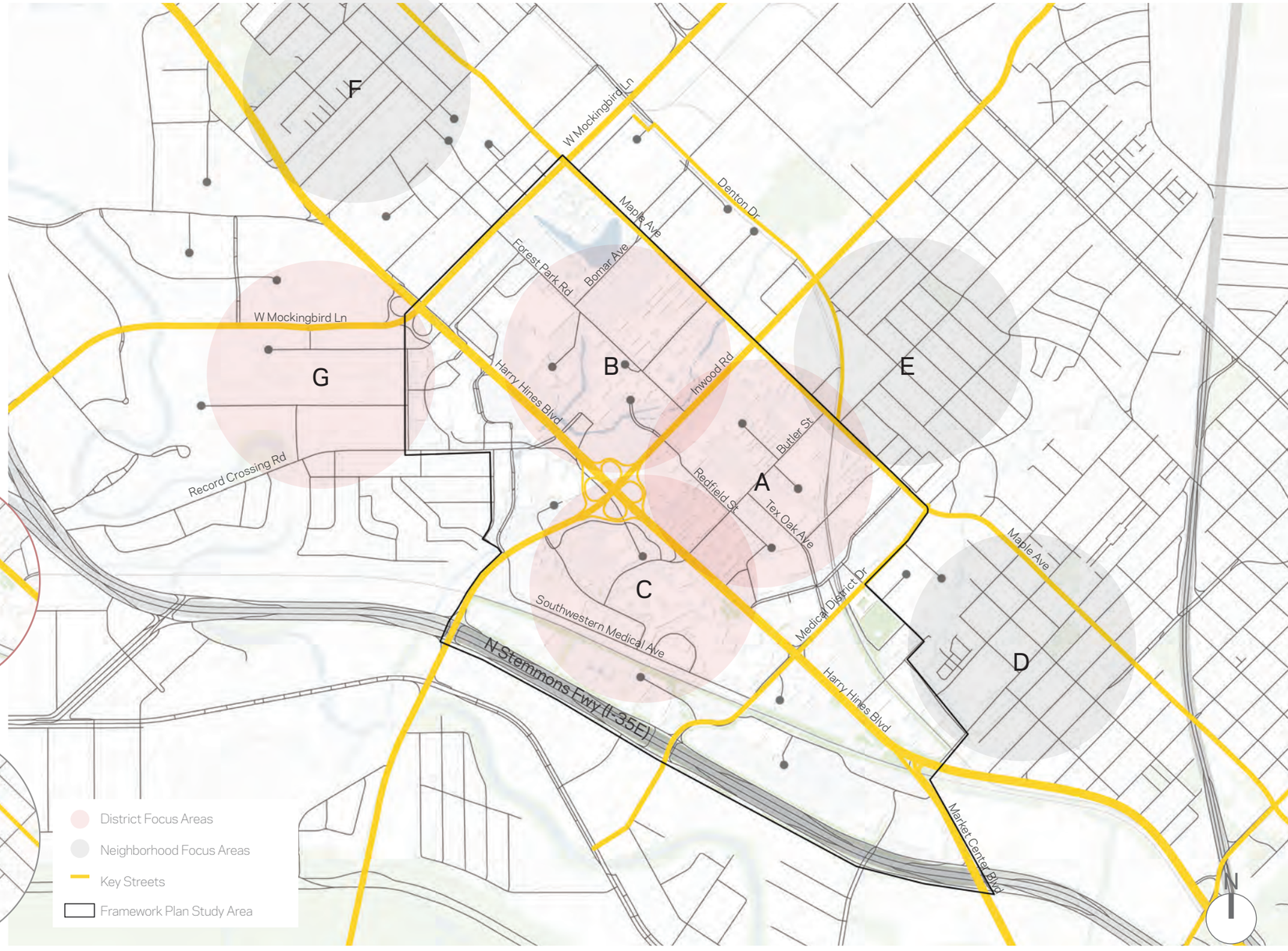


Figure 13: Street Grid Patterns

UTILITIES ANALYSIS

Overview

In support of the development of Master Plan, a utilities infrastructure assessment was conducted to develop a foundation of an informed plan for the future of the SWMD. The assessment included the following tasks:

- Aggregating and reviewing available documentation
- Interviewing member institutions and utility providers
- Mapping exercises and online research
- Development of a framework plan for the District
- Recommendations and best practices for sustainable infrastructure and nature-based solutions

The utilities assessment focused on identifying, mapping, and assessing:

- Stormwater infrastructure
- Electrical distribution lines and associated substations
- Domestic and wastewater
- Natural Gas lines
- IT/Telecommunications

Efforts were made by the planning team to gather information from member institutions related to existing utility capacities and future needs. However some information was not available or could not be provided.

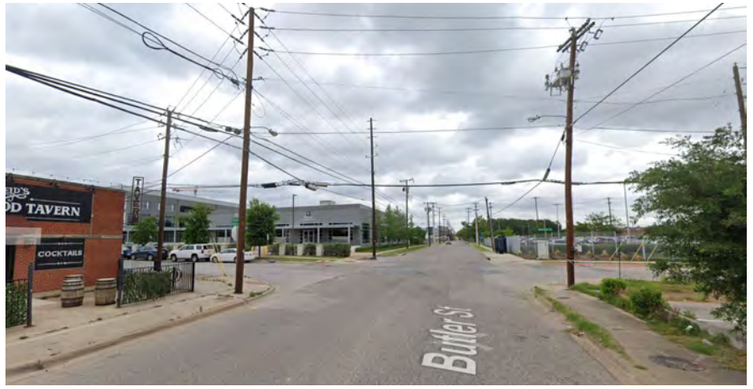
Figure 14: Existing Utilities in the District

Box culverts northeast of Harry Hines during storm event

Detention basin at Bomar and Maple Avenues

Box culverts northeast of Harry Hines

Inwood Rd substation



Butler St overhead distribution lines

Butler St overhead distribution lines

Water and Wastewater Utilities Infrastructure*

Existing water utilities within the District are primarily sourced from Dallas Water Utilities (DWU). Infrastructure serving the District is typically updated from project to project. Water lines utilize key corridors such as Harry Hines Boulevard, Medical District Drive, and Inwood Road.

There are three water wells within the District area, two owned by the City of Dallas, and one by a private owner. The oldest dates back to 1956, as shown in the adjoining figure.

A review of committed projects was conducted and identified projects include replacement of existing lines DWU has determined to be failing, water/wastewater lines that have been planned for future growth, or are scheduled for regular maintenance. Notably, committed projects in the adjacent map note that many lines have leaks, cracks or are in need of replacement due to age. DWU identified a large wastewater project to begin design in 2024 that would construction 8x300 linear feet of 96 inch wastewater interceptor near Harry Hines Boulevard.

Water resilience and redundancy for institutions within the District is achieved through on-site storage tanks. Member institutions, to varying degrees, have instituted water conservation Best Management Practices (BMP), smart monitoring of systems, and thorough renovation of energy systems.

*Data limitations
As projects occur, sections have been upgraded or abandoned. Data from member institutions does not provide a complete or up-to-date understanding of water utility infrastructure within the District.

Figure 15: Water and Wastewater Utilities

Stormwater Infrastructure and Management*

Stormwater

Stormwater infrastructure in the SWMD primarily serves to detain and manage runoff through underground pipes, concrete box culverts, and a detention basin. Captured water is generally conveyed to the south and west into the Noble Branch Sump and Hampton-Oak Lawn Sump to be pumped into the Trinity River. Both sumps are what remain of the former Elm Fork Channel and the former Trinity River Channel.

Existing stormwater infrastructure is highly channelized and efficiently moves water through the District. As new projects within the District come online, low-impact development strategies can be seen through landscaping interventions that slow surface runoff or increases permeability.

Improvements to key corridors like Harry Hines Boulevard and adjacent parcels represent opportunities for re-envisioning and stormwater culverts and implementing resilience strategies that enhance the District.

*Data Limitations:
Additional information is required to model stormwater within the SWMD. Additional study would also be required to assess potential for daylighting underground stormwater infrastructure.

Figure 16: Stormwater Infrastructure Analysis

Floodplains

Floodplain boundaries within the SWMD were mapped to understand areas of risk and build a foundation of knowledge for open space and designing stormwater infrastructure with nature based solutions.

Both tributaries of Knights Branch – East Knights and West Knights – form the main water bodies intersecting the District. Cedar Springs Branch to the southeast also intersects the study area.

Infrastructure designed in the 1950's, 1960's, 1970's and 2000s form key elements of the Knights Branch stormwater system. This captures watersheds north and east of the District and conveys it towards sumps and onward to the Trinity River. Images (right) show key stormwater infrastructure during a flash flood event in September 2022.

Localized flooding has been noted to occur at specific low spots within the District, particularly around Tex Oak Avenue and Butler Street.

The District should seek to improve and enhance open space within the District. Additional modeling should be conducted to assess feasibility of daylighting stormwater infrastructure. Daylighting could restore natural water courses in the District and create an amenity by creating multi-modal trail linkages and comfortable open space.

Figure 17: FEMA 100 Year Floodplain

Impervious Cover

Impervious cover within the SWMD contributes to run-off, poor water quality, and heat-island effects. An assessment of impervious cover utilizing information from the City, augmented through aerial map assessment, was conducted to gauge impervious cover percentages throughout the District.

Overall, the SWMD consists of approximately 69% impervious cover from structures and paving. Large percentages of space are dedicated to parking structures and surface parking. Surface run-off moves quickly over these surfaces and flows directly to drainage infrastructure.

Percentages of impervious cover for hubs (as defined in the Framework Plan) are outlined below.

Hub	Impervious Cover
Bomar	52%
Butler	84%
Record Crossing	80%
Cedar Springs	61%

Figure 18: Impervious Cover Analysis

Electrical Utilities

The assessment of electrical utilities infrastructure within the District consisted of mapping and cataloging substations, overhead and underground distribution lines, and the District's energy generation locations.

The most noticeable electrical infrastructure consists of overhead distribution lines serving structures throughout the District. There are approximately 26 miles (138,119 feet) of overhead lines within the SWMD. Notably this does not include communication lines that often share a lower position on electrical poles (refer to map alongside). Overhead lines are particularly dense on Harry Hines Boulevard, Forest Park Road, Inwood Road, Butler Street, and Redfield Street.

Five key substations service the District's energy needs, located near Record Crossing, Inwood Road, Medical District Drive and along Maple Avenue. These substations link to key 138kV high voltage lines on monopoles overhead coming from north and west of the District. High voltage overhead lines along Maple Avenue represent a major project and should be coordinated with Oncor to mitigate aesthetic and weatherization impacts and security concerns.

Oncor Service Type	Length (Feet)
Primary Overhead	91,616
Secondary Overhead	46,503
Primary Underground	149,271
Secondary Underground	21,709
Service (linking to structure)	51,518
Grand Total	360,617

Figure 19: Electrical Utilities Analysis

Natural Gas Utilities*

Natural Gas lines provided by Atmos Energy were mapped within the District and augmented with any applicable findings from reviewed documents.

Underground lines run primarily along street rights-of-way. A high-pressure line follows the Inwood Road corridor and extends to reach key energy generation facilities along Southwestern Medical Avenue and both north and south of Inwood Road.

Energy sources for member institutions within the SWMD depend on both off-site generation and distribution from electrical lines, and also on-site generation through thermal energy plants.

*Data Limitations:
Underground gas line information is incomplete as Luminant provides service to some of the member institutions.

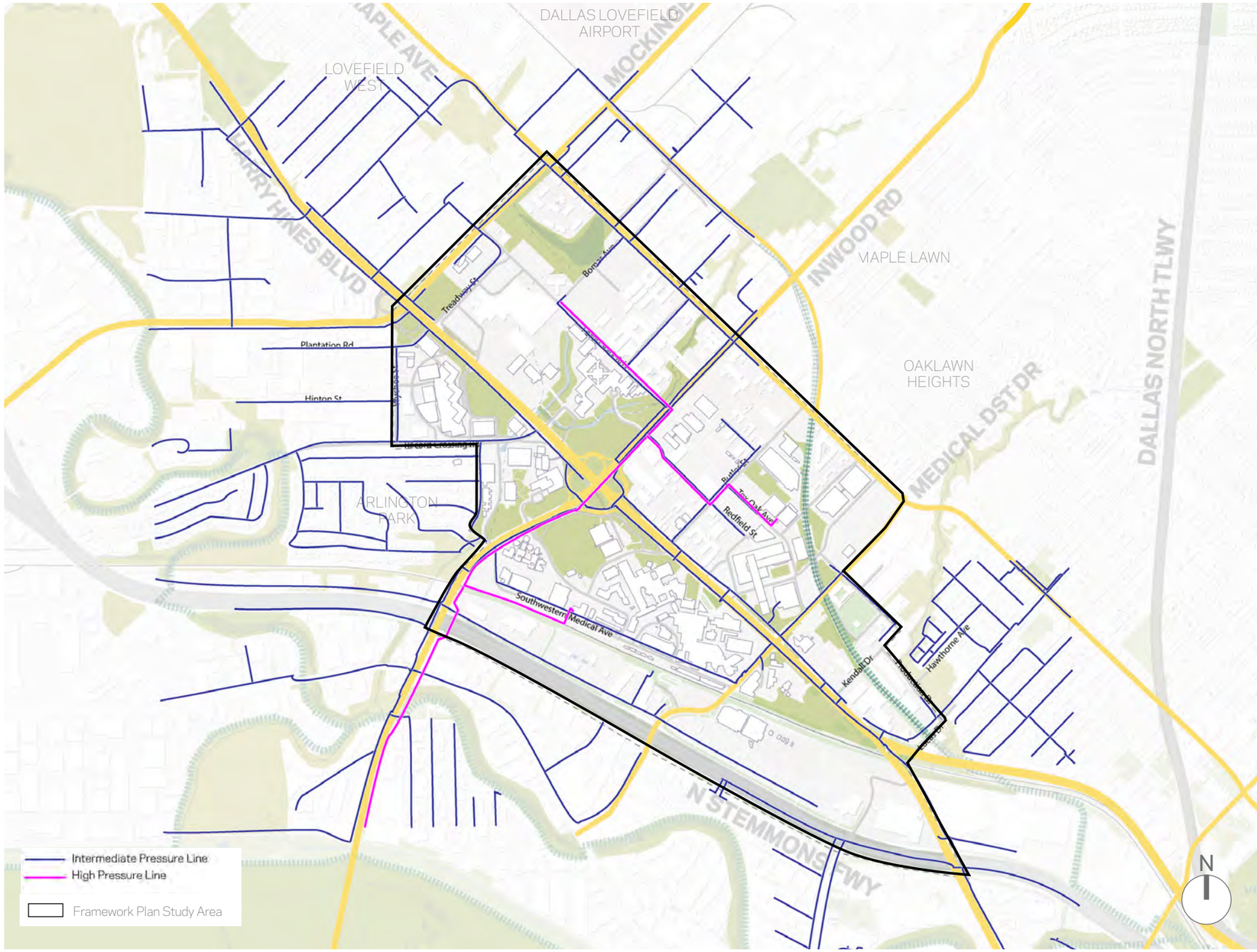


Figure 20: Natural Gas Utilities Infrastructure

Telecommunications Infrastructure*

Telecommunications infrastructure within the District vary greatly in size, location and complexity. A District-wide telecommunications network for this effort could not be mapped effectively without significant investigation, locating, and additional input from each member institution. Recently completed projects within the District have provided some insight into the major locations of fiber optic lines. Those locations are shown in the adjoining map.

Through web-based study and site visits, the team visually identified communication lines sharing space on electrical poles, as highlighted in the image. This configuration is ubiquitous throughout the District and adds to visual obstruction at a pedestrian level. In addition, fiber-optic cable, CCTV, co-axial cable, and telephone lines already run underground through key street corridors, including Harry Hines Boulevard.

Recent projects have provided insight into telecommunications networks and also provided spot locations for points of entry.

*Data Limitations:
A variety of service providers have utility lines underground and overhead within the SWMD. These supply both medical facilities, residents, and commercial business. A comprehensive network map of the District is difficult to accomplish, additional investigation into key points of entry, key network pipe locations should be considered for additional study.

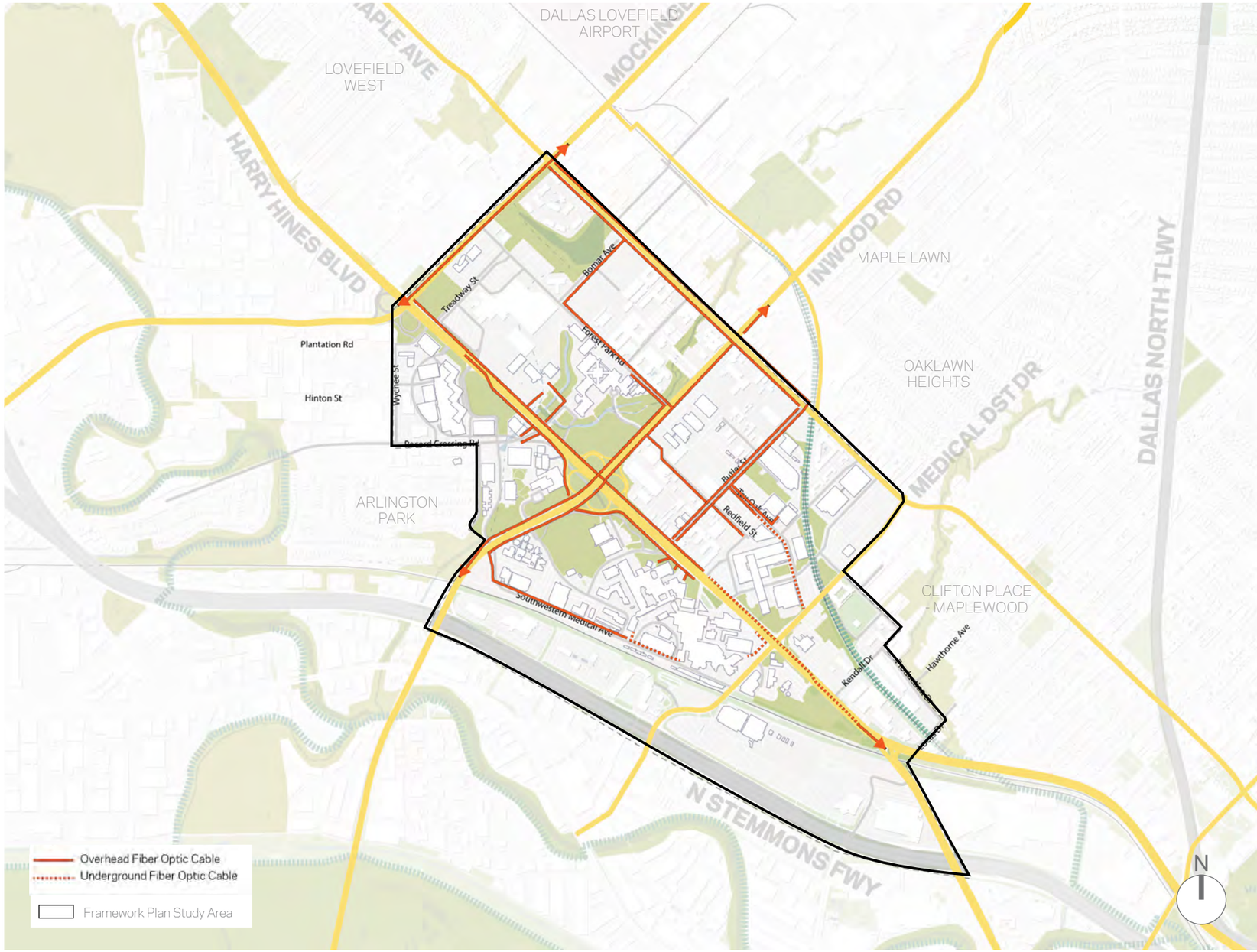


Figure 21: Telecommunications Infrastructure

MOBILITY ANALYSIS

Existing Street Network and Connections

Interstate 35E is a major regional highway that provides access to the District. From I-35E, regional thoroughfares, and local collector streets, there are seven major gateways to the SWMD; West Mockingbird Lane, Inwood Road, Medical District Drive, Market Center Boulevard, Harry Hines Boulevard, and Maple Avenue. Numerous minor public and internal private streets provide localized access to the developments within the SWMD. There are several "super blocks" that add additional traffic to the major streets where there is a lack of minor street connectivity.

W Mockingbird/
Harry Hines Blvd Gateway

DART Station

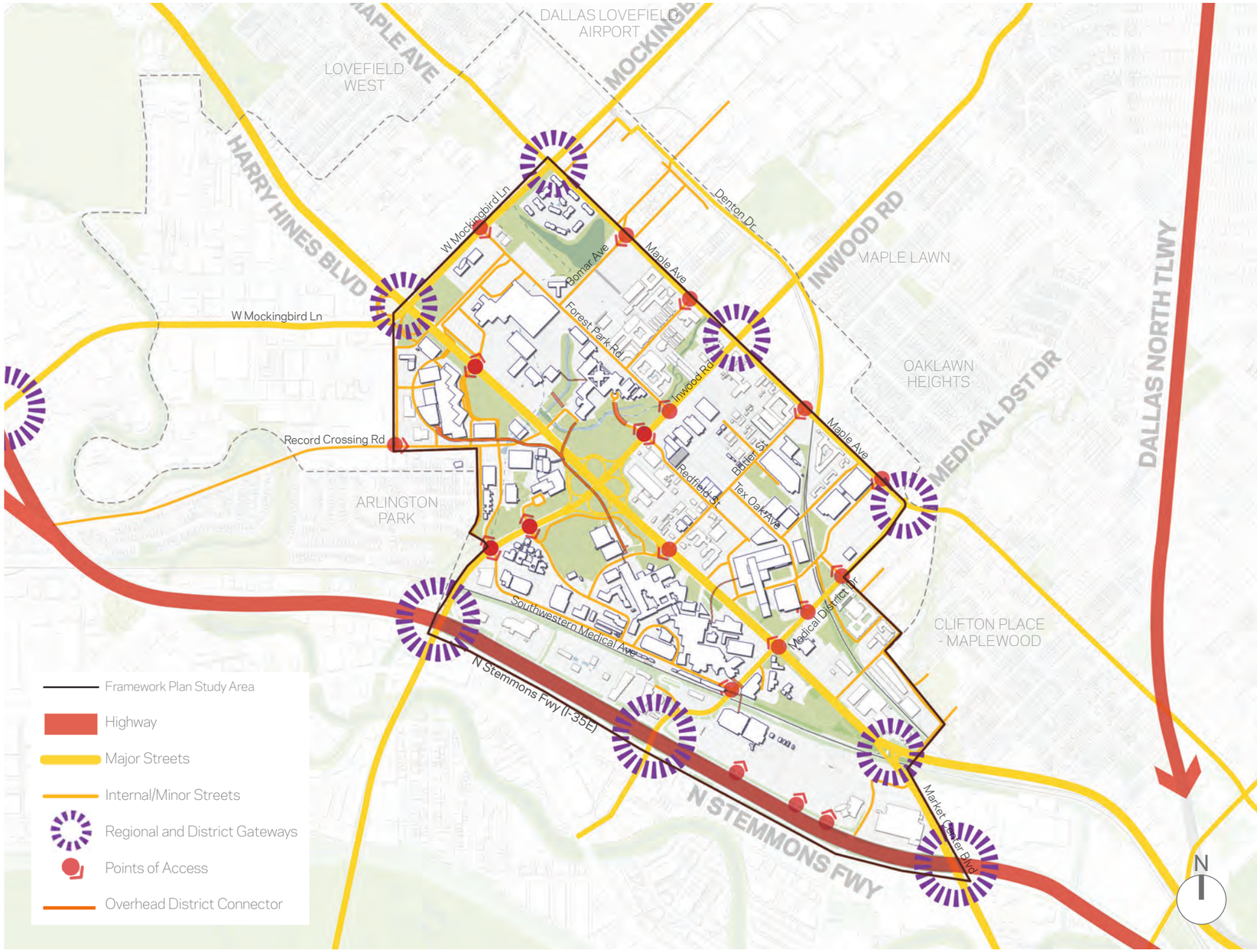


Figure 22: Existing Street Network

Access to the District

Major gateway access points into the Southwestern Medical District are displayed in the map on the previous page (Figure 22). Traffic movement through these major access points needs to be constantly monitored to ensure a high level of service and adequate facilities to support it.

The Texas Trees Foundation is currently leading a redesign of the Harry Hines Boulevard corridor – a critical thoroughfare within and through the District – between Market Center Boulevard and West Mockingbird Lane. The design is promoting a more multi-modal, tree-lined, improved roadway.

Access within the District

Once vehicles arrive at the SWMD typically through major roadways at the access points described in Figure 22, vehicles will disperse from these roadways onto the District's collector and smaller roadway network. Other than the major thoroughfares such as Inwood Road, West Mockingbird Lane, Medical District Drive, Maple Avenue and Harry Hines Boulevard, there are other collector streets that provide connectivity and release pressure from the major thoroughfares, including Butler Street, Redfield Street, Forest Park Road, Bomar Avenue, Tex Oak Avenue, Southwestern Medical Avenue, and Record Crossing Road.

Collector roads are often major opportunity areas for greater multi-modal improvements. Unlike major thoroughfares, collector streets typically have lower speeds than major arterials which can lower levels of stress for vulnerable roadway users such as pedestrians and cyclists. Therefore, it is best practice to concentrate enhanced multi-modal and parkway improvements on these types of streets in the existing or expanded right-of-way (ROW) and work with developers and property owners to utilize more parkway space for pedestrian and bicycle activities. The collector roads in the SWMD offer an opportunity to be retrofitted to embody a complete street design by adding dedicated bicycle infrastructure, wide sidewalks for all users, buried utilities, and street trees. The planning team has identified 14 future roadways that will help break up the "super-blocks" that exist today and will help alleviate pressure from the major thoroughfares. An example cross section of these future roadways can be found in Figure 23. The proposed service streets would possibly add additional on-street parking opportunities to the District and shared use paths shaded by street trees. This will promote comfortable walkability and increased connectivity throughout the SWMD.

The following page considers the different characters of some of these key streets.

Transit/Shuttle Access

Currently, the SWMD is well-served by the Dallas Area Rapid Transit (DART) and Trinity Railway Express (TRE). There are two DART light rail stations close to the District; the Southwestern Medical District/ Parkland Station and Inwood/Love Field Station. There are multiple DART bus routes that reside within the SWMD as well as the individual shuttle routes from the different institutions (Children's Health Medical Center, UT Southwestern Medical Center, and Parkland Health). The TRE has one commuter rail station, Medical/Market Center Station, that stops along Southwestern Medical Avenue. As the SWMD continues to grow, better access to the different transit stations by sidewalk connections, bike lanes/trails, and shuttle service should be evaluated.

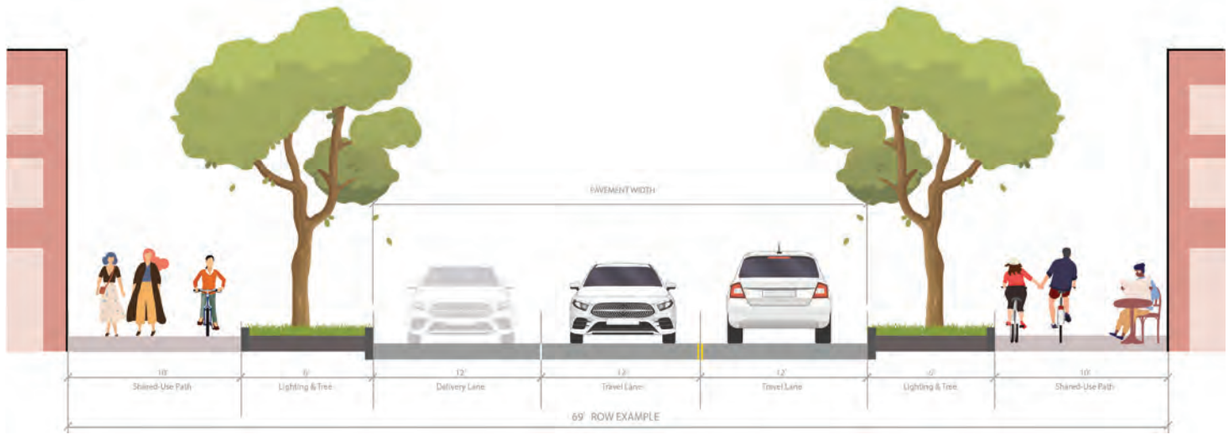


Figure 23: Service Street Cross Section Example

Street Character

Harry Hines Boulevard is a six-lane divided boulevard with large oak trees that line the median. The outside lanes have a mix of vehicles and buses with a dedicated bus lane only during peak periods.

Maple Avenue is a four-lane undivided roadway with no right or left turn lanes. The lack of turn lanes does cause congestion and signal timing constraints along the corridor.

Forest Park Road is a four-lane undivided roadway with no right or left turn lanes. The roadway is currently a back entrance to several buildings and campus apartments.

West Mockingbird Lane is a six-lane divided roadway that acts as the north border of the District. West Mockingbird Lane also provides major regional and airport (Dallas Love Field) traffic.

Inwood Road is a six-lane divided roadway that carries a lot of traffic. There are plans for a "Green Park" at the intersection of Harry Hines Boulevard and Inwood Road.

Butler Street is a two-lane undivided roadway. The roadway parallels Inwood Road and connects Harry Hines Boulevard and Maple Avenue.

Figure 24: Existing Streets Character

Bicycle Facilities

In 2022, the first bicycle facilities had been constructed within the SWMD. Dallas County has constructed the extension of the Trinity Strand Trail in the southern part of the District. The trail runs along Harry Hines Boulevard from Market Center Boulevard to Medical District Drive where it bends and continues east along Medical District Drive to the DART tracks, and then it follows underneath the DART tracks north through the SWMD to the Inwood/Love Field station. As part of the Medical District Drive construction between I-35E and Southwestern Medical Avenue, bike lanes are being provided.

The City of Dallas is also currently going through their bike plan update with the expectation to have an adopted plan by the end of 2024. In October 2022, they have released the draft results which can be found in the adjoining map. The draft recommendations within the SWMD have been reviewed as part of this Study.

- Framework Plan Study Area
- Trinity Strand Trail
- City Boundary
- Existing/Funded Sharrow
- Existing/Funded Bike Lane
- Existing/Funded Buffered Bike Lane
- Existing/Funded Cycle Track
- Existing/Funded Trail
- Proposed Bicycle Route
- Proposed Bicycle Boulevard
- Proposed Visually Separated
- Proposed Physically Separated
- Proposed Trails
- Proposed Remove

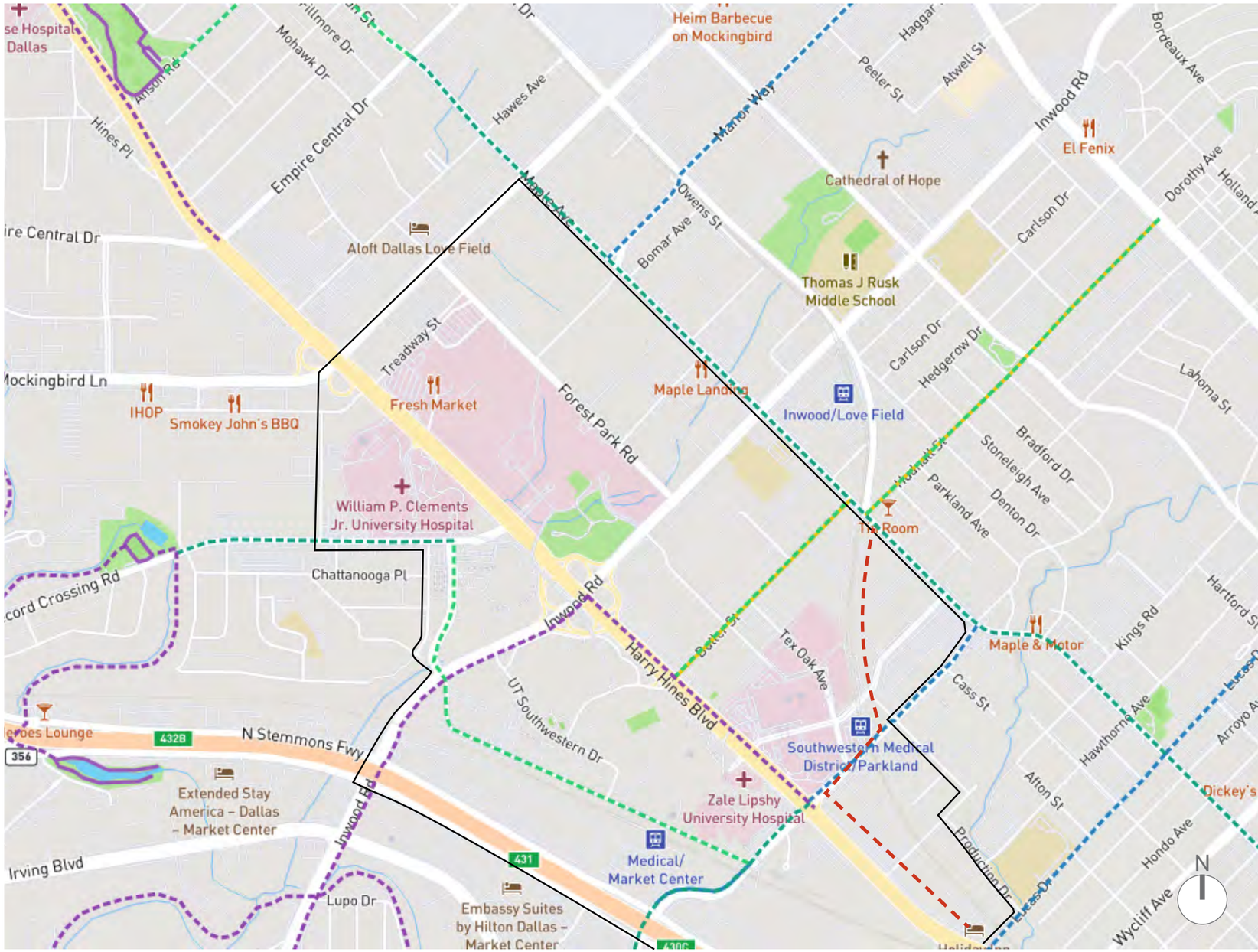


Figure 25: Dallas Bike Plan Draft Recommendations (Source: Dallas Bike Plan Update)

Crash History

In 2022, the City of Dallas adopted a Vision Zero goal to eliminate all traffic-related deaths and reach a 50% reduction in severe injuries from crashes by 2030. The City identified Maple Avenue between Hudnall Street and Oak Lawn Avenue as one of the top 15 corridors in the City in which people are most likely to be killed or seriously injured. As Maple Avenue is a top corridor for serious injury, the City has recently conducted a public meeting for potentially putting Maple Avenue on a road diet and adding bicycle facilities and enhance the pedestrian paths.

Figure 26 shows a heat map of crash locations occurring withing the last five years (2017-2022), according to Texas Department of Transportation's (TxDOT) Crash Records Information System (C.R.I.S). Throughout the SWMD, there were three fatalities reported over the five-year period: one along Inwood Road near Southwestern Medical Avenue, one along Harry Hines Boulevard near Butler Street, and one along Maple Avenue near Denton Drive Cut-off.

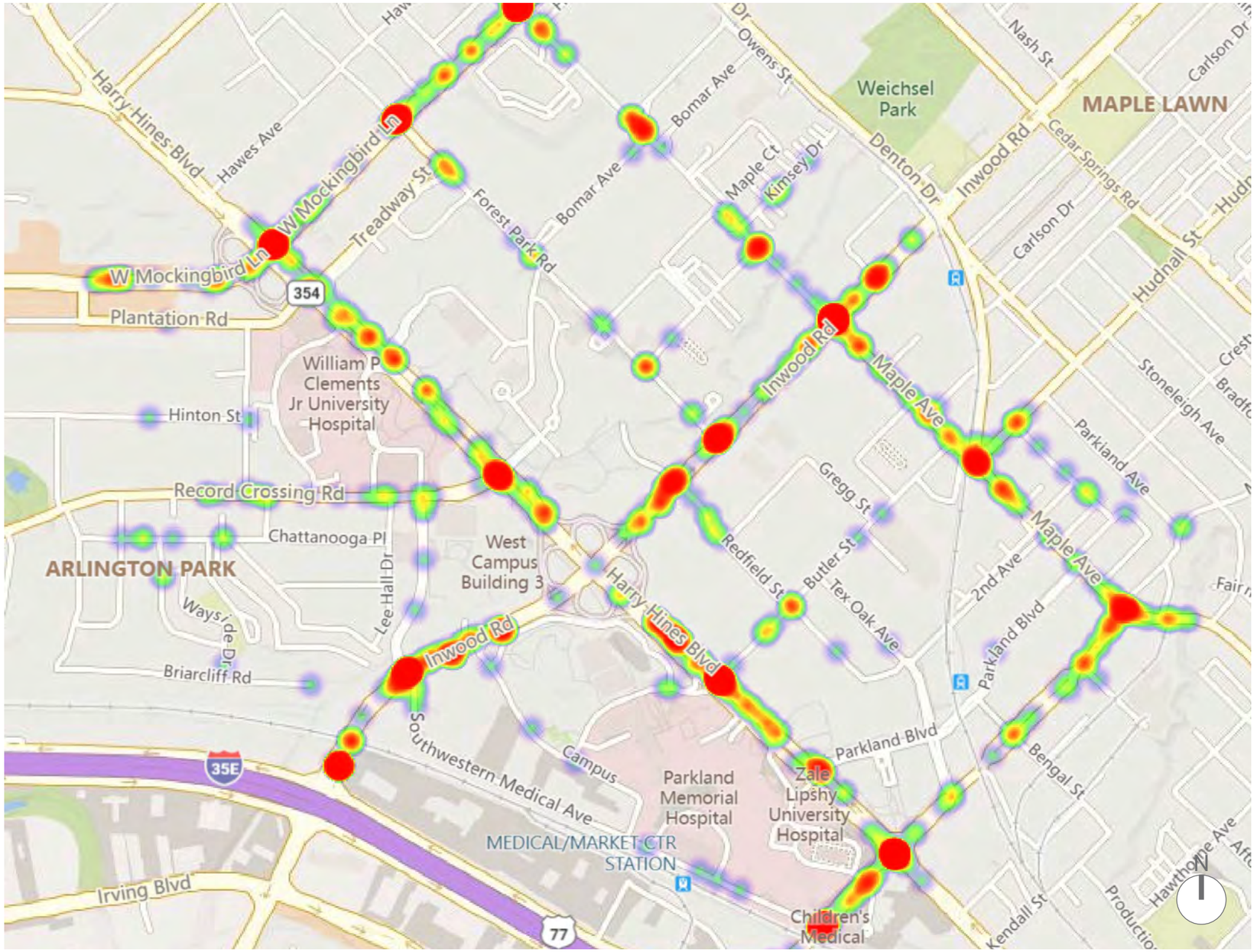


Figure 26: Crash Locations (TxDOT C.R.I.S. 5 Year Data)

Existing Intersections Analysis

To better understand the future needs of the SWMD transportation system, an analysis of the existing roadway network was conducted. Vehicle and pedestrian turning movements counts were collected at 34 intersections in the District during weekday peak periods (this data was collected during the PM peak hours, between 4:00 – 6:00PM on a typical weeknight), and 24-hour tube counts were collected at 28 locations along various major roadways within the District.
Based on the existing conditions (2022) analysis, the transportation network operates acceptably overall. The majority of the intersections (both signalized and un-signalized) have an average vehicle delay less than 35 seconds. Only two intersections have an average delay between 35 and 55 seconds, and the intersection of Medical District Drive at Maple Avenue is the only intersection in the District that experiences a delay of over 55 seconds. Figure 27 displays the existing PM peak hour (assumed to be the higher of the peak hours) analysis summary at each of the study intersections.

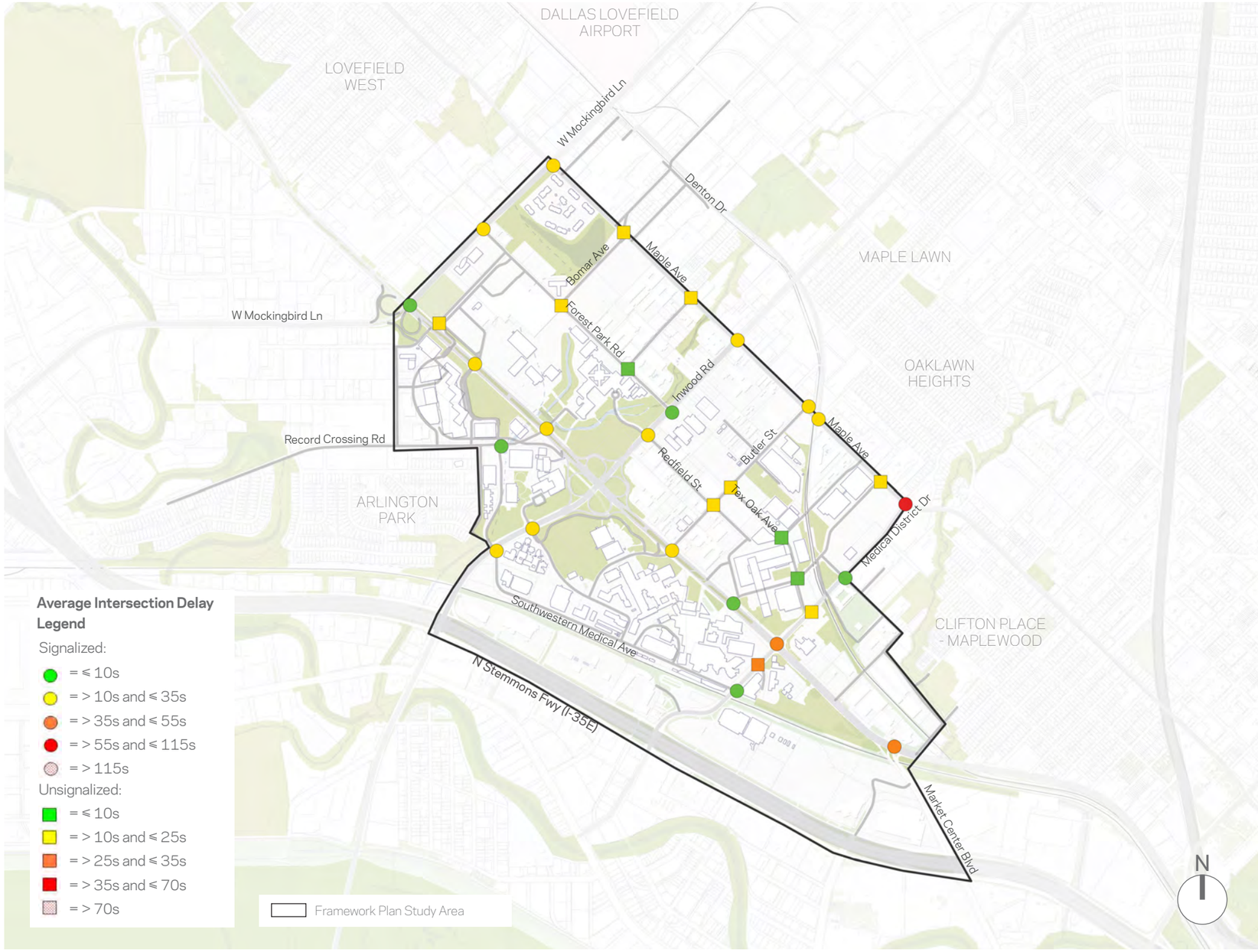


Figure 27: Existing Conditions (2022) PM Peak Hour Analysis

Future Intersections Analysis

To analyze future demand and performance of SWMD's intersections, the traffic counts collected for the existing analysis were grown 20% for a 2045 study year. Figure 28 displays the future (2045) PM peak hour analysis summary at each of the study intersections, which is assumed to be the higher of the peak hours. Many of the intersections still perform relatively well, with a few outliers, primarily along Maple Avenue.

As part of the Master Plan, the team has looked at the projected volume demands at each of the four Hubs. The high-level analysis also considered existing and future access into and through each of the Hubs. Some recommendations have been made for intersection control needed to support the anticipated traffic levels.

Figure 28: Future Conditions (2045) PM Peak Hour Analysis

ECONOMIC DEVELOPMENT ANALYSIS*

District Strengths and Weaknesses

The SWMD is a preeminent medical district and is fully integrated in the surrounding community. This includes maintaining adequate space for future hospital, educational, and research expansions and creating additional economic activity. The City of Dallas' Economic Development Policy (updated in 2023) places emphasis on equitable growth. This can align with the goals of the Southwestern Medical District.

The SWMD member institutions have both strengths and weaknesses when it comes to enhancing and expanding economic growth, job creation, research, innovation, technology, healthcare, and life sciences. They have the potential to significantly contribute to economic growth, innovation, and job creation. However, addressing weaknesses related to economic disparities, gentrification, funding diversification, and regulatory challenges is essential for ensuring that the benefits of the District's growth are shared widely and sustainably.

Review of local economic development plans, incentive policies, select medical and innovation districts around the country, market assessment, and economic models demonstrates opportunities for continued growth in the medical and medical-office space sectors. Market assessment findings are summarized in the following pages.

** This section summarizes the economic development findings. Details on the economic modeling analyses and medical district case studies can be found in the Economic Development Report in the Appendix.*

Strengths of Member Institutions

Research Excellence	The member institutions in the SWMD, such as UT South-western Medical Center, Parkland Health, and Children's Health are renowned for their cutting-edge research in various fields, including medicine, biology, and biomedical sciences. Their research output attracts federal grants, private funding, and collaborations
Talent Pool	These institutions attract a highly skilled workforce, including researchers, physicians, scientists, and healthcare professionals, contributing to a strong talent pool for innovation and growth
Collaboration Opportunities	Proximity of several top-tier institutions fosters collaboration, knowledge-sharing, and interdisciplinary research initiatives, creating a dynamic environment for innovation
Medical Education	Institutions like UT Southwestern Medical Center provide education and training for medical students, residents, and fellows. This fosters a pipeline of skilled professionals who can contribute to healthcare and research
Healthcare Services	The presence of hospitals and medical centers offers advanced healthcare services, attracting patients from the region and beyond. This can stimulate local economic activity and job creation
Biotechnology and Life Sciences	The SWMD's focus on healthcare, life sciences, and biotechnology makes it conducive for fostering biotech startups, research centers, and collaborations with pharmaceutical companies
Infrastructure	The district's existing infrastructure, such as research facilities, laboratories, and medical facilities, provides a strong foundation for expanding research and innovation

Weaknesses of Member Institutions

Economic Disparities	While the institutions in the SWMD have the potential to generate economic growth, the benefits might not be evenly distributed throughout the surrounding communities. Economic disparities and access to opportunities can be a challenge
Gentrification	As the district grows and attracts investment, there's a risk of gentrification, which can displace lower-income residents and change the socioeconomic fabric of the area
Funding Dependence	Reliance on federal grants and funding sources can make institutions vulnerable to shifts in funding priorities, impacting research and innovation efforts
Limited Industry Diversification	While the focus on healthcare and life sciences is a strength, over reliance on a specific industry can lead to vulnerability if that industry faces challenges
Regulatory Challenges	Healthcare and life sciences research can be subject to strict regulatory oversight, which can slow down the pace of innovation and development
Lack of Tech Transfer	Institutions might face challenges in effectively commercializing research findings and innovations, limiting the translation of research into viable products and startups
Infrastructure and Space Constraints	As institutions expand, there might be limitations on available space for new facilities, research centers, and startups
Workforce Retention	Highly skilled researchers and professionals might be drawn to other regions with more attractive incentives, posing a challenge to retaining top talent

Market Assessment: Regional Context

Given SWMD's strategic location between downtown Dallas, Dallas Love Field Airport, multiple interstates, and rail transit, the District is well-positioned to continue steady growth in the short- and long-term. There are multiple factors driving confidence in the area's expansion.

- From June 2022 to June 2023, the Dallas-Fort Worth (DFW) Metroplex workforce grew by 5%, accounting for 205,000 jobs. This growth outpaced Texas (4.1%) and the United States (2.5%). (see Figure 29)
- Despite changing economic conditions nationally, the multifamily sector accounts for the largest share of investment sales volume in DFW.
- The Texas Workforce Commission jobs report indicates DFW added 170,700 jobs from September 2022 to September 2023.
- The same study reports DFW added 14,400 jobs and the unemployment rate fell from 4.2% to 3.9% in the most recent month.
- DFW's non-farm employment increased 25,600 from August to September 2023.
- The education and health services sector employment increased, adding 22,800 jobs from September 2022 to September 2023 and 4,600 jobs from August to September 2023. (see Figure 30)

Over the next decade, the DFW metroplex is expected to add over 989,000 residents (a 12% increase) to over 8.9 million residents (see Figure 31). CBRE identifies the DFW metroplex as one of the best markets for accessing life sciences research talent (#16 nationally). The DFW metroplex is home to a higher-than-average number of researchers and a higher-than-average concentration of people employed in professional, scientific, and technical services. Additionally, the DFW metroplex has the fourth highest average annual salaries for life sciences and the fourth best ratio of average salary to local cost of living.

Figure 29: The DFW Metroplex Labor Force, Jan. 2022-Aug. 2023

Figure 30: The DFW Metroplex Education & Health Services Employment, Jan. 2022-Aug. 2023

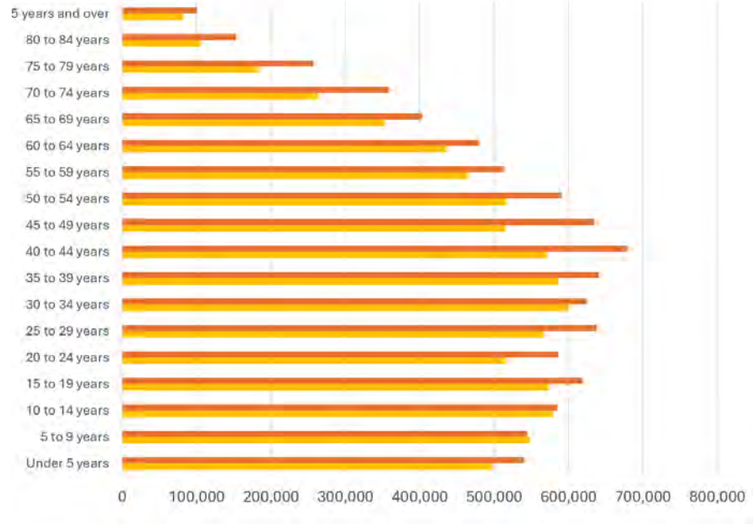


Figure 31: The DFW Metroplex Population Growth, 2023-2033

The Multifamily Market

DFW Multi-Family Market	5,726 Units Absorbed	7,491 Units Delivered	2,164 Units Started Construction	93.3% Occupancy Rate

Within the ever-evolving realm of the Dallas/Fort Worth (DFW) metroplex multifamily real estate sector, the second quarter of 2023 witnessed significant changes in net absorption, occupancy trends, and construction dynamics. Despite absorbing a notable number of units during this period, modest declines in occupancy persisted (from the DFW metroplex's occupancy peak of 97.4% in Q1 2022), mainly due to a substantial influx of new quarterly deliveries, while rental rates exhibited stability, contributing to a moderation in annual rent growth.

Net absorption shifted direction in Q2 2023, with 5,726 units absorbed, although occupancy experienced a marginal decline due to a significant number of quarterly deliveries. This marks a continued decrease from the DFW metroplex's peak occupancy in Q1 2022. Frisco, North Fort Worth/Keller, and Allen/McKinney emerged as leading sub-markets, collectively contributing to one-third of the Dallas/Fort Worth metroplex's quarterly demand.

Rental rates remained largely stable, exerting downward pressure on annual rent growth from 5.1% to 2.4%. Q2 2023 witnessed the delivery of nearly 7,500 units, marking the highest quarterly total in two years. Despite a slowdown in construction starts from the previous quarter, the active pipeline indicates 73,178 units under construction, with 21,116 slated for delivery in the remainder of 2023.

Challenges in debt, construction costs, and equity conditions contributed to the decline in construction starts, evident in the 6.9% decrease in rolling 12-month permitting. The anticipated reduction in deliveries for 2025-2027 is expected to elevate rent growth and absorption rates. The Dallas/Fort Worth metroplex led the nation in multifamily investment volume, recording $12.1 billion in sales over the past four quarters, constituting 6.6% of the national total. Despite rising interest rates and constrained debt availability affecting all property types, the multifamily sector remains the predominant contributor to investment sales volume for both the Dallas/Fort Worth metroplex and the broader U.S. market in 2023.

Figure 32: Example of new multi-family developments around the District (Source: Google Streetview)

The Office Market

DFW Office Market	24.6% Vacancy Rate	-794,410 SF Net Absorption	4.8M SF Under Construction	756k SF Delivered

In the Dallas/Fort Worth metroplex office sector, robust job growth of 56,300 positions over the past year outpaced overall regional employment gains. However, a recent quarter marked by negative net absorption increased vacancy rates to 24.6%, influenced by downsizing, office closures, and a notable portion of vacant space in Class A assets within specific micro markets.

Development activities decreased to 4.8 million square feet, comprising 2% of the existing inventory. Despite weekly office utilization rates averaging 53%, surpassing the national large metro average, the Dallas/Fort Worth metroplex fell behind Houston and Austin in this regard.

The market-wide net absorption, based on physical occupancy, decelerated from the previous quarter due to two significant downsizes and the closure of PepsiCo's divisional office following company layoffs. The total net absorption reached nearly negative 800,000 square feet, with two-thirds of this figure originating from the Far North Dallas sub-market alone. Consequently, the overall vacancy rate (direct and sublease) increased from 24.3% to 24.6%, resulting in more than 57.5 million square feet of vacant office space across the DFW metroplex. Notably, a significant portion of North Texas's vacant space, comprising 13.7 million square feet, is attributed to Class A assets within the Dallas CBD and the Upper Tollway/West Plano micro market

The Retail Market

The DFW metroplex retail market is resilient. This resilience is marked by strong demand and delivery of new retail spaces. One of the driving forces behind this overall occupancy rate increase is grocery chains, including regional and national brands entering and expanding in the market.

The momentum in the DFW metroplex retail market remains strong, approaching a 95% occupancy rate in mid-year 2023. With just over 300,000 sq. ft. of net absorption in Q2 and a total of 850,000 sq. ft. for the first half of 2023, demand was notably concentrated in areas such as Addison, Frisco, West Fort Worth, and North Grand Prairie. Q2 2023 saw the delivery of over 356,000 sq. ft. of retail space, primarily in Frisco/West Frisco, McKinney, and Northwest Fort Worth, with a collective pre-leased rate of 65.9% (See Figure 3).

The overall occupancy rate stands at 94.9%, marking a 90-basis-point increase from Q1 2022, and twelve micro markets in the Dallas/Fort Worth metroplex boast vacancy rates below 2%. The market features 153 available big box retail spaces (20,000 sq. ft. and larger), accounting for 6.9 million sq. ft. or 36% of the total market availability.

Noteworthy grocery expansions in Dallas include plans from H-E-B, Kroger, Tom Thumb, and Costco, along with the introduction of new-to-market stores like H Mart and El Rio Grande Latin Market.

Office to Medical Conversions

There are strong market opportunities for the DFW metroplex to convert underutilized office space into medical specific space. At the end of Q4 2022, the DFW metroplex medical office market vacancy rate stood at 10%, the lowest rate in over seven years. The SWMD market area was at 9.5%. Increased hybrid work environments are driving a trend of seeking health care services more locally. Because of this trend of increased hybrid work environments, a geographic re-balancing is taking place. Medical office and multifamily conversions of unoccupied office space are happening, with the trend being strongest in high-growth Sun Belt markets such as Dallas. These conversions are ideally situated near medical clusters and residential/foot traffic. These conversions are suitable across soft, mixed, and hard medical specialties.

Wholesale conversions entail an entire building repositioned at once. The wholesale conversion option is better for buildings with very high vacancy (>50%) or high rollover risk. However, the wholesale conversion option is capital intensive. Piecemeal conversions include converting one floor or office suite at a time. This piecemeal option is better suited for buildings with mid-to-high vacancies (25% to 40%). This piecemeal option is less capital intensive, but still expensive as compared to the wholesale conversion option.

Results and Findings

The results of economic modeling demonstrate a net benefit to re-imagining the Southwestern Medical District as a more cohesive area. In this sense, cohesive means that the areas surrounding the hospital campuses are aligned with supporting the growth of the hospitals. As seen throughout medical districts and innovation districts across the country, those most successful districts are anchored by hospital campuses and are supported by commercial, office, and residential developments that cultivate growth for the anchor institutions. Simultaneously, these districts allow for expansion of hospital campuses.

Framework Planning

- District Guiding Principles
- Mobility Framework
- Open Space Framework
- Utilities Framework
- Land Development Framework -Hubs

DISTRICT GUIDING PRINCIPLES

Developed in collaboration with the leadership of the members institutions and stakeholder input, the following principles guide the Framework and Master Plan recommendations

- Establish a **framework of safety and connectivity** between land use, natural systems, mobility network, and infrastructure across the District.
- **Integrate a mix-of-uses** within and around the District that complement and support its world class clinical, research and educational activities.
- Create a **comprehensive, safe, and connected mobility network** that supports vehicular, transit, bicycle, micro-mobility, and pedestrian movement to and through the District.
- Ensure that the District is well supported by modern, state-of-the-art and **resilient utility systems.**
- Respect and connect the District to adjoining **residential neighborhoods.**
- **Preserve, protect and enhance the watershed**, and its branches and creeks, that flow through or along the District and integrate them into the District's overall open space network.
- **Prioritize safety and promote human comfort** through an increased tree canopy, a reduction in heat island effect, improved air quality and an active, walkable ground-level experience.

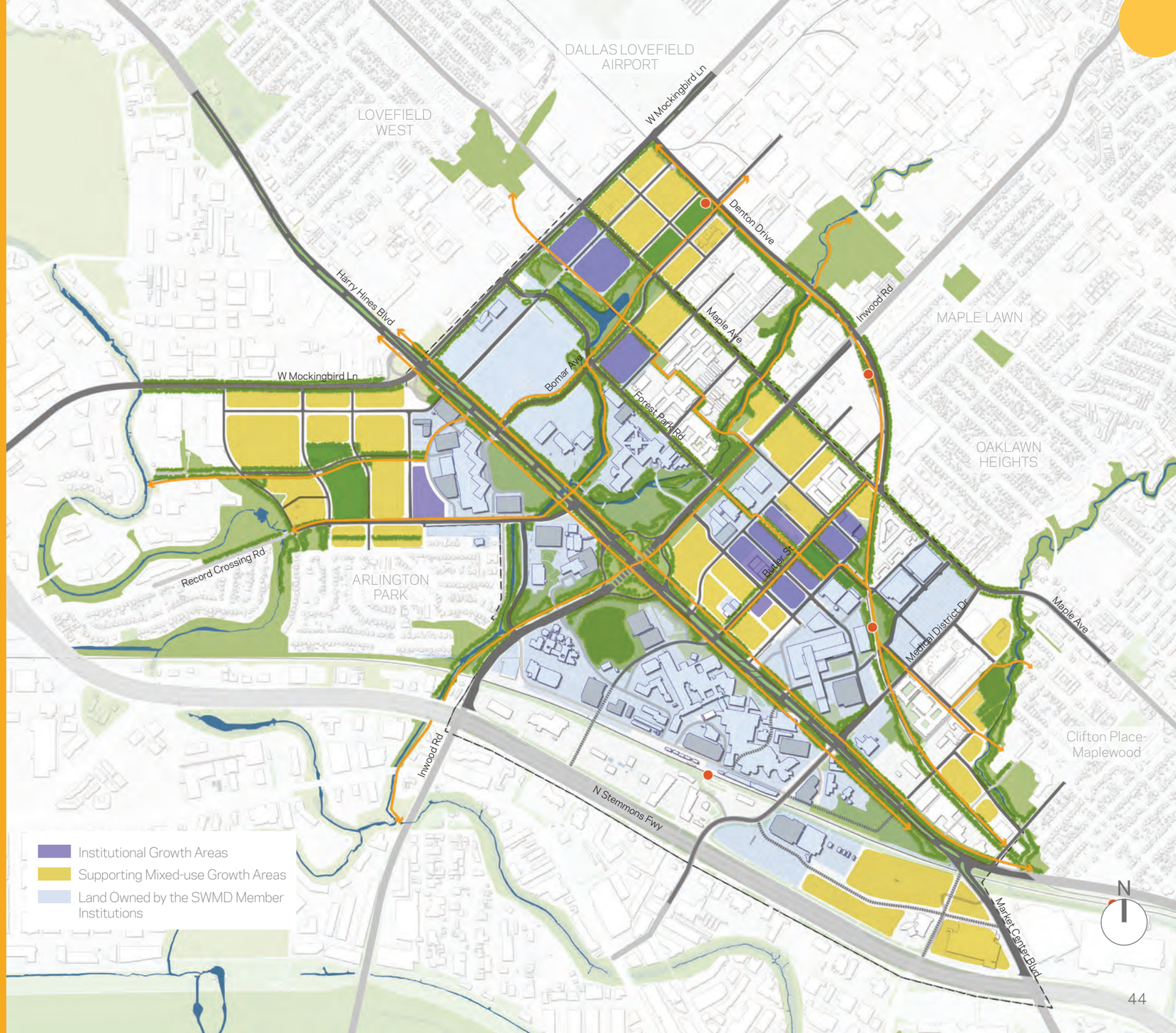


Figure 33: Southwestern Medical District Framework Plan

MOBILITY FRAMEWORK

Recommended Street Framework

The Framework Plan recommends a District-wide street grid and pathway network for improved access and circulation for all modes of travel. An improved street grid will link to and provide access into adjoining thoroughfares and collector streets, diffuse traffic, reinforce existing roadways and identify future roadway corridors. An enhanced roadway network will promote safety, operational efficiency, and support future physical growth of the institutions. A better grid of sidewalks and trails will also improve the pedestrian and bicycle accessibility throughout the SWMD. The proposed roadway network is described in further detail in the Master Plan recommendations chapter of this report.

The 'A' Streets should be considered as 'frontage' streets with activated ground levels, storefronts, pedestrian friendly paths.

The 'B' Streets should be considered as 'service' or 'auxiliary' streets and non-pedestrian oriented uses such as a parking garage entrances, loading docks etc.

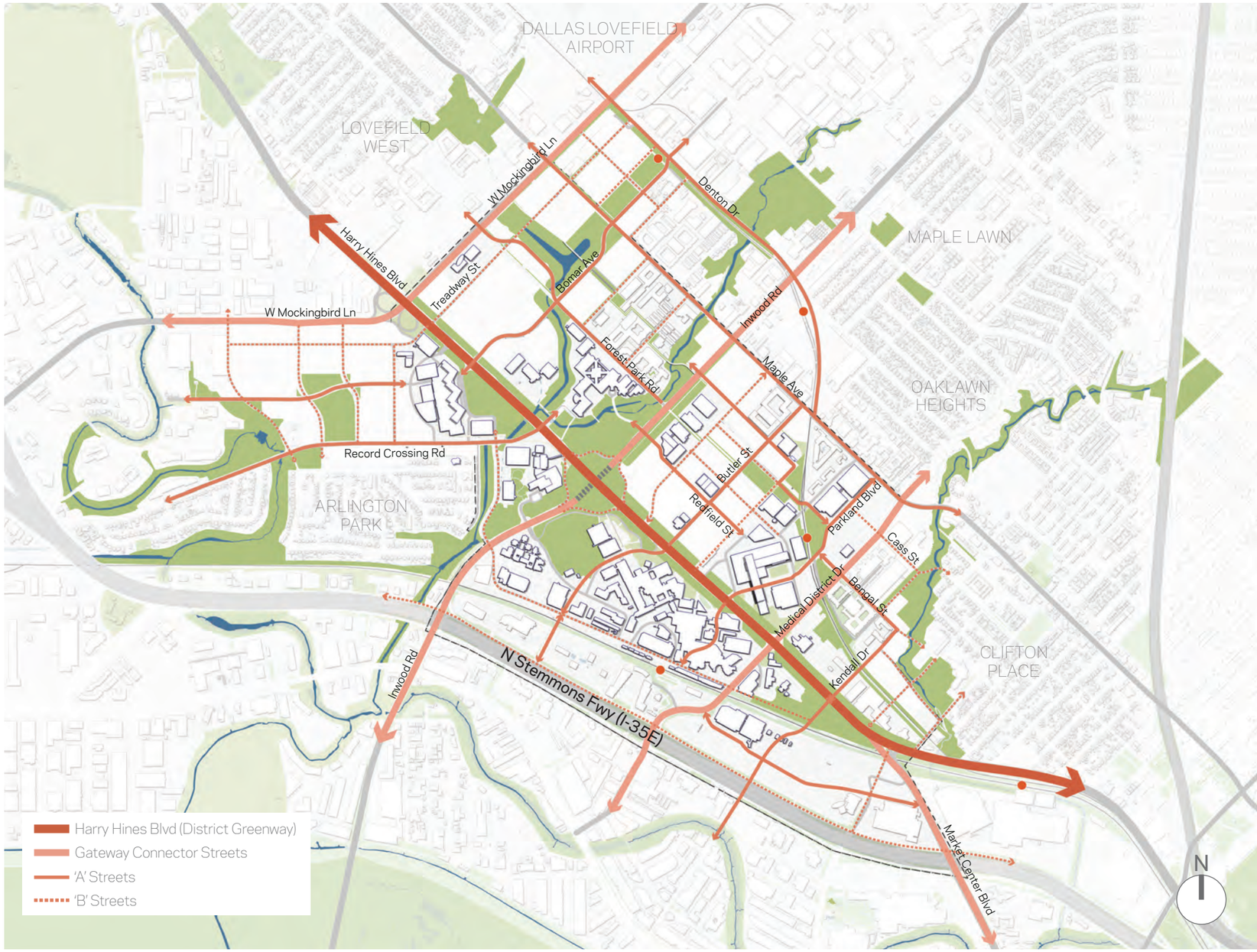


Figure 34: Recommended Street Framework

Bike and Pedestrian Framework

Building from the SWMD Pedestrian Access Study, the City's Sidewalk Master Plan, and the City's Draft Master, the SWMD plans to greatly expand the pedestrian and bicycle network through the District. Figure 34 provides a conceptual framework of the future pedestrian and bicycle network providing a significant increase in multi-modal connectivity through the District. The figure provides a breakdown of sidewalks, bikeways, and shared-use pathways. There is a strong focus on building up the network as the four hubs and the district develop. The District will continue to have discussions with the City as their Bicycle and Sidewalk Master Plans evolve. As an example, the SWMD team has had recent conversations with NCTCOG and DART to incorporate a pedestrian sidewalk along Inwood Road as part of the planned double-tracking of the transit line.

Figure 35: Existing Bikeway at Butler Street and Denton Drive (Source: Google Streetview)

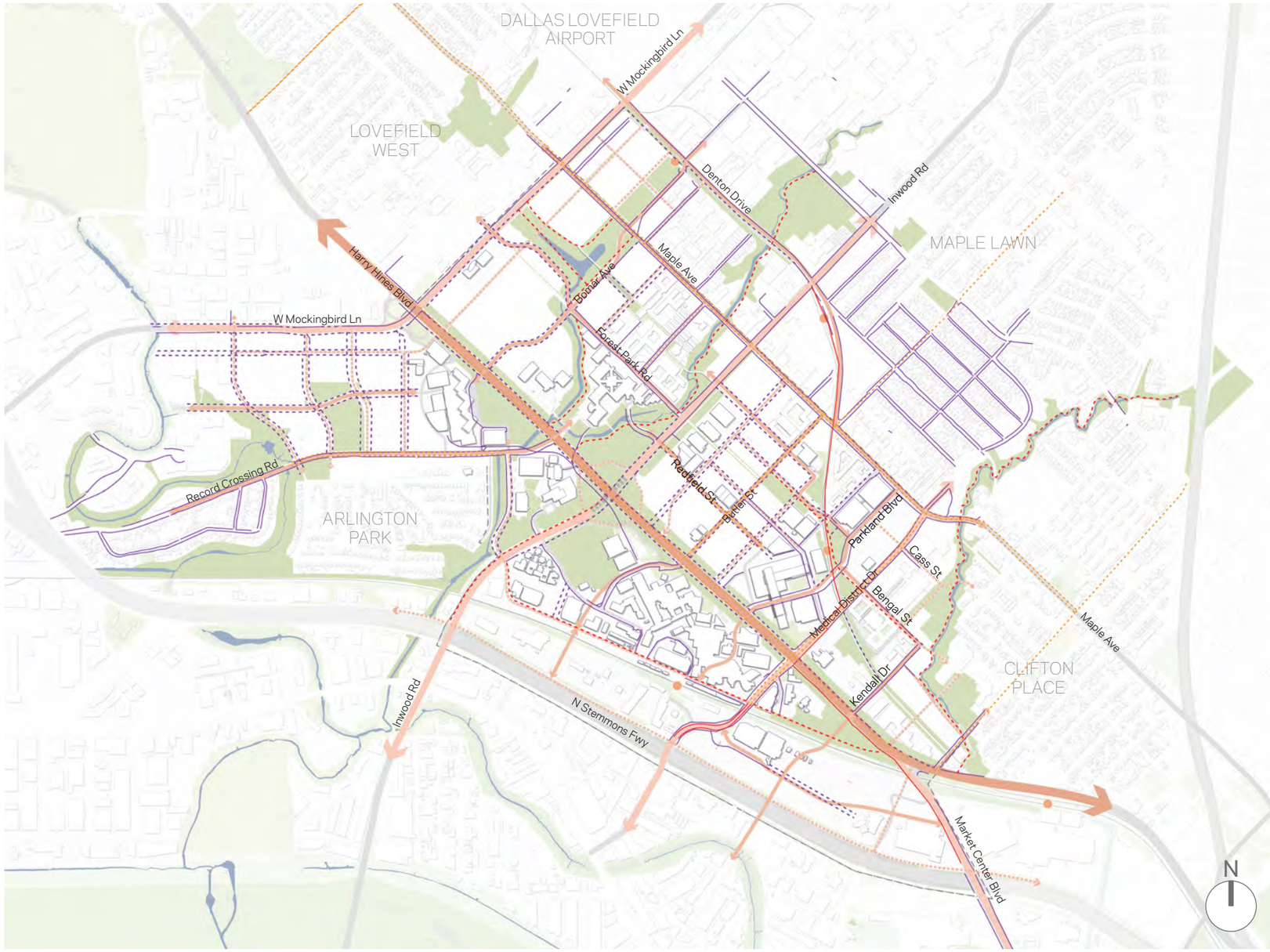


Figure 36: Conceptual Bicycle and Pedestrian Framework

OPEN SPACE FRAMEWORK

Open Space Network

The open space framework for the SWMD builds on the existing East and West Knights Branch, the Cedar Springs Branch's natural open space drainage network, and the Harry Hines Boulevard "front yard" green corridor. The framework proposes enhancement to the existing open space corridors to provide better and more continuous pedestrian access, connecting them to the Trinity Strand Trail where possible. Particular attention has been given to the Bomar detention basin open space and expansion of it to the east, across Maple Avenue to the DART line. It also recommends open space connections to the north across Mockingbird Lane to the Lovefield West neighborhood.

The framework recommends better connections to Cedar Springs Branch, expanding the corridor and providing access along it, to the Trinity Strand Trail, and establishing several connections across it to the Clifton Place-Maplewood neighborhood.

The framework embraces the Texas Tree Foundation's work on the Harry Hines Boulevard streetscape improvements and on the creation of the "Green Park" at the reconfigured intersection of Harry Hines Boulevard and Inwood Road.

In addition, enhanced streetscape amenities are proposed for key roadways that border or bisect the District: West Mockingbird Lane, Bomar Avenue, Record Crossing Road, Forest Park Road, Inwood Road, Butler Street, Redfield Street, Medical District Drive and Market Center Boulevard. Enhanced streetscape amenities include: street trees, wide sidewalks or multi-use trails, street and pedestrian-scaled lighting, benches, trash receptacles and safe pedestrian cross walks.

Figure 37: Recommended Open Space Framework

UTILITIES FRAMEWORK

Overview

The utilities framework adheres to the Plan's guiding principles and provides recommendations for modernizing, re-envisioning, and reconnecting utility infrastructure. The framework represents a first step in collating and identifying information at a District level. Utilities covered include water and wastewater, stormwater, electrical, natural gas, and telecommunications.

Stormwater infrastructure within the District should reconnect and revitalize open space within the District by re-envisioning stormwater infrastructure. Utilize nature-based solutions, blue-green infrastructure, that improves localized flooding, reduces impervious surface, encourages water conservation and reuse, and enhances ecological restoration. Design stormwater management solutions that work with local landscapes and create opportunities for quality and comfortable spaces within the District.

Other utilities should seek to improve District safety aesthetics and resilience through the relocation of all overhead utilities including electrical distribution and telecommunication lines underground. New large utility infrastructure should be appropriately located and fortified-screened to protect viewsheds and enhance security. Incorporate sustainability and redundancy strategies for key utility systems in the District.

Overall, the Southwestern Medical District should seek to strengthen utility cooperation and coordination through the creation of District-wide utilities infrastructure group that includes member institutions and utility providers.

Figure 38: Stormwater and Electrical Utilities around the District

Localized flooding at Tex Oak Avenue & Med Dist Drive

Inwood substation

West Knights Branch during storm event

Butler Street overhead utilities

Stormwater Strategies

Stormwater infrastructure strategies should incorporate near-term policy and technology changes and long-term infrastructure projects.

- Adopting low-impact development standards for new construction within the District
- Exploration of Knights Branch daylighting throughout the District
- Re-envision Bomar detention basin to develop as a community amenity
- Reduction of impervious cover through best management practices (BMP) including: rainwater capture, reuse, permeable paving, bioretention, wetponds or rain gardens
- Capitalize on opportunities with anticipated roadway reconstruction or maintenance projects
- Consider coordination with DWU to update existing floodplains and/or Knights Branch Floodplain study

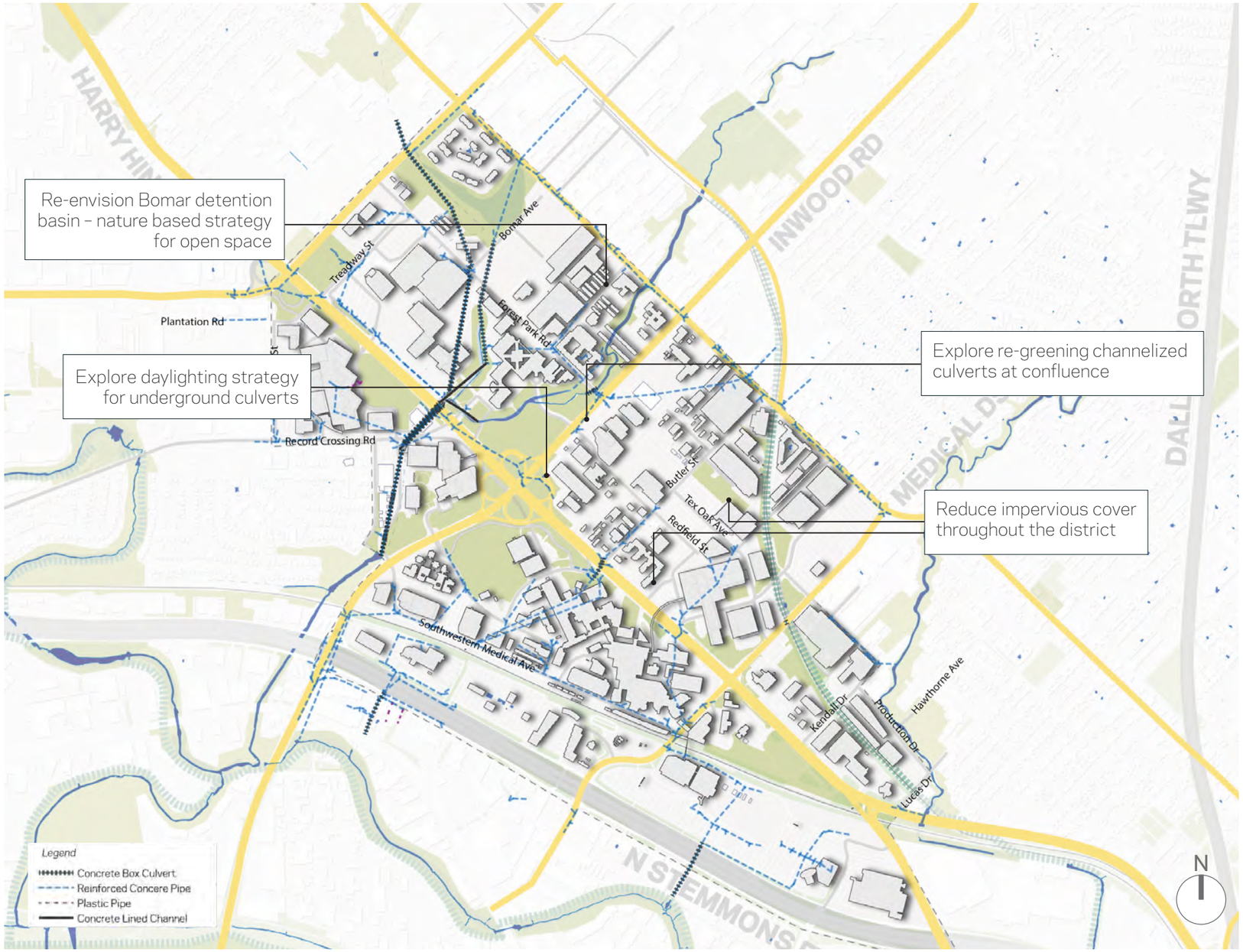


Figure 39: Stormwater Framework

Utilities Strategies

The following section outlines framework strategies for water and wastewater, electrical, natural gas, and telecommunications utilities. These strategies include aspects of sustainability, aesthetics, and mobility that would benefit institutions, businesses, and residents of the District by creating comfortable and walkable places and enhancing the institutions ability to adapt to environmental shocks and/or extreme weather events.

Water and wastewater

- Explore feasibility and potential of secondary water sources; potential for groundwater
- Conduct a water reclamation feasibility study to asses water reuse and water quality regulations/restrictions
- Continue and enhance water conservation efforts
- Utilize smart metering and emerging technologies

Electrical Utilities

- Enhance district resilience and aesthetics through relocation of overhead utilities underground
- Plan for alternative energy strategies for District resilience and redundancy
- Locate large infrastructure outside of key corridors and obscure/ screen
- Capitalize on planned street or sidewalk reconstruction projects for utility relocation
- Adopt SWMD design standards to relocate overhead utilities

Figure 40: Utilities Framework (a)

Natural Gas

- Identify District-wide resilience strategies for extreme weather events
- Explore decarbonization and redundancy strategies through alternative energy feasibility study
- Consider potential for District energy solutions

Telecommunications

- Relocate any overhead utility lines underground
- Map District points of entry and/or critical infrastructure
- Explore non-terrestrial technology for network solutions

District-wide

- Form a District-wide utilities committee composed of service provider representatives and member institutions
- Adopt forward thinking resilience and adaptation strategies for critical infrastructure
- Enhance the District through collaborative large civic-oriented projects
- Align utilities policies with land use and growth policies

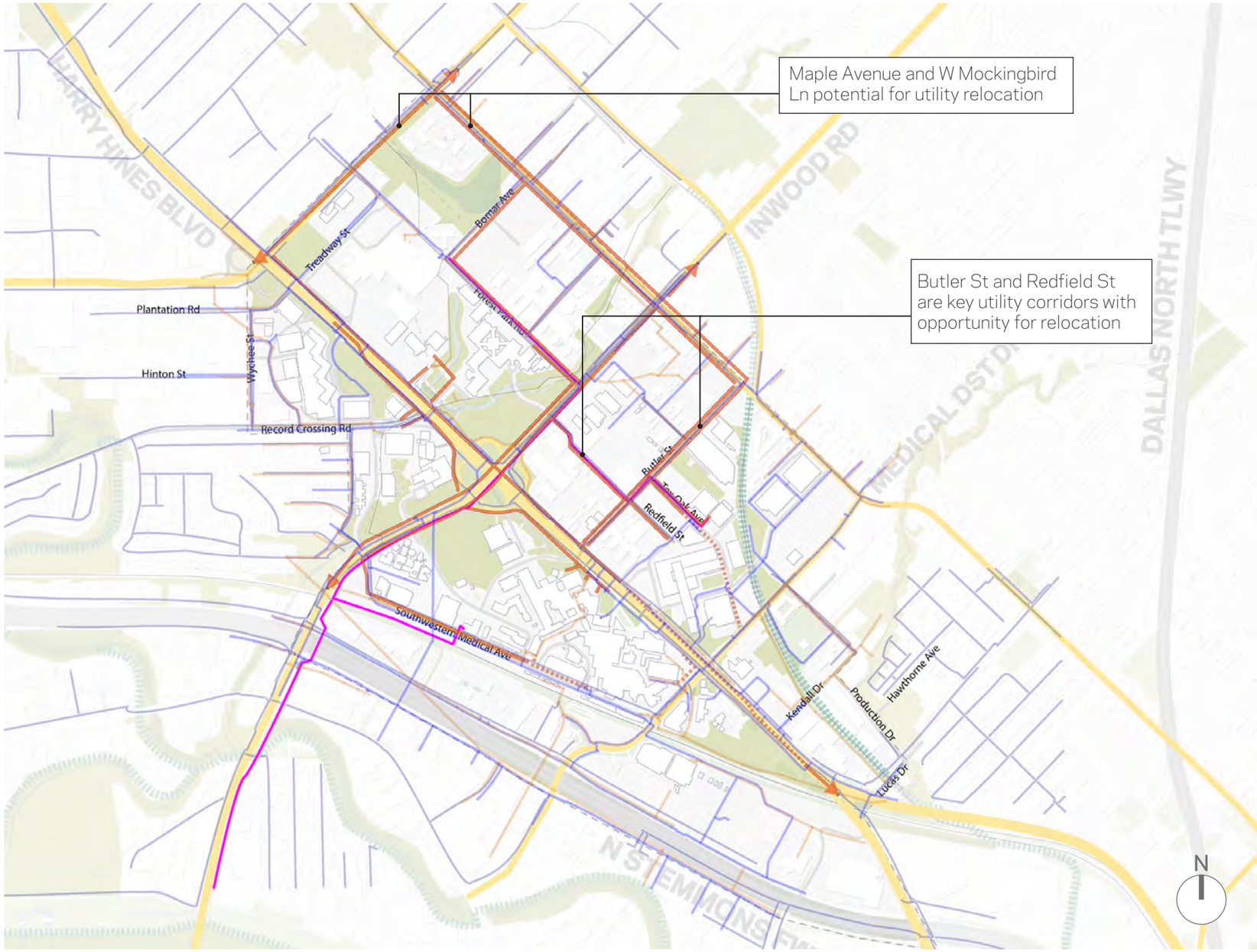


Figure 41: Utilities Framework (b)

Utility Needs Inventory and Opportunity Projects

The following provides an inventory of utility projects identified through City of Dallas needs inventory, capital projects, or 2017 bond program initiatives. The inventory contains new construction of streets, urban design and thoroughfare planning, street maintenance and resurfacing, and floodplain and stormwater projects. The adjacent map highlights corridors with planned projects within the SWMD corridors where there may be opportunities to relocate overhead utilities.

Figure 42: Butler Street View (Source: Google Streetview)

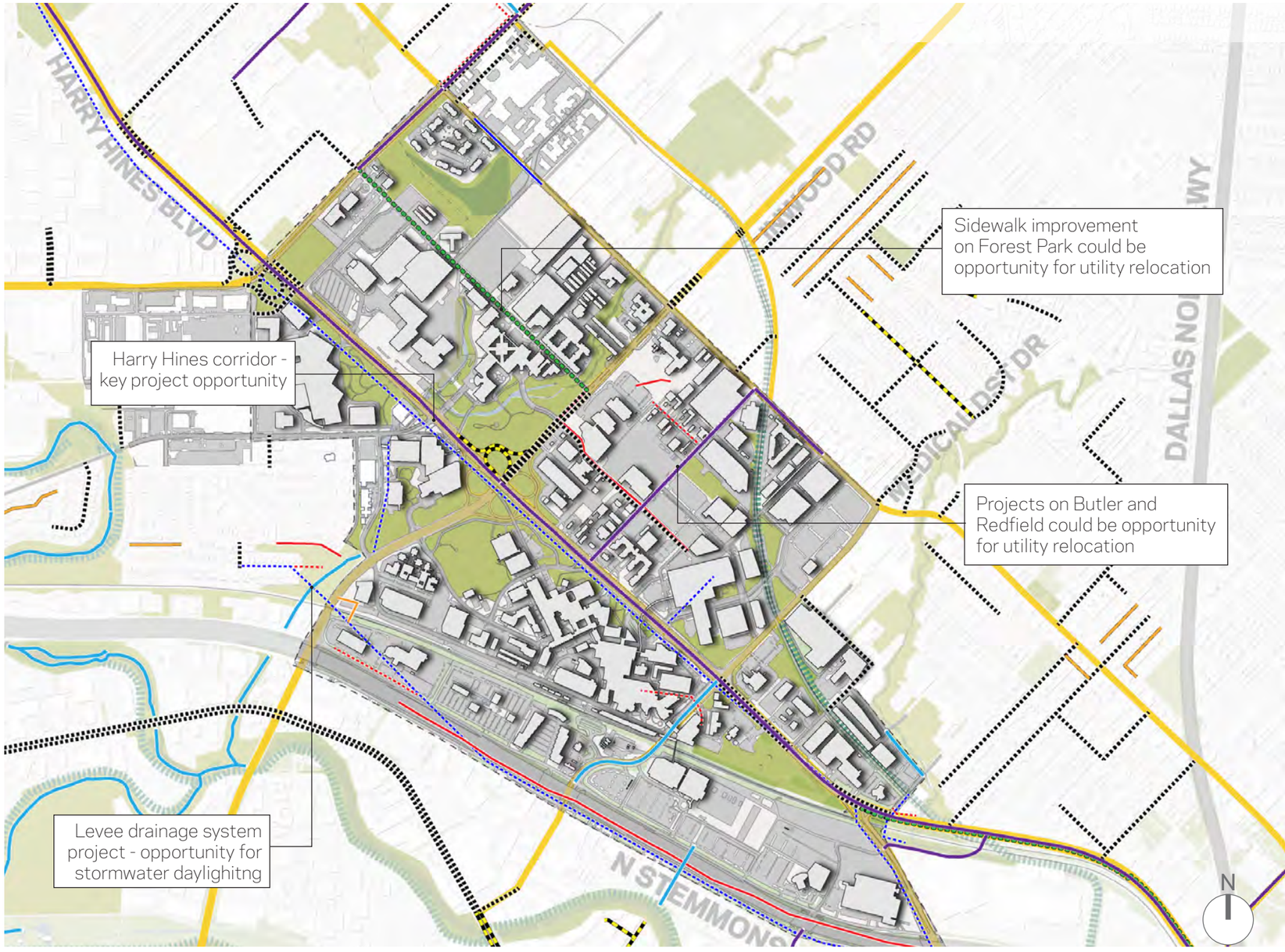


Figure 43: Utilities Needs Inventory / Opportunity Projects

LAND DEVELOPMENT FRAMEWORK

Growth Areas

Based on the identified potential redevelopment areas within the SWMD and in the "seam" between it and the surrounding neighborhoods, the land development framework highlights areas for mixed-use growth. The mixed-use growth areas build off of the existing and proposed street grid that will provide access to these areas and suggests new open spaces that can bring value and a sense of place to the development.

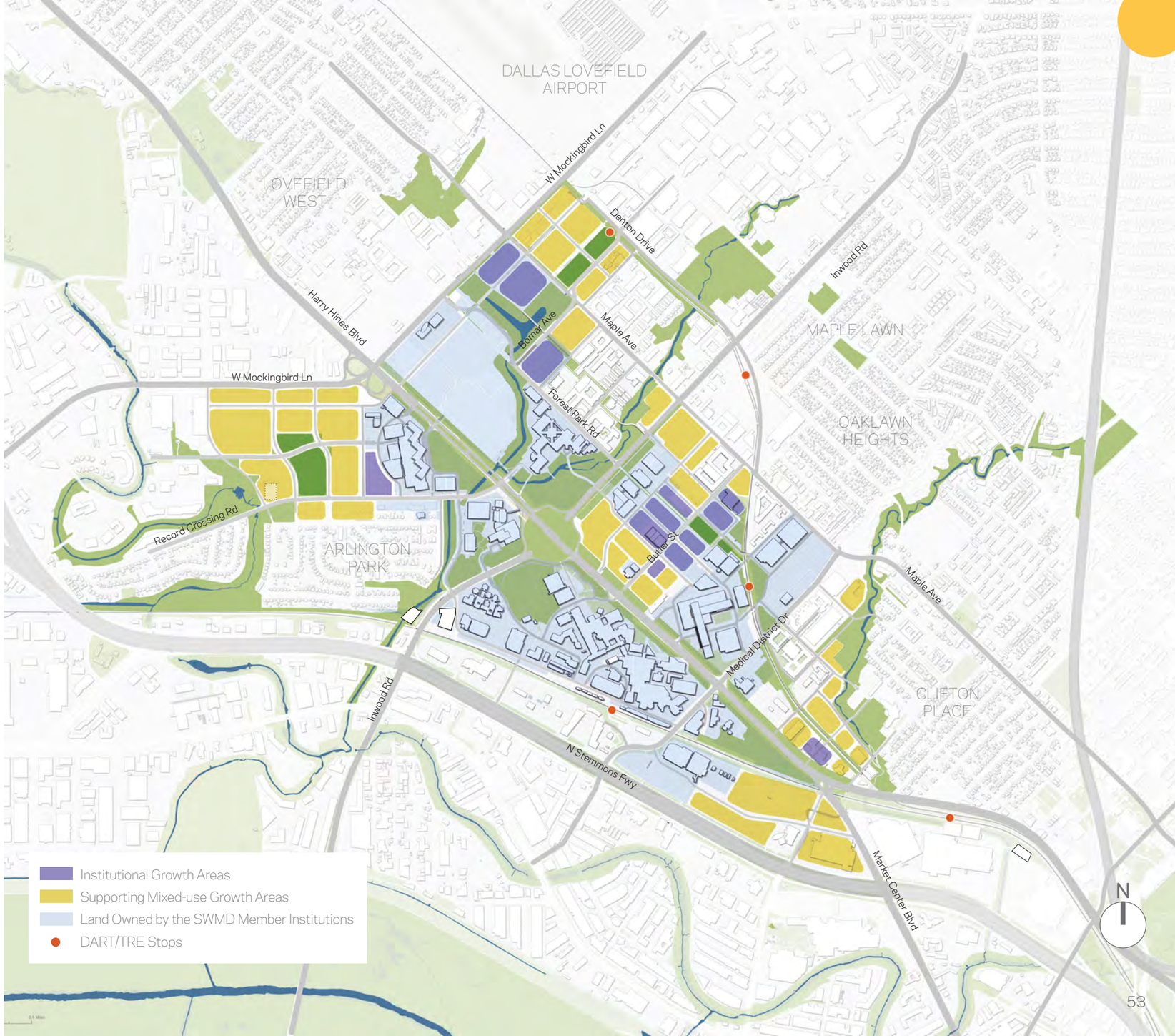
Within the District there are mixed-use redevelopment opportunities along Harry Hines Boulevard and Maple Avenue with Butler Street and Redfield Street as key connectors.

Cedar Springs Branch provides the opportunity to introduce a mix of uses that enhance and energize the open space corridor and better connect to the adjoining neighborhoods.

The area south of West Mockingbird Lane, between Maple Avenue and the DART line/Denton Drive provides mixed-use redevelopment opportunities in support of the new pediatric hospital with Bomar Avenue as an expanded new connector from Harry Hines Boulevard to the DART line/Denton Drive. There is also the possibility of adding a new DART station at this location.

The area south of West Mockingbird Lane and to the west of William P. Clements Jr. University Hospital has changed considerably over time, with many vacant buildings, vacant land and large land holders who may be interested in change. This area is also north of the Arlington Park Neighborhood that provides a range of affordable housing options that supports the District. Record Crossing Road is the key street that serves the area. This area could provide long-term growth potential for William P. Clements Jr. University Hospital and a mix of uses in general support of the District and the Arlington Park Neighborhood.

Figure 44: Land Development Framework and Potential Growth Areas



Hubs

As seen throughout medical districts and innovation districts across the country, the most successful districts are anchored by hospital campuses and are supported by commercial, office, and residential developments that cultivate growth for the anchor institutions. Simultaneously, these districts allow for logical growth and renewal of the hospital campuses.

The identified District potential growth areas support the concept of creating mixed-use "hubs" distributed in and around the District providing for and supporting growth of clinic, academic and research activities of the three medical institutions, and providing a mix of supporting uses that establish a 24/7 environment, a strong sense of place and a live, work, play setting that is walkable and relies on other mobility options beyond the automobile.

The mixed-use "hubs" include; the Bomar Avenue corridor, the Butler Street corridor, the area between Record Crossing Road and West Mockingbird Lane, and the Cedar Springs Branch corridor.

The Crow Holdings property north of Market Center Boulevard is a potential growth area and was identified as a hub in the early part of the Planning process. However, given that this area is largely under private ownership of the developer Crow Holdings, it was determined that the SWMD will not play an active role in its future development. It is, therefore, no longer called out as a "hub". It should be noted that this area still provides a partnership opportunity with a national developer interested in mixed-use development that is in support of the SWMD, with both programmatic uses and support services.

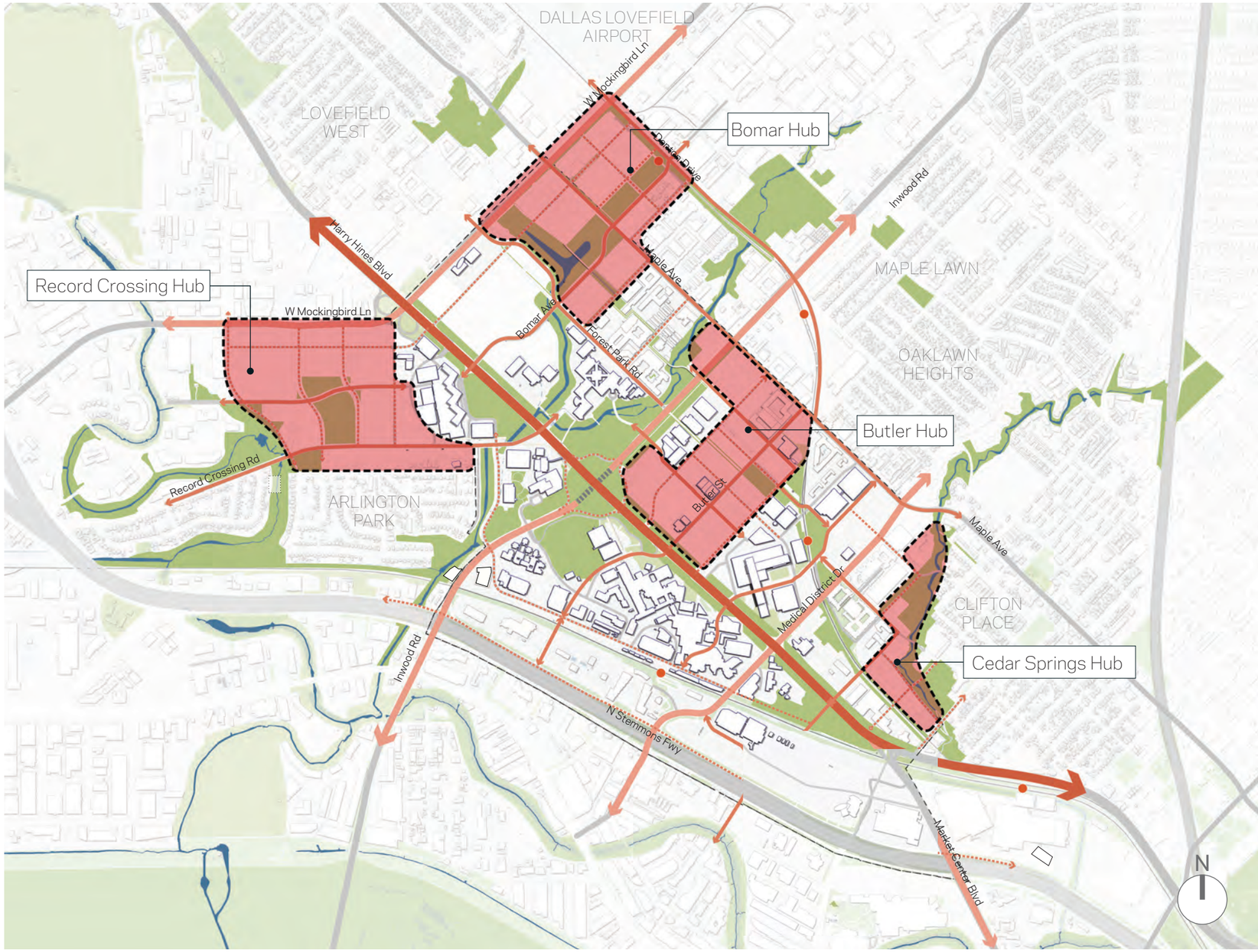


Figure 45: District Hubs Framework Plan

Master Plan Recommendations

- Plan Evolution
- Land Use Recommendations
- Open Space & Parks Recommendations
- Mobility Recommendations
- Utilities Recommendations

PLAN EVOLUTION

Transitioning from Phase One to Phase Two

The Master Plan, builds on the work of the Framework Plan and provides more detailed recommendations for Economic Development, Land Use, Open Space and Parks, Mobility, and Utility Infrastructure. The Plan continues to focus on the development of the four "Hubs" within the District: Butler, Bomar, Record Crossing and Cedar Springs.

It is important to note that as the Plan transitioned from a framework stage, development concepts evolved and new projects were made public, resulting in some key differences between the two phases. Following are some of the areas that have evolved since the completion of the Framework Plan and will be reflected in the Master Plan recommendations:

1. The District study area boundary was expanded to include growth areas identified through this planning study.
2. Expansion of Record Crossing Hub to the Elm Fork Channel riparian corridor to the west.
3. Forest Park Rd and Bomar Hub have been realigned per the new pediatric hospital plan.
4. The fifth hub identified in the Framework Plan, the Market Center Hub, while still considered an important part of the District, was removed from further study due to its primary single ownership by Crow Holdings and acknowledging that they have their own vision and timeline for development of that site.
5. The Cedar Springs Hub has been expanded up to Harry Hines Boulevard.
6. The Butler Hub boundary and open space has been realigned in accordance with planned projects.

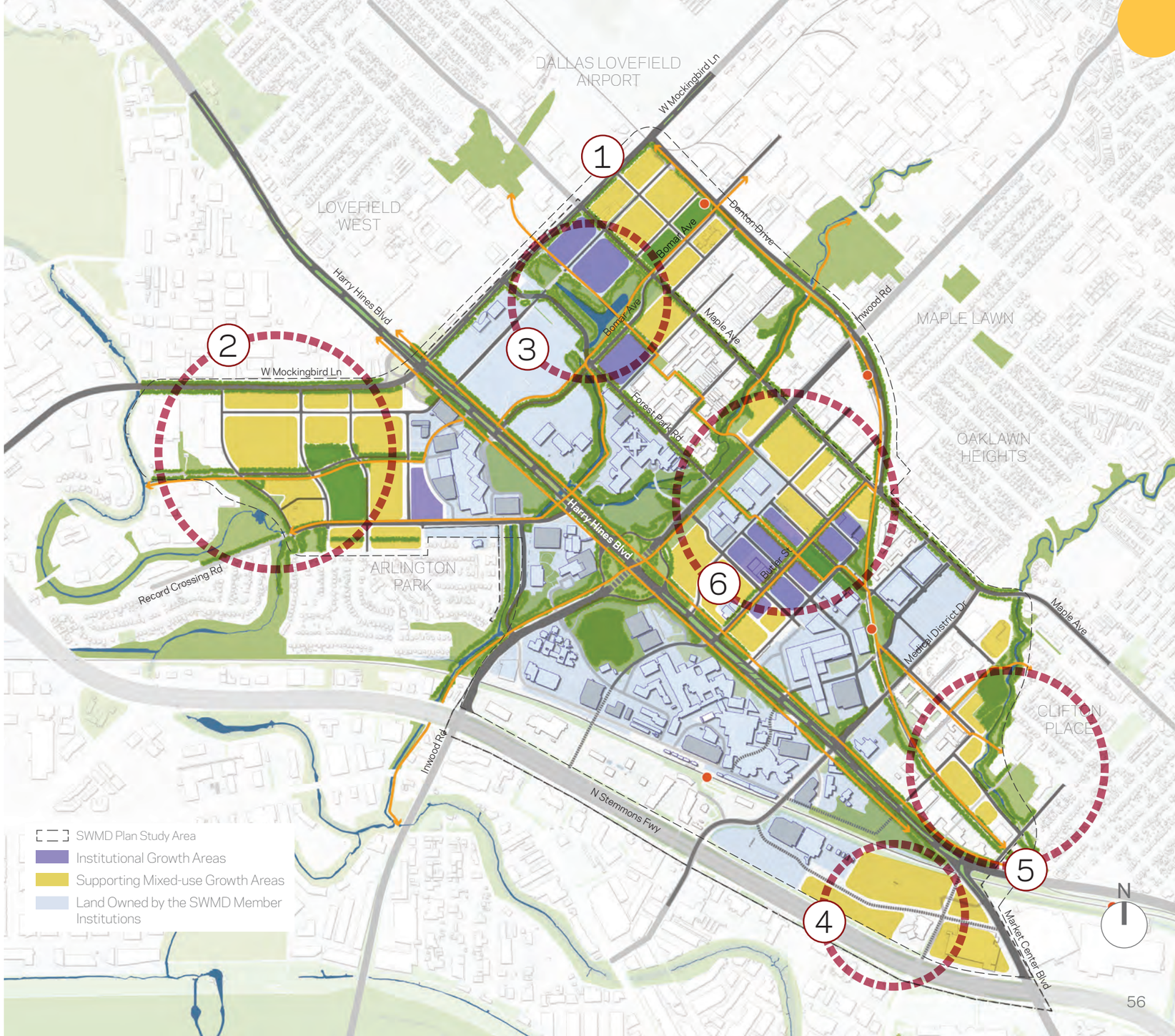


Figure 46: Framework Plan Evolution

LAND USE RECOMMENDATIONS

Overview

Working with the SWMD Four Person and Planning Advisory Committees, a land use strategy was developed that clearly defines land within the District that has been committed to or is desired for the long-term growth of each institution to achieve their clinical, academic and research functions as part of an overall academic medical center district. This land has been designated purple on the Land Use Plan and is designated as Institutional.

Land within the District that has been deemed "of interest" to the three institutions has been designated as Institutional Mixed-Use and could be a mix of medical related uses, educational, research, and partnerships with private industry. Institutional Mixed-Use is designated blue on the Land Use Plan.

The third land use category designated on the Land Use Plan is Mixed-Use and is illustrated as yellow. This land use category is intended to facilitate the attraction of new residential, office, hotel, retail, educational, civic, and cultural uses to the District. This mix of uses provides options for employees of the three hospitals to live within walking distance of where they work, to encourage few vehicular trips to and from the District. It is also intended to provide more opportunity for services to support the District with retail, service commercial, food and beverage, health and wellness, etc. As in the Institutional Mixed-Use, it could also provide office and research space for private industry wanting to do business with the three institutions, either independently or in partnership with the three Member Institutions.

Figure 47: Overall Master Plan

The concept of mixed-use can either be in the form of different uses arrayed horizontally or stacked vertically on top of each other. Horizontal mixed-use would create single purpose buildings connected by streets and pedestrian ways (i.e., an office building next to a residential building next to a hotel). Vertical mixed-use would have multiple uses in the same building; (i.e., retail/lobbies at the ground level, office/research above retail, residential/hotel over the office).

To create an active, walkable District, the Plan recommends that all ground floor uses along streets or pedestrian ways incorporate retail, service commercial, food and beverage, etc. that will activate the street level environment and encourage a high level of foot traffic.

The adjacent list categorizes the allowable and prohibited uses defined in each of the land use categories mentioned above.

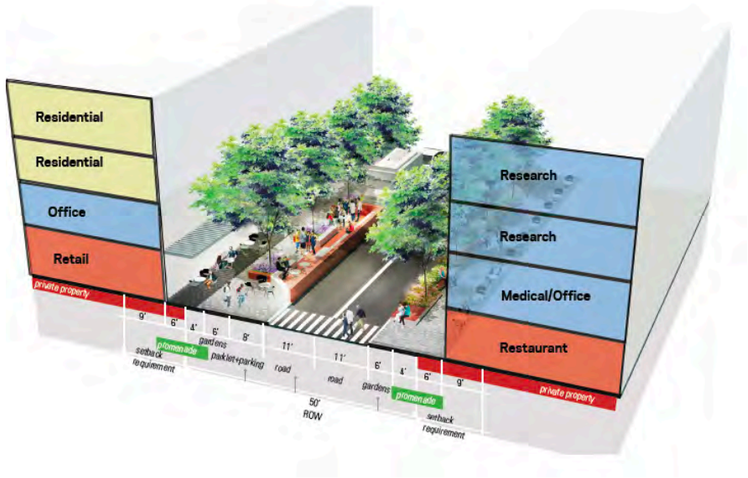


Figure 48: Typical Mixed-Use Cross Section

Institutional

- Clinical
- Research
- Academic
- Transit facilities
- Private and public open space

Institutional Mixed-Use

- Clinical
- Research and development
- Academic
- Medical offices and clinics
- Amenities for patients, physicians, researchers, students, and staff
- Other public/private institutions (daycare, schools, faith-based organizations, etc)
- Transit facilities
- Private and public open space
- Others to be determined

Mixed-Use

- Multi-family residential
- Retail and personal services
- Civic and cultural
- Offices (private/medical etc.)
- Lodging and conference/convention centers
- Amenities for district residents, patients, physicians, researchers, students, and staff
- Public/private institutions (healthcare, higher education, daycare, schools, faith-based organizations, etc)
- Research and development
- Transit facilities
- Private and public open space
- Others to be determined

Prohibited uses across the district

- Self-storage
- Commercial stand-alone parking lots
- Adult establishments
- Drive-thru fast-food establishments
- Gas stations
- Big box stores
- Liquor stores
- Car washes
- Others to be determined

Aligned With ForwardDallas

The City of Dallas is currently updating its citywide comprehensive land use plan; ForwardDallas is a long-term plan that charts the vision for the city's future land use and urban design. This effort has run parallel to the SWMD 2024 Master Plan process, allowing the SWMD planning team to collaborate with the City of Dallas planners to ensure the land use vision in ForwardDallas and the SWMD are aligned. To implement ForwardDallas, the City will be updating its current zoning regulations. The SWMD should continue to be engaged with the City as it goes through its zoning update to ensure continuity in land use alignment.

ForwardDallas is establishing the concept of 'placetypes' to describe a range of allowed uses. This concept ensures land uses are inclusive rather than exclusive and promotes a mix of uses in each place type rather than singular uses.

The image on this page and content below describe the land uses proposed by ForwardDallas. This information has been extracted from ForwardDallas as of the date of this Plan. For additional and current information visit: https://dallascityhall.com/departments/pnv/Forward-Dallas

Institutional Campus/Public Utility:

- Large master-planned educational, institutional or business facilities outside city center
- Often acts as smaller versions of a complete community including a range of land uses
- A variety of land uses exist to support the major campus employer and area residents
- Primary land uses: public and institutional facilities and offices.
- Supporting land uses: Mixed-use, multi-family apartments, private and public open space, commercial and personal services, single-family attached, transportation, utility, agriculture, lodging

Community Mixed-Use:

- Incorporates a mix of commercial, retail, office and residential buildings
- Nodes & corridors are commonly located at the intersection of major streets
- Uses serve the larger neighborhoods and communities
- Primary land uses: Mixed-use, multi-family apartments, lodging, office, commercial and personal services
- Supporting land uses: Public and institutional facilities, private and public open space, single-family attached, transportation, utility, agriculture, light industrial

Regional Mixed-Use:

- Major employment / shopping destinations outside of the Urban Core
- High-rise office towers, multifamily dwelling units, low to mid-rise residential buildings
- Primary land uses: Mixed-use, multi-family apartments, lodging, office, commercial and personal services
- Supporting land uses: Public and institutional facilities, private and public open space, single-family attached, single-family detached, transportation, utility, agriculture, light industrial

City Residential:

- Predominantly apartments & town homes with scattered duplexes and single family
- Comprised of more commercial and office land uses
- Neighborhood includes both large and smaller scaled streets
- Primary land uses: Mixed-use, multiplex
- Supporting land uses: office, public and institutional facilities, private and public open space, lodging, commercial and personal services, single-family attached, single-family detached, transportation, utility, agriculture

Community Residential:

- Predominantly single family with a mix of parks, schools, & places of worship
- Sensitively integrated missing middle housing, such as duplexes and multiplexes, provide increased housing choice
- Commercial, retail, and office land uses are likely to be along major streets
- Primary land uses: Multiplex, single-family attached, single-family detached
- Supporting land uses: Mixed-use, office, public and institutional facilities, private and public open space, commercial and personal services, transportation, utility, agriculture.

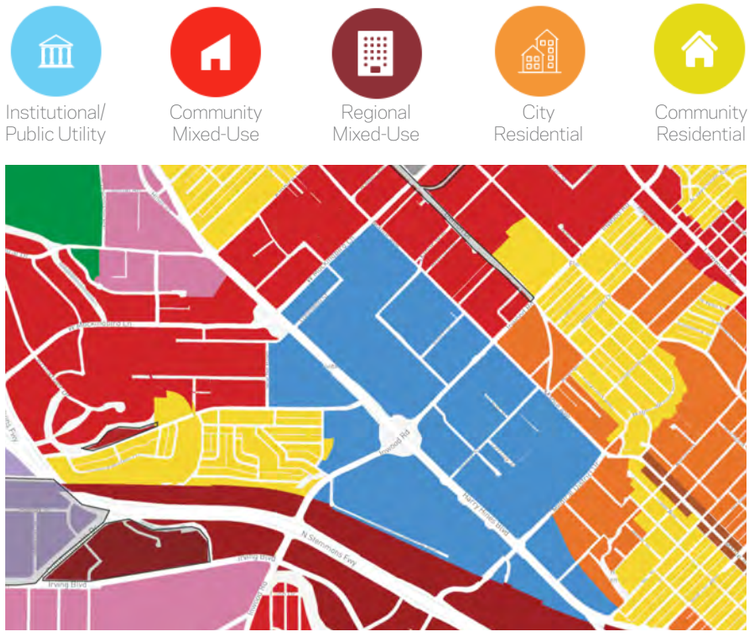


Figure 49: ForwardDallas Placetype Map (Draft #6 Revised June 2024)

District Hubs

The overall land use strategy, described above for the entire District, has been used to develop more detailed plans for each of the hubs. A more fine-grained street network has been established that connects to the surrounding street network and existing intersections and curb cuts. The refined street network also establishes smaller, more typical development blocks. In addition, a more refined parks and open space plan has been established for each hub that connects to and is integrated into the overall District open space and parks system and creates unique placemaking opportunities for each of the hubs.

Utility infrastructure has been integrated within the proposed reconstruction of existing streets and new street infrastructure to upgrade existing utility services and locate new utility services. An overall goal is to locate overhead electric and communications utility lines into an underground system, creating a more sustainable and resilient system and enhancing the aesthetics of the hubs and District. (Insert overall land Use Plan with Hubs highlighted)

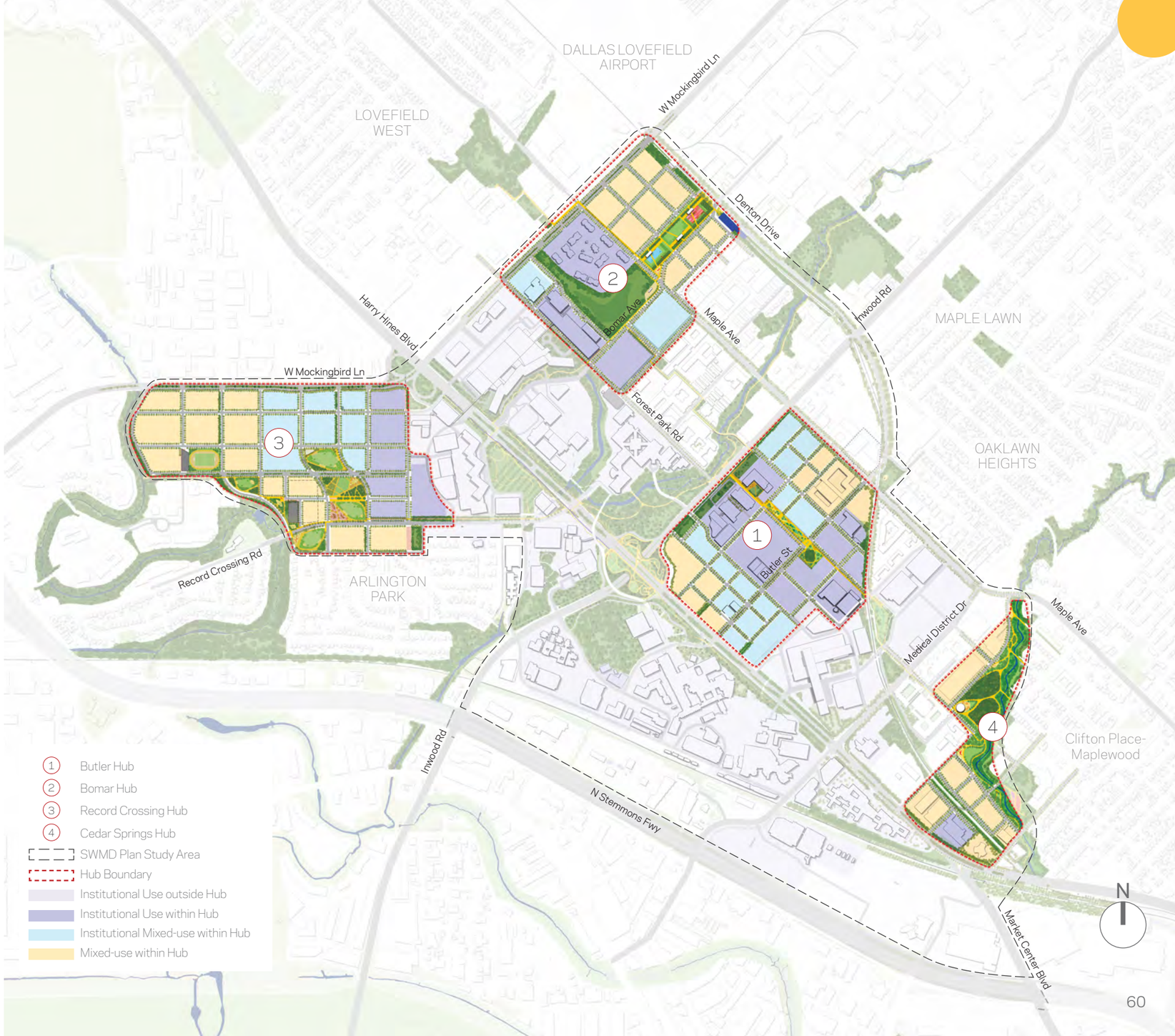


Figure 50: Master Plan - Hubs

Butler Hub

The Butler Hub has long been seen as the center of the District and the 2009 SWMD Master Plan highlighted it as an opportunity to introduce a mix of support uses into the District. Since that Plan was adopted, there have been many changes in the District and the Butler Hub. Parkland Hospital has grown and expanded considerably and UTSWMC has expanded its Bio-Science Research footprint south of Inwood Road. In addition, private development has popped up along Maple Avenue including residential and storage facilities.

While the Butler Hub will still be considered the center of the District it is likely to remain an important growth area for both Parkland Hospital and UTSWMC Bio-Research activities. As such, the center of the hub has been designated as Institutional. The Institutional land use is flanked by Institutional Mixed-Use, providing for additional hospital and research expansion, but with a more open mixed-use perspective allowing for partnerships with public and private partners.

The Mixed-Use land use category is primary located along Harry Hines Boulevard and Maple Avenue, the primary north/south streets that serve the District. These are the areas where residential, office, retail, and commercial uses can be integrated into the Butler Hub to provide the support services desperately needed in the District. Mixed-use along Harry Hines Boulevard will help to activate the street and will take advantage of the transformational streetscape improvements and the Green Park that the Texas Tree Foundation is currently designing. The Plan recommends that a hotel conference center be added to the mix of uses at the intersection of Harry Hines Boulevard and Inwood Road, taking advantage of the new green park setting and providing a landmark and an anchor at the center of the District. Mixed-uses along Maple Avenue should be more in scale of a narrower, traffic-calming, and community-oriented commercial corridor supportive of the neighborhoods to the east.

To create an active, walkable District, the Plan recommends that all ground floor use along streets or pedestrian ways incorporate retail, service commercial, food and beverage, etc. that will activate the street level environment and encourage a high level of foot traffic.

Butler Street and Redfield Street will continue to serve as primary streets connecting into and through the hub. The Plan recommends that Butler Street be reconstructed as a boulevard street and key connection between Harry Hines Boulevard and Maple Avenue. Redfield Street will continue to function as a primary ambulance route to the Parkland Hospital Emergency Department, primarily from Inwood Road, incorporating two wide vehicular lanes with no on-street parking. The remaining recommended grid of streets have been designed to accommodate two vehicular lanes, on-street parking to support ground level uses and wide sidewalks to accommodate pedestrian movement and outdoor seating.

At the heart of the Butler Hub, the Plan recommends the creation of a “greenway” that extends from Inwood Road to Medical District Drive and Bengal Street, incorporating the existing grove of trees at Butler Street, as well as the existing park and open space along the DART Line. The Butler Greenway connection would then extend down Bengal Street to Cedar Springs Branch as part of the Cedar Springs Hub.

1. Butler Street re-design to ‘Boulevard’
2. Butler Hub Greenway (Inwood Rd to Medical District Dr)
3. UTSW Bio-sciences Research Building Plaza
4. Parkland Health
5. Realigned Gregg Street
6. Potential greenway connection to Bomar Hub
7. Potential greenway connection to Cedar Springs Hub

Figure 51: Butler Hub Recommendations

Bomar Hub

The Bomar Hub is defined by Forest Park Road, West Mockingbird Lane, Denton Drive, and the development parcels south of Bomar Avenue. At the heart of this area is the Bomar Basin stormwater management area. This area was initially considered as an opportunity for significant open space/landscape enhancement. However, the Basin contains a portion of regulated floodplain and does serve to manage stormwater, so improvement opportunities for enhancements are extremely limited.

The land between Forest Park Road and Maple Avenue is primarily owned by UTSWMC and includes mostly Institutional land use. The land at the intersection of Bomar Avenue and Maple Avenue is not currently owned by UTSWMC and the Plan recommends that this site be designated as Institutional Mixed-Use, with anticipation that could serve future growth for the Medical Center as well as serve as a mixed-use edge to the Maple Avenue frontage.

The land between Forest Park Road and Bomar Basin is part of the new Pediatric Hospital and includes a new staff parking garage and thermal energy plant for the new hospital. It also includes a Dallas Independent School District STEM School and a retail property that has been designated as Institutional Mixed-Use.

The land between Maple Avenue, West Mockingbird Lane, Denton Drive, and Bomar Avenue has been designated as Mixed-Use and provides the greatest opportunity in the Bomar Hub for activities and services that support the District. Bomar Avenue, west of Maple Avenue, is recommended to be realigned to connect with Manor Way to create a safer intersection with Maple Avenue. A street grid has been planned to create smaller development blocks and to enhance connectivity through this mixed-use area. This area lends itself to a vertical mix of uses with ground floor retail and commercial services, office above the retail and then residential above the office.

The Bomar Basin open space has been extended east across Maple Ave to Denton Drive. While an extension of the basin it will not have the same stormwater functionality. Instead, it has been designed as a community open space to serve the mixed-uses around it, with trees to create shade and reduce heat island affect, wetland gardens and water infiltration areas, pedestrian gathering spaces with shade pavilions, an art plaza and dog park.

The Plan also recommends that consideration and additional planning be given to the creation of a new DART station at the Bomar Hub to better serve the new Pediatric Hospital, William P. Clements Jr. Hospital, UTSW Research facilities and the new concentration of mixed-use development. The DART line at this location, aligns with street level, before it goes under West Mockingbird Lane. The station would be located between Bomar Avenue and Manor Way, along Denton Drive, with easy access into the District and Hub through the new park Bomar Park.

1. Bomar Stormwater Detention Basin
2. Bomar Ave Streetscape Improvements and Bomar Trail
3. Bomar Avenue-Manor Way Intersection Realignment at Maple Avenue
4. Bomar Park
5. Proposed DART Station at Manor Way - Denton Drive Intersection
6. Southwestern Medical Park Apartments
7. Children's Health / UTSW New Pediatric Hospital
8. UTSW Medical Center
9. Greenway connection to Butler Hub
10. East Knights Branch

Figure 52: Bomar Hub Recommendations

Record Crossing Hub

The Record Crossing Hub has been expanded from what was illustrated in the SWMD Framework Plan to connect to the Elm Fork Channel. With this expansion, the Record Crossing Hub extends from William P. Clements Jr. University Hospital to Elm Fork Channel, bounded on the north by West Mockingbird Lane and on the south by Record Crossing Road/Chattanooga Place. The proposed land uses have been arrayed from east to west, to include Institutional for the first row of blocks, providing an immediate growth vector for William P. Clements Jr. Hospital, Institutional Mix-Use for the next three blocks to provide opportunities for clinical, research and academic growth in partnerships with public and private entities and Mixed-Use on the remaining blocks to the west and along the south side of Record Crossing to serve as a buffer and transitional land use from the Arlington Park neighborhood.

A modified urban street grid has been created that provides smaller development parcels and connects to the Arlington Park neighborhood street grid with the existing median breaks along West Mockingbird Lane. Wyche Boulevard, Plantation Road and Hinton Street are existing streets that have been integrated into the Plan. Hinton Street is planned to be rebuilt as an urban boulevard with central median, one vehicular lane in each direction and bicycle lanes along the curb, to create a strong multi-modal connection between William P. Clements Jr. University Hospital and the Elm Fork Channel riparian corridor. The remaining recommended grid of streets have been designed to accommodate two vehicular lanes, on-street parking to support ground level uses and wide sidewalks to accommodate pedestrian movement and outdoor seating.

A central park has been created in the eastern half of the hub as an interface with all three land use categories. Record Crossing Park is sub-divided into three sections. The section north of Hinton Street incorporates a multi-purpose recreation field, in conjunction with a potential school and an art plaza to heal and reflect. The central portion, south of Hinton Street, integrates a central green space with a flower garden. The southern half of the Park, that is separated from the central portion by a wide east/west pedestrian promenade, incorporates a programmable activity pavilion and an interactive children's playground.

Riverside Drive, from Chattanooga Place, is proposed to extend north of Record Crossing along an abandoned railway spur to connect with West Mockingbird Lane. The roadway has been planned as a "parkway", with a series of new parks along the east side and Arlington Community Park along the west side. The existing green space, south of Record Crossing, is recommended to be improved, incorporating a cultural/history plaza to tell the history of the Arlington Park Neighborhood. North of Record Crossing, the park space acts as an extension of the Arlington Community Park, provides buffering and screening of the existing electrical substation, and integrates a dog run. North of Hinton Street, the Parkway connects into a sports park for active programmed team-based recreation, before its intersection with West Mockingbird Lane. This park also incorporates the existing weather monitoring station.

Figure 53: Record Crossing Hub Recommendations

Cedar Springs Hub

Cedar Springs Hub is the only single use hub. The Plan recommends that land uses in this area be Mixed-Use, with an emphasis on residential with ground level retail and support services for the District.

At the heart of the Cedar Springs Hub is the creation of Cedar Springs Park which will provide an attractive setting for new residential uses and an open space resource for the District and adjoining neighborhoods. The Plan recommends the restoration of Cedar Springs Branch as a natural riparian corridor supporting stormwater run-off through the District and as a linear open space connector to areas outside of the District. The Plan recommends that the riparian corridor be expanded to include other adjoining green spaces and woodlands as well as some commercial and industrial development that is severely impacting the riparian corridor.

Cedar Springs Park includes multi-use paths along the branch and through the park, connecting with the Trinity Strand Trail and extending multi-modal connectivity east of Maple Avenue. The multi-use trails connect into Bengal Street and Cass Street, connecting the Hub to Medical District Drive and Parkland Hospital to the north. The Plan also recommends the introduction of several pedestrian/bicycle bridges across the branch connecting the neighborhoods to the south. The Park provides an attractive setting for the proposed new mixed-use residential uses around it and a new outdoor resource for the residents of the Ronald McDonald House at Bengal Street and Macatee Drive.

A new street is proposed on the north side of the park that connects from Bengal Street to Maple Avenue. This new street will provide access to the park and the ground level retail and support services that are in the mixed-use blocks. Production Drive edges the west side of the park and will also provide access to the park and the proposed mixed-use development along it with ground level retail and services that activate the park.

Within Cedar Springs Park, programming opportunities include an outdoor pavilion for art and cultural events, an arts plaza, dog run and outdoor play berms associated with Esperanza “Hope” Medrano Elementary School.

1. Cedar Spring Branch
2. Cedar Springs Park
3. Arts Plaza and Pavilion
4. Trinity Strand Trail
5. Cedar Springs Multi-use Trail
6. Pedestrian/Bike Bridge
7. Esperanza ‘Hope’ Medrano Elementary School
8. Ronald McDonald House of Dallas
8. Planned State Psychiatric Hospital

Figure 54: Cedar Springs Hub Recommendations

Overall District Economic Impact*

The economic modeling for each hub within the District includes four levels of development (4, 6, 8, and 12 story) and there are corresponding economic impacts. Shown in the graphic below is the break-even estimate in months at 100% occupancy associated with those development thresholds.

The most aggressive development actions provide the greatest return on investment potential, but are also the most capital intensive. Most passive strategies, including land banking, allow the SWMD to take a more measured approach. The Master Plan does not specify how aggressive the development should be to allow each member institution additional time to consider individual expansion needs.

Regardless of the level of development, the SWMD should most strongly consider those plans that foster innovation and attract talent, in addition to stimulating economic growth. At the heart of such innovation and talent attraction plans should be internal and external entrepreneurship. More clearly stated, the SWMD and its resource partners should consider plans that encourage internal spin-off activity and the recruitment of startups and entrepreneurs aligned with medical research and development and innovation. Such actions include public-private partnerships, research and innovation clusters, talent development and education, infrastructure and facility development, community engagement, incentives for innovation, leveraging technology, marketing and branding, sustainable practices, and adaptive reuse of existing structures. Each strategy's success is dependent on community input and stakeholder engagement.

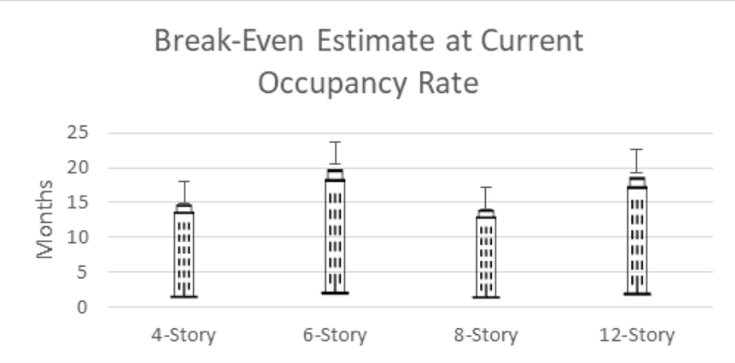


Figure 55: Break-even Estimate

** Details on the economic impact methodology and additional details related to these recommendations can be found in the Economic Development Report in the Appendix.*

Summarized below are additional economic impacts of the proposed land use recommendations specific to each hub of the Master Plan.

Bomar Hub

Given its proximity to the neighborhoods west of UT Southwestern, and Dallas Love Field Airport to the north, it is recommended that the Bomar Hub consider land uses focused on cultural amenities. It is also recommended that this area place an emphasis on medium commercial and mixed-use land types. In addition to the mixed-use spread of development, it is recommended that there be spaces reserved for mixed income, multi-family residential units. This emphasis can help address some of the critiques associated with large scale development projects, namely, gentrification.

In this hub, the average parcel size is 75,611 square feet and the average demolition costs (per parcel) would be roughly $398,000.

Construction in this hub is estimated to support 180-530 full time equivalents (FTEs). This includes direct, indirect, and induced FTEs. Direct FTEs refer to the number of full-time positions directly associated with a specific project, business, or activity. Indirect FTEs encompass positions that support the core activities but are not directly involved in the primary production or service delivery. Induced FTEs are jobs created as a result of the economic activity generated by direct and indirect employment. These positions are in sectors such as retail, services, or other industries benefiting from increased consumer spending.

In this hub, the monthly rent revenue is estimated to fall between $1.4 million to $3.4 million and construction is estimated to break-even between 15.25 months and 20.91 months depending on the size of the building.

Butler Hub

The Butler Hub is in the heart of the Southwestern Medical District. It is recommended the Butler Hub serve as the de facto epicenter of the District. Outside of the institutional growth areas, the parcels in the hub could benefit the most from mixed-use zoning. Given its central location in the entire District, it would be advantageous to locate a hotel and event space in this hub. Similar to other medical districts across the country, a landmark hotel centers visitors and generates additional foot traffic and revenues for area businesses.

The average parcel size is 51,319 square feet. The average demolition cost (per parcel) is just over $270,000. Construction in this hub is estimated to support 350-1,050 full time equivalents (FTEs). This includes direct, indirect, and induced FTEs.

In this hub, the monthly rent revenue is estimated to fall between $2.9 million to $6.7 million and construction is estimated to break-even between 17.23 months and 24.92 months depending on the size of the building.

Record Crossing Hub

It is recommended that the Record Crossing Hub place an emphasis on life sciences and medical wet lab spaces. This hub could also support a blend of mixed use developments similar to Bomar and Butler Hubs. It is also recommended that this hub include spaces for startup and spin-off entrepreneurial activities.

The average parcel size in the Record Crossing Hub is 89,164 square feet and the average demolition cost (per parcel) is roughly $470,000. Construction in this hub is estimated to support 800-1,200 full time equivalents (FTEs). This includes direct, indirect, and induced FTEs.

In this hub, the monthly rent revenue is estimated to fall between $12.7 million and $14.5 million and construction is estimated to break-even in 9.76 months to 19.14 months depending on the size of the building.

Cedar Springs Hub

It is recommended that this hub be anchored by cultural and open space amenities and support mixed-use residential and lodging mixed with ground floor retail uses focused on galleries and full-service dining establishments.

The average parcel size is 75,611 square feet and the average demolition cost (per parcel) is nearly $399,000.

Construction in this hub is estimated to support 500-1,500 full time equivalents (FTEs). This includes direct, indirect, and induced FTEs.

In this hub, the monthly rent revenue is estimated to fall between $4.3 million and $9.9 million and construction is estimated to break-even in 16.32 months to 23.59 months depending on the size of the building.

Figure 56: Hubs - Economic Impact of Plan Recommendations

OPEN SPACE & PARKS RECOMMENDATIONS

Overview

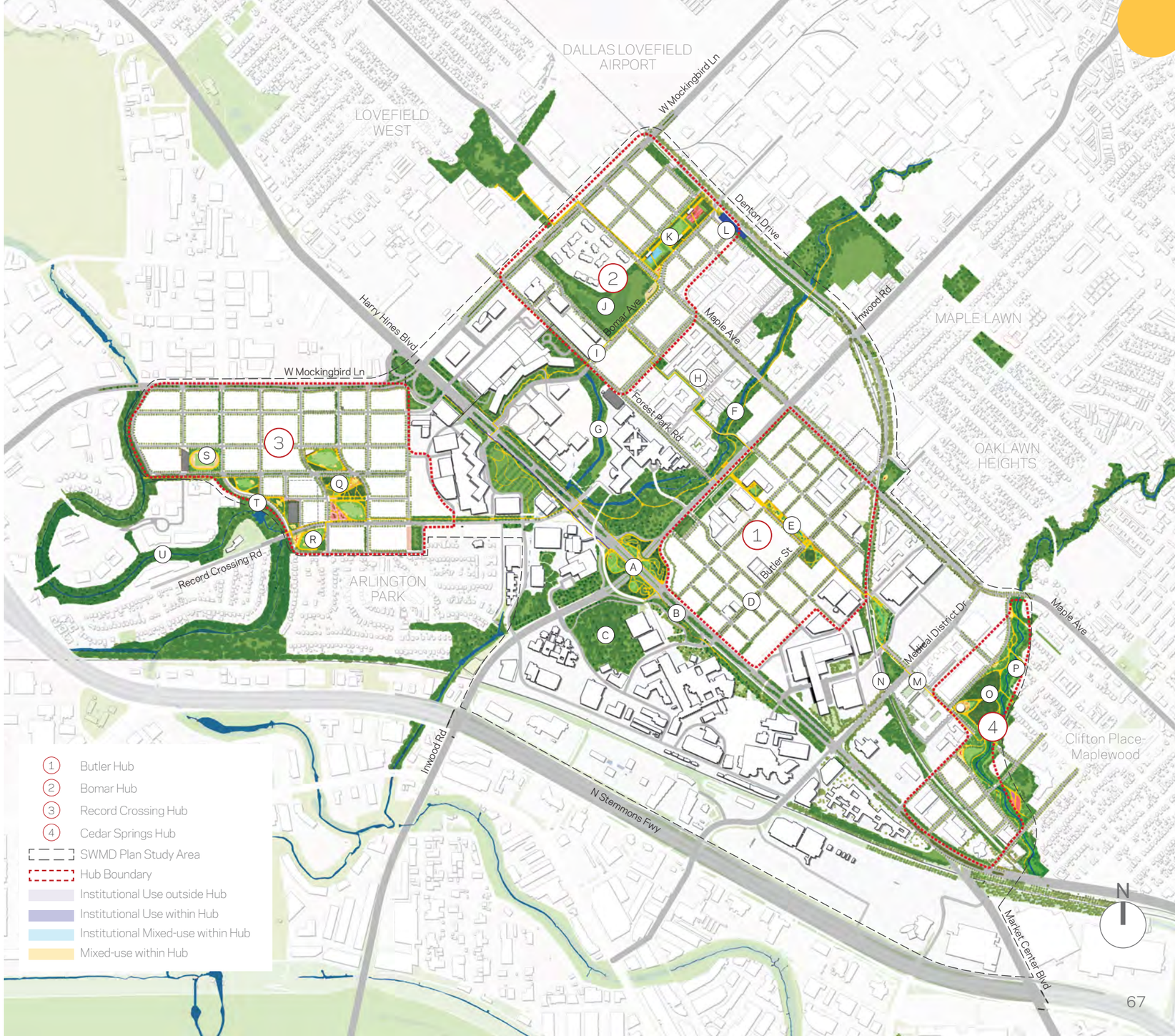
A significant component of the Master Plan is the celebration of the District's existing open space resources and the addition of new parks and placemaking spaces that support a live, work, play, and cultural environment.

The Plan establishes a number of drivers for the planning and design of open spaces within the District:

- District Connectivity
- Connection to Nature and Mental Health Benefits
- Program and Amenities
- Places to Reflect and Heal
- Tree Canopy Shade
- Human Comfort
- Placemaking and Experience
- Stormwater Treatment
- Landscape Seasonal Performance
- Art, Cultural, and Historical Elements

A. Harry Hines Green Park
B. Harry Hines Streetscape Project
C. UTSWMC Bird Rookery
D. Butler Street re-design to 'Boulevard'
E. Butler Hub Greenway (Inwood Rd to Medical District Dr)
F. East Knights Branch
G. West Knights Branch
H. Potential greenway connection to Bomar Hub
I. Bomar Ave Streetscape Improvements and Bomar Trail
J. Bomar Stormwater Detention Basin
K. Bomar Park
L. Proposed DART Station at Manor Way - Denton Drive Intersection
M. Potential greenway connection to Cedar Springs Hub
N. Trinity Strand Trail Extension
O. Cedar Springs Park
P. Cedar Springs Multi-use Trail
Q. Record Crossing Park - Central
R. Record Crossing Park - South
S. Record Crossing Park - North
T. Riverside Drive re-designed as a 'Parkway'
U. Former Elm Fork Channel

Figure 57: Open Space and Parks Recommendations



Riparian Corridors

The Framework Plan identified the importance of East and West Knights Branches, Cedar Springs Branch and former Elm Fork Channel riparian corridors, as the natural open spaces resources that define stormwater movement through the District, but also provide tree cover and an ecological setting for flora and fauna. The plan recommends that these riparian corridors be preserved for their stormwater management and ecological importance and enhanced to allow for more access to and along them. These corridors are also important in that they connect to open space resources outside of the District including: Grauwyler Park and Brook Hollow Golf Club to the north of West Mockingbird Lane, Weichsel Park to the east, and the Trinity Strand Trail and Trinity Levee Trail that are part of the Trinity River open space to the south.

West Knights Branch

West Knights Branch crosses the District from east to west, starting at the intersection of Inwood Road and Stemmons Freeway, paralleling Inwood Road to Southwestern Medical Avenue. The branch then goes underground under Southwestern Medical Avenue and daylights at Record Crossing briefly and then goes underground under Harry Hines Boulevard where it daylights again as a channelized waterway running through the UT Southwestern Biomedical Research campus. This section of the branch integrates natural stone edge walls and a series of stone weirs that slow the flow of water and creates interest. There also pedestrian walkways on each side of the branch with maintained lawn edges and informal tree planting. The Plan recommend that a more natural native riparian planting be established on each side of the branch, in place of lawn and increased tree cover to shade the walkways.

West Knights Branch is then piped under Forest Park Road and connects with the Bomar Basin stormwater detention area. The basin incorporates a regulated floodplain and is limited in what can be planted in it. As such it is maintained as a grassy bowl with only volunteer vegetation occurring in it. The Plan recommends that the edge along Bomar Avenue incorporate a multi-purpose path, shaded with canopy trees and incorporating a landscaped buffer along the basin and roadway. The path connects to Maple Avenue, the UTSW Student Housing, the Bomar Mixed-Use Hub and the potential new DART station at Manor Way and Denton Drive.

The branch then goes under West Mockingbird Lane and daylights north of Hawes Avenue in an informal unimproved wooded area and ends at the boundary of Dallas Love Field Airport.

East Knights Branch

East Knights Branch diverges from West Knight Branch where it goes under Harry Hines Boulevard. It then travels through south and east along Inwood Avenue around the UTSW North Biosciences Campus to Forest Park Road. The treatment of the branch incorporates the same stone edges and weirs as along the West Knights Branch on the north side of the Biosciences campus, along with a denser deciduous and evergreen informal grove of trees. This area will become part of the Green Park project, under design by the Texas Trees Foundation.

East of Forest Park Road, the branch parallels Inwood Road, weaving around (and under) existing properties, and goes under Maple Avenue and then the DART line/Denton Drive, where it connects to Weichsel Park. The Plan recommends that this section of East Knights be improved and enhanced as a riparian corridor with stabilized native

Figure 58: West Knights Branch

Figure 59: East Knights Branch

plant edges and that a pedestrian pathway be added along it to facilitate connectivity between the Green Park and Weichsel Park. The Plan recommends that the ExtraSpace Storage facility, which was built over East Knights Branch be redeveloped to restore the riparian corridor and facilitate connectivity.

The Plan also recommends an art plaza installation along the East Knights Branch pedestrian pathway between Forest Park Road and a pedestrian bridge connecting to a north-south pedestrian walkway that weaves through existing business and residential development to connect to the Bomar Basin trail.

(Former) Elm Fork Channel

The Elm Fork Channel forms the western edge of the Record Crossing Hub and is a remnant tributary of the larger Trinity River system. Arlington Park and the Arlington Park Recreation Center are a part of this riparian corridor and reinforces this as an important linear open space. The new street grid recommended in the Record Crossing Hub connects the Elm Fork Channel with William P. Clements Jr. University Hospital. The Plan specifically recommends existing Hinton Street as a key boulevard street with sidewalk and bike lanes that would connect to Elm Fork. The channel itself has not been improved and the Plan recommends that the riparian corridor be improved and enhanced with bank stabilization, native plant material, and the introduction of a pedestrian pathway that the Record Crossing Hub walkways can connect to.

In addition, the Plan recommends that Riverside Drive be extended following the old rail corridor to Hinton Street and then north to West Mockingbird Lane. The new portion of Riverside Drive provides pedestrian access to and along Arlington Park and then connects to Elm Fork using Hinton Street.

Cedar Springs Branch

Cedar Springs Branch on the south end of the District, represents the greatest opportunity to restore and enhance an existing riparian corridor in the District. The Plan recommends that existing properties along the branch be redeveloped to expand the open space opportunities, provide pedestrian pathways along the north side and pedestrian bridges at key locations to connect to the Clifton Place-Maplewood neighborhoods on the south side.

The riparian corridor needs to be cleaned up, restored back to its natural state and enhanced as a key open space resource for the District. Connections from Cedar Springs Branch to Medical District Drive along Bengal Street and Cass Street need to be reinforced and enhanced with streetscape amenities. Connections also need to be enhanced along Kendall Drive, extended Hawthorne Avenue and Lucas Drive to Harry Hines Boulevard.

Figure 60: (Former) Elm Fork Channel

Figure 61: Cedar Springs Branch

Streets as Open Spaces

The Master Plan recommends new street trees and streetscape amenities along all existing and new streets proposed in the Plan. Streets are an important part of the open space network and serve as important connectors between open spaces across the District. The Texas Tree Foundation's Harry Hines Boulevard Streetscape and Green Park Transformation project, now in the design phase, is a great example of leveraging street infrastructure to create new open space amenities.

Figure 62: Harry Hines Streetscape Rendering
Credit: Texas Trees Foundation/Field Operations

Figure 63: Harry Hines Streetscape and Green Park Plan
Credit: Texas Trees Foundation/Field Operations

SWMD Urban Streetscape and Park Transformation Project

The Texas Trees Foundation is currently in the process of re-designing Harry Hines Boulevard through a collaborative, multi-disciplinary partnership model with the Southwestern Medical District, the three anchor-hospital partners, and local government entities. The SWMD Urban Streetscape and Park Transformation Project will become the new model for what a medical district should be: a more holistic, green campus that unites the community, promotes health, healing, and safety, and acts as an 'intersection of health and nature'. Driven by an evidence-based design approach to nature-based solutions, it will transform a two-mile segment along the Harry Hines Boulevard, spanning from Treadway Street to Lucas Drive, into a greener, safer, and multi-modal thoroughfare. It will also construct an eight-acre Green Park at the intersection of Harry Hines and Inwood Road.

Source: https://texastrees.org/swmdtransformation/

Figure 64: Green Park Plan
Credit: Texas Trees Foundation/Field Operations

Figure 65: Green Park Rendering
Credit: Texas Trees Foundation/Field Operations

Butler Street

Butler Street is the primary east/west street in the Butler Hub connecting Harry Hines Boulevard with Maple Avenue. The Plan recommends that Butler Street be reconstructed as a boulevard street with a 12 feet wide planted median, one 12 feet wide vehicular lane in each direction and an 8 feet wide buffered bicycle lane in each direction. An 8 feet wide planter zone is recommended adjoining the curb edge on each side of the roadway with a 6 feet wide sidewalk. The overall ROW is recommended to be 80 feet wide. The Plan recommends that a 6 feet wide minimum private patio space be required to adjoin the public sidewalk and provide space for outdoor seating and dining.

The Plan also recommends that street lighting, pedestrian lighting, street furniture and regulatory signage will be located in the 8 feet wide planter zone and coordinated with breaks in the planters. Street trees that provide adequate canopy are recommended in the planter zone and a median with low ground cover that does not block visibility.

Figure 66: Butler Street Recommended Typical Cross Section

Figure 67: Butler Street Conceptual Plan Recommendation

Figure 68: Butler Street and Hub Conceptual Rendering
(Inset: Current image of Butler Street looking towards Harry Hines Blvd)

Bomar Avenue

Bomar Avenue connects east/west from Forest Park Road to Maple Avenue, running along the south side of the Bomar Basin stormwater detention area. The Plan recommends that Bomar Avenue be realigned at the intersection with Maple Avenue to connect to Manor Way which runs along the south side of the proposed Bomar Basin Park and ends at Denton Drive and the proposed new DART station.

Bomar Avenue as recommended as a two-lane street with on-street parking on both sides. Two 12 feet vehicular lanes and 8 feet parking zone along each curb. An 8 feet planter zone is recommended for each side of the roadway with a 12 feet sidewalk on the south side and a 12 feet multi-use path on the north side, running along Bomar Basin from Forest Park Road to Maple Avenue and through the new Bomar Park from Maple Avenue to Denton Drive.

Figure 69: Bomar Avenue Recommended Typical Cross Section

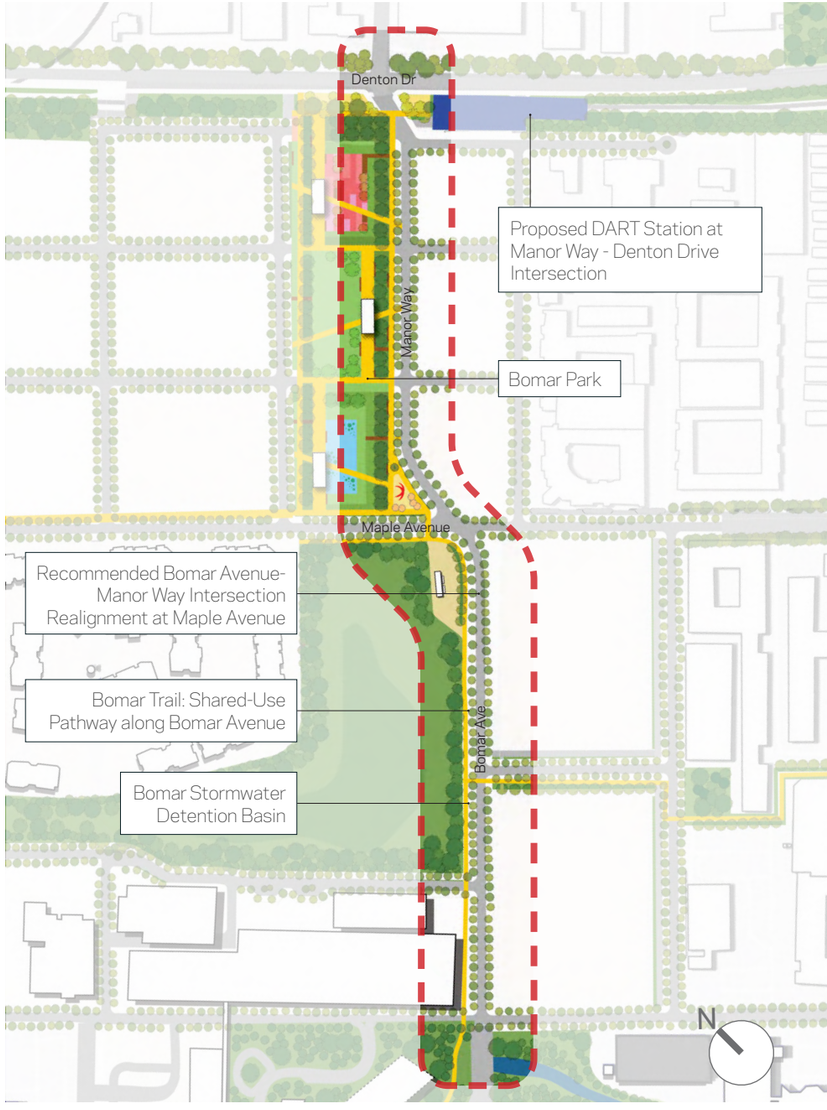


Figure 70: Bomar Avenue Conceptual Plan Recommendation

Figure 71: Bomar Avenue Trail Conceptual Rendering
(Inset: Current image of Bomar Ave looking towards Maple Avenue)

Riverside Parkway

Riverside Parkway connects north/south from Record Crossing Road to West Mockingbird Lane, running along the east side of Arlington Park along an abandoned rail line corridor to Hinton Street and then a new street ROW within the Record Crossing Hub.

Riverside Parkway is recommended as a two-lane street with on-street parking on both sides with two 12 feet vehicular lanes and an 8 feet parking zone along each curb. An 8 feet planter zone is recommended along each side of the roadway with an 8 feet sidewalk on the west side, along Arlington Park and a 12 feet multi-use path on the east side, connecting a series of open spaces that serve the neighborhood as extensions of the larger Arlington Park.

The parkway starts at the intersection of Chattanooga Place and Riverside Drive, where an existing left-over open space is transformed into an open space amenity with a cultural/history plaza at the intersection of Record Crossing Boulevard and Riverside Parkway. To the north of Record Crossing Boulevard a series of smaller open spaces, including a dog run, help screen the existing electrical substation. At the intersection with Hinton Street, a small open space on the southeast corner provides opportunities for informal recreation. An open space on the northwest corner of Riverside Parkway and Hinton Street provides space for more formal recreation with a multi-purpose recreation field (football, soccer, lacrosse, field hockey, etc.). This open space also helps screen and buffer the existing weather monitoring station that occupies the site and cannot be relocated. To the north of the recreation field, an expanded ROW along the west side of Riverside Parkway establishes a greenway gateway into the Record Crossing Hub.

Figure 72: Riverside Parkway Conceptual Plan

Figure 73: Record Crossing Hub Conceptual Rendering
(Inset: Current image of Riverside Drive and Record Crossing Road Intersection)

Hinton Street

Hinton Street is an existing street in the Record Crossing Hub that connects east/west from William P. Clements Jr. Hospital to the Elm Fork Channel riparian corridor. The Plan recommends that Hinton Street be redesigned as a boulevard street with a cross section similar to Butler Street, with a central landscaped median, a vehicular lane and bicycle lane in each direction, and then wide sidewalks on each side, with street trees and opportunities for outdoor gathering. This transformation of the street into a green corridor is intended to elevate it as the key east/west connecting street through the mixed-use Record Crossing Hub, from the Hospital to the Elm Fork Channel.

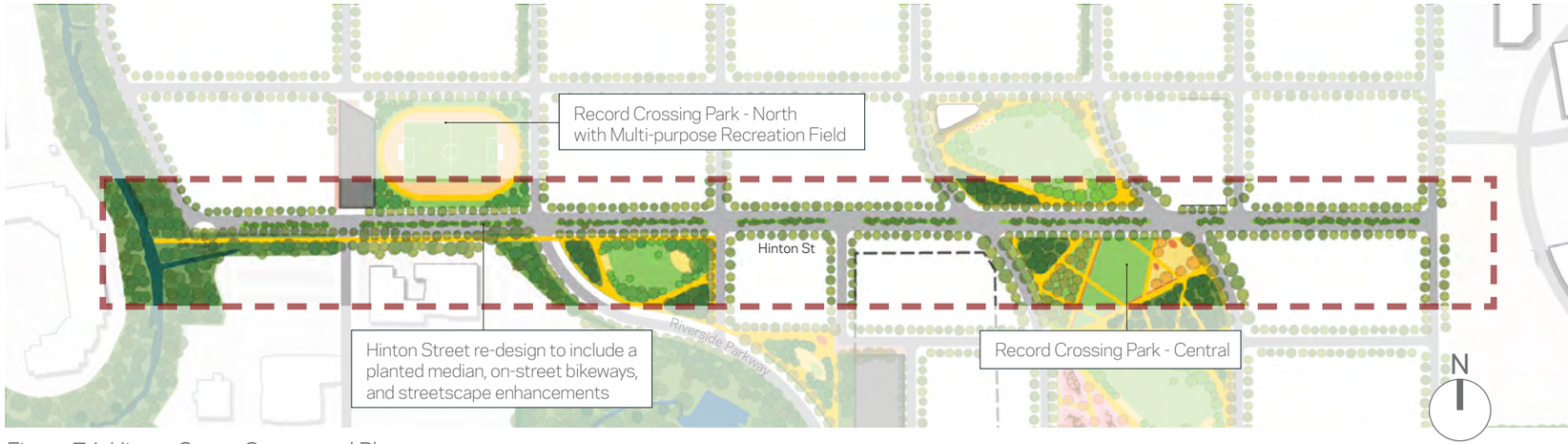


Figure 74: Hinton Street Conceptual Plan

Figure 75: Existing Hinton Street (Source: Google Streetview)

Figure 76: Hinton Street Recommended Typical Cross Section

Parks and Placemaking

In addition to a robust new street network and streetscape amenities that serve the four hubs, the Plan recommends the addition of new park space within each hub that provide new tree cover, permeable green surfaces, programmable outdoor spaces and placemaking qualities that support each of the live-work-play mixed-use hubs.

Butler Hub Greenway

The Butler Hub Greenway extends from Butler Street to Inwood Road and incorporates the existing grove of trees south of Butler Street. The greenway connects across Inwood Road at Forest Park Road and a recommended north/south pathway that extends to Bomar Avenue. It also connects south to the Parkland DART station, Trinity Strand Trail, Parkland Park, Bengal Street and Cedar Springs Park. The south connection follows a proposed new street between Butler Street and Medical District Drive and thus is not part of the Greenway.

The Greenway between Butler Street and the UT Southwestern East Campus buildings is approximately 50 feet wide and defined by a new street on the west side, that defines the edge of institutional ownership, and new mixed-use institutional edge on the east side. The ground level uses along both edges should be active and services oriented.

Pedestrian walkways long the new street and east edge of the greenway will be wide multi-use paths with canopy trees lining them for shade. Ground level plantings will help divide the linear space into smaller gathering places with native vegetation providing seasonal interest. Street and pedestrian lighting will line the street and walkways for night-time safety and security. Pedestrian amenities such as benches, trash receptacles, bike racks and information kiosks will be integrated along the Greenway. Public art will also be integrated into the Greenway at key points to facilitate placemaking and way-finding.

The Greenway extends from the UT Southwestern East Campus Service Drive to Inwood Road, between the eastern two research buildings. The Greenway in this area consists of the open space that has been constructed with the new Texas Instruments Biomedical Engineering & Sciences Building.

The Greenway extends visually across Inwood Road to an Arts Plaza and overlook of West Knight's Branch. Access to this open space amenity would be at the intersection of Inwood Road and Forest Park Road.

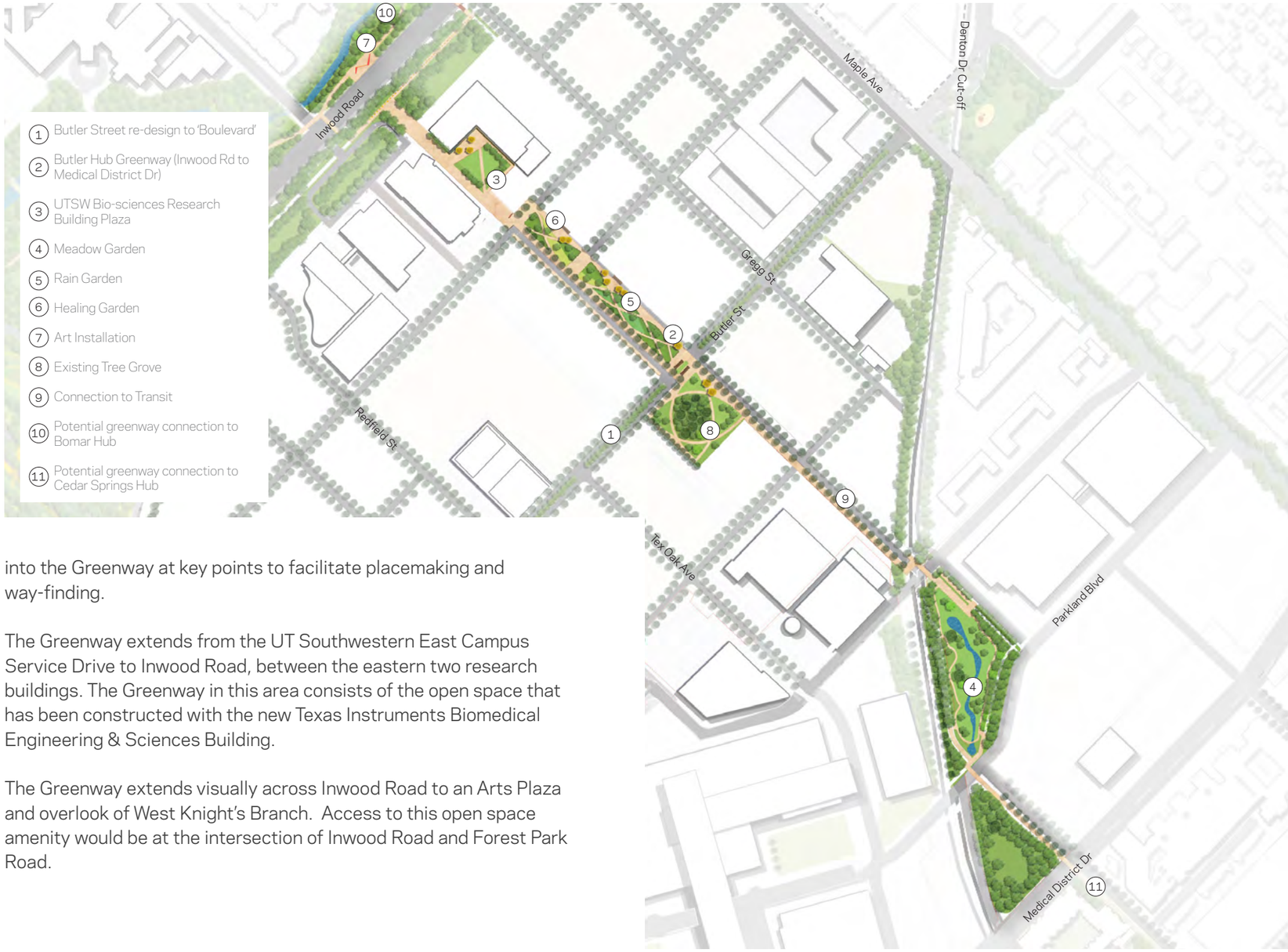


Figure 77: Butler Hub Greenway Conceptual Plan

Figure 78: Butler Hub Conceptual Rendering
(Inset: Current image of Butler Street looking north)

Bomar Basin Park

Bomar Basin Park is an extension of the Bomar Basin stormwater management area from Maple Avenue to the proposed DART line and Denton Drive. The Plan recommends that Bomar Avenue be realigned to connect to Manor Way and form a new intersection at Maple Avenue. Manor Way and new mixed-use development form the southern edge of the Park. A new street and mixed-use development forms the northern edge of the Park.

Bomar Basin Park acts as a gateway from the new proposed DART Station at Manor Way and Denton Drive. Passengers would arrive here to access the new Pediatric Hospital and William P. Clements Jr. Hospital. Shuttle service could be provided or passengers could use the multi-use pathway that connects from the station, along Manor Way and Bomar Avenue to the hospitals, clinics, and research institutes.

The Park also provides open space amenities for the proposed mixed-use development around it. Two new north/south streets are proposed through the park that divide it into three east/west areas. Each section incorporates a shade pavilion for outdoor gathering. The eastern most section, is the DART gateway and incorporates a native wildflower garden. The center area provides a flexible open space for recreation activities and larger gatherings. The western area is planned as an extension of Bomar Basin and incorporates stormwater management, rain gardens, bio-swales and infiltration areas to mitigate rainwater before it gets to the Basin.

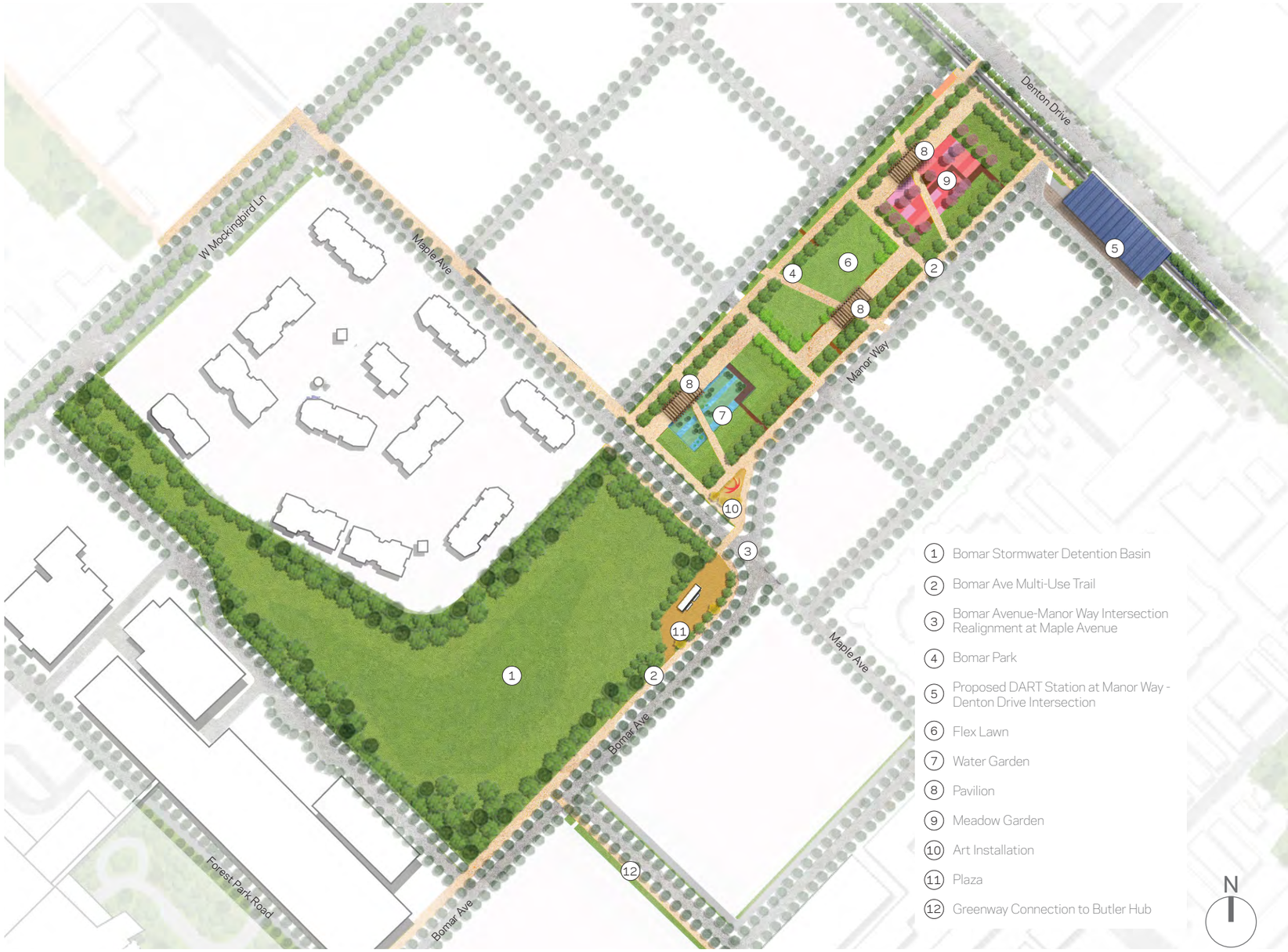


Figure 79: Bomar Detention Basin and Park Conceptual Plan

Figure 80: Bomar Hub Conceptual Rendering
(Inset: Current view across Manor Way towards Denton Drive)

Record Crossing Park

Record Crossing Park's southern edge is Record Crossing Road, extending three blocks to the north serving institutional, institutional mixed-use and mixed-use development around it. The southern block incorporates a children's playground and large open event space with an east/west connecting pedestrian promenade. The center block incorporates a central green and flower garden. Hinton Street Boulevard divides the center block with the north block. The northern block includes a flex green space and an arts plaza, focused on healing and reflection. The site to the east of the northern block would be an ideal setting for an elementary school, serving the residential areas of the hub, and the flex green could be used for outdoor play and sports.

Figure 81: Existing Riverside Drive (Source: Google Streetview)

Figure 82: Record Crossing Park Conceptual Plan

Figure 83: Record Crossing Park Conceptual Rendering
(Inset: Current view across Hinton Street looking north)

Cedar Springs Park

Cedar Springs Park is an extension of the Cedar Springs Branch riparian corridor. It is primarily defined by Production Drive, Macatee Drive, and Bengal Street on the west side and Cass Street on the east. The Ronald McDonald House and new residential development are the anchor uses on the west edge. The Plan recommends redevelopment of the warehouse site for new residential development and, fronting this, a new east/west street will provide access to the northern edge of the Park. Kroger grocery store provides the anchor use on the east side. The corner of Bengal Street and the new street is proposed for a new civic or cultural pavilion and green as a gathering place for the surrounding neighborhood. The rest of the park is an existing mature woodland and is recommended to be preserved and enhanced with new woodland vegetation.

An arts plaza and a dog run are recommended at the corner of Macatee Drive and Production Drive. This site is currently occupied by the Tracy Law Firm and Crash Inc. (currently for sale). The Plan recommends redevelopment of this site and returning it to open space in support of the Park and Cedar Springs Branch riparian corridor.

The Plan recommends that Cedar Springs Park extend to the east side of Cedar Springs Branch, between Hawthorne Avenue and Lucas Drive, and establish a meadow and play berms that act as an extension of the outdoor play space around Esperanza 'Hope' Medrano Elementary School.

1. Cedar Spring Branch
2. Cedar Springs Park
3. Arts Plaza
4. Pavilion
5. Cedar Springs Riparian Trail
6. Pedestrian/Bike Bridge
7. Mature Woodland
8. Perennial Gardens
9. Dog Run
10. Art Installation/Signage

Figure 84: Cedar Springs Branch Images (bottom left and middle)

Figure 85: Cedar Springs Park Conceptual Plan

Figure 86: Cedar Springs Park Conceptual Rendering (a)
(Inset: Current view across Macatee Street looking north)

Figure 85: Cedar Springs Park Conceptual Rendering (b)
(Inset: Current view near Cedar Springs Branch)

MOBILITY RECOMMENDATIONS

Overview

The mobility recommendations in this Plan integrate and complement other planning studies. To further understand existing recommendations from previous planning studies, the project team reviewed the SWMD Pedestrian Access Study, the Texas Trees Foundation SWMD Urban Streetscape Master Plan, Dallas Sidewalk Master Plan, the Dallas Strategic Mobility Plan, the City of Dallas Vision Zero Action Plan, and the draft of the Dallas Bike Plan (currently in development). The City of Dallas' plans envision the SWMD as a walkable, pedestrian-friendly environment that seamlessly connects the member institutions through a connected network of sidewalks, trails, and bicycle infrastructure. The District is also recommended to be well served by transit and should be easily accessible for all modes of transportation. Building off of previous plans, conducting stakeholder engagement effort with the member institutions, and partnering with the City of Dallas are all vital steps in building informed recommendations to create a better network of multi-modal transportation facilities in the District.

In order to keep up with projected demand of the area while implementing equitable development practices, the SWMD must embrace a multi-modal approach to transportation solutions.

This Plan identifies strategies to expand active transportation infrastructure through walking, biking, or using a shuttle as the best opportunity to accommodate medical facility growth and sustainable land development patterns. Enhancing the District's multi-modal infrastructure network could result in reduced rates of driving, and also provide public health improvements to the area as well. The resulting multi-modal transportation system will act as an intricate network that functions as a complete system. The development of such a system will happen incrementally over time.

Map ID	Location	Project Type
1	Butler Street Between Harry Hines Boulevard and Maple Avenue	Street or Streetscape Improvements
2	Redfield Street Between Inwood Road and Parkland ER Driveway	Street or Streetscape Improvements
3	Harry Hines Boulevard Between Market Center Boulevard and Mockingbird Lane	Street or Streetscape Improvements
4	Southwestern Medical Avenue Between Medical District Drive and Inwood Road	Street or Streetscape Improvements
5	Maple Avenue At Bomar Avenue / Manor Way	Intersection Study
6	Maple Avenue At Butler Street / Denton Drive Cut Off / Hudnall Street	Intersection Study
7	Maple Avenue At Medical District Drive	Intersection Study
8	Harry Hines Boulevard At Mockingbird Lane	Intersection Study
9	UTSW Overhead Connector Between South Campus and North Campus	Overhead Connector Realignment
10	Paul Bass Way Extension Between Harry Hines Boulevard and Forest Park Road	Street or Streetscape Improvements
11	New Roadway Connection Between Treadway Street at Mockingbird Lane	Street or Streetscape Improvements
12	Inwood Road Between IH-35E and Southwestern Medical Avenue	Pedestrian Improvements
13	Harry Hines Boulevard At Kendall Drive	Intersection Study
14	New Roadway Connection Between Bomar Avenue and New Roadway Connection	Street or Streetscape Improvements
15	New Roadway Connection Between Forest Park Road and Maple Avenue	Street or Streetscape Improvements
16	Extension and realignment of Gregg Street Between Inwood Road and Butler Street	Street or Streetscape Improvements
17	OK Avenue Extension Between Butler Street and Redfield Street	Street or Streetscape Improvements
18	New Roadway Connection Between OK Avenue and Tex Oak Avenue	Street or Streetscape Improvements
19	New Roadway Connection Between Harry Hines Boulevard and Realigned Gregg Street	Street or Streetscape Improvements
20	New Roadway Connection Between Harry Hines Boulevard and Southwestern Medical Avenue	Street or Streetscape Improvements
21	Extension of Wycliff Avenue Between Harry Hines Boulevard and IH-35E	Street or Streetscape Improvements
22	New DART Station Denton Drive at Manor Way	Transit Study
23	Extension of Kendall Drive / Macatee Drive from Bengal Street to Cass Street	Street or Streetscape Improvements
24	Extension of Children's Way Between existing Children's Way and Wycliff Avenue	Street or Streetscape Improvements
25	Extension of Southwestern Medical Avenue Between Medical District Drive and Harry Hines Boulevard; include Amelia Court Reconstruction	Street or Streetscape Improvements
26	New Roadway Connection Between UTSW Campus Circle and Southwestern Medical Avenue	Street or Streetscape Improvements

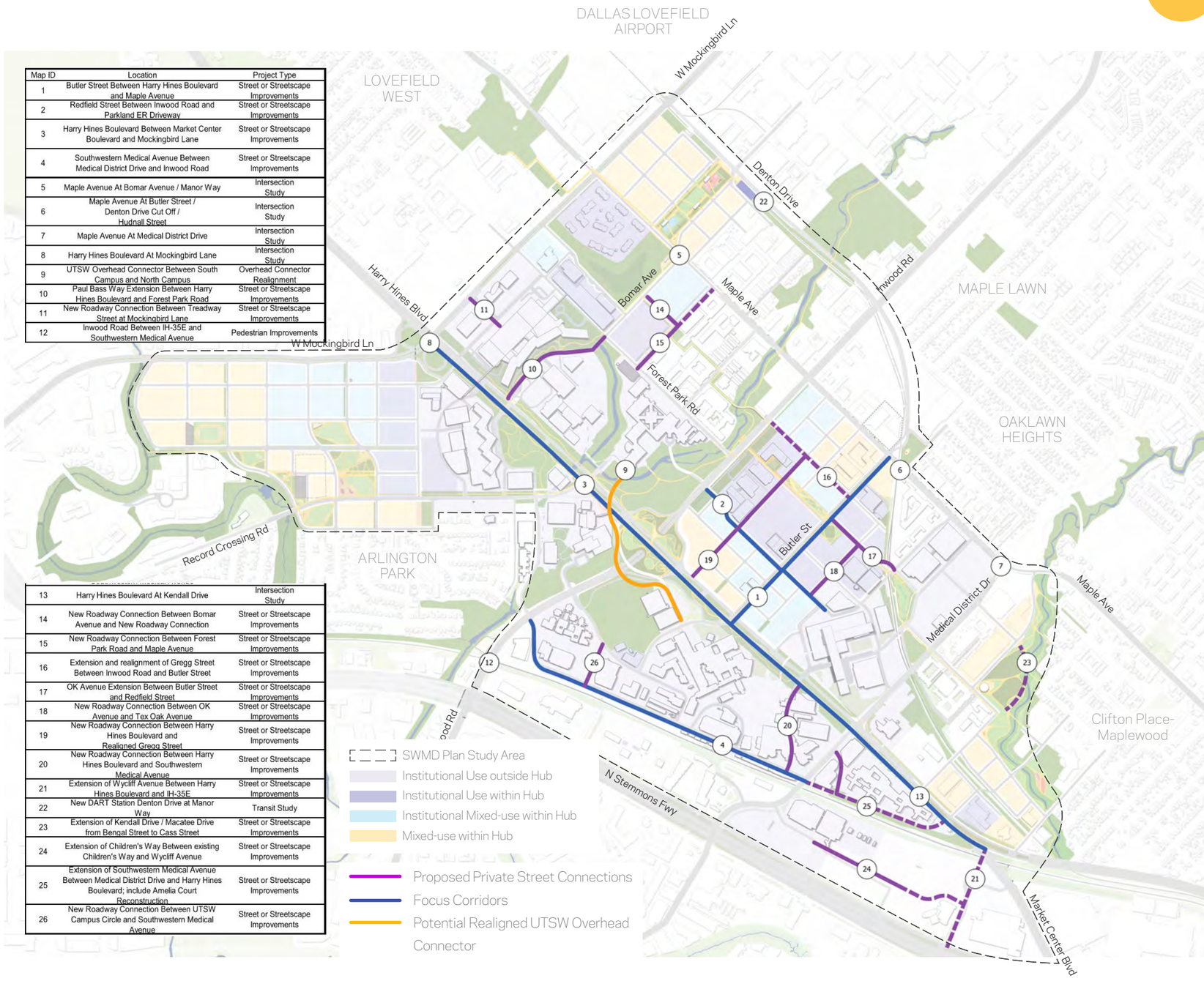


Figure 88: Transportation Recommendations Summary

Focus Corridors

Through the development of the recommended projects, four corridors were identified as focus corridors: Harry Hines Boulevard, Southwestern Medical Avenue, Butler Street, and Redfield Street.

Harry Hines Boulevard

Harry Hines Blvd is a critical thoroughfare within and through the District. The Texas Trees Foundation is currently leading a redesign of the corridor between Market Center Boulevard and West Mockingbird Lane. The design is promoting a more multi-modal, tree-lined, pedestrian-friendly, improved roadway.
As mentioned previously, collector roads are often major opportunity areas for greater multi-modal improvements. Therefore, it is best practice to concentrate enhanced multi-modal and parkway improvements on these types of streets in the existing or expanded ROW and work with developer and property owners to utilize more parkway space for pedestrian and bicycle activities. The collector roads in the SWMD offer an opportunity to be retrofitted to embody a complete street design by adding dedicated bicycle infrastructure, wide sidewalks, and street trees.

Southwestern Medical Avenue

Southwestern Medical Avenue (between Medical District Drive and Inwood Road) is a good candidate for multi-modal improvements. The SWMD, in partnership with Texas Woman's University, engaged Kimley-Horn (under a separate study) to evaluate the corridor and provide recommendations to improve the overall feel of the corridor. The recommendations may include removing on-street parking to provide room for a shared-use path. Figure 87 provides the proposed cross sections of Southwestern Medical Avenue.

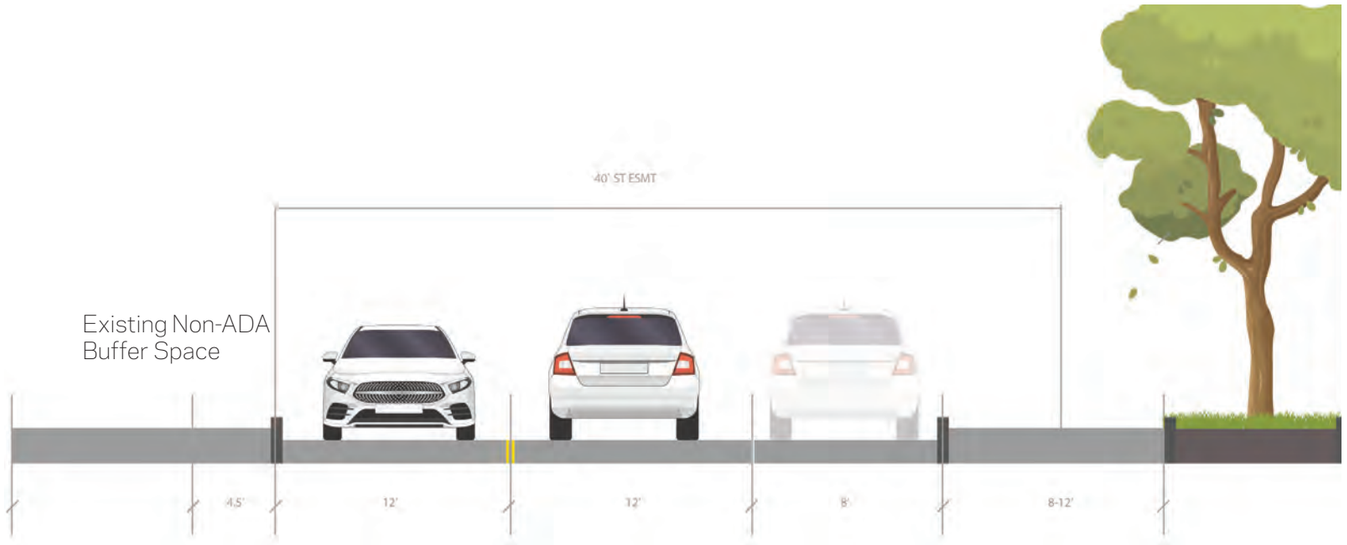


Figure 89: Proposed Cross Section for Southwestern Medical Avenue

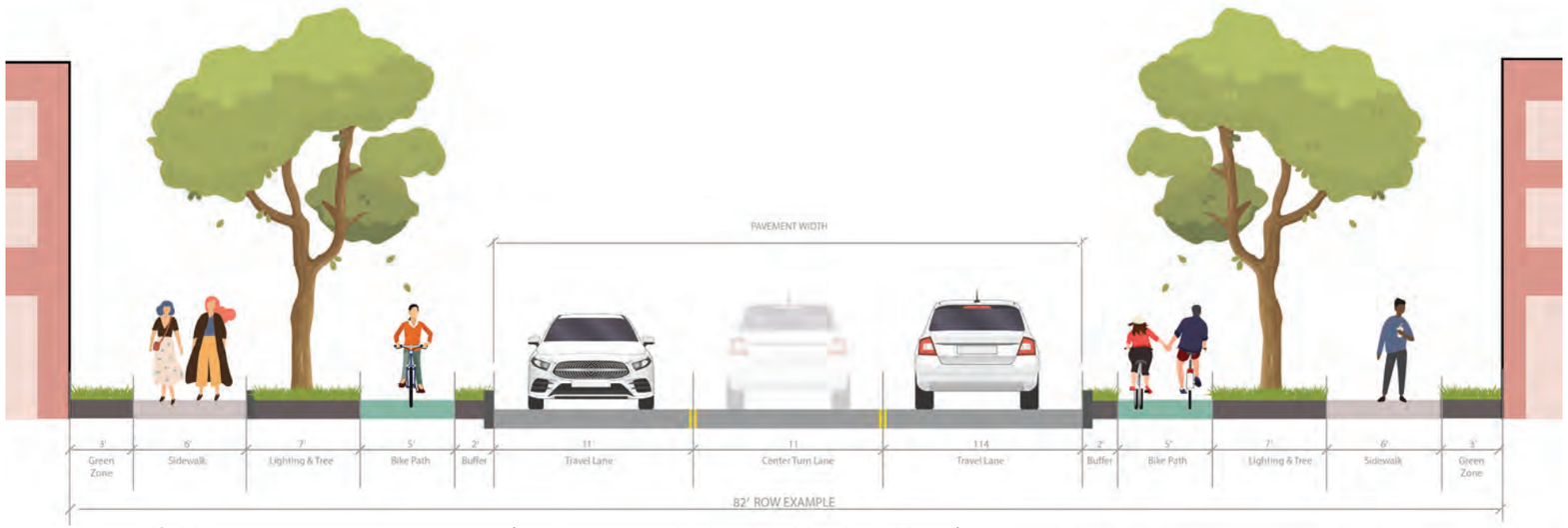


Figure 90: Redfield Street Cross Section Example (between Inwood Rd and Parkland Health ED)

Butler Street and Redfield Street

Butler Street and Redfield Street are proposed to be reconfigured to provide multi-modal facilities and ease of emergency vehicle access to Parkland. An additional landscape buffer would plant street trees and provide additional shade to pedestrians and cyclists. Figures 88-91 display examples of potential complete street designs for Butler Street and Redfield Street with a goal to refine these cross-sections during implementation phases.

Maple Avenue

Maple Avenue is currently being evaluated for safety improvements by the City of Dallas between West Mockingbird Lane and Oak Lawn Avenue. This corridor was identified as a priority in the City's Vision Zero Action Plan and Draft Dallas Bike Plan (2023 update). The corridor study is specifically looking at new bike lanes, new/enhanced pedestrian crossings, and improvements to the Hudnall/Butler and Manor/Bomar intersections.

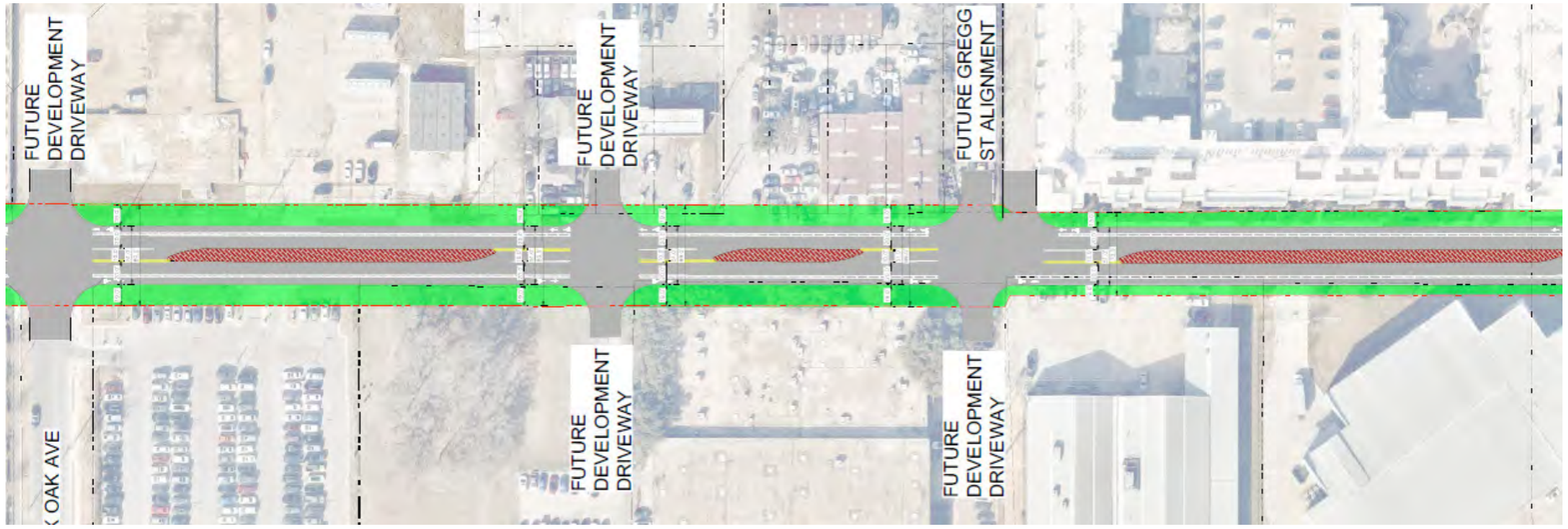


Figure 91: Butler Street Concept Layout

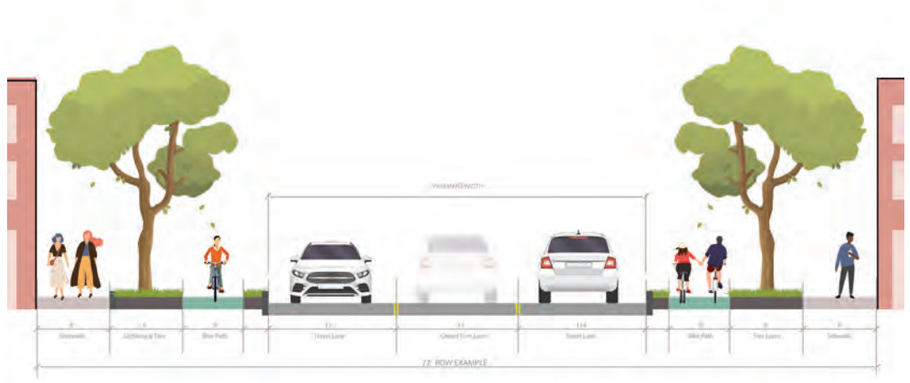


Figure 92: Butler Street Cross Section Example (between Gregg St and Maple Ave)

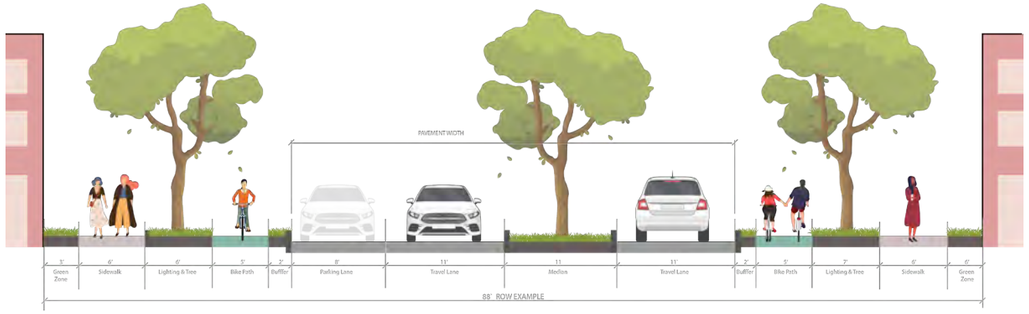


Figure 93: Butler Street Cross Section Example (between Harry Hines Blvd and Gregg St)

Overall Intersection Recommendations

The Plan recommends several intersection enhancements based on traffic projections for the next twenty years.

Butler Hub

- Butler Hub anticipated to generate 35,000 to 40,000 vehicles per day in a 20-year horizon.
- Access along Maple Avenue should be coordinated with City of Dallas in conjunction with their current planning efforts for Maple Avenue.
- Butler Street to be re-imagined as a two-lane roadway with center turn lanes throughout.
- Potential traffic signal along Inwood Road at future Gregg Street connection.
- Harry Hines and Inwood will be signalized as part of the TTF Harry Hines project.

Bomar Hub

- Bomar Hub anticipated to generate 10,000 to 15,000 vehicles per day in a 20-year horizon.
- Access along Maple Avenue should be coordinated with City of Dallas in conjunction with their current planning efforts for Maple Avenue.
- Traffic signal at Forest Park and Bomar in conjunction with NPC project.
- Potential traffic signal at Maple & Bomar with future UTSW campus growth.
- Align proposed Mockingbird Lane connections with existing median openings.

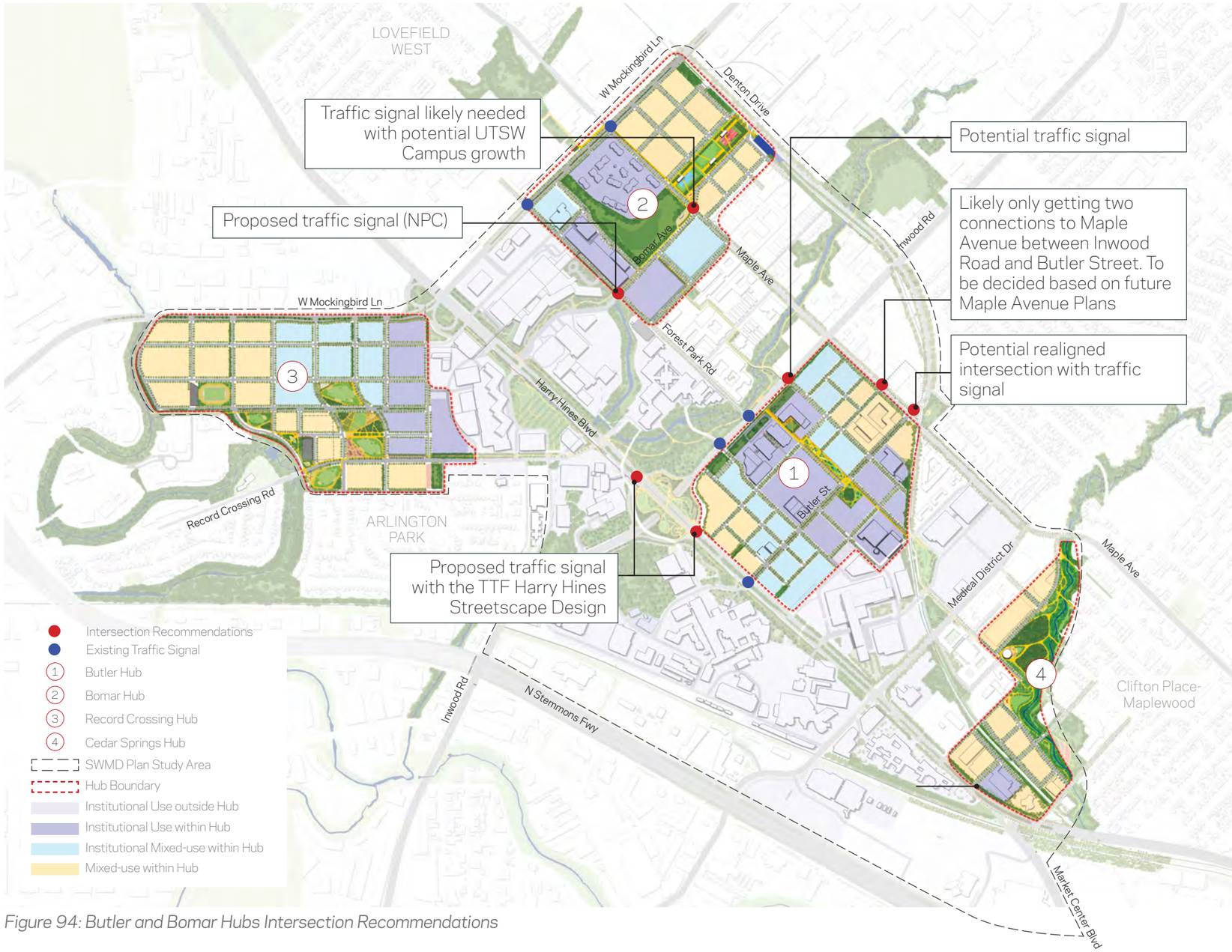


Figure 94: Butler and Bomar Hubs Intersection Recommendations

Record Crossing Hub

- Record Crossing Hub anticipated to generate 25,000 to 30,000 vehicles per day in a 20-year horizon.
- Proposed street connections along Mockingbird Lane should align with existing median openings.
- Potential traffic signals for the new main north-south roadway at Mockingbird Lane and Record Crossing Road.
- Improve Hinton Street through the Hub as a future Boulevard similar to Butler Street in the Butler Hub.

Cedar Springs Hub

- Cedar Springs Hub anticipated to generate 5,000 to 10,000 vehicles per day in a 20-year horizon.
- Proposed Pedestrian Hybrid Beacon along Harry Hines at Kendall as part of the TTF Harry Hines project.
- Roadway between Lot 4 and Lot 6 likely to be partial access connection to Harry Hines.
- Access along Maple Avenue should be coordinated with City of Dallas in conjunction with their current planning efforts for Maple Avenue.

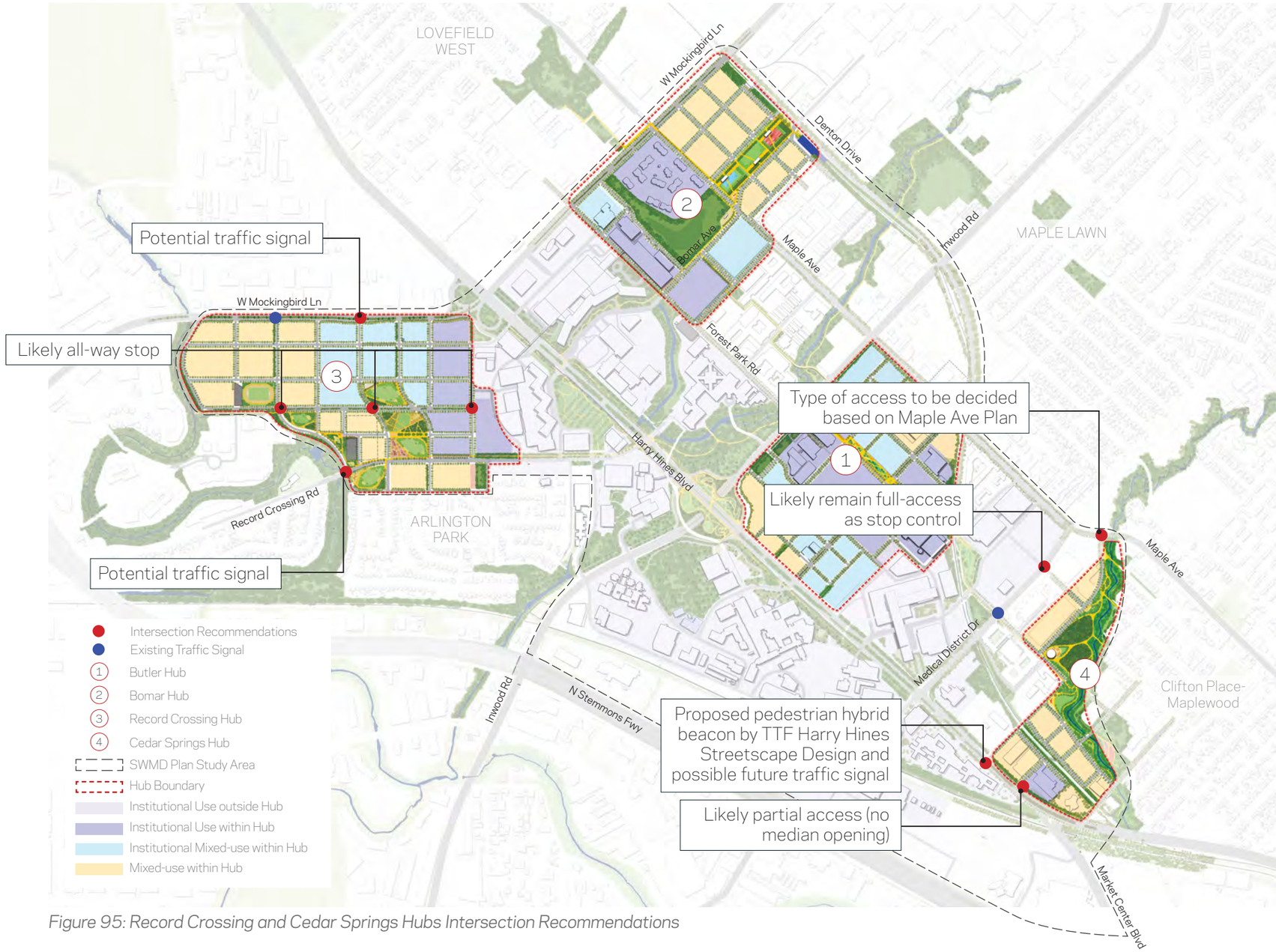


Figure 95: Record Crossing and Cedar Springs Hubs Intersection Recommendations

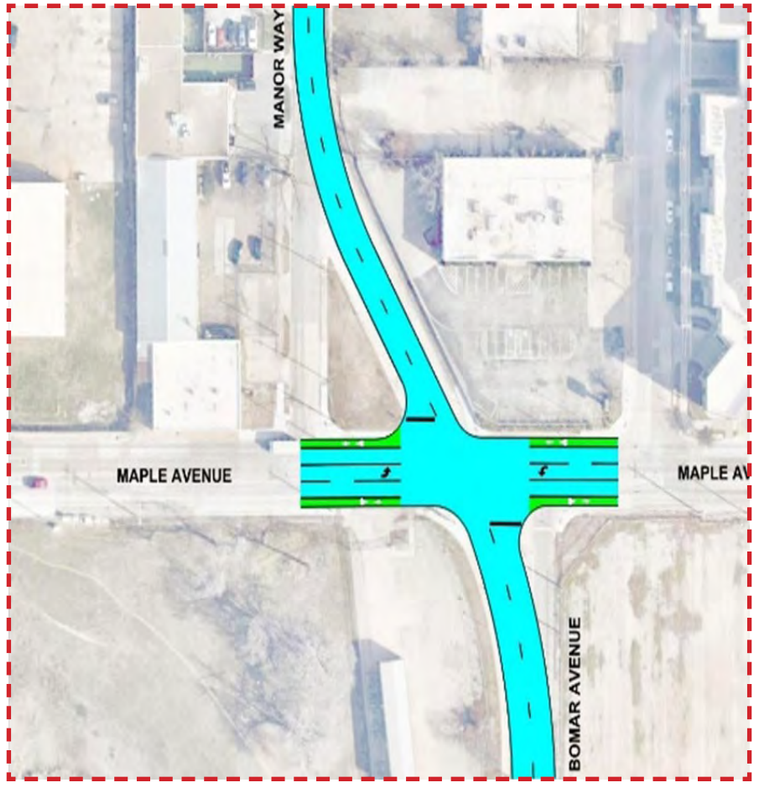
Focus Intersections along Maple Avenue

The City of Dallas identified Maple Avenue as a potential roadway for reducing the four-lane undivided roadway to a three-lane street (two travel lanes with a two-way left turn lane) with bike lanes in each direction. With the potential modification of Maple Avenue, several potential solutions were identified on how to improve a few of the Maple Avenue's intersections within the SWMD.

Maple and Bomar Avenue

The current geometry of Maple Avenue and Bomar Avenue creates an awkward intersection and as seen in Figure 26: Crash Map, has a high index of crashes at the intersection. There are channelized right turns, close intersections, and no pedestrian crossing across Maple Avenue. For a high-level look, three alternatives have been created as examples on how to realign the intersection to reduce the number of conflict points at the intersections. It is recommended to study this intersection further to determine the future configuration for this intersection, in collaboration with the City of Dallas.

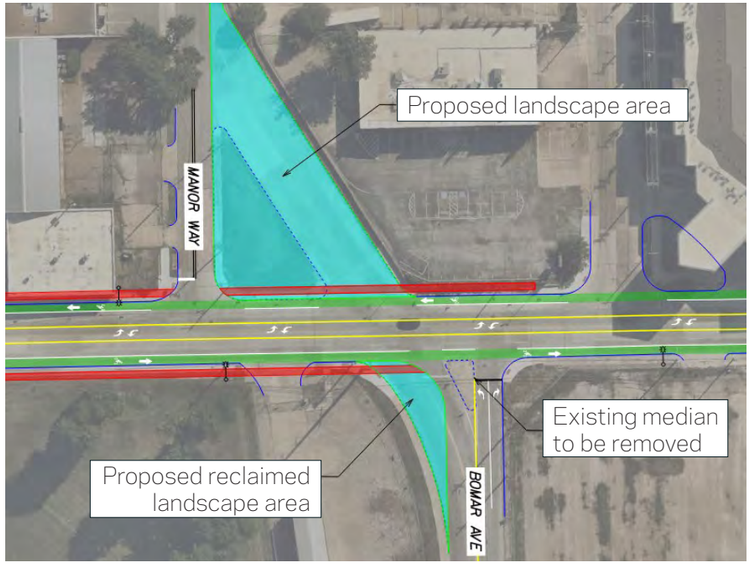
Figure 96: View of Maple Avenue and Bomar Avenue Intersection



a. Preferred Option

b. Alternative Option

c. Alternative Option



d. City of Dallas option (Source: City of Dallas Maple Avenue Safety Project)

Figure 97 (a, b, c, d): Maple Avenue and Bomar Avenue Intersection Alternatives

Maple Avenue at Butler Street/Denton Drive Cut Off/ Hudnall Street

The current geometry of Maple Avenue and Butler Street/Denton Drive Cut Off/Hudnall Street is an awkward intersection in which both north-south streets tie into Maple Avenue within 150-feet of each other. There have been several recent vehicular accidents including one fatality. The Trinity Strand Trail was recently expanded to cross this intersection which makes this intersection an important intersection to enhance for all mode users. The three alternatives are examples on how to realign the intersection to reduce the number of conflict points at the intersection. It is recommended to study this intersection further to determine the future configuration for this intersection, in collaboration with the City of Dallas.

Figure 98: Maple Ave at Hudnall Street and Denton Drive Cut-off

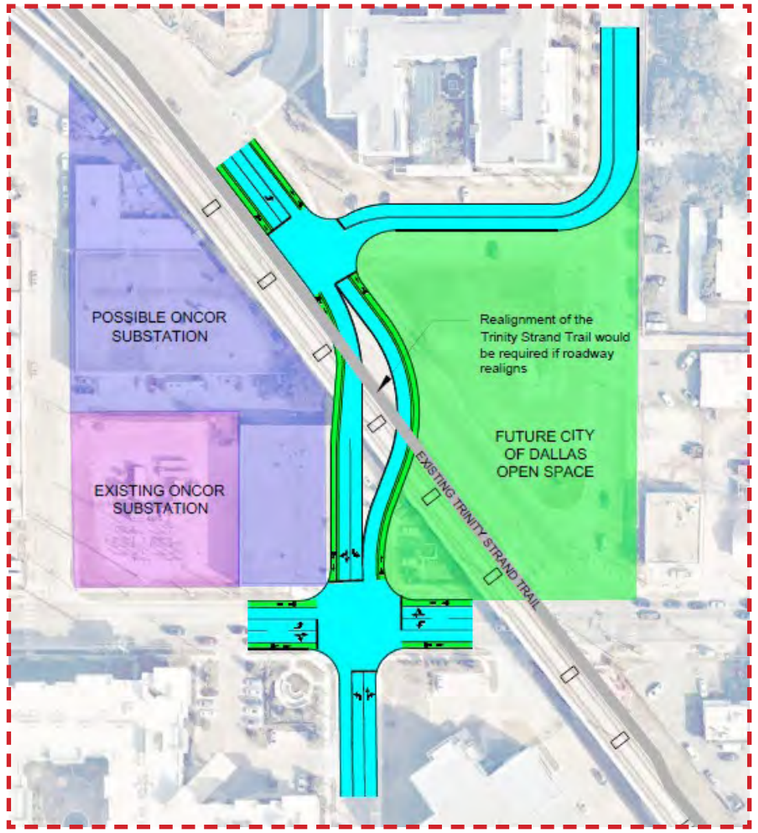


Figure 99: Maple Avenue at Butler Street/Denton Drive Cutoff/Hudnall Street Intersection (Preferred Option)

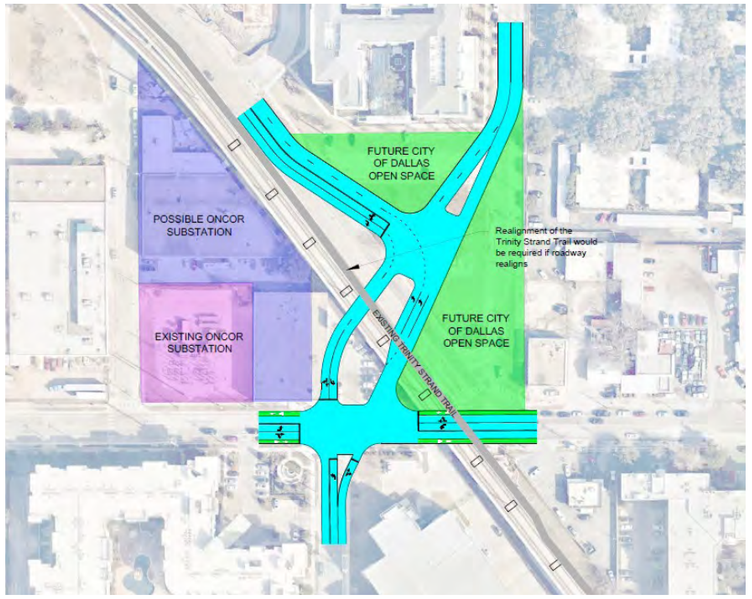


Figure 100: Maple Avenue at Butler Street/Denton Drive Cutoff/Hudnall Street Intersection (Alternative Option)

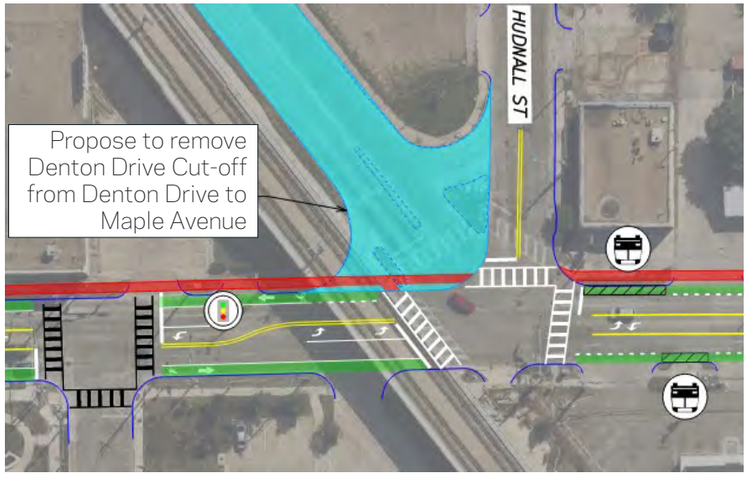
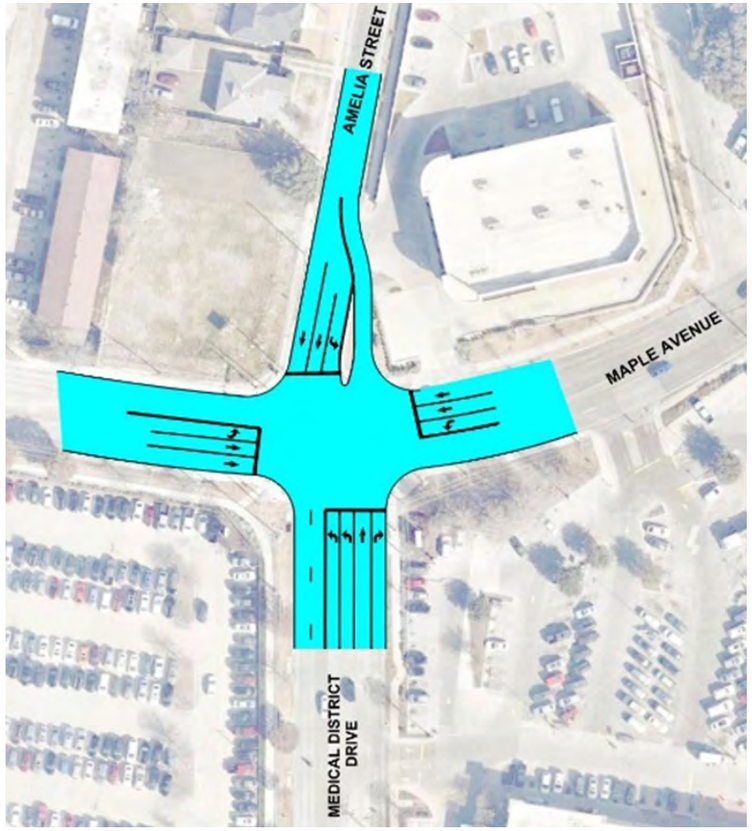


Figure 101: Maple Avenue at Butler Street/Denton Drive Cutoff/Hudnall Street Intersection (Source: City of Dallas Maple Avenue Safety Project)

Maple Avenue at Medical District Drive

The current geometry of Maple Avenue and Medical District Drive/Amelia Street is a skewed intersection with shared through/left lanes. When this type of geometry occurs, it limits the traffic signal timing. The intersection is currently split-phased and limits the amount of time each approach has to move through the intersection. The two alternatives shown are examples on how to realign the intersection to enhance the traffic flow and traffic signal timing. As mentioned in this Plan, the City of Dallas has identified Maple Avenue as a potential conversion from four lanes to three lanes with the addition of bike lanes. One option below assumes Maple Avenue remains four-lane roadway and the other is assuming the City adds bicycle lanes along Maple Avenue. It is recommended to study this intersection further to determine the future configuration for this intersection, in collaboration with the City of Dallas.

Figure 102: View of Maple Avenue at Medical District Drive Intersection (Source: Google Streetview)



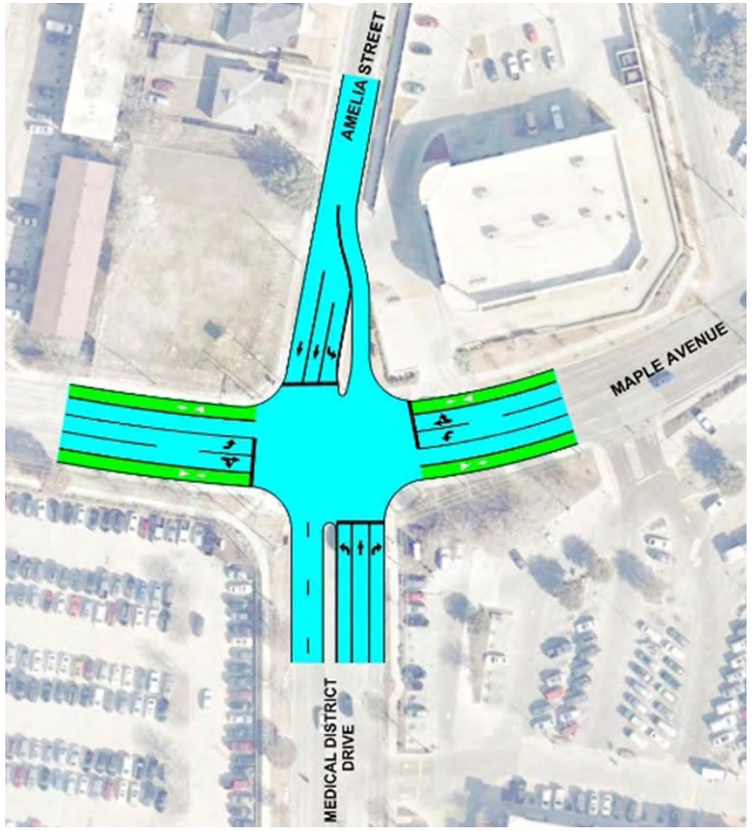


Figure 103: Maple Avenue at Medical District Drive Intersection Alternatives

Pedestrian and Bicycle Traffic

Bicycle Access to and within the District

Similar to the vehicle traffic, pedestrian and bicycle routes should tie into the SWMD transportation network. The Trinity Strand Trail was recently expanded and has finished construction along Market Center Boulevard, Harry Hines Boulevard and Medical District Drive. This trail greatly expands neighborhood connections to the District, allowing more employees to commute by bicycle or walking. Along Medical District Drive, a bicycle lane is being constructed to connect IH-35E to Southwestern Medical Avenue.

The City of Dallas is currently updating their Bike Plan with an anticipated completion by end 2024. The draft plan includes more bicycle routes to access the District such as Maple Avenue, Hudnall Street, Inwood Road, Record Crossing and Manor Way. The figure to the right shows existing and proposed bicycle facilities and shared-use paths in and around the District.

The Master Plan recommends the following:

- Dedicated bicycle facilities along collector roadways where connectivity improvements are needed most.
- Connect bicycle infrastructure to surrounding neighborhoods.
- Bicycle lanes on Harry Hines Boulevard need to be separated from general traffic lanes to promote usage and cyclist safety.
- Bicycles can utilize both dedicated bicycle lanes and shared use paths, which provides additional connections via off-street trails and shared-use paths.
- Providing bicycle infrastructure, including parking, near popular destinations, including the major hospitals, educational, research, and the Dallas Area Rapid Transit (DART) and Trinity Railway Express (TRE) stations.

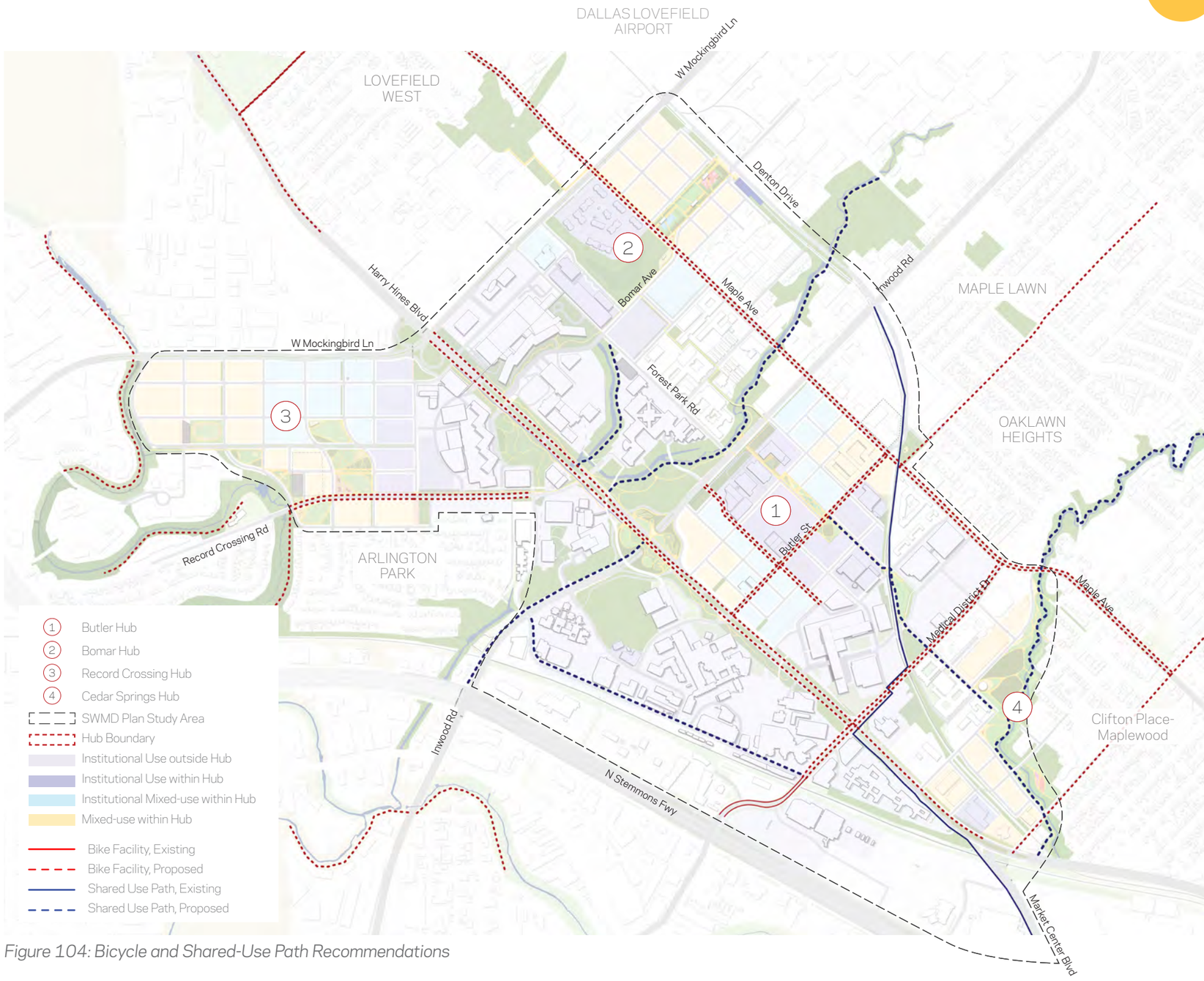


Figure 104: Bicycle and Shared-Use Path Recommendations

Pedestrian Access to and within the District

In 2017, the SWMD conducted a pedestrian access study to understand the existing walkability and pedestrians needs at the time. A pedestrian access audit was completed to evaluate approximately 19.2 miles of sidewalk, ramps, crosswalks, and lighting in the City ROW for compliance with current ADA requirements. The overall goal was to prioritize the sidewalks within the District.

In 2020, the City of Dallas completed the Sidewalk Master Plan. In that plan, the City identified locations of improvement in the District which included Inwood Road between IH-35E and Harry Hines Boulevard as a high priority section. There is an existing constraint along Inwood Road at the TRE bridge crossing with no pedestrian accommodations. The TRE is planning to upgrade the bridge. The pedestrian accommodations along Inwood Road need to be included as part of the improvements. The SWMD should continue to work with the City of Dallas to improve the connectivity and network of sidewalks within the District to provide a more comfortable and safer walking experience in the District.

As the District continues to redevelop and expand, increasing the connectivity of sidewalks and bicycle facilities will enhance the overall transportation experience of the District. The figure on the right shows an expanded network of sidewalk and shared-use paths in the District. The Plan recommends the following:

- Proposed sidewalks on Harry Hines Boulevard separated by a wide landscape buffer to promote pedestrian safety
- Sidewalks are generally 6 feet, shared use paths are 10-12 feet
- Additional shared use paths were identified to connect "superblocks" via off-street trail alignments even where streets may not fit.
- Proposing a connected, grid-like network of sidewalks and trails.
- Creating connections from the TRE station to the rest of the District
- Enhancing pedestrian connectivity from the DART station to surrounding destinations.

Partnering with the City of Dallas, developers, and other agencies will increase the chances of having a completed pedestrian network.

Figure 105: Pedestrian and Shared-Use Path Recommendations

Transit Operations and Interconnections

Transit (DART and TRE)

The public transportation system serving the SWMD is comprised of DART light rail and bus services and the TRE commuter rail. Once people enter the District via DART or the TRE, they can then use shuttle service as a last mile connector. There are currently two DART light rail stations that serve the SWMD, with access less than a one mile walk from anywhere within the current District. The TRE is a commuter rail system that runs between Downtown Fort Worth and Downtown Dallas. Within the District, there is a stop located along Southwestern Medical Avenue, adjacent to the existing Children's Health Dallas Campus.

DART ridership has been impacted by the COVID-19 pandemic since 2020, but DART expects increased ridership in the future as DART continues to expand its services. DART is currently constructing a new line, the Silver Line, which runs parallel to IH-635 between Plano and Irving to connect to the DFW Airport. This line will have connecting access to the Red Line, Green Line and the Orange Line. It will open more opportunities for employees and visitors in the northern part of Dallas to use the DART transit services to access their jobs and medical services within the SWMD.

Additionally, since the SWMD has two DART light rail stations and a TRE station, this could attract people to utilize alternative forms of transportation through the available transit services. In the 2010 Transportation Master Plan, a Regional Zip Code Analysis was performed, which was compared to an updated analysis for 2021. The comparison of these two analyses is displayed in the figures to the right. 40% of the SWMD employees in 2010 lived in zip codes adjacent to the rail lines (including the expansion of the Orange and Green lines). In the 2021 Zip Code Analysis, employees have shifted living patterns. Approximately 20% of employees in 2021 lived in an adjacent zip code to a DART or TRE line, which is likely due to more people branching outside of the City limits to the suburbs. On the plus side, an increased number of SWMD employees live within walking distance of the SWMD institutions, buoyed by the increased supply of multi-family housing along Maple Avenue.

As part of the SWMD Master Plan, the planning team has had discussions with DART to explore the opportunity to construct a new DART station along Denton Drive, near Manor Way. The intention of this new station is to serve potential growth in the Bomar Hub. The planning team prepared population estimates for the Bomar Hub to support the need for the new stations. The forecasts resulted in an anticipated population growth (including residents, employees, patients, and visitors) of approximately 59,260 (accounts for both people that live in the district as well as people that work within the district) at full build-out of the Hub. DART has been provided this information and is currently running models to determine the feasibility of a new Denton Drive-Manor Way station.

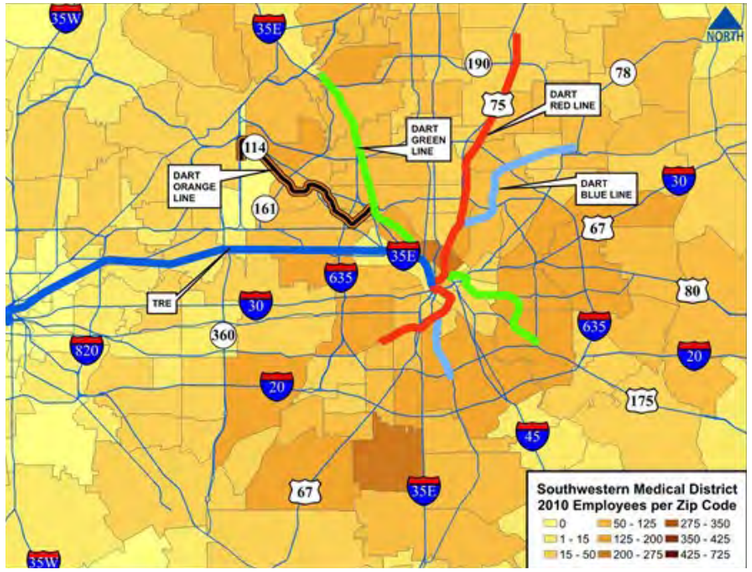


Figure 106: Zip Code Analysis 2010

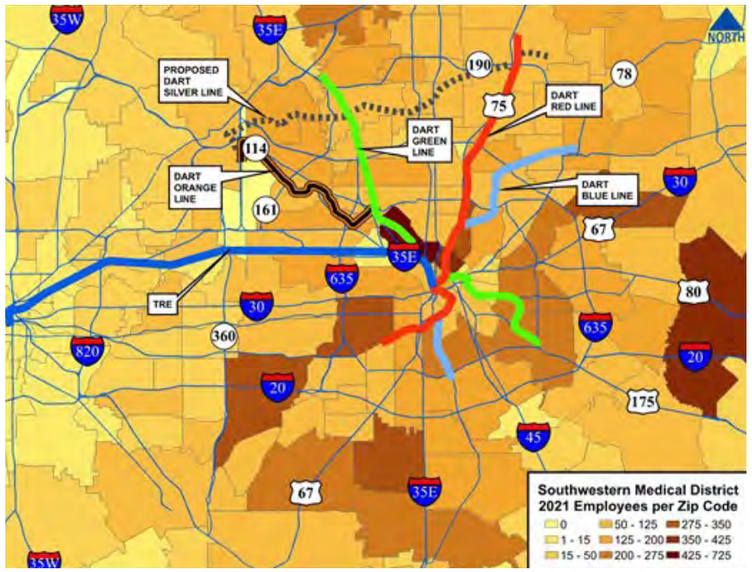


Figure 107: Zip Code Analysis 2021

Surface Shuttle Service

As the District continues to expand and grow, increasing and optimizing existing District shuttle routes, vehicles, and frequency will be important for the implementation of a successful transportation network. The shuttle for some employees is the last mile between the transit (DART or TRE) and their workplace.

Children's Health has four routes that currently service the Dallas campus: the Children's DART Route, Trinity Towers Route, and Main-ER Specialty Route. Children's Health has four stops including the DART Parkland Station, the Children's Main Hospital Entrance, TRE Station, and the Children's Specialty Center. The Children's DART shuttle route in 2022, had a total of 7,299 riders for the year. The Trinity Towers Route has two stops, including the Trinity Towers stop and the TRE Station. Since the recent expansion of Children's Health into Trinity Towers on I-35E and Inwood Road, this route has become the highest used shuttle service for employees. In 2022, the Trinity Towers Route had a total ridership of 7,738 riders for the year. The Main-ER Specialty Route has three stops which include the TRE station, Main Hospital Entrance, and the Specialty Center. In 2022, the Main-ER Specialty Route had a total ridership of 738 riders for the year.

UT Southwestern currently utilizes ten shuttle routes to service all four campuses in the SWMD: Hospital Express, Brookriver, Connector, DART 422, DART 423, East Campus Parking, Clinical On-Demand, Pegasus Park, South Campus/Zale, and Bass Shuttle. The heaviest used shuttle route, Connector, sees approximately 20,000 riders each month on the dedicated overhead structure. UT Southwestern on average has around 30,000 riders each month across all ten of the shuttle routes. With the expansion of North Campus, increasing routes between the newly finished Cancer Care Center and Brain Institute and other parts of the campus are needed. This can be accomplished via the Overhead Connector and/or using Harry Hines Boulevard.

Parkland's employees and patients have two Parkland routes - the ASC Route and Moody Route. In addition, DART has three shuttle services that also serve Parkland Hospital, the Route 434, Route 435, and Route 436. The DART Shuttle routes on average have approximately 30,000 riders each month.

As the SWMD continues to grow in patients and staff, as well as geographical location, an interconnected network of shuttle and transit services is needed for the District. Below are several solutions on how to enhance the shuttle and transit experience in the SWMD.

- A near-term goal of the surface shuttle system would be to increase shuttle frequency to provide wait times of approximately ten minutes or less during peak travel periods.
- Coordinate timing of shuttles with arrivals from the DART light rail and TRE commuter rail.
- Provide real time data for patients and staff on where shuttles are and estimated time of arrival to the stops. This can be accomplished through a website or through an application for cell phones.

Figure 108: SWMD Shuttle Service

Overhead Connector Service

Currently, the Overhead Connector services UT Southwestern's South Campus, North Campus, and West Campus. The shuttle bus has a monthly ridership of approximately 20,000 riders each month. The Overhead Connector provides quicker and more direct paths between campuses than using on-street roads.

The Overhead Connector was expanded to the West Campus between 2014 and 2015. This section was widened to include an overhead pedestrian path with lighting and wider driving lanes for the shuttles. As the Texas Trees Foundation's Harry Hines Boulevard project progresses, the introduction of the Green Park will drastically change how Inwood Road and Harry Hines Boulevard interact with vehicles and pedestrians. The Green Park will add more green space where pedestrians will have more direct access to areas near the bottom of the current Overhead Connector. Due to the proposed location, the current Overhead Connector between UT Southwestern's South Campus and North Campus would need to be realigned to avoid the Green Park. To provide a more walkable section of the Overhead Connector, it is recommended to match the section that was built for the West campus to include wider driving lanes and the covered pedestrian path. The figure on the right displays generally how the realignment would need to be oriented around the proposed Green Park.

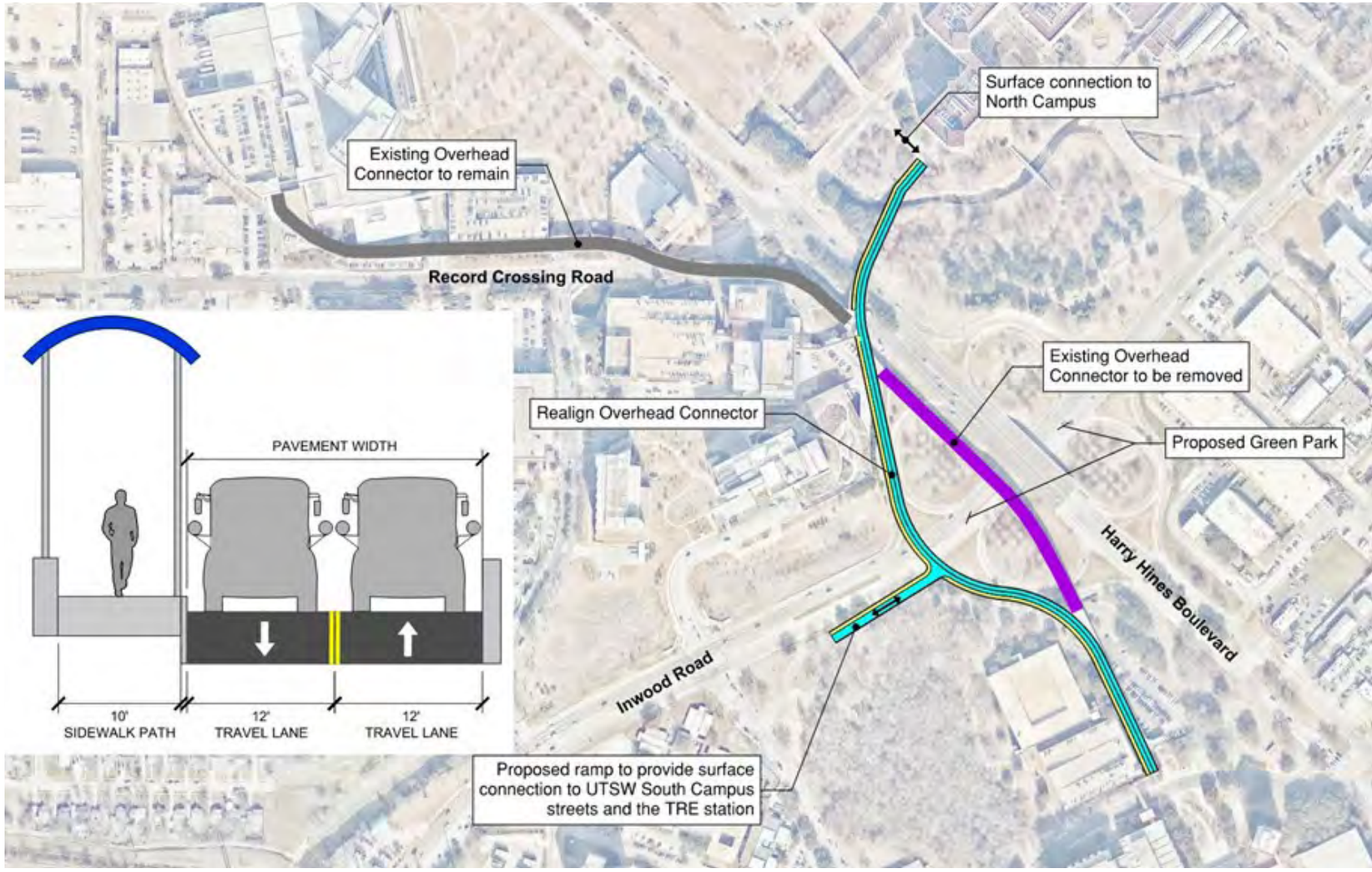


Figure 109: Overhead Connector Realignment

Parking District Concept

Improving the SWMD experience is a theme reiterated throughout the Strategic Mobility Study. Parking is an essential piece in the overall experience for a visitor to the area. An important step in improving the overall parking experience is the formation of a complementary parking and local transit system, where a visitor can easily park once and navigate through the SWMD utilizing shuttle services or by walking/biking.

As parking is an important piece of the overall experience, getting a parking master plan as a next step should be a goal of the District. To develop a District parking master plan, the following key items should be considered to have a successful parking master plan:

1. Analyze current and future parking supply/demand conditions.
2. Develop parking program guiding principles to serve as the framework for parking planning.
3. Review layout and efficiency of existing parking areas.
4. Identify opportunities to improve parking management and utilization.
5. Evaluate remote parking and shuttle options.
6. Evaluate demand management strategies for parking.
7. Study preferred accessible parking and pedestrian access strategies.
8. Evaluate the parking and access impacts of proposed facility modifications, campus expansions, and future building projects.
9. Reassess parking allocation strategies.
10. Develop potential parking expansion alternatives.
11. Costs of proposed construction, operations and maintenance of recommended parking alternatives.

Other parking recommendations or “future proofing” may include the following:

- For underground parking structures, including repeaters to enhance the signal reception. Vehicles are becoming more advanced and as they advance maintaining access to reception will be important.
- When considering electric vehicle (EV) charging. The industry average for parking is between 1-3% of the total parking. To plan for the future, including the infrastructure to provide 5-10% of the parking to be compatible with EV charging will be important. Note that providing EV charging is an amenity, since staff and patients have the opportunity to charge vehicles at home.
- Providing an incentive for employees to take other modes of transportation such as transit (DART or TRE), walking and/or biking to work, or using rideshare (carpool, transportation network company, etc).

UTILITIES RECOMMENDATIONS

Overview

Key Strategies

The Plan's goal is to understand the District's challenges and develop goals and desires for improved utility infrastructure in the District. The Plan helps to identify and inventory recommended utility projects that will facilitate growth in the District.

The following strategies are identified as recommended projects:

- Water and Wastewater
  - Coordinate with City of Dallas on Future Growth Plans and Capital Improvement projects
  - Analysis of increased water demand from proposed new development in the Hubs
  - Implementation of sustainable practices such as water re-use and efficiency practices (e.g. low flow fixtures)
- Electrical and Telecommunications
  - To bury overhead electrical and telecommunication lines as a weatherization, security, and an aesthetic measure.
  - Update or expand electrical substations to meet future energy demands.
- Sustainability and Resilience
  - Opportunities for green infrastructure
  - Reduction of impermeable surfaces
  - Burying overhead distribution lines
  - Implementing low impact development design standards
  - Prioritizing green, open space for improved stormwater management

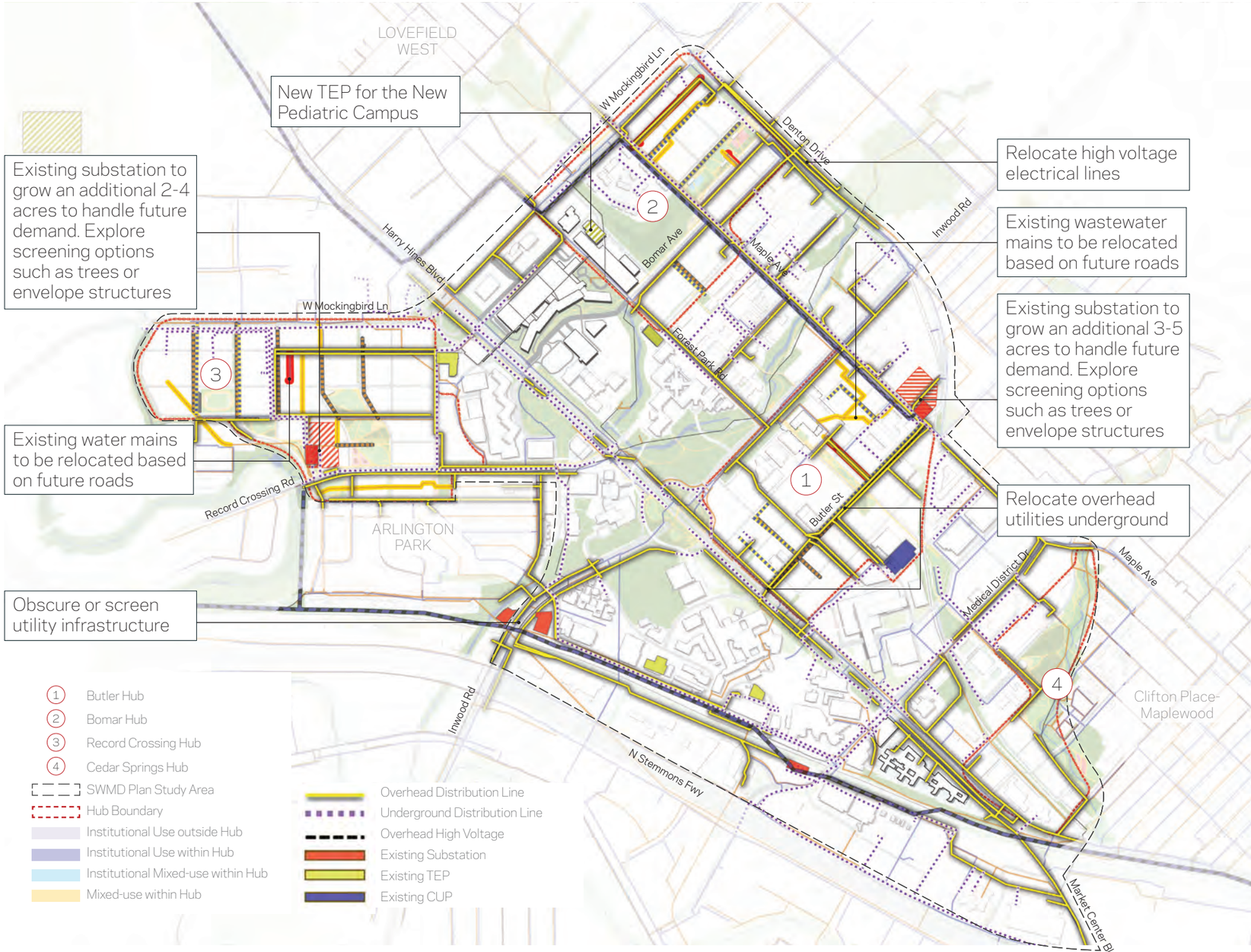


Figure 110: Overall Utilities Recommendations

Water, Wastewater, and Stormwater Utilities

Understanding District Water Demand

A direct result of the land use recommendations would be a noticeable change in the water demand within the district. To support the calculations needed for this demand, research was conducted for typical usage rates based on building classifications. The recommended development scenario included a variety of building usage types, and the demand for each type was unknown and identified as a data gap. Research and typical usage rates were used to fill this data gap and the ones used in the assessment are listed in the table below:

Building Type Classification	Usage Type
Retail Stores	2L/unit/day
Medical Office	5.3 L/unit/day
Office Building	3.67 L/unit/day
Apartments	400 L/unit/day
Hotel	450 L/unit/day
Hospital	Total usage numbers provided by respective hospitals

Figure 111: Assumed Usage Rates by Building Classification

For each hub (Butler, Bomar, Record Crossing, Cedar Springs), an identified data gap was the density of development as this project is still in the master planning phase; therefore three scenarios were prepared to represent a range of new development density based on proposed building heights. The three scenarios are listed below:

- New buildings built to 4 floors
- New buildings built to 6 floors
- New buildings built to 8 floors

Additional data gaps were identified for land type: parking, landscaping, and hotel usage. Assumptions were made to fill these data gaps and are summarized below.

- Land type/building usage came in as Institutional, Institutional Mixed-Use, and Mixed-use
  - Institutional
    - Assumed to be medical office space for building type classification as this seemed like a usage type that would likely use more water than a typical office space, but less than a hospital
- Institutional Mixed-Use
  - Assumed to be 50% floors medical office, 50% floors apartment/condominiums
- Mixed-Use
    - Assumed to be as 50% floors retail; 50% floors apartment/condominiums
  - Parking space & landscaping excluded from water demand calculations
- 1,000 SF per unit for residential apartment calculations (average 2-bed apartment in Dallas) to account for non-leasable space
- 1,000 SF per room for hotel calculations to account for non-leasable space (only Butler includes hotel)

Water Conservation Efficiency and Re-use Options

In support of the recommended land use, the planning team identified conceptual water demand scenarios based on the three levels of density that could occur in the District's future. For each scenario, the team assessed a district level demand and potential demand for each Hub location. Water usage for each hospital was provided directly and was added to the estimated demands for each scenario and hub to evaluate total water use.

The figure below shows the findings of the three-level study in comparison to existing water usage levels for the Bomar, Record Crossing, Cedar Springs, and Butler Hubs.

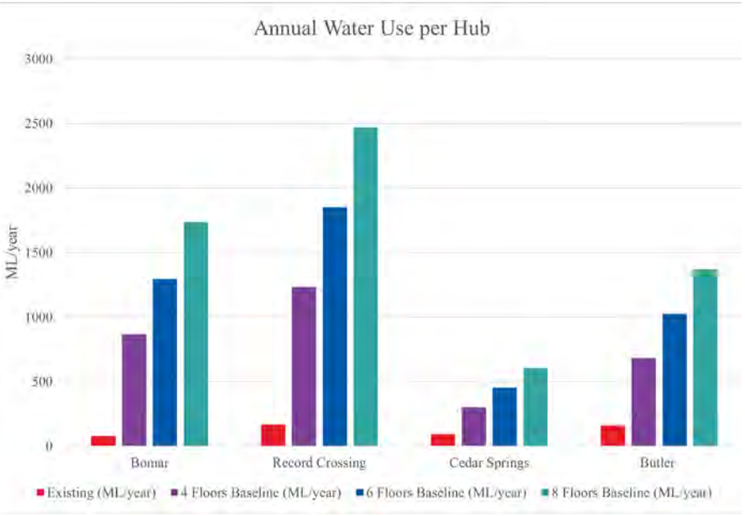


Figure 112: Annual Water Usage Per Hub

As indicated in the figures below, the water demand will increase significantly depending on the future development types (4 floors, 6 floors, and 8 floors). This requires that water capacity can adequately be met by DWU and that all existing utility pipes are updated/upsized as needed to accommodate the increased demand. Should land-use changes in the District occur, the assessed demand scenarios illustrate the potential need for new or expanded utility infrastructure. As a solution to help reduce demand, certain sustainable practices

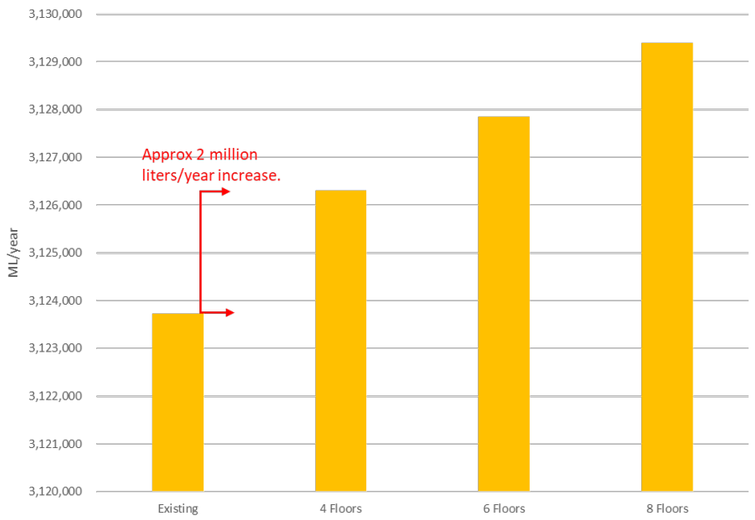


Figure 113: District-Wide Annual Water Usage (All hubs + hospitals + additional structures)

such as water re-use and low flow fixtures can be implemented. These sustainable practices are assumed to only be used in residential and office space, not medical facilities. Based on preliminary estimates, implementing sustainability strategies such as low flow fixtures, water reuse/treatment, etc. could achieve 20-30% water usage reductions.

These strategies would help reduce demand on the DWU water supply and provide a more sustainable approach to new development in the District. The main principles guiding this design include minimizing water consumption, maximizing the efficiency of the water supply system, having a closed loop of resources within the site, and reducing the energy and resource costs of providing centralized water and wastewater treatment.

Taking Record Crossing Hub's recommended land use plan with eight-stories as an example (as the highest demand scenario), a step-approach to water use reduction is illustrated in Figure 107. Implementing a water use reduction plan would result in the following

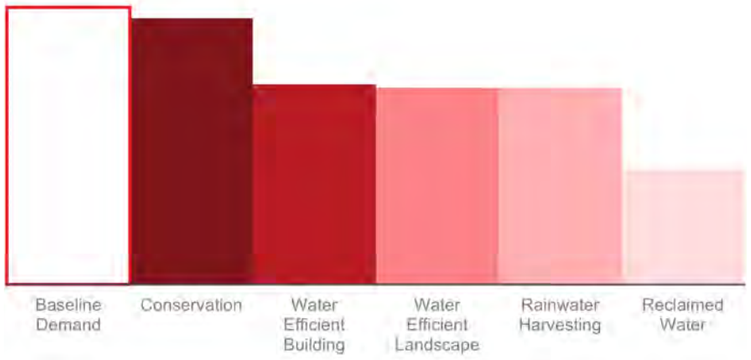


Figure 114: Step-approach to water use reduction

benefits:

- Decreased potable water demand
- Reduced stormwater runoff from the site
- Decreased infrastructure requirements for stormwater management and water and sewer utilities, as the peak flows are decreased
- Greater resilience to water shortages and climate change by storing water for reuse

The first priority to is reduce demand as much as possible, and then design water reuse systems to utilize recycled water for non-potable purposes where possible (should be noted that this might not always be possible in hospital/lab settings).

Conservation and design efficiency are the most cost-effective strategies in reducing water demand, which include the following:

- Installation of efficient water fixtures, appliances and HVAC systems
- Recovery of HVAC condensate and other process water for reuse
- Selection of appropriate landscape plantings and use of xeriscaping principles, including a grading plan to allow for optimal usage of rainfall
- If irrigation is necessary, provide high efficiency systems with appropriate leak detection and climate-responsiveness, coupled with best practices
- Water use restrictions for uses that do not require potable water
- Integration of best practices for water use on a building level, such as running full dishwasher loads, minimizing water used for cleaning, etc.
- Universal building-level metering with real-time display of water usage

Rooftops and other areas present opportunities to collect rainwater, which can be stored in tanks and treated for use in irrigation, flushing toilets, cooling systems, fire demand and other non-potable uses. A form of treatment will be required based on the final end-use and expected exposure to human contact. As the District grows and develops, other opportunities for rainwater harvesting such as ponds and underground storage tanks or chambers should be explored.

Treated wastewater effluent (typically from non-hospital buildings) can be used as a resource when effectively treated to sufficient levels and re-used. Recycled water is wastewater treated to tertiary level, then distributed throughout the community via a dual distribution system (i.e., one water main for potable and a second for non-potable use, usually via purple piping to distinguish it). In certain cases, it is feasible to treat reclaimed water back to potable water standards.

Some important considerations for implementing water reuse include:

- A separate non-potable water supply system needs to be provided separate from the potable water supply in plumbing fixtures
- Treatment equipment will be required which will require ongoing operations and maintenance
- Educating occupants on the benefits of water reuse, why it is being used and where it is being used

Figure 115: Examples of Rainwater Harvesting Cisterns

Figure 116: Reclaimed water signage (left) and purple pipe reclaimed water distribution system (right)

Water and Wastewater Utilities Recommendations Summary

The Plan compiles proposed, planned, and new wastewater, water and electric modifications for Butler, Bomar, Record Crossing, Cedar Springs Hubs, and key projects for the District.

The Plan includes locations and potential lengths of proposed new wastewater gravity mains and water lines for each hub. The database also includes locations and lengths of existing wastewater and water pipes that are conflicting with the proposed development of the area, so are recommended to be removed. Sewers should be further studied for changes in land use. Record Crossing Hub has new parcels that overlap with a major 60 inch sewer line. Bomar Hub has new parcels that overlap 8 inch gravity wastewater lines and up to 8 inch pressurized water lines. At Butler Hub, new parcels overlap up to 12 inch gravity wastewater lines near institution facilities and existing multi-family residential. Cedar Springs Hub has no notable changes. The figure alongside illustrates the locations of existing and conflicting water and wastewater infrastructure.

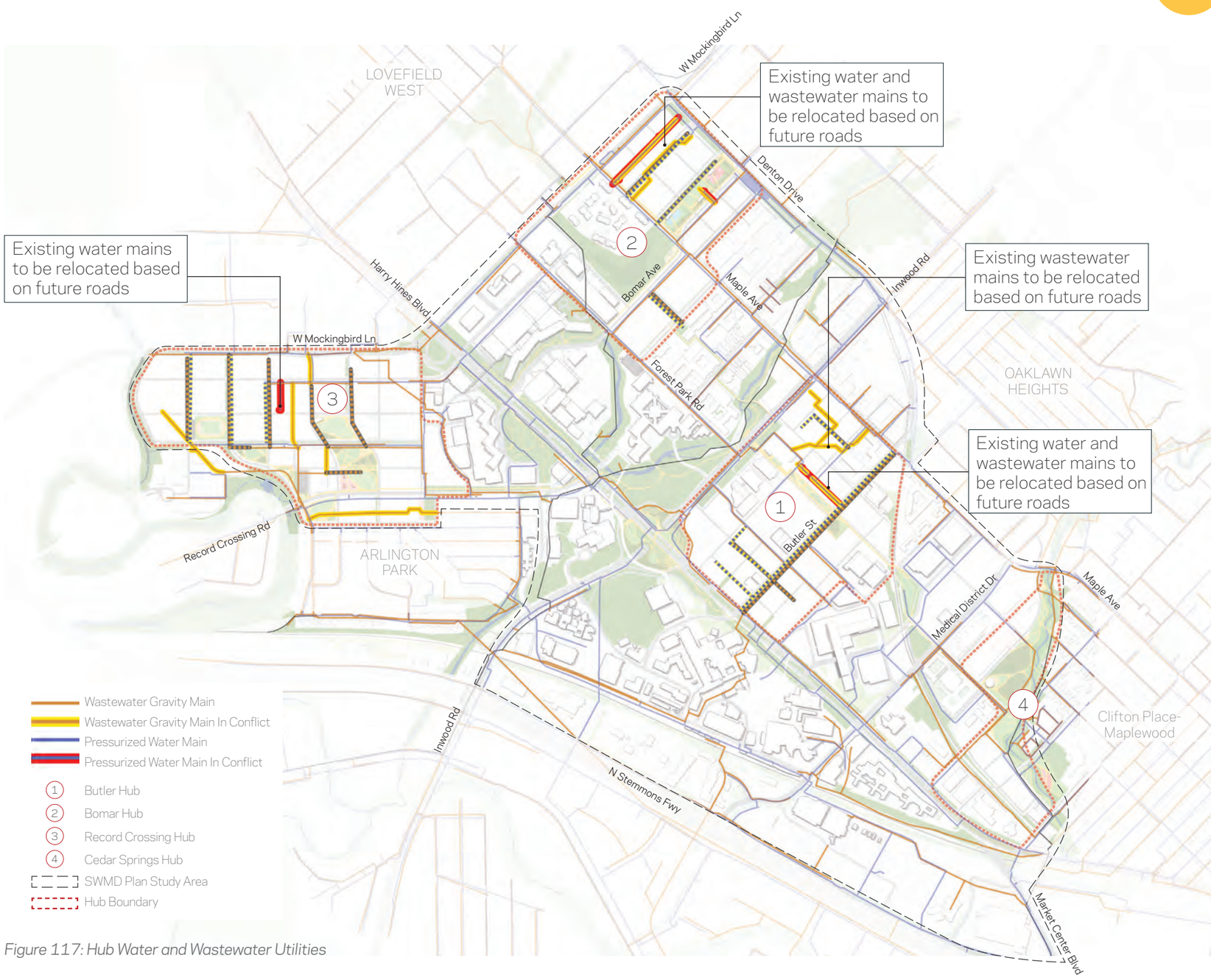


Figure 117: Hub Water and Wastewater Utilities

Stormwater Management

As Dallas experiences more frequent and intense rain events in addition to increased development/impermeable surface area, it is critical to adequately address stormwater management. Grey infrastructure is the traditional stormwater management technique, using manufactured systems to control water. Green infrastructure is a design and land development approach that helps to enhance urban flood resilience and alleviate the negative runoff impacts of pollutants in stormwater. Green infrastructure uses engineered plant and soil systems that mimic nature's natural ability to absorb and filter water. Common green infrastructure practices include pervious pavement, bioretention areas, rain gardens, and bioswales. A comprehensive stormwater management strategy for the District can lead to reduction of the heath-island effect and prevention of thermal pollution, reduced flooding, enhanced water quality, and restoration of a more natural hydraulic regime.

The Plan recommends implementing the following green infrastructure elements for stormwater management as part of future developments and open space enhancements within the District.

Permeable Pavers

Permeable pavers are a water quality stormwater best management practice (BMP) that can be implemented in parking stalls, walkways, local roadways and bike paths to help meet post-construction stormwater quality requirements. Permeable pavers are bricks, concrete, or other pavers placed far enough apart to allow for water to percolate in between, reducing runoff and increasing water quality. Pervious pavement offers high phosphorus removal potential and reduction of runoff velocity. They have a low storage volume to area ratio compared to some other green infrastructure practices.

Percolation tests are required to determine if permeable pavers are practical for a site, because they require a certain infiltration rate to work properly.

The Elm Street Streetscape Project in Dallas included permeable pavers in sidewalks draining toward tree planters. The site was previously more than 90% hardscape (impermeable) and now includes 26 rain gardens and many street trees and planting areas.

The NVIDIA Corporate Campus in Santa Clara, CA uses rot-resistant wood permeable pavers to achieve stormwater management and reduce the heat-island effect as a cooler alternative to concrete or brick pavers (as show in the figure below).

Figure 118: NVIDIA Corporate Campus exterior area with Black Locust Lumber permeable pavers

Bioretention

Bioretention cells collect, retain and temporarily store surface water in soil void space and surface ponding from small drainage areas, in addition to providing water quality benefits. They are designed to slow and clean stormwater runoff, reduce local flooding, and protect stream health. The runoff passes through a mulch layer, filter bed of soil or engineered soil media, and plant root area to infiltrate into the soil and eventually pass down through an underdrain system. Water is designed to be filtered through the soil planting bed before being conveyed downstream by an underdrain system or infiltrated into the existing subsoil below the soil bed. These can be located within landscape areas and along walkways or adjacent to streets. Bioretention areas have ecological value or habitat creation potential and reduction of runoff velocity. They are also relatively low cost. They have a medium storage volume to area ratio compared to some other green infrastructure practices.

Pacific Plaza is an example of a parking lot in Dallas that transformed into a 3.7-acre park, utilizing many green infrastructure features including many bioretention cells to mitigate stormwater runoff. This created a robust tree canopy over the area, generating shade and reducing the heat-island effect.

Rain Gardens

Rain gardens are small bioretention areas that contain amended soil and native vegetation for receiving and temporarily storing stormwater runoff. Rain gardens can be designed for full, partial or no infiltration into underlying soil dependent on site and soil conditions. Rain gardens provide hydrologic and water quality benefits as well as aesthetic benefits. Rain gardens are typically utilized in parking lot islands, roadway bulb-outs, and landscaping features, with a maximum designed contributing area of 5 acres per treatment cell. Rain gardens have ecological value or habitat creation potential and reduction of runoff velocity and are also relatively low cost. They have a medium storage volume to area ratio compared to some other green infrastructure practices.

Figure 119: Rain gardens near street (NYC DEP)

Bioswales

Bioswales (also called water quality swales) are grass or vegetated drainage channels that soak up and filter stormwater runoff, containing drainage layers to filter stormwater and providing water for plants. They are generally located in linear landscape or along a greenway. Bioswales have high phosphorus removal potential, ecological value or habitat creation potential and reduction of runoff velocity. They have a medium storage volume to area ratio compared to some other green infrastructure practices.

The University of Texas at El Paso recently transformed the heart of its campus from a highly paved environment to a green landscape that incorporated bioswales in its practices.

Figure 120: Bioswales at the University of Texas at El Paso

Implementation of Green Infrastructure

Certain green infrastructure practices can be used in conjunction with each other to maximize benefits. For example, in order to dissipate runoff velocity and treat stormwater close to the source, a green roof can be used. The water then continues into a bioretention area where water infiltrates and slows down, finally entering a cistern for irrigation which provides volume attenuation upstream of the final outfall.

All green infrastructure implementation should consider ADA requirements to ensure adequate clearance is maintained for pedestrian access adjacent to the green infrastructure asset. Other considerations include ensuring adequate infiltration requirements, sizing constraints, storage considerations and slope requirements. For specific information, refer to the Dallas Drainage Design Manual 2019.

Generally, optimal locations for placement of green infrastructure are areas that are not located above a high groundwater table. Trinity aquifer is a major underground water source that lies under all or parts of 18 counties in North Texas, stretching from Central Texas to the northeastern part of the state. Woodbine aquifer is smaller and sits on top of the Trinity. It is located beneath Dallas, Collin and other counties on the eastern portion of the Trinity Aquifer. High groundwater tables are likely not an issue in the Dallas area, so this would not necessitate shallow design of green infrastructure practices for this area.

Energy Infrastructure

Oncor provides electricity while Atmos Energy provides natural gas to Southwestern Medical District. Figure 121 illustrates the District and shows the location of the nearby substations in red shapes. One substation is immediately northeast of the Butler Hub and a second substation is along Medical District Drive by the TRE rail line. A third substation is centrally located in Record Crossing Hub. A final substation is located near the intersection of I-35E and Inwood Rd.

Investigation into District Energy Possibilities

As part of the utilities assessment process, the planning team interviewed representatives of each of the member institutions to understand the feasibility of district-wide energy solutions. As each campus operates as a bespoke energy system, the technical challenges associated with supplying district-wide power appear to be significant. Each institution saw challenges with fuel supply and type, locating thermal energy plants, distances from each campus, and finally, governance and capital costs as well as operating cost.

Given the challenges listed, a district-wide shared energy plant does not appear to be feasible. Each institution should continue to purchase energy through the standard utility providers until these challenges can be overcome.

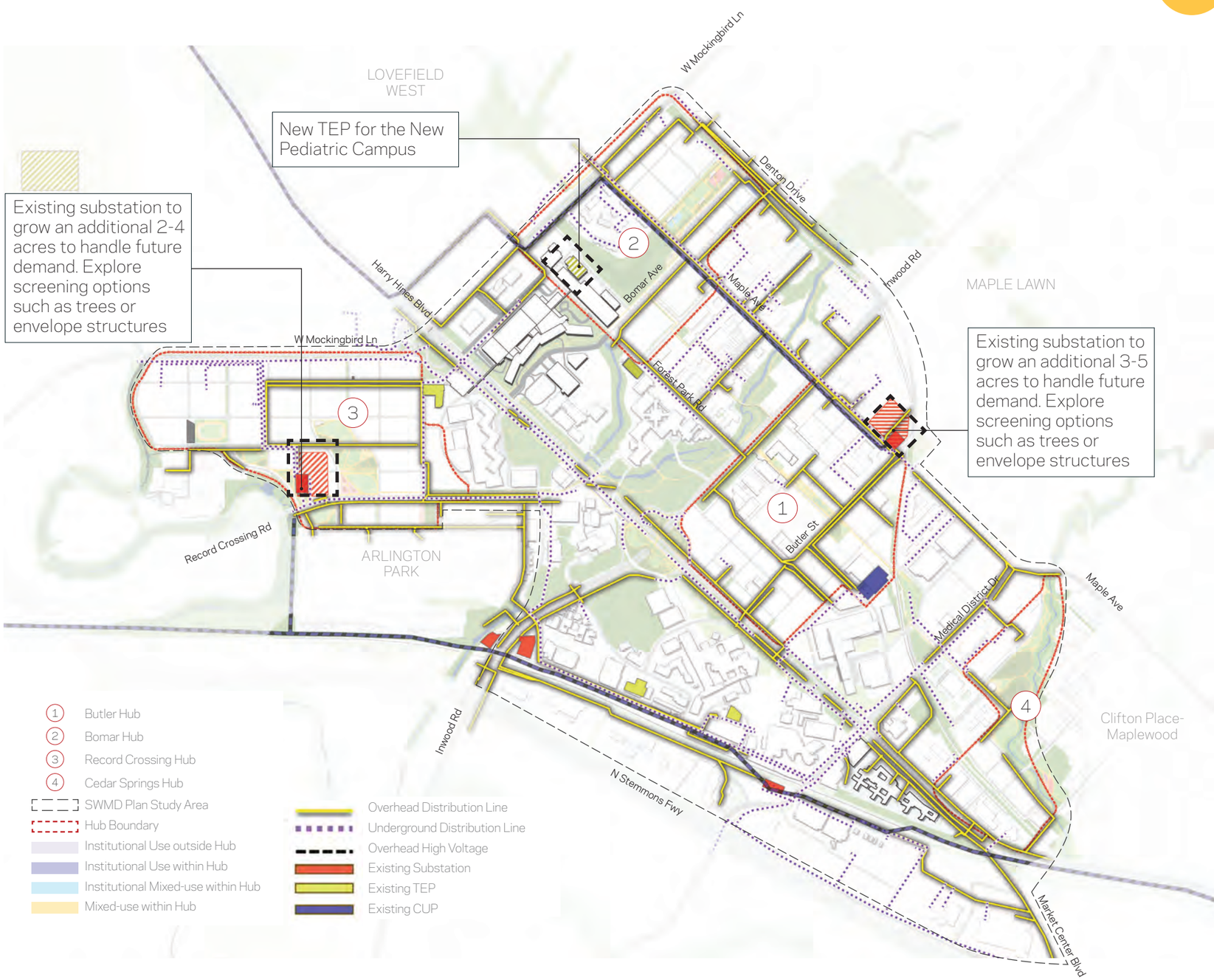


Figure 121: Existing Oncor Substations

In support of the recommended land use, the team identified conceptual energy demand scenarios based on three levels of density that could occur in the District's future. For each scenario, the team assessed a district-level demand and potential demand for each hub location.

Building Type Classification Data Gaps

For the energy demand calculations, research was conducted for typical usage rates based on building classifications. The proposed development scenario included a variety of building usage types, and the demand for each type was unknown and identified as a data gap. It was assumed that restaurants in the District currently and in the future will use natural gas as their primary source for cooking energy. Research and typical usage rates were used to fill this data gap and the ones used in the assessment are listed in Figure 122 below:

Building Type Classification	Peak Usage
Retail Stores	7.9 W/ SF
Medical Office	11.5 W/ SF
Office Building	9.5 W/ SF
Apartments	9.25 W/ SF
Hotel	9 W/ SF
Hospital	22 W/ SF

Figure 122: Energy Peak Demand Assumptions by Building Type

Energy Demand Scenarios

Conceptual energy demand scenarios were identified based on three levels of density that could occur in the district's future. For each scenario, the team assessed a district-level demand and potential demand for each hub location. The energy usage for each hospital was provided directly and was added to the estimated demands for each scenario and hub to evaluate total energy-use and peak demand.

Figure 123 shows the findings of the three-level study in comparison to existing peak electrical energy levels for Bomar, Record Crossing, Cedar Springs, and Butler Hubs.

As indicated in Figure 123, the energy peak demand will increase significantly due to different development types (4 floors, 6 floors, and 8 floors). SWMD will need to ensure that the existing electrical

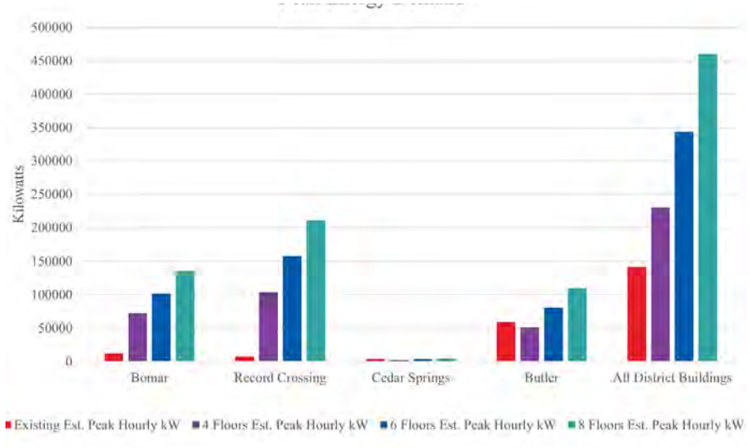


Figure 123: Peak Electrical Energy Usage

infrastructure can meet the future needs of the District. The District will need to work closely with Oncor to ensure that the growth needs of the substations meets the overall intentions of the District.

In general, commercial and institutional facilities are the highest energy users. There is a significant increase in peak energy demand in residential energy between the 6-floor and 8-floor scenarios. Between the three institutions, they consist of approximately 20% of the energy demand in the District.

Burying Overhead Utilities

As the District grows, the plan recommends for overhead utility infrastructure, including electrical and telecommunication distribution lines, to be buried in the future. This would be to improve district aesthetics, provide space for plantings, improve infrastructure resilience from extreme heat and security threats, and protect from windstorms and utility pole damage.

During conversations with Oncor, they noted the need for understanding specific project criteria for relocation of infrastructure. They have stated the need for ROW drawings, building footprint information, building programming information, and more to begin their relocation process. It is important to note that the relocation of overhead utilities is a long-term project necessitating coordination with multiple providers and agencies. We recommend these conversations should occur through key corridor urban design and streetscape projects, with the highest priority being on Butler Street.

Substation Growth

In conversations with Oncor, it was noted that the existing substations in the District will need to grow to meet the energy demands of the growth scenarios. As these growth scenarios become a reality, the District will need to work closely with Oncor to grow the substations in an aesthetically pleasing manner that works with the individual growth plans of each institution and the District as a whole.

Maple and Butler Substation

Due to the energy demand growth scenarios, Oncor has stated that the Butler electrical substation will require a growth of 4 to 6 acres. It has been discussed with the District about the potential need of local building acquisition to expand the existing substation. Figure 124 illustrates the growth scenario of this substation. There may be a need to reconfigure the roads of Maple Avenue and Butler Street to acquire the use of the “opportunity parcel” in figure 124.

Record Crossing Substation

Significant changes in land-use pattern are recommended for the Record Crossing Hub, which would necessitate possible relocation and growth of new utilities in the new street ROWs. The existing substation in this hub is currently approximately 0.5 acres in size but there is space for this substation to grow to approximately 2 acres with minimal acquisitions, as illustrated in Figure 125.

Figure 124: Current Butler Substation (top) and potential need (bottom)

Figure 125: Current Record Crossing Substation (top) and potential need (bottom)

Electrical Infrastructure Recommendations Summary

For electrical infrastructure, the streets or blocks with existing overhead electrical lines that require relocation or under-grounding should be further studied. Similar studies should be done for existing underground electrical infrastructure to determine capability to reuse or abandon. Figure 126 illustrates these changes.

- Record Crossing Hub's significant recommended change in land-use pattern would necessitate new utilities in new street ROWs.
- Similarly, Bomar Hub's new land-use pattern would necessitate relocation and upgrade of existing infrastructure.
- Butler Hub's key goal is relocation of overhead electric lines, in addition to screening of the Maple Avenue Substation.
- The Maple Avenue Substation should be prioritized for growth to adequately handle the growing electrical need in the District.
- It may be possible to connect existing service to new parcels in Cedar Springs Hub. Across the District there is a desire to relocate all overhead electric lines to underground lines.

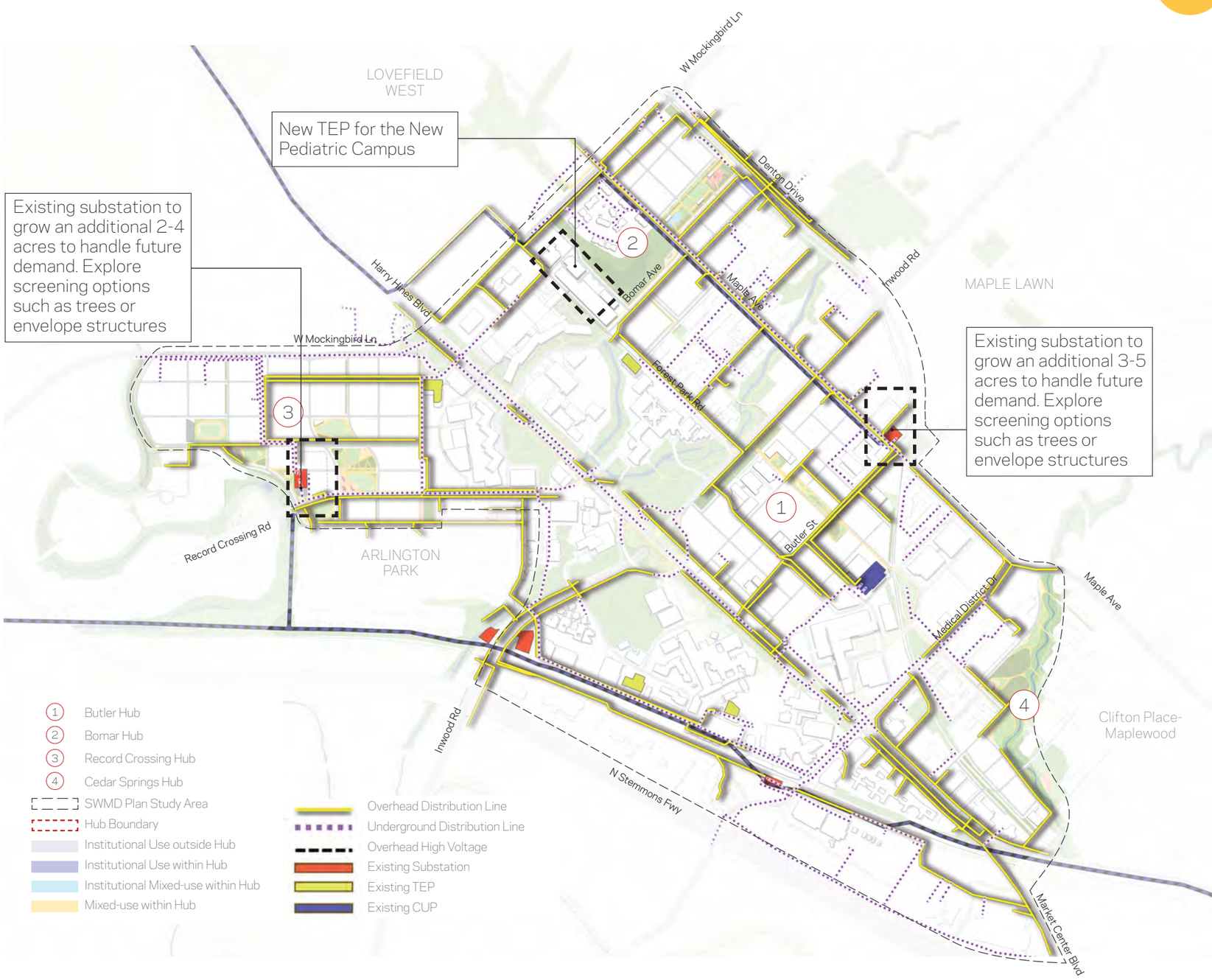


Figure 126: Hub Electric Utilities

Implementation Strategies & Action Steps

- Economic Development Strategies
- Mobility Projects & Grants
- Utilities Projects & Grants
- Zoning
- Collaborations & Partnerships
- Governance

ECONOMIC DEVELOPMENT STRATEGIES

Economic Development Tools and Grants*

This study recommends that the SWMD explore the use of the following economic development tools:

- Land banking
- Municipal management districts (MMDs)
- Public improvement districts (PIDs)
- Tax increment financing (TIF) districts
- Master developers

Each recommended economic development tool has its strengths and weaknesses. These tools are also accompanied by a related real-world examples of medical districts that have utilized the tool. These tools are most directly applicable to the Southwestern Medical District as it reshapes itself and its surrounding neighborhoods and communities.

Land Banking

Land banking refers to the strategic acquisition and holding of vacant, abandoned, or underutilized properties by a public or private entity with the intention of facilitating future development. It is essentially a proactive approach to managing land resources to achieve long-term economic and community goals.

Land banking opportunities include:

- Urban Planning and Development: land banking allows local private entities to strategically plan and control urban development. By holding onto land in strategic locations, they can guide the growth of cities in a cohesive and organized manner.
- Infrastructure Development: holding land can facilitate the development of critical infrastructure such as roads, utilities, and public facilities. This can enhance the overall attractiveness of the area for potential investors and residents.
- Attracting Investment: by having a stockpile of developable land, developers can attract investors more easily. This is because investors see the potential for profitable developments and are more likely to commit funds when the land is readily available.
- Stabilizing Real Estate Prices: land banking can help prevent rapid fluctuations in real estate prices by controlling the supply of available land. This stability can be attractive to investors and residents alike.
- Affordable Housing: land banking can be used to reserve land for affordable housing projects, helping to address housing shortages and promote social equity.
- Long-Term Vision: land banking allows for a long-term vision and planning strategy. This can help haphazard development and ensure that the land is used optimally for the medical district and community's future needs.

Land banking also comes with its own set of challenges:

- Financing: acquiring and holding land requires significant financial resources. Financing the acquisition, maintenance, and potential development of land can strain private investors' budgets.
- Market Fluctuations: economic downturns or changes in market demand can affect the viability of planned developments. Holding onto land during such periods might lead to financial losses.
- Zoning and Regulation: changes in zoning and regulatory frameworks can impact the potential uses of land, affecting its value and development prospects.
- Political and Community Opposition: local leadership might resist land banking if they perceive it as reducing their influence over land use decisions. There might also be opposition due to concerns about gentrification, displacement, or environmental impacts.
- Maintenance Costs: holding onto undeveloped or underdeveloped land incurs maintenance costs. These costs accumulate over time and might not be recoverable if the planned development doesn't proceed as intended.
- Speculation: land banking can also attract speculative behavior, where investors purchase land with the hope of benefiting from future price increases without actually contributing to productive development.
- Opportunity Costs: the resources tied up in land banking could be used for other pressing needs such as immediate infrastructure upgrades.
- Long Payback Period: the returns on land banking might take a long time to materialize. This long payback period can be a challenge for investors.

Example: Texas Medical Center, Houston, TX

Municipal Management Districts (MMDs)

MMDs are special-purpose districts established by local governments to promote economic development, infrastructure improvements, and community enhancement within a defined geographic area. Also known as management districts, improvement districts, or business improvement districts, MMDs operate with a focus on addressing specific needs and challenges within the boundaries.

Some MMD advantages include:

- Infrastructure Development: MMDS can finance infrastructure projects such as roads, utilities, parks, and public facilities. By investing in infrastructure, these districts can attract businesses, residents, and investors, leading to economic growth.
- Planned Development: MMDS enable stakeholders to implement controlled and coordinated development plans. This can prevent haphazard growth, ensuring that development aligns with community goals.
- Attracting Investment: well-planned MMDS can make an area more attractive to investors and developers by providing the necessary infrastructure, services, and amenities that support business operations and quality of life.
- Property Value Enhancement: MMDS often contribute to increasing property values in the area, which benefits property

** Additional details related to these recommendations can be found in the Economic Development Report in the Appendix.*

owners and generates higher tax revenues for local governments.
- Public-Private Partnerships: MMDs can facilitate public-private partnerships, where both government and private entities collaborate to fund and implement projects that benefit the community as a whole.
- Economic Diversification: by focusing on specific sectors such as technology, tourism, or manufacturing (all of which medical districts can capture), MMDs can help diversify the local economy, making it more resilient to economic downturns.
- Neighborhood Revitalization: MMDs can aid in revitalizing blighted or underdeveloped areas, turning them into vibrant and economically viable communities.

As with all things, there are potential challenges:
- Tax Burden: property owners within MMD boundaries might face increased taxes or assessments, which could be seen as a financial burden, particularly for residents and businesses on fixed incomes.
- Equity Concerns: the benefits of MMD-led economic growth might not be equally distributed among all community members, potentially exacerbating socioeconomic disparities.
- Accountability and Transparency: proper management and accountability of MMD funds are crucial to ensure that they are used for their intended purposes. Lack of transparency can lead to misuse or mis-allocation of funds.
- Resistance from Stakeholders: property owners and local businesses might oppose the creation of MMDs if they believe the additional taxes outweigh the benefits, or if they feel excluded from the decision-making process.
- Long-Term Viability: the long-term sustainability of MMDs depends on their ability to generate sufficient revenue to maintain and improve infrastructure and services.
- Market Dependence: economic success driven solely by MMDs can make an area vulnerable to fluctuations in the specific industries targeted for growth.
- Political Challenges: MMDs might face political opposition or changes in leadership that impact their continuity and funding.

Example: Illinois Medical District (IMD), Chicago, IL

Public Improvement Districts (PIDs)

PIDs are special taxing districts established to fund and manage specific public improvements and services within a defined geographic area. PIDs can play a role in spurring economic growth and investment, but they also come with their own set of opportunities and challenges.

Some of those opportunities include:
- Infrastructure Enhancement: PIDs can fund infrastructure improvements such as streets, sidewalks, lighting, landscaping, and public spaces. These enhancements can make an area more attractive to businesses, residents, and visitors, leading to increased economic activity.
- Quality of Life Improvements: by providing services like enhanced security, maintenance, and beautification, PIDs can contribute to a better quality of life in the area, attracting both business and residents.
- Property Value Appreciation: as PIDs invest in infrastructure and services, property values within the district can rise, benefiting property owners and generating increased property tax revenue.
- Place-Making: PIDs can contribute to creating vibrant, unique, and walkable neighborhoods, which can attract foot traffic, tourism, and investment.
- Attracting Businesses: businesses are more likely to establish themselves in areas with well-maintained infrastructure, a pleasant environment, and supportive services provided by PIDs.
- Local Governance: PIDs provide a mechanism for local stakeholders to have a say in the management and development of their neighborhood, fostering community engagement and collaboration.

Accompanying these opportunities are challenges:
- Equity and Affordability: PIDs can potentially lead to increased costs for property owners within the district, raising concerns about affordability for lower-income residents or businesses.
- Uneven Development: the benefits of PIDs might not be evenly distributed, leading to gentrification and displacement of existing residents or businesses, particularly if the district becomes unaffordable for them.
- Governance and Accountability: effective management of PID funds and transparency in decision-making are essential to prevent misuse of resources and ensure accountability to the community.
- Long-Term Viability: PIDs need stable revenue sources to fund ongoing maintenance and improvements. Dependence on property taxes means that economic downturns can impact funding.
- Coordination with Local Government: collaboration with local government entities is crucial to avoid conflicts, duplication of efforts, or overlapping responsibilities.
- Business Opposition: some businesses within a PID might resist additional taxes or assessments, particularly if they don't see immediate benefits or if they perceive the district's management as ineffective
- Perception of Exclusivity: PIDs can sometimes give the impression of exclusivity, where only certain areas receive improved services and amenities, potentially leading to tensions with neighboring areas.
- Long Implementation Timelines: implementing infrastructure projects and realizing the economic benefits of PIDs can take time, which might require patience from stakeholders and investors.

Example: Uptown Houston / Harris County Improvement District #1, Houston, TX

Additional Tools and Grant Opportunities

Cities in Texas can employ a variety of economic development tools to promote growth, attract investments, create jobs, and enhance the overall well-being of their communities. A review of the City of Dallas' Economic Development Policy is included in the Economic Development Report found in the Appendix. It highlights incentive programs with grant opportunities such as:

- The City of Dallas' incentive policy
- Negotiated Incentives (Tax Abatement, Loans, and Grants) & Awards through the Office of Economic Development
- Community and Economic Development Loans and Grants
- Infrastructure Investment Fund
- Federal HUD Section 108 - Community Development Block Grant (CDBG)
- City of Dallas Housing and Neighborhood Revitalization Department

An economic toolbox is also included Economic Development Report found in the Appendix.

In addition there are many business assistance programs, financial tools, and incentives that have the potential to benefit the SWMD. Communities and by extension medical districts that make use of incubators, accelerators, intellectual property assistance, permitting and licensing assistance, and regulatory assistance outpace those communities that do not. A comprehensive list of these tools is included in the Appendix. These tools have the potential to facilitate the establishment and expansion of R&D-focused businesses in the district.

By combining business assistance programs, financial tools, and incentives, the SWMD can create a supportive ecosystem that encourages the growth of research and development facilities and entities. This can lead to increased innovation, economic growth, job creation, and entrepreneurship in the district and the surrounding neighborhoods and throughout the Metroplex.

Furthermore, the SWMD has the potential to strength partnerships with corporate decision-makers, knowledge-based professional resources, and new entities. This is a critical component for the SMWD to foster innovation, growth, and collaboration. These opportunities range from networking events to collaborative projects and industry-academic partnerships. More detailed information regarding different partnerships can also be found in the Appendix.

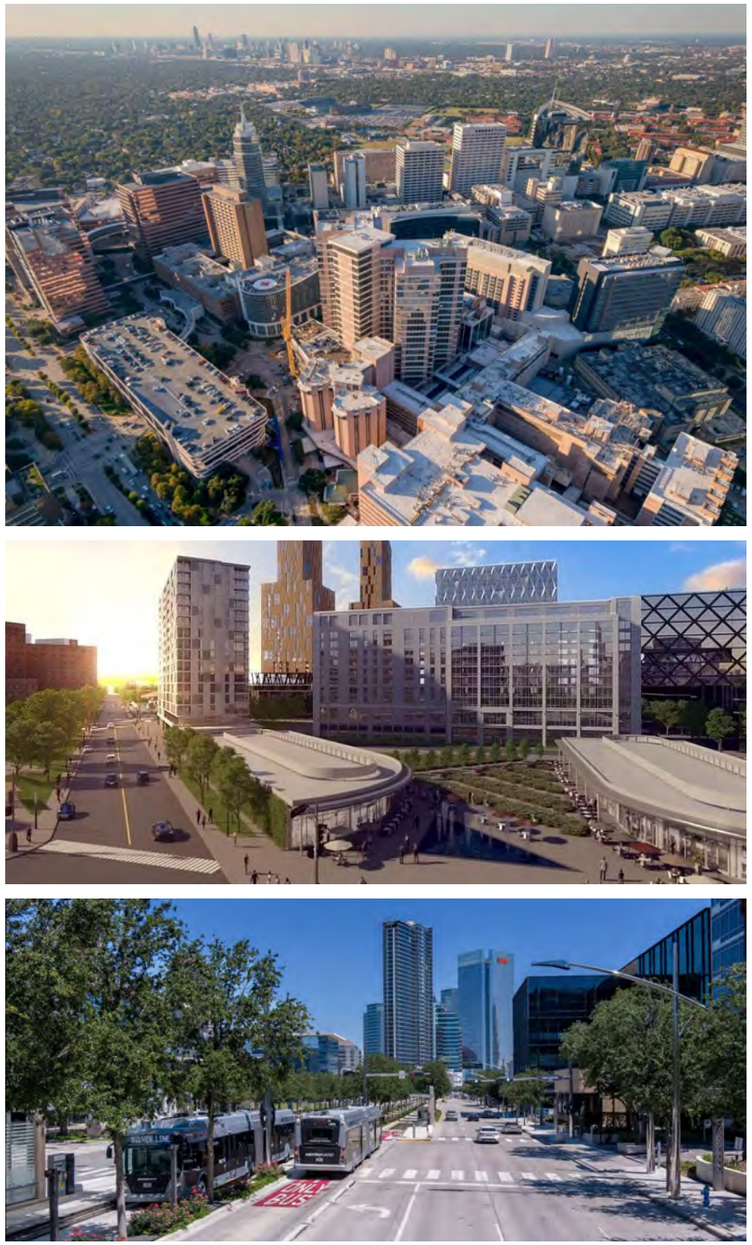


Figure 127: Examples of Economic Development Tools
Top - Land Banking: Texas Medical Center, Houston, TX (Source: www.tmc.edu)

Middle -MMD: Illinois Medical District (IMD), Chicago, IL (Source: https://www.anseradvisory.com/project/illinois-medical-district)

Bottom -PID: Uptown Houston / Harris County Improvement District, Houston, TX (Source: uptown-houston.com)

Action Steps*

The following diagram outlines the three most important action steps to take in the immediate term.

The first is land acquisition. In order to implement the vision of the Plan, land must be acquired. Those lands currently owned by the City of Dallas should be pursued first. These properties are identified because it will be easier to share the vision of the SWMD with the City of Dallas versus multiple property owners. Private land that comes on the market for sale should also be considered for acquisition.

The second is hiring a master developer. It is recommended that the master developer have extensive experience with the City of Dallas and its Office of Economic Development. Experience and familiarity with the City of Dallas and Office of Economic Development can accelerate courses of action.

Additionally, knowledge of the incentive programs and economic development tools outlined in this document can further accelerate the growth of the SWMD. The first action step is to align incentive priorities. Between the master developer and hospital leadership there needs to be alignment so the master developer can begin the process of pursuing specific economic development tools and incentives. Each decision needs to be aligned with the short- and long-term goals of the SWMD.

1 LAND ACQUISITION

Acquire as much land as possible as quickly as possible. Start with lands owned by the City of Dallas before inquiring about privately held properties.

2 MASTER DEVELOPER

Hire a master developer with extensive experience with the City of Dallas and its Office of Economic Development.

3 INCENTIVE ALIGNMENT

The master developer and hospital leadership need to have vision alignment before pursuing specific economic development tools (i.e., hospitals' short- and long-term goals).

** Additional details related to these recommendations can be found in the Economic Development Report in the Appendix.*

MOBILITY PROJECTS & GRANTS

Recommended Projects and Grant Funding

The twenty-six projects identified in this study were ranked and put into either a near-term or long-term category for implementation prioritization. Near-term projects are anticipated to be completed within the next seven years, and long-term projects are anticipated to be completed in more than seven years. Estimated construction costs (without ROW acquisition) have been estimated for many of the projects.

Figure 88 and the table below shows the list of projects with location of the project, description, project type, and estimated costs associated with the project.

Priority Projects

The following four projects are a priority to the SWMD:

- **Harry Hines Boulevard** was identified as a priority project because it is the major thoroughfare throughout the District and provides a significant opportunity for a complete street redesign.
- **Butler Street** was identified as a priority project because it is a critical collector throughout the District and provides a significant opportunity for a complete street redesign.
- **Redfield Street** was identified as a priority project because it is a critical collector throughout the District and provides a significant opportunity for a complete street redesign.
- **Southwestern Medical Avenue** was identified as a priority project because it is a critical collector throughout the District and provides a significant opportunity for a complete street redesign.

Grant Funding Opportunities

Funding for the project improvements can come from many different sources, some of those sources may include public and private grants, future City of Dallas Bond Program, collaboration with Dallas County and North Central Texas Council of Governments (NCTCOG), partnering with developers and property owners, and fundraising.

The four priority projects listed here are recommended to be brought in front of the City of Dallas during the next Bond Program cycle. In addition to the City of Dallas Bond program, there are many other funding sources that could potentially contribute towards the cost, through the City of Dallas, Dallas County, NCTCOG, TxDOT, and the Federal Government.

Some of these federal grants may include the following:

- PROTECT: Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation Program
- RAISE: Rebuilding American Infrastructure with Sustainability and Equity
- SS4A: Safe Streets and Roads For All
- ATIIP: Active Transportation Infrastructure Investment Program
- TA Set-Aside: Transportation Alternatives Grant
- HSIP: Highway Safety Improvement Program

Action Steps

Additional steps need to be taken towards the improvement of the District's infrastructure that will both support the growth of the area and improve the overall experience for both employees and visitors to the SWMD. Below summarizes actions steps for the SWMD to further the mobility recommendations:

- Begin collaboration with the City of Dallas on proposed near-term and long-term roadway improvements and intersection studies.
- Share the near-term improvements with the different work groups within the SWMD.
- Continued coordination with TxDOT, DART, TRE, NCTCOG, and other related entities should occur to communicate the clear desires of the SWMD and to help identify funding sources or partnership opportunities.
- Develop a District-wide parking master plan.

Transportation Recommendations Table

Project Number	Street Name	Limits	Project Type	Description	Status	Near/Long-Term	Conceptual Project Costs
1	Butler Street	Between Harry Hines Boulevard and Maple Avenue	Street or Streetscape Improvements	▪ Street improvements (including; bike lanes, sidewalks, trees/lighting, center turn lanes, on-street parking, green space) ▪ Proposed City bond project	Proposed Improvement	Near-Term	$2,750,000 - $3,600,000
2	Redfield Street	Between Inwood Road and Parkland ER Driveway	Street or Streetscape Improvements	▪ Street improvements (including; bike lanes, sidewalks, trees/lighting, center turn lanes, green space) ▪ Proposed City bond project	Proposed Improvement	Near-Term	$1,600,000 - $2,100,000
3	Harry Hines Boulevard	Between Market Center Boulevard and Mockingbird Lane	Street or Streetscape Improvements	▪ Street improvements (including; bike lanes, sidewalks, trees/lighting, narrower medians, green space) ▪ Current and proposed City bond project	Under Design by Texas Trees Foundation	Near-Term	$90,000,000 - $120,000,000
4	Southwestern Medical Avenue	Between Medical District Drive and Inwood Road	Street or Streetscape Improvements	▪ Street improvements (including; shared-use path, on-street parking, enhanced crosswalks, green space) ▪ Proposed City bond project	Under Study by Kimley-Horn	Near-Term	*Costs are being developed as part of the Southwestern Medical Avenue Study
5	Maple Avenue	At Bomar Avenue / Manor Way	Intersection Improvement	▪ Realignment of Bomar Avenue and Manor Way ▪ Pedestrian Improvements ▪ Enhanced pedestrian crosswalk across Maple Avenue	Proposed Improvement	Near-Term	$1,450,000 - $3,900,000
6	Maple Avenue	At Butler Street / Denton Drive Cut Off / Hudnall Street	Intersection Improvement	▪ Realignment of Butler Street / Denton Drive Cut Off / Hudnall Street ▪ Pedestrian Improvements ▪ Bicycle Improvements ▪ Traffic Signal Improvements	Proposed Improvement	Near-Term	$2,650,000 - $3,850,000

1.Costs are for planning purposes only, not for construction or bidding. Costs do not include estimated right-of-way acquisition.
2.Near-term projects estimated to be between 2024-2031. Long-term projects estimated 2031 and beyond.

Project Number	Street Name	Limits	Project Type	Description	Status	Near/Long-Term	Conceptual Project Costs
7	Maple Avenue	At Medical District Drive	Intersection Improvement	▪ Intersection modification ▪ Traffic signal timing improvements ▪ Pedestrian Improvements	Proposed Improvement	Near-Term	$1,600,000 - $2,200,000
8	Harry Hines Boulevard	At Mockingbird Lane	Intersection Study	▪ Study alternative interchange layouts / configuration	Future Study by the City of Dallas	Near-Term	TBD as part of the study by the City of Dallas- $2,100,000
9	Overhead Connector	Between South Campus and North Campus	Overhead Connector Realignment	▪ Realignment of overhead connector between South Campus to North Campus to accommodate the Green Park project	Planned Improvement	Near-Term	$30,000,000 - $40,000,000
10	Paul Bass Way	Between Harry Hines Boulevard and Forest Park Road	Street or Streetscape Improvements	▪ Extension of Paul Bass Way from Brain Institute Garage to Forest Park Road. ▪ Install traffic signal at Bomar Avenue/Paul Bass Way at Forest Park Road	Anticipated with New Pediatric Campus	Near-Term	TBD as part of the New Pediatric Campus
11	New Roadway Connection	Between Treadway Street at Mockingbird Lane	Street or Streetscape Improvements	▪ New roadway connection to break up large blocks	Anticipated with New Pediatric Campus	Near-Term	TBD as part of the New Pediatric Campus
12	Inwood Road	Between IH-35E and Southwestern Medical Avenue	Pedestrian Improvements	▪ TRE currently under design to double track rail line ▪ Proposed Pedestrian improvements (shared-use path) along Inwood Road	Proposed Improvement	Near-Term	TBD as part of the TRE bridge replacement and double tracking

1.Costs are for planning purposes only, not for construction or bidding. Costs do not include estimated right-of-way acquisition.
2.Near-term projects estimated to be between 2024-2031. Long-term projects estimated 2031 and beyond.

Project Number	Street Name	Limits	Project Type	Description	Status	Near/Long-Term	Conceptual Project Costs
13	Harry Hines Boulevard	At Kendall Drive	Intersection Study	▪ Signal warrant analysis for potential future signal	Future Study	Long-Term	$30,000 - $50,000
14	New Roadway Connection	Between Bomar Avenue and New Roadway Connection	Street or Streetscape Improvements	▪ New roadway connection to break up large blocks	Future Alignment Study and Concept Design	Long-Term	$450,000 - $600,000
15	New Roadway Connection	Between Forest Park Road and Maple Avenue	Street or Streetscape Improvements	▪ New roadway connection to break up large blocks	Future Alignment Study and Concept Design	Long-Term	$1,200,000 - $1,500,000
16	Gregg Street	Between Inwood Road and Butler Street	Street or Streetscape Improvements	▪ Realignment of Gregg Street between Inwood Road and Butler Street to provide additional connection into East Campus as well as Parkland	Future Alignment Study and Concept Design	Long-Term	$1,100,000 - $1,500,000
17	OK Avenue	Between Butler Street and Redfield Street	Street or Streetscape Improvements	▪ Extension of OK Avenue to create a connection under the DART light rail	Future Alignment Study and Concept Design	Long-Term	$850,000 - $1,100,000
18	New Roadway Connection	Between OK Avenue and Tex Oak Avenue	Street or Streetscape Improvements	▪ New roadway connection to break up large blocks	Future Alignment Study and Concept Design	Long-Term	$450,000 - $600,000
19	New Roadway Connection	Between Harry Hines Boulevard and Redfield Street	Street or Streetscape Improvements	▪ New roadway connection to break up large blocks	Future Alignment Study and Concept Design	Long-Term	$700,000 - $900,000

1.Costs are for planning purposes only, not for construction or bidding. Costs do not include estimated right-of-way acquisition.
2.Near-term projects estimated to be between 2024-2031. Long-term projects estimated 2031 and beyond.

Project Number	Street Name	Limits	Project Type	Description	Status	Near/Long-Term	Conceptual Project Costs
20	New Roadway Connection	Between Harry Hines Boulevard and Maple Avenue	Street or Streetscape Improvements	▪ New roadway connection to break up large blocks	Future Alignment Study and Concept Design	Long-Term	$1,200,000 - $1,500,000
21	Between Harry Hines Boulevard and IH-35E	Between Inwood Road and Parkland ER Driveway	Street or Streetscape Improvements	▪ Realignment of Market Center Boulevard between I-35E and Harry Hines.	Future Alignment Study and Concept Design	Long-Term	$4,000,000 - $6,000,000
22	New DART Station	Denton Drive at Manor Way	Transit	▪ Construct new DART station	Future Study	Long-Term	TBD
23	Kendall Drive	Between existing Kendall Drive and Cass Street	Street or Streetscape Improvements	▪ Extension of Kendall Drive from existing Kendall Drive to Cass Street	Future Alignment Study and Concept Design	Long-Term	$1,400,000 - $2,800,000
24	Children's Way	Between existing Children's Way and Wycliff Avenue	Intersection Improvement	▪ Extension of Children's Way from Specialty Center to potential redeveloped area along Wycliff Avenue	Future Alignment Study and Concept Design	Long-Term	TBD
25	Southwestern Medical Avenue	Between Medical District Drive and Harry Hines Boulevard	Intersection Improvement	▪ Extension of Southwestern Medical Avenue to Harry Hines Boulevard behind proposed Psychiatric Hospital	Future Alignment Study and Concept Design	Long-Term	$1,300,000 - $1,700,000

1.Costs are for planning purposes only, not for construction or bidding. Costs do not include estimated right-of-way acquisition.
2.Near-term projects estimated to be between 2024-2031. Long-term projects estimated 2031 and beyond.

UTILITIES PROJECTS & GRANTS

Enabling Projects and Grant Funding

The Master Plan outlines a land-use scenario for the District envisioning a "built-out" district with reconfigured street grids creating new blocks. The plans for growth include additions of new residential, commercial, and healthcare uses that will increase demand on utilities as well as create an increase in impervious area.

This section provides guidelines for advancing land use, growth, and development goals detailed in the previous chapter. Achieving changes in land use and anticipated growth in the SWMD will require close coordination with City of Dallas, Dallas Water Utilities, and relevant utility providers (electrical, telecommunications, gas).

Dallas Water Utilities has identified projects planned for enabling growth in the District, as shown in the adjacent figure. In coordination with the Harry Hines corridor project, water and wastewater lines will be replaced and upgraded along the corridor throughout the District. In addition, DWU has completed design for replacement of water and wastewater lines in the Butler Street ROW. These pipes are being sized in accordance with DWU's design standards for serving commercial and industrial land uses and would be adequate for supply to multifamily buildings should future re-development occur.

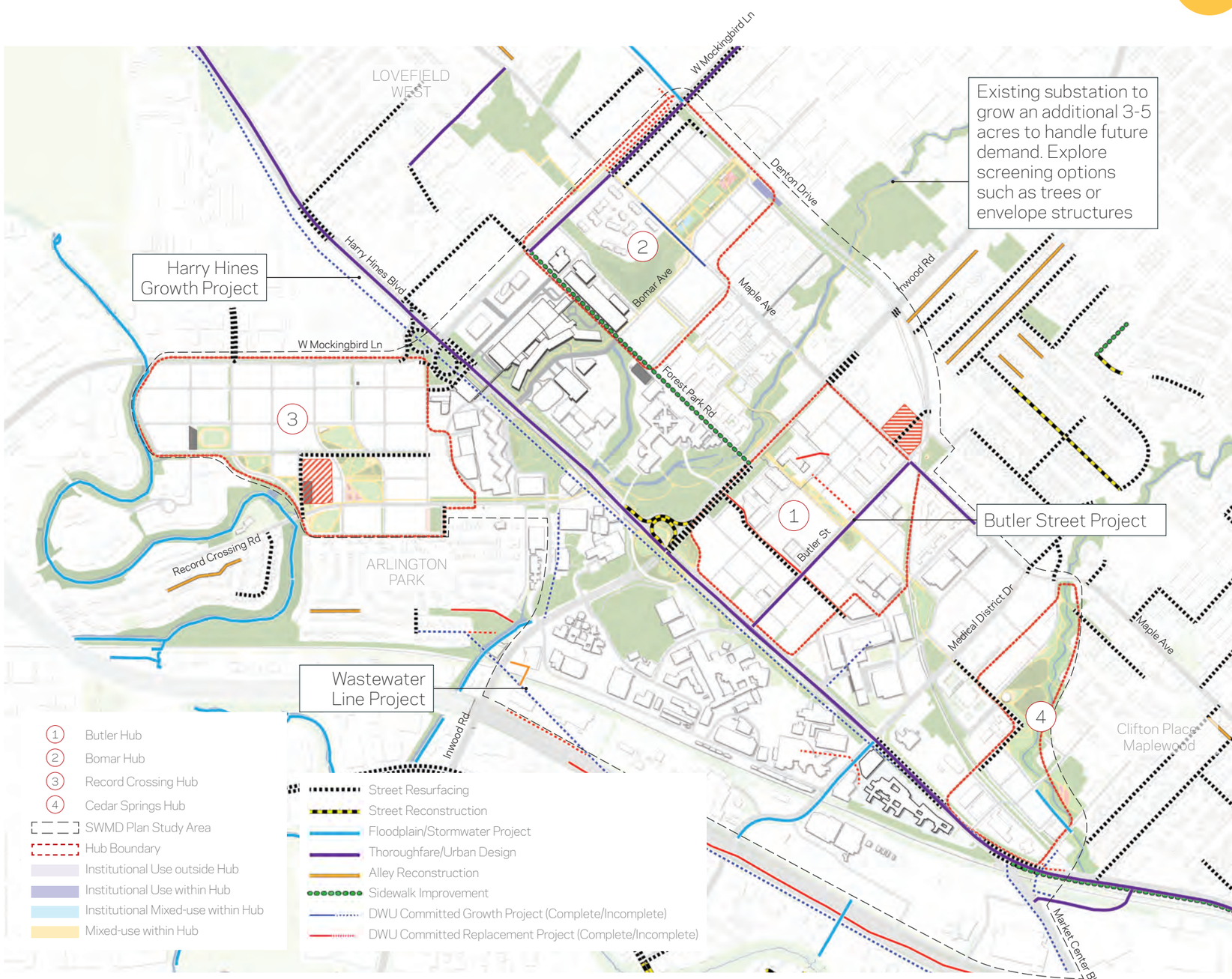


Figure 128: Utilities Enabling Projects across the District

Key Streets and Needs for Further Study

The Master Plan has identified key streets in each hub to be drivers in redevelopment and provide high quality user experience and walkability. Each of these key streets will require full streetscape and subsurface utility design to facilitate new land uses. The District should work with City of Dallas, Dallas Water Utilities (DWU), Oncor and other telecommunications providers to locate and develop utilities. The following streets are identified as priority and should be considered as catalysts for advancing the goals of the master plan.

Consider a corridor study, streetscape and urban design plan, traffic analysis, and development assessment for the following streets:

- Butler Street,
- Hinton Street
- Bomar Ave
- Redfield Street

Harry Hines Avenue – While this street is being addressed through the Harry Hines corridor project, the Master Plan views this critical corridor as a catalyst for connectivity, interest, critical care and healthcare services, and multi-modal transportation connectivity.

Considerations for a SWMD Utility Focused Steering Committee

In support of the major projects and in coordination with the planning team, multiple steering committees (PAC and FPC) were formed to guide concurrent planning efforts.

The plan recommends that a similar permanent Utilities Project Planning Committee be created for the District, including representatives from each member institution, utility providers, and City of Dallas staff.

Further study should be conducted regarding committee governance or the appropriate entity to host or provide facilities to the prospective committee.

Grant Funding Opportunities

Grant funding is a tool that can be used to bridge the public and private sectors. Some of these potential funding sources that could contribute to costs involved with this project come from FEMA, DOT, and DOE and relate to resilient infrastructure initiatives, energy efficient building design, equity in community connectivity and electrical weatherization. Some examples of potentially applicable project-wide grants are as follows:

- Building Resilient Infrastructure and Communities Grant (BRIC) – Federal Emergency Management Agency (FEMA). The typical application window for this grant opens in late October. This program supports local communities as they undertake hazard mitigation projects, reducing the risks from disasters and natural hazards.
- Building Energy Efficient Frontiers and Innovation Technologies Grant (BENEFIT) – Department of Energy (DOE). This funding opportunity invest in potential projects to provide substantial improvements to building energy performances and make buildings more resilient to blackouts and extreme weather. The next funding window for this grant has not been announced.
- Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) – Department of Transportation (DOT). Under the Bipartisan Infrastructure Law, this grant provides funding to ensure surface transportation has resilience to extreme weather events.
- Rebuilding American Infrastructure with Sustainability and Equity Grant Program (RAISE) – Department of Transportation (DOT). Applications are due on January 13th, 2025. This grant is intended to help close the gap in surface transportation funding to address and improve safety, environmental sustainability, mobility, and community connectivity.
- Preventing Outages and Enhancing the Resilience of the Electric Grid Grants Program – Department of Energy - Grid Deployment Office (DOE-GDO). The next application round has not been announced. To qualify for this funding the project must address undergrounding of electrical equipment as a weatherization measure and/or weatherizing and hardening of electrical power infrastructure.

ZONING

Tools to Implement Land Use Vision

Zoning Purpose

In Texas, zoning inside a municipality can have significant land use implications that impact development, property values, and the overall character of a community. The City of Dallas zoning website states "Zoning is the division of land into districts. These districts have uniform zoning regulations including those on land use, height, setbacks, lot size, density, coverage, and floor area ratio (FAR)."

The 2024 Master Plan sets a vision for future land use and urban design for the District. While the vision is long-term and aspirational in nature, it embodies a significant shift in the use and type of development in the District. More importantly, it defines the type of uses that the SWMD does not want to see in the future. Land use implications range from development opportunities and restrictions, aesthetic and character, traffic and infrastructure consideration, and property values to affordability, environmental concerns, and legal ramifications. An important way to control the future land use and development within the District is via the City's zoning process. SWMD should work with the City to revise the zoning code and language for the District to control the land use types and development patterns.

Zoning Recommendations

The land area defined by the 2024 Master Plan as the "District" encompasses land owned by the SWMD's three member institutions, land identified for institutional growth and land with the potential for future partnerships in support of the mixed-use goals and objectives of the District. There are multiple zoning regulations that apply within this District. In most cases, there are more multiple zoning codes for each land parcel. This results in a non-cohesive pattern of use and development across the District. As of date of this Plan, District properties are regulated by one or multiple of the following zoning categories:

- Special Provision Sign District (SPSD) Overlay
  - SWMD SPSD (to learn more about this Sign District see panel to the right of this page)
  - Parkland Hospital SPSD
- Airport Height Overlay
- Base Zoning
  - Planned Development Districts (PD)
  - Mixed-use (MU)
  - Specific Use Permit (SUP)

Re-imagining the Southwestern Medical District as a more cohesive area supports the economic development goals of the City, the institutions, as well as the Guiding Principles of the 2024 Master Plan. A key step towards achieving this sense of cohesion will be regulating land use and development patterns under a unifying zoning code. This study recommends the SWMD work with property owners and the City to consider one or more of the following zoning categories to apply across the District.

- Extend the SWMD Special Provision Sign District Overlay: The current sign district should be extended to encompass the study area identified in the 2024 Master Plan. District boundary and then redefine the role of the signage District.
- Create a new SWMD Institutional Overlay District: Per Dallas City Code, "The institutional overlay district promotes cultural, educational, and medical institutions, and enhances their benefit

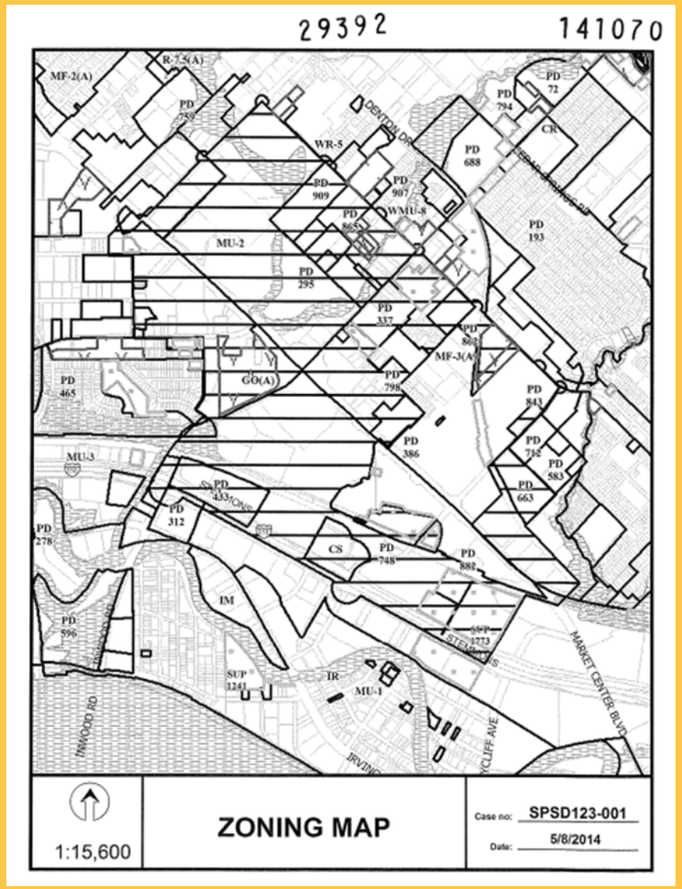


Figure 129: Division 51A-7.2300. **Southwestern Medical District Sign District.** https://codelibrary.amlegal.com/codes/dallas/latest/dallas_tx/0-0-0-90561 "The purpose of this division is to regulate both the construction of new signs and alterations of existing signs with a view towards enhancing, preserving, and developing the unique character of the Southwestern Medical District area while addressing the public's need to locate and navigate to the multiple hospital and medical office entrances efficiently."

to the community while protecting adjacent property." (Reference: https://codelibrary.amlegal.com/codes/dallas/latest/dallas_tx/0-0-0-1)

- Implement SWMD Form District: Form Districts are a type of base zoning within the City of Dallas code and seek "to create walkable urban neighborhoods where higher density mixed-uses and mixed housing types promote less dependence on the automobile." Form based zones accommodate a mix of compatible uses in close proximity and could be used to guide developments for each of the Hubs within the District.
- Align with City's Zoning Update:To implement ForwardDallas, the City will update its current zoning regulations. ForwardDallas land uses and the 2024 Master Plan recommended land uses are broadly in alignment. The SWMD should continue to be engaged with the City as it goes through its zoning update to ensure the zoning changes truly meet the District vision for future development.

Action Steps

The process of changing zoning typically involves rezoning, which refers to modifying the zoning regulations that dictate how land can be used and developed within specific areas of a municipality. The following key action steps are recommended:

- Initiate Phase Three of the Master Plan that progresses development planning to developing a rezoning strategy. Study and confirm the District boundary as part of this study to formalize what land areas should be within the purview of the SWMD.
- A zoning law attorney should be retained by the District to further evaluate these options and determine the most appropriate course of action and process to follow.
- Build and maintain a healthy relationship with the City of Dallas and find alignment with the ForwardDallas vision to demonstrate commitment to being a community partner.
- This study recommends the SWMD work with property owners and the City to discuss any zoning action.

Figure130: Above two graphics are extracted from the City of Dallas' Zoning 101 document, dated Jan 5, 2021

COLLABORATION & PARTNERSHIPS

Action Steps

Implementing the vision described in the SWMD Master Plan will necessitate support, expertise, investment by partners within and outside of the Southwestern Medical District. Amongst the many implementation strategies discussed throughout this report, the topic of partnerships and entities to collaborate with appears many times. Strengthening existing partnerships and building new ones with corporate decision-makers, knowledge-based professional resources, and new entities is crucial for the SWMD to foster innovation, growth, and collaboration. The SWMD can create a vibrant ecosystem that encourages active engagement between member institutions, corporate decision-makers, knowledge-based professionals, and other public and private sector entities. This collaboration can lead to new perspectives, innovative solutions, and shared avenues for growth that benefit all stakeholders involved.

The SWMD will need to engage and collaborate with these entities and others to further implementation goals identified in this report.

- **City of Dallas:** The City and its various departments will be an important partner to help implement recommendations ranging from land use and zoning changes to economic development to roadway and water infrastructure enhancements.
- **Dallas County and North Central Texas Council of Governments (NCTCOG):** Along with the City, the County and NCTCOG entities would be instrumental in implementation of regional trails and mobility enhancement projects and utilities upgrades.
- **Private Utilities**: In addition to public entities such as Dallas Water Utilities, NCTCOG etc., the SWMD should work with private entities like Atmos, Oncor and other telecommunications providers to locate and develop utilities.
- **Texas Tree Foundation (TTF):** Continue the ongoing strong partnership with the TTF in support of the priority - Harry Hines Boulevard Urban Streetscape Park & Transformation Project - and for support of broader goals around streetscape improvements, increasing tree canopy, heat island reduction, etc.
- **Dallas Area Rapid Transit (DART):** DART is an important ally to the SWMD's in its quest to expand and enhance access to transit and explore opportunities for trails and greenway connections along/across DART lines. DART is already studying the viability of the new DART station at Denton Drive at Manor Way as proposed by the Master Plan.
- **Local and International Industries:** To foster innovation and attract growth and investment, explore collaborations with industry partners such as. Texas Instruments, AT&T, pharmaceuticals, etc.
- **Master Developers:** Partner with a master developer experienced in Dallas to develop the Hubs in the District.
- **SWMD Non-Institutional Property Owners:** While the three member institutions own the majority of the land within the district, there are many other property owners with a vested interest in this area. Co-operation and buy-in of the property owners will be necessary to implement many of the recommendations, including: public right-of-way improvements, land use changes, rezoning, etc.
- **Neighbors:** Engaging with the neighbors (Clifton Place-Maplewood, Maple Lawn – Oak Lawn Heights, Arlington Park, and Love Field West) in the future will be important to get support on projects (especially along the edges of the SWMD) that are mutually beneficial to the District and its neighbors.

Figure 131: Plan Vision for a new DART station at Denton Drive at Manor Way

GOVERNANCE

Action Steps

The 2024 SWMD Master Plan is a future-forward and comprehensive vision for the District. The preceding pages of this section capture a robust set of implementation strategies, actions steps, and tools. However, implementing these recommendations successfully will require constant co-ordination, oversight, and focused decision-making to move things forward. This in turn will need staff resources and a governance structure.

Dedicated District Management Team

As of the date of this report, the SWMD has one dedicated full-time staff (Manager of the SWMD.) As the SWMD looks to grow as a district and starts implementing the many projects and initiatives outlined in this report, the one-staff model will not work. The Master Plan recommends that the SWMD hire additional dedicated staff to support implementation and overall operations of the District. Prominent medical districts around the country such as the Texas Medical Center in Houston and Longwood Collective in Boston offer insights to the various staff roles and expertise needed. Following are some initial recommendations on roles/expertise that SWMD should have on staff.

- District manager
- Operations and finance (including police and security, support services)
- Communications, marketing and branding, public relations
- Planning, design, and real estate
- Grant writing and fundraising

Governance Process

The creation of a Master Plan governance process through which decisions are made will help achieve the following goals:

- To ensure continuity between the Plan goals and implementation
- To provide a legacy of advocacy, education and institutional memory to various constituencies throughout the Plan's implementation
- To guide project priorities and capital funding process in a way that is consistent with the Guiding Principles of the Plan and in the broader interest of the District
- To allow thoughtful and informed adjustments to projects and priorities which are inevitable as the needs and fiscal realities of the District institutions evolve
- To ensure that capital planning and investment decisions are informed by the considerations and strategies of the Plan
- To track progress of Plan recommendations
- To provide ongoing stewardship of the District's natural and built environment

Establishing a clear structure and process of Master Plan Governance (decision-making), over multi-year phases of Plan implementation will be necessary for the seamless and orderly implementation of the Plan.. The Master Plan recommends formalizing a governance structure to guide the implementation process. The governance structure should be built around the three leadership groups that guided the development of the Master Plan. The governance framework should be built around these three committees.

- Planning Advisory Committee: The PAC will provide timely information, insight, and feedback to ensure proposed projects or initiatives are aligned with the Plan and meet the original intent set forth by the Master Plan and its Guiding Principles. The team leading each project or initiative would make updates based on PAC feedback before sharing with the FPC.
- Four-Person Committee: The FPC's role is to further review project developments and provide feedback and agreement on concepts or capital expenditures before being shared with the Board.
- SWMD Board of Trustees: The Board will receive key project updates and provides strategic decisions and approvals.

The Plan also recommends a permanent Utilities Project Planning Committee be created for the District. This group would include representatives from each member institution, utility providers, and City of Dallas staff.