



North Central Texas
Council of Governments

UNT Mobility Hub Strategy



NCTCOG Intermodal Transportation Hubs for Colleges and Universities Study

Acknowledgements

NCTCOG Staff

Ezra Pratt
Shannon Stevenson
Andrew Pagano
Michael Makris

Project Advisory Committee Representation

City of Arlington
City of Dallas
City of Denton
City of Fort Worth
Collin County
Dallas Area Rapid Transit
Dallas College
Dallas County
Denton County
Denton County Transportation Authority
Paul Quinn College
Southern Methodist University
STAR Transit
Tarrant County
Tarrant County College
Texas Christian University
Texas Woman's University
Trinity Metro
University of North Texas at Dallas
University of North Texas at Denton
University of Texas at Arlington
University of Texas at Dallas
VIA Transportation
Weatherford College

Prepared in cooperation with the Regional Transportation Council, NCTCOG, Federal Highway Administration, and the Texas Department of Transportation.

The contents of this report reflect the views of the authors who are responsible for the opinions, findings, and conclusions presented herein. The contents do not necessarily reflect the views or policies of the Regional Transportation Council, NCTCOG, the Federal Highway Administration, the Texas Department of Transportation.

Table of Contents

01	Introduction	1
	UNT in Context	1
	Why Does UNT Denton Need a Mobility Hub Strategy?	2
02	Planning a Hub Network at UNT	3
	Planning for Scale	3
	Goal Setting	4
	UNT-Specific Use Cases and Problem Statements	6
03	Where Are the Hub Opportunities for UNT?	8
	Siting Analysis	8
	Local Mobility Hub Examples	9
	Union Circle Hub Concept	11
04	What Can be Found at Each Hub Location?	13
	Hub Types	13
	Kit of Parts	20
	Choosing the Right Kit of Parts for Your Hub	22
	Connecting the Hub Network	25
	Hub Amenity and Siting Recommendations at UNT	25
05	Implementation Factors	28
	Key Considerations	28
	Implementation Team and Partner Opportunities	31
	Implementation Pathways	35

01 Introduction

UNT in Context

The University of North Texas (UNT) at Denton is a dynamic and growing campus environment home to nearly 45,000 students, faculty, and staff. The campus converges professionals, students, local residents, and visitors from around North Central Texas; some live on-campus, while the majority of others access the campus via a regular commute. UNT Denton is a [highly diverse university](#), with 11,400 Latinx students and 5,900 Black students, as well as 1,700 international students.

There is no one-size-fits-all approach to campus access and mobility at UNT Denton. UNT Denton's campus affiliates build their lives around the Denton campus and require a diverse mix of mobility solutions and travel information to satisfy their need for quick, regional, and intra-campus mobility. Yet, campus affiliates face a range of mobility challenges that are not easily addressed by traditional transportation planning.

The Denton campus is set amongst a broader local and regional network where campus affiliates seek diverse connections and mobility options to support their unique travel needs. UNT Denton is both a regional gateway to education, research, and jobs and a demand generator for intra-campus and community connections. The campus is located amongst the vibrant and bustling cultural hub of Denton, TX. Thus, campus affiliates seek fluid connections between major on- and off-campus destinations scattered throughout the City of Denton, including the satellite sciences, technology and engineering facilities at UNT's Discovery Park.



Why Does UNT Denton Need a Mobility Hub Strategy?

Mobility hubs on and near the Denton campus are a framework to organize mobility, information, and public space, while addressing UNT Denton's unique mobility needs. Mobility hubs uniquely address key transportation barriers that campus affiliates experience, such as connectivity to DCTA and campus shuttles, first- and last-mile gaps to and from campus, access to mobility options, and awareness of real-time travel conditions through the co-location of multiple transportation modes.

The North Central Texas Council of Government's (NCTCOG) and UNT Denton partnered to develop a campus mobility hub strategy with specific planning, implementation, and siting and mobility amenity guidance at the Denton campus. This strategy serves as a roadmap for mobility hub planning, design, and implementation support, and documents mobility hub opportunities in the UNT-context. This report also serves as a basic blueprint for other campuses across North Central Texas to think about how to build new campus mobility hubs and enhance existing hubs that under deliver mobility and place-based needs of campus affiliates.

02 Planning a Hub Network at UNT

UNT should consider a full network of hubs when planning mobility hubs at UNT. A mobility hub in isolation will not achieve broader goals of connectivity and access. The network extends beyond the boundaries of UNT - off-campus hubs will complement on-campus hubs and create more direct access to the university. In short, UNT should identify, coordinate, and plan for a full network of mobility hubs. To start, consider locations where burgeoning mobility hubs may already exist.

Perhaps the most important question to consider when planning a mobility hub at UNT - is there existing transportation infrastructure in the hub area to support safe, accessible travel between hubs or between hub and destination? As is most often the case, the Dallas-Fort Worth region lacks quality bicycle and pedestrian infrastructure in suburban and other auto-oriented areas. Without a concerted effort to invest in the bicycle and pedestrian network as a foundation for mobility hubs, each mobility hub will be effectively isolated, lacking the crucial connections needed to realize their potential. In short - to get the most out of campus mobility hubs, there is a need to invest in quality bicycle and pedestrian connections.

Planning for Scale

Some campus mobility hubs at UNT will integrate into a shuttle stop or parking lot, while others will seamlessly blend into a pedestrian plaza. Mobility hubs should come in many sizes and configurations. Land use, the density of transit connections, and the street grid are the primary factors that will determine the scale, layout, types and level of mobility amenities, and the complexity of connections at mobility hubs.

Mobility hubs may also differ by the type of anchor services and transportation infrastructure. While most mobility hubs are anchored to frequent and high-capacity transit, other major facilities and community anchors act as natural conveners for mobility and access. These can include student gathering places, major parking facilities, large stadia, or student residences.

Small, Medium, and Large Hubs

The types of amenities offered at mobility hubs on UNT campus will vary. Small hubs are likely to have fewer amenities, with the focus on making short trips between hubs or between hub and classroom or residence. These hubs will likely complement an existing area with heavy pedestrian traffic, rather than serving as a standalone hub without complementary land use or transportation infrastructure. The types of amenities likely included in small hubs at UNT would include wayfinding signage, shared micromobility, seating, lighting, bike racks, shade awnings, and connections to the surrounding bicycle and pedestrian network.

Medium hubs will have more room to work with than a small hub - these hubs can be built off a shuttle stop and designed to accommodate a longer transfer or stay for its users. These spaces are most effective when they are activated with amenities like tables and chairs, a park, vendor trucks, or connections to adjacent commercial locations (like the UNT University Union, for example). All the amenities listed as complementing a small mobility hub could still apply with medium hubs, but there is the opportunity for amenities that require a larger investment, like real-time digital transit information signage, private vehicle parking, and carshare.

Finally, large campus mobility hubs are fit for larger groups of people, supporting high-capacity transit, with integration with event centers and stadia. These mobility hubs are very visible and branded, with plenty of activated amenities. Near Apogee Stadium on campus, there could even be a designated space for celebrating every time the Mean Green wins. Large mobility hubs can include all of the amenities listed previously, as well as an expanded parking structure for private vehicle parking as a park-and-ride option, a platform to support high-capacity transit, support for carshare, and pickup and dropoff locations for rideshare. Large hubs may serve as the beginning of a commuter's journey, or a connection point between high-capacity transit and smaller mobility hubs.



Left: A-Train Station in Downtown Denton. Right: Union Circle on UNT Campus

Source: Denton Record-Chronicle

Goal Setting

When planning your mobility hub network, start with a set of goals developed by stakeholders and your broader planning and implementation team. Project goals should be informed by discussions with campus planners, faculty, staff, students, local partner agencies (DCTA, City of Denton, etc.), and any other groups who commute to campus, would be involved in planning a mobility hub network, or would be impacted by mobility hubs on campus. Goal setting is a key initial step that will act as a guide to the subsequent steps of planning and implementing hubs on the UNT campus and within the City of Denton; the best plans are well-informed, and it's important to understand the goals of the community when it comes to access, connectivity, and equity before beginning your mobility hub journey.

Campus Affiliate Engagement

Engaging with campus affiliates takes an intentional and comprehensive approach. The best outcomes include direct questions that address the heart of the siting, design, or implementation needs of the community in question. The ideal surveying methodology will differ by the group being surveyed, but consider if outreach would be most effective in person, online, or over the phone based on the demographics of the sample group. Likewise, consider the time availability of the group you're speaking to – the best surveying methods get answers to crucial questions in just 5-10 minutes of interaction.

Equity is a key component of a successful engagement process and a general best practice. Crafting an engagement strategy that considers all groups creates trust with the local community. And particularly when seeking federal funding, grant applications that demonstrate that the engagement process focused on a considerate inclusion of underserved, minority, and BIPOC groups often have a better chance at securing funding.

While contacting methods will vary based on the sample group, UNT has a critical outreach tool at their disposal – the student directory. Campus administrators can craft an outreach campaign that reaches all UNT affiliates through their unique email. Consider other tools unique to the university context that can help reach campus affiliate groups.



Setting a UNT-Specific Vision and Objectives

Campus mobility hubs are the **physical and digital intersection** of mobility options, transportation information, campus life, and social interactions. Campus mobility hubs are **centralized points both on- and off-campus** where people have **on-demand access** to a range of shared mobility options and mobility storage solutions. They enable campus affiliates to access multiple transportation options and amenities that **support campus access or connections across modes**. Typically built on a **backbone of public transit and campus shuttles**, mobility hubs offer a **safe, comfortable, convenient, and accessible** space to seamlessly transfer across different mobility options.

The NCTCOG region developed the overarching vision for mobility hubs shown above, but UNT should do the same to address their affiliates' unique mobility needs. UNT's mobility hub project team should consider adjusting this vision statement, objectives, and performance metrics to best align with local aspirations, mobility needs, and intended outcomes. This vision would be best developed by engaging UNT Denton's affiliate community and other stakeholders at a citywide scale. A comprehensive UNT mobility hub vision would incorporate not just the needs of UNT affiliates, but those of the city of Denton, Texas Woman's University, DCTA, UNT's Discovery Park, and others. Considering these affiliate groups will be done most effectively through an equity lens.

Considerations for Success

Prioritization –Budget and space limitations are often primary considerations when deciding which mobility hub elements to include. One way to prioritize space or budget limitations is for UNT to create and adopt a modal hierarchy and apply it to hub siting and investment decisions. Based on community input, long-term campus goals, and local context, a modal hierarchy can be used to prioritize which modes to support on campus. By sticking to this prioritization framework, questions related to how to allocate budget and physical space can be more easily answered.

Coordination –Coordination among campus groups and local agencies is needed from the beginning of planning all the way through the life of the mobility hubs. Many funding sources (such as the SMART grant) have requirements for collaboration and partnerships in order to achieve funding. Additionally, while mobility hubs are primarily considered to be practical tools to create easier commutes outside of the personal vehicle, mobility hubs in the campus context can serve as an application of education. For universities like UNT that have programs focused on urban planning and transportation, mobility hubs can act as a space to demonstrate what is being learned in the classroom. Coordination with these programs can be a way to integrate education with demonstration and allow mobility hubs to be part of the educational process.

Viability – Demonstrating viability is a key component of successful mobility hubs for many reasons. In addition to creating legitimacy for a hub or hub network, demonstrating viability will score better on grant applications for mobility hub funding. There are many ways to show viability for your hub and hub network – including by aligning performance metrics with success, demonstrating propensity for shared mobility or transit at your hub site, or by building an implementation team to lead planning, implementation, and beyond.

UNT-Specific Use Cases and Problem Statements

Campus affiliates at UNT have diverse connectivity needs that a network of mobility hubs can facilitate. When talking through goals and objectives for a mobility hub network, the use cases specific to UNT should be considered. Consider these use cases, as well as others that may be specific to UNT:

- **Intra-city connections:** Trips between campus destinations that cannot be serviced by walking or using a personal micromobility device. In [NCTCOG's Campus Mobility Survey](#), 62.3% of respondents reported that they drive their car to get to or from campus – those without a personal vehicle may find it difficult to get between off-campus destinations.
- **"Park Once" drivers:** According to the Campus Mobility Survey, these campus affiliates make up one of the largest user groups at UNT: those who drive to campus to park and then make the rest of their trips on foot. These trips can be made more comfortable through shared mobility offerings, shade structures, street trees, and other urban design and mobility offerings. 76.2% of respondents report walking as their primary mode of transportation once arriving on campus.
- **First/last-mile (FLM) connections from commute termini (e.g., A-Train):** The Downtown Denton Transit Center (DDTC) is commonly used to commute between downtown Denton and the broader DFW area. The primary access to the DDTC today is by car – the parking lot on-site regularly fills up during peak times to the point that overflow parking spills into residential streets. Creating easier first/last-mile connections at this location and at other commute termini would more effectively bridge the gap between UNT and

regional destinations. According to the Campus Mobility Survey , 45.7% of respondents reported interest in accessing campus via transit with a short last mile connection to campus.

- **Getting to/from Fry Street, downtown Denton, Rayzor Ranch, and other off-campus retail:** There are many popular destinations near UNT that have peak access timeframes outside of DCTA service windows. Mobility hubs at these locations can increase access to the area by providing shared mobility services or amenities that improve the waiting experience. According to the Campus Mobility Survey, 19% of respondents noted that transit isn't available or frequent enough when there is a travel need near campus.
- **Campus affiliates traveling between Discovery Park and UNT main campus:** Trips between Discovery Park and the UNT main campus is a key trip for students, faculty, and staff. Currently, Denton Connect runs a bus between Discovery Park and the UNT main campus. The Discovery Park bus stop currently consists of a large parking lot and a bike rack - additional amenities could be included at this space to increase access, comfort, and safety.
- **Intercity travel (e.g., FlixBus):** FlixBus rides to destinations outside of Denton depart from Union Circle at UNT and at the Exxon gas station at the northwest corner of the intersection of University Drive and the I-35 frontage road. Coordinating with FlixBus or other regional travel operators to create mobility hubs in key locations would create an easier trip for campus affiliates, especially those without their own personal vehicle.

Developing problem statements related to mobility hubs for UNT campus can be helpful to guide your planning priorities. Problem statements clearly lay out a problem and why it is important to mobility hub planning at UNT. Some problem statement examples for UNT that were informed through on-campus stakeholder engagement sessions are included below:

- UNT students want to access campus without needing to drive, but find that transit doesn't get them where they need to go when they want to get there. Transit schedules that align with UNT affiliate needs will help decrease reliance on driving.
- An underlying network of bicycle and pedestrian infrastructure is lacking in Denton. Without it, connectivity between mobility hubs in a mobility hub network will not be safe, direct, or accessible.
- Many students don't realize that mobility offerings like on-demand shuttles are available to them. Ad hoc or decentralized mobility information can limit usage of untraditional amenities.

03 Where Are the Hub Opportunities for UNT?

Siting Analysis

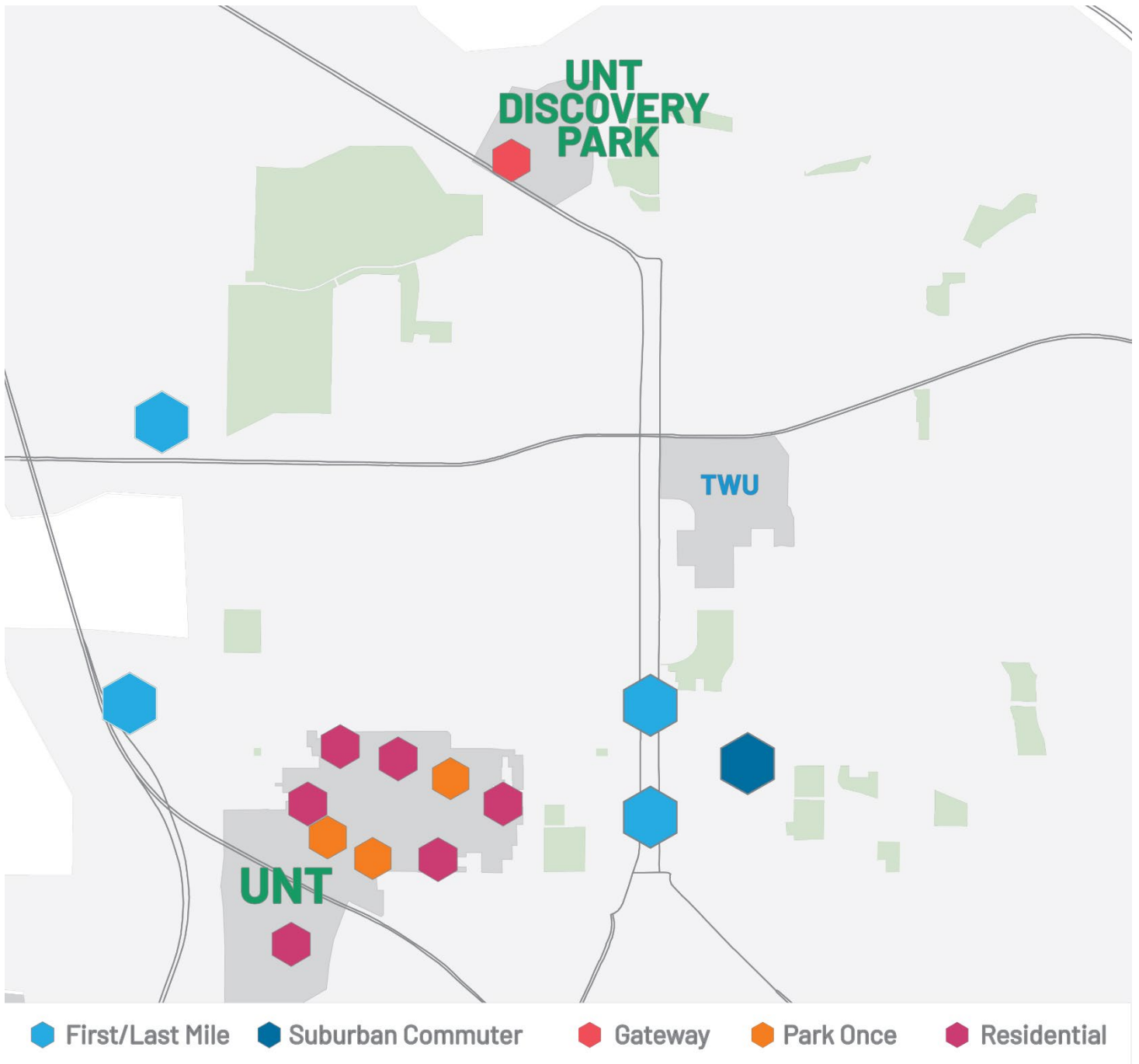
UNT and the greater Denton area are home to a wide variety of on- and off-campus mobility hubs that are not clearly identified as such – locations that contain one or more mobility hub amenities, but might lack the coordination, branding, or marketing that advertise them as a mobility hub within a network. Many of these locations operate today in varying states of mobility hub functionality, while many other locations lack any mobility amenities and only have the propensity to be established as a hub location. The question is: where are campus mobility hubs located on the UNT campus and throughout Denton?

Methodology

There are three approaches to identify mobility hubs at UNT. Within the NCTCOG area, site identification for on-campus college and university mobility hubs follows one of two approaches, depending on the size of the university and the amount of campus land use and transportation infrastructure data available. For large university campuses, multiple hub site locations are identified through a largely automated process, whereas just one hub location is manually identified for small or one-building college campuses. UNT is a large campus with plenty of available land use and transportation infrastructure data, so the automated process to identify multiple hub locations was used. To improve the accuracy of the automatized siting analysis, the project team validated the results and manually added on-campus hubs using satellite imagery. The full methodology for mobility hub siting is included in [NCTCOG's Scenario Development and Evaluation Report](#).

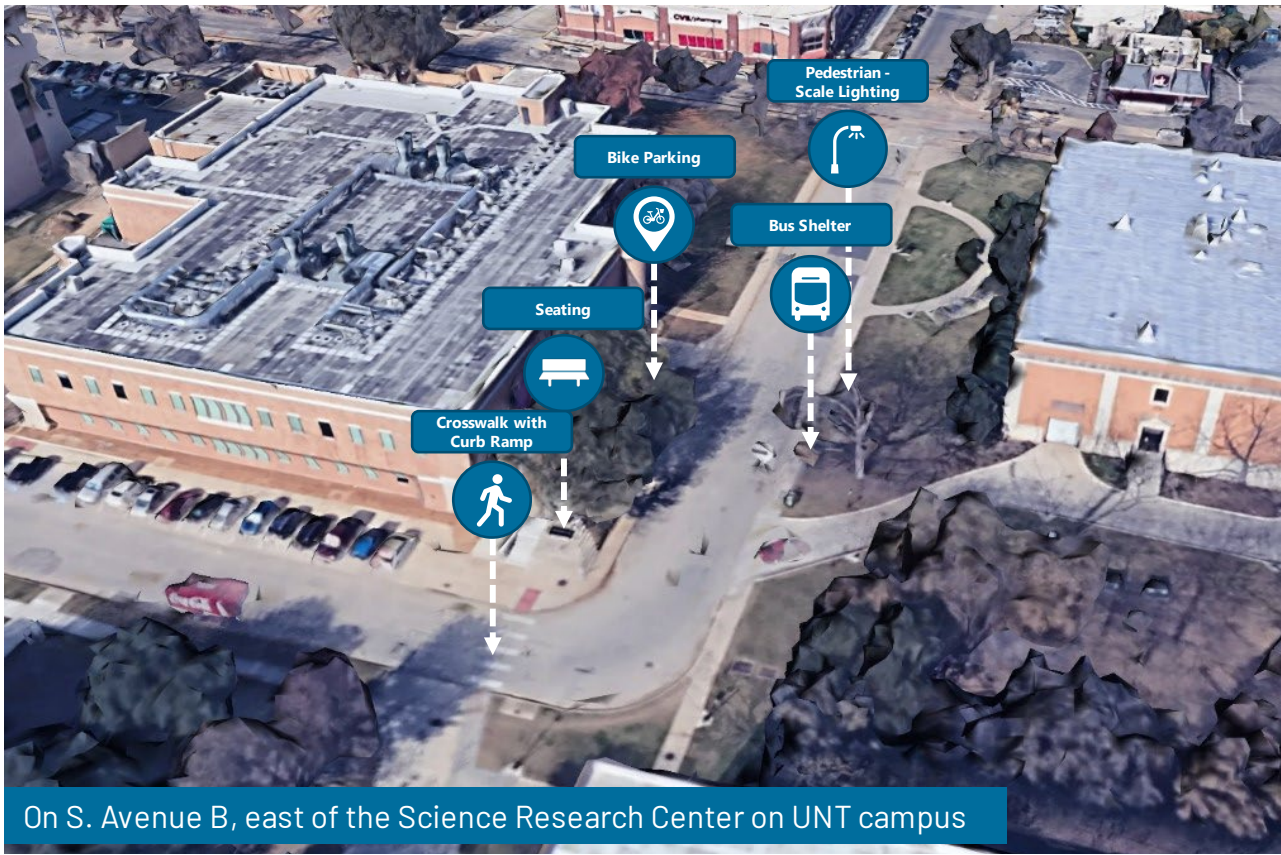
Results

The map below shows the identified mobility hub locations on UNT campus and in Denton. The sites include a mix of hub types, which will be explained in detail in the next section. An interactive map showing these and other hub locations in the North Central Texas area can be found [here](#).



Local Mobility Hub Examples

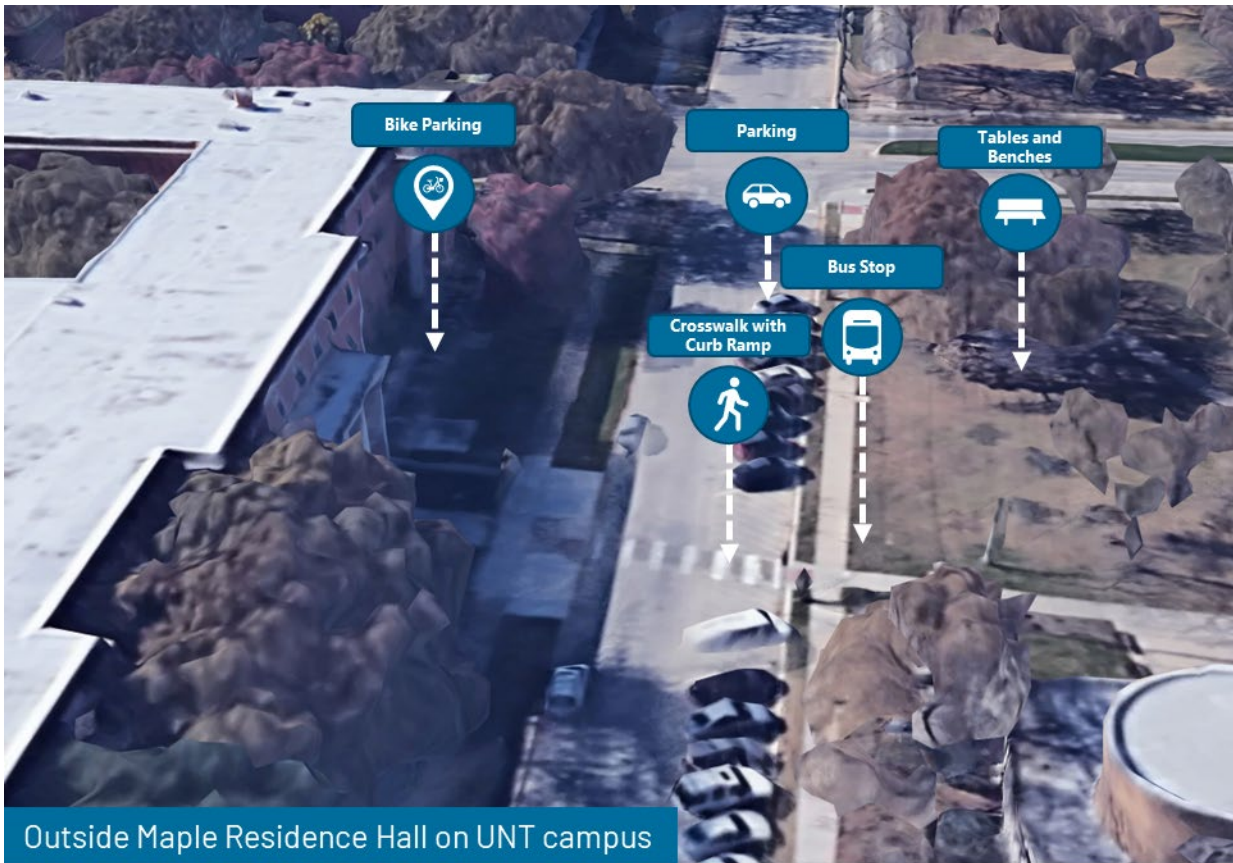
Mobility hubs are common on university campuses, but they are rarely recognized, resourced, or branded as such. UNT and Denton as a whole have many locations where transportation amenities come together in one place. This section includes some examples of mobility hubs in the Denton area. Using these locations as a foundation could be one way to begin planning for mobility hubs on UNT campus.



On S. Avenue B, east of the Science Research Center on UNT campus



At the intersection of Hickory Street and Fry Street, just north of UNT



Union Circle Hub Concept

During a charrette held in October 2022 with local and university mobility leaders in the North Central Texas region, two mobility hub concepts at UNT’s Union Circle were developed. The graphic below demonstrates the mobility amenities, infrastructure additions, and design considerations for a potential mobility hub at UNT’s Union Circle. This includes:

- Changing Union Circle to one-way operation
- Outdoor pavilion with lighting and security
- Bidirectional protected bike lane on the south end of Union Circle
- Pickup/dropoff locations
- Seating area with food trucks
- Abundant lighting and wayfinding
- Color-coded wayfinding throughout garage
- Roadway cut-through to deconflict parking access
- New transit center for buses, on-demand transit, and shuttles to centralize passenger boarding and alighting (with off-peak food trucks)
- New shuttle stop amenities
- Bike parking
- E-cargo bikes and dedicated off-street loading zones

While more detailed planning and design work is needed to make this concept a reality, the consultant team’s initial assessment is that this design can adequately meet the demands and capacity needs for the various users and services that operate in this space—including transit and shuttle services that service passenger activity and layover along Union Circle.



04 What Can Be Found at Each Hub Location?

Hub Types

The features, access conditions, and use cases of each mobility hub, on and off-campus, depends on the land use context, available multimodal network, and specific transportation needs of the adjacent community. After identifying the on-and off-campus mobility hubs, assigning the campus hub typology informs the hub planning, design, amenities and service selection, and access hierarchies at each hub type. Each hub type is designed to be flexible and cater to a diverse set of mobility needs. No two hubs of the same type will be alike.

Across the UNT campus area and City of Denton, there are five defined campus mobility hub typologies that lay out the access, context, and connectivity indicators that comprise them. The following hub types are further explained below:

On-Campus Hub Types:

- Gateway Hubs
- Residential Hubs
- Park Once Hubs

Off-Campus Hub Types:

- Suburban Commuter Hubs
- First/Last Mile Hubs

On-Campus Mobility Hubs

On-campus mobility hubs are found within the boundaries of campuses such as UNT. They connect commuters coming into campus or help campus residents and affiliates make short trips on campus or between campus and nearby destinations. The mobility and land use factors that inform on-campus hub amenities will vary but in general, the context of on-campus hubs will relate to lower-capacity mobility access and campus land uses such as student housing and classrooms. On-campus hubs at UNT are divided into the following three types: Gateway Hubs, Park Once Hubs, and Residential Hubs.

Gateway Hubs

Gateway Hubs are often found on campuses near the main campus entrances or access points. Campus amenities, such as housing, classrooms, and public gathering places are nearby. Gateway Hubs are often integrated into signature public spaces and alongside a major landmark (e.g., gateway structure, fountain feature, statue, landscaped entryway, etc.).

An example of a Gateway Hub can be found at UNT Discovery Park in Lot 91. Figure 1 shows the potential design and amenity opportunities of a sample Gateway Hub.

Figure 1 On-Campus Gateway Hub Sample Design



Park Once Hubs

Park Once Hubs emphasize connecting campus affiliates who drive and park their car to mobility options. Typically, these mobility hubs are located away from the center of campus and major campus amenities.

Examples of Park Once Hubs on UNT campus include in Lot 49 and in Union Circle. Figure 2 shows the potential design and amenity opportunities of a sample Park Once Hub.

Figure 2 On-Campus Park Once Hub Sample Design



Residential Hubs

Residential Hubs are located on campus in close proximity to student housing. These hubs operate in both urban and suburban contexts, but the mix of mobility amenities is likely to be similar at Residential Hubs regardless of urban or non-urban context.

Examples of Residential Hubs can be found across the UNT campus near many of the residential halls and at the Texas Woman's University. Figure 3 shows the potential design and amenity opportunities of a sample Residential Hub.

Figure 3 On-Campus Residential Hub Sample Design



Off-Campus Mobility Hubs

Off-campus mobility hubs are located outside of the boundaries of college and university campuses. Typically, they serve to connect campus affiliates between campus and either an off-campus demand generator or transit connection. Located away from the campus context, off-campus hubs offer a mix of campus affiliate and non-affiliate mobility use cases. Land use and mobility factors that commonly inform off-campus mobility hubs include

proximity to high-capacity transit, population and employment density, and activity centers. Off-campus hubs are divided into the following three typologies: Urban Core Hubs, Suburban Core Hubs, and First/Last-Mile Hubs.

Urban Core Hubs

Urban Core Hubs are located within relatively dense, urban settings, and typically have direct access to high-capacity transit or major transit centers (within 2 miles) and a diverse mix of land uses. These mobility hubs are located in areas with high population and employment density, in a TOD-like setting, with access to mobility options other urban amenities.

There are currently no examples of Urban Core Hubs in the Denton context, largely due to the city's lack of high-density urban context. However, there are opportunities for Urban Core Hubs that can align with future development. For example, if the Suburban Hub at the Downtown Denton Transit Center becomes an expanded TOD concept, it could fall into the Urban Core Hub category. Figure 4 shows the potential design and amenity opportunities of a sample Urban Core Hub.

Figure 4 Off-Campus Urban Core Hub Sample Design



Suburban Commuter Hubs

Suburban Commuter Hubs are typically found in areas with low to moderate density and a residential land use focus. A TOD-like land use context may apply to the Suburban Commuter Hub, but the density of the surrounding context will be lower than in the Urban Core Hub.

An example of a Suburban Commuter Hub near the UNT campus is in Downtown Denton anchored by the Downtown Denton Transit Center. Figure 5 shows the potential design and amenity opportunities of a sample Suburban Commuter Hub.

Figure 5 Off-Campus Suburban Commuter Hub Sample Design



First/Last-Mile Hubs

First/Last-Mile Hubs are off-campus hubs that bridge the gap between the on-campus setting and off-campus setting. Typically found within a mile of the campus boundary, the land use context of these mobility hubs trends towards commercial activity.

Examples of First/Last-Mile Hubs can be found outside of the UNT Campus in the Denton Square, at Rayzor Ranch, and in other locations in Denton. Figure 6 shows the potential design and amenity opportunities of a sample First/Last-Mile Hub.

Figure 6 Off-Campus First/Last Mile Hub Sample Design



Kit of Parts

With thoughtful investment, campus mobility hubs at UNT are the intersection of four key elements integral to supporting its users and surrounding community: Access & Mobility, Public Realm, Customer Experience, and Information. Mobility hubs, anchored by bus and shuttle stops, high-capacity transit, and other mobility access points should be co-located with mobility options such as bike share, car share, ridehail pickup and dropoff, and bike parking. In addition to mobility options, the user's experience and context-specific needs can also be supported through additional amenities. Campus mobility hubs, flexible in their design, are the sum of their parts. This means amenities can be integrated as plug-and-play features to fit the needs of the local context and needs.

Access & Mobility Amenities

Access & Mobility amenities prioritize and encourage people walking and rolling, biking, taking transit, and using shared mobility services by providing a clear hierarchy of access (one that doesn't solely prioritize vehicular travel) and resolves connectivity challenges to and from the mobility hub.

Transit Shelter & Waiting Area

Covered structures and places to sit at transit stops that provide a safe and comfortable place to wait for transit.

Sidewalk Connectivity

High-quality sidewalks that are connected, continuous, and wide enough to accommodate pedestrian flows are critical mobility infrastructure to and from the mobility hub.

Safe Intersections

High visibility painted crosswalks, stop bars with adequate distance from the crosswalk, daylighting parking, curb bulbouts/extensions, and leading pedestrian intervals provide safe walking conditions to and from the mobility hub.

Short-Term Bike Parking/Bike Racks

Bike racks that are conveniently placed and easy for users to secure their bikes provide an essential end-of-trip facility.

Bike Stations with End-of-Trip Facilities

Staffed secure bike parking areas, usually outfitted with changing rooms, maintenance tools, light retail, and other supportive end-of-trip facilities.

Bike Share

Public bike share enables intra-campus mobility, neighborhood connectivity, and first/last-mile connections for transit riders.

Bike Network Connectivity

A gap-free bike network that seamlessly connects affiliates to mobility hubs provide an essential first/last mile connection. High comfort bike facilities, which include protected bike lanes and/or off-street bike paths, provide the safest and most user-friendly experience.

Long-Term Secure Bike Parking

Bicycle infrastructure that provides a convenient and secure place to park and repair bikes. Consists of bike lockers, bike cages, or indoor bike parking that provides covered long-term parking.

Micromobility Stations and Drop Zones

Designated areas for users to pickup, recharge, and drop-off shared bikes, scooters, mopeds, and other small vehicles.

Loading Zones

Curb space used for active freight and passenger loading and unloading of ride-hail, shuttles, micro/on-demand transit, and urban freight.

Dedicated Car Share Parking

Parking that has been marked and designated for car share vehicles.

EV Charging Stations for Shared Vehicles and Micromobility

Clearly marked and signed charging infrastructure that allows for fast charging of shared mobility vehicles and micromobility devices. As there is currently no EV charging on UNT campus, this amenity is especially important.

Common Carrier Package Pickup and Other Efficient Delivery Services

Secure, self-service kiosks for affiliate to retrieve packages and other goods at any given time. Eliminates delivery drive time and loading conflicts.

Public Realm Amenities

More than just conduits for transportation options, campus mobility hubs have the opportunity to contribute to the activities, sense of place, and overall vibrancy of locations where they are sited. Creatively activating the space with community assets and art make a mobility hub a more enjoyable to its users and contribute to a sense of community.

Pedestrian-Scale Lighting

Street lighting that illuminates the sidewalk and is positioned lower and spaced closer together than roadway lighting, located in areas with high pedestrian activity to improve safety and visibility.

Permanent and Mobile Vending/Retail Space

A mix of dedicated space for permanent retail services that are anchored to a physical location (e.g., restaurant) and flexible space for mobile vending/retail services (e.g., food trucks, florists, coffee stands) that can share the same space at different times.

Street Furniture

Objects placed or fixed in the public right-of-way that activate sidewalks and establish a sense of place (e.g., benches, planters).

Community-Driven Design Elements/Tactical Urbanism

A community-led approach to community building using simple, temporary, low-cost design interventions that can be altered and scaled up to better serve the community (e.g., curb bulbs, pedestrian enhancements, cultural amenities, and art).

Green Space

An area that is partly or completely covered with grass, trees, shrubs, or other landscaping. Ideally, the green spaces are for people to experience, sit, and linger.

Customer Experience Amenities

Amenities focused on the user experience at a campus mobility hub improves the quality of the waiting experience.

Digital Mobility Payment for Transit and Shared Mobility

Contactless payment systems located near transit stops that allow riders to pre-pay for their trip before boarding or unlocking a ride.

Place Programming

Creation of public gathering spaces that extends the community identity outdoors and establishes a sense of place (e.g., parklets).

Public Bathroom

Bathrooms that are accessible to the public provide a basic and respectable amenity for mobility hub users.

Digital Screens for Booking and Trip Planning

Touch screen kiosks that digitally display nearby mobility options and allow users to book and plan their trip.

Public Wi-Fi

Free access to Wi-Fi within a specified distance.

Public Device Charging Outlets

Charging stations for cell phones and other devices.

Information Amenities

Information amenities at a campus mobility hub are critical for helping users understand when and where to access their travel needs. These amenities help users navigate the network by giving people an understanding of their mobility options in real-time at any time, even through disruptions.

Real-Time Travel Information

Information that shares the current status of nearby mobility options to enable travelers to make informed decisions about their trips (e.g., estimated arrival/departure times, location of services).

Digital and Physical Wayfinding

A guidance system that directs users to nearby mobility services and amenities.

Hub Area Maps, Amenity Information, and Bulletins

Physical displays that help orient users and direct them to nearby amenities and relevant announcements.

Choosing the Right Kit of Parts for Your Hub

As expressed in the sections above, a mobility hub is the sum of its parts. Mobility hub amenities should be specific to the mobility hub area context and suited to the needs of its users. Choosing the right amenities for an individual hub starts first by identifying the campus hub typology. Table 1 summarizes the level of amenities needed at each campus mobility hub type. The next important consideration for choosing amenities at a mobility hub is level of

investment—also expressed as level of amenity, functionality, and utility. Three different levels of investment – Basic, Enhanced, and Seamless – will result in different amenities being offered at each mobility hub.

Basic investment assumes that only minor mobility hub amenities and core mobility options are built into the hub. The amenities included would support commuters and UNT campus affiliates in connecting between transportation modes, but may lack amenities that support longer term stays, or have minimal technology integration.

Enhanced investment features more foundational mobility supports that begin the cultural shift toward multimodal travel. The amenities offered at the mobility hub are more developed and of a wider variety than the Basic investment, including additional shared mobility options to meet diverse mobility needs. Transportation network infrastructure in the mobility hub area is fairly developed in the Enhanced investment scenario, but could be lacking key elements such as signage, separated bicycle facilities, or shared-use paths.

Seamless investment contains a full array of mobility hub amenities and supportive transportation infrastructure, leading to transit orientation and lasting mode shift to shared mobility and active transportation. Mobility options are integrated physically and, to the extent possible, digitally. The specific amenities offered will vary by hub type, but a hub at the Seamless investment level will provide a full offering of amenities, infrastructure, information, urban design, and supportive transportation policy.

When choosing the level of investment for campus mobility hubs, it is important to consider amenities as a critical factor for supporting mode shift. In the NCTCOG Campus Mobility survey, 62% of respondents that attend or work at UNT expressed that they want to make fewer car trips. When asked about the specific amenities they prefer, real time information, park and ride facilities, and transit with first/last mile connections were the most preferred.

Table 1 Amenities by Campus Hub Typology

Infrastructure Category	Amenities	Cost Estimate	Applicable Hub Typology					
			V = Vital R = Recommend O = Optional					
			Urban Core	Suburban Commuter	First/Last Mile	Gateway	Park-Once	Residential
Access & Mobility	Transit Shelter & Waiting Area	\$\$	V	V	V	V	V	V
	Sidewalk Connectivity	\$\$-\$\$\$	V	V	V	V	V	V
	Safe Intersections	\$\$-\$\$\$	V	V	V	V	V	V
	Short-Term Bike Parking/Bike Racks	\$	V	V	V	V	V	V
	Bike Stations with End-of-Trip Facilities	\$\$	R	O	O	R	O	R
	Bike Share	\$-\$\$	V	O	V	V	R	V
	Bike Network Connectivity	\$-\$\$\$	V	R	V	V	R	V
	Long-Term Secure Bike Parking	\$\$	V	V	V	V	V	V
	Micromobility Stations and Drop Zones	\$	V	O	R	V	O	V

Infrastructure Category	Amenities	Cost Estimate	Applicable Hub Typology					
			V = Vital R = Recommend O = Optional					
			Urban Core	Suburban Commuter	First/Last Mile	Gateway	Park-Once	Residential
	Loading Zones	\$	R	R	R	R	R	R
	Dedicated Car Share Parking	\$	R	R	R	R	R	R
	EV Charging Stations for Shared Vehicles and Micromobility	\$\$	R	R	R	R	R	R
	Common Carrier Package Pickup and Other Efficient Delivery Services	\$-\$\$	R	O	O	R	O	R
Public Realm	Pedestrian-Scale Lighting	\$\$	V	V	V	V	V	V
	Permanent and Mobile Vending/Retail Space	\$-\$\$\$	R	O	O	R	O	R
	Street Furniture	\$-\$\$	R	O	R	R	O	R
	Community-Driven Design Elements/Tactical Urbanism	\$	R	O	O	R	O	R
	Green Space	\$-\$\$	R	O	O	R	O	R
Customer Experience	Digital Mobility Payment for Transit and Shared Mobility	\$\$	R	R	R	R	R	R
	Place Programming	\$-\$\$	R	O	R	R	O	R
	Public Bathroom	\$\$	R	R	R	R	R	R
	Digital screens for booking and trip planning	\$\$	R	O	O	R	R	R
	Public Wi-Fi	\$	R	O	O	R	O	R
	Public Device Charging Outlets	\$	R	O	O	R	O	R
Information	Real-Time Travel Information	\$-\$\$	V	V	V	V	V	V
	Digital and Physical Wayfinding	\$\$	V	V	V	V	V	V
	Hub Area Maps, Amenity Information, and Bulletins	\$\$	V	V	V	V	V	V

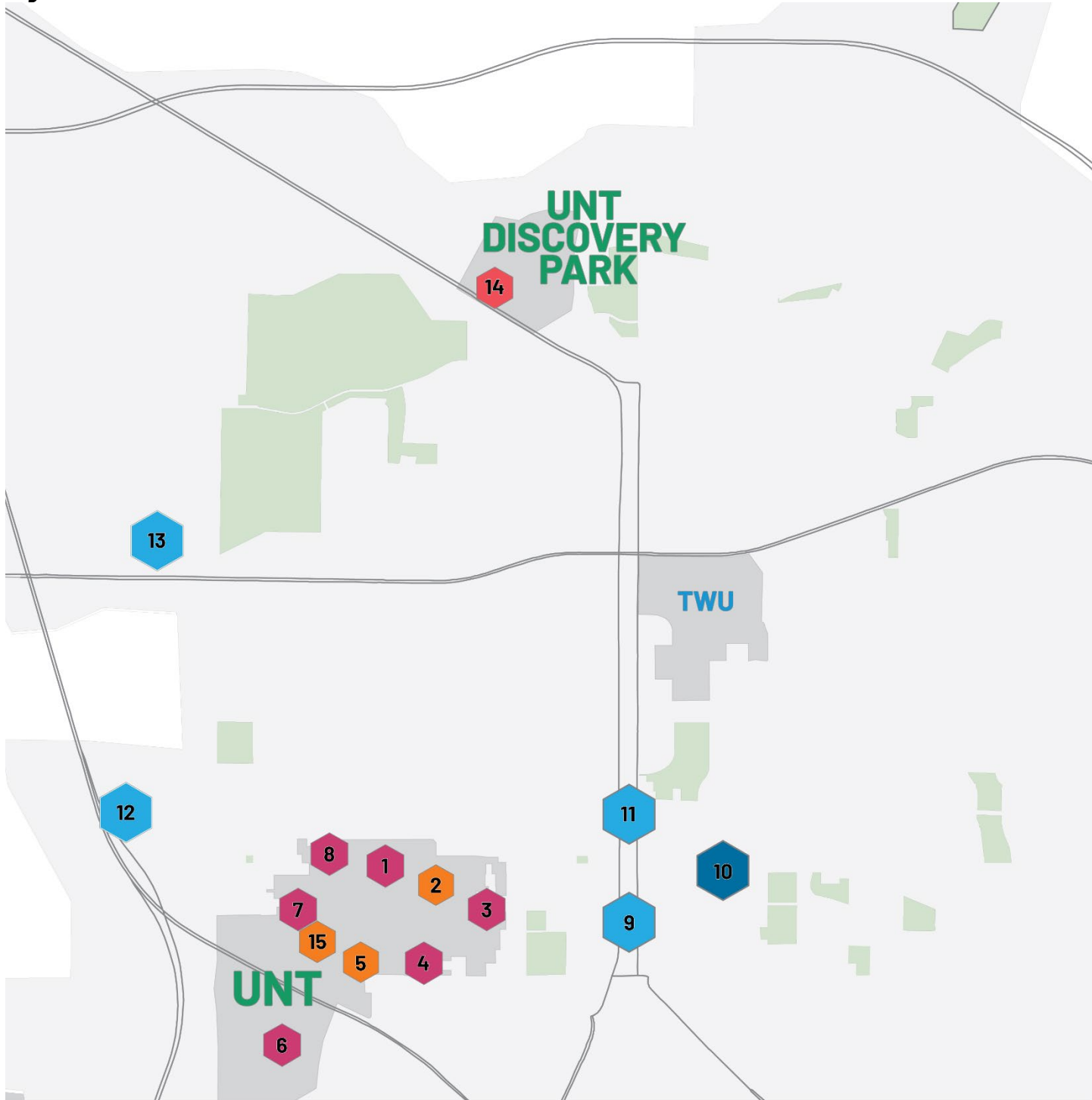
Connecting the Hub Network

Mobility hub amenities are just one part of the equation. Any investment in mobility hubs cannot reach its potential without an investment in the surrounding bicycle and pedestrian infrastructure network. As a baseline, the local active transportation network needs to be safe and well-connected for mobility hubs to be truly accessible. The current state of bicycle and pedestrian infrastructure in the Denton area is generally lacking, with many of the candidate mobility hub locations missing critical bicycle and pedestrian connections. Campus mobility hub providers should seek to work with local government to advocate for better walking and biking facilities that support transit service and the mobility hub network.

Hub Amenity and Siting Recommendations at UNT

Figure 7 displays the hub locations on the UNT campus and in the City of Denton. Each proposed hub location currently contains a service or amenity that can serve as the backbone for a full mobility hub. Leveraging these existing amenities to kickstart your mobility hub will set your hubs up for success. Following Figure 7, Figure 8 contains the siting opportunity specific to each hub location that is best served to build a mobility hub, as well as the recommended kit of parts amenities based on the hub type. Figure 8 also shows what amenities already exist at each proposed hub location. Figures 7 and 8 should be used as a guide for your mobility hub implementation.

Figure 7 Hubs in Denton and at UNT



- Light Blue Hexagon: First/Last Mile
- Dark Blue Hexagon: Suburban Commuter
- Red Hexagon: Gateway
- Orange Hexagon: Park Once
- Pink Hexagon: Residential

Figure 8 Hub Amenity Recommendations in Denton and at UNT

		1 - North Ave C		2 - Union Circle		3 - Lot 47		4 - Lot 31		5 - Lot 22		6 - Apogee Center		7 - Santa Fe Square		8 - Lot 12		9 - 134 W Prairie		10 - Downtown TC		11 - Denton Square		12 - W Oak Street		13 - Rayzor Ranch		14 - Discovery Park		15 - Fouts Field	
	HUB TYPE	RES	PO	RES	RES	PO	RES	RES	PO	FLM	SC	FLM	FLM	FLM	FLM	GW	PO														
ACCESS & MOBILITY	TRANSIT SHELTER & WAITING AREA	●	●			●	●	●			●	●	●																		
	SIDEWALKS/SAFE INTERSECTIONS				●	●				●			●	●	●	●	●	●													
	BIKE PARKING		●	●	●	●	●	●	●	●		●	●	●	●	●	●	●													
	BIKE STATIONS/END OF TRIP FACILITIES	●		●	●		●										●														
	LONG-TERM BIKE STORAGE		●		●	●	●	●			●																				
	BIKESHARE STATION	●					●	●	●	●			●																		
	BIKE NETWORK CONNECTIVITY	●		●			●		●	●				●	●	●	●	●													
	DEDICATED CAR-SHARE PARKING		●				●																								
	MICROMOBILITY STATIONS/ZONES			●	●		●	●	●				●																		
	LOADING ZONES	●		●	●		●					●																			
	EV CHARGING STATIONS	●		●	●		●				●		●	●	●																
	PACKAGE LOCKERS	●		●	●		●					●																			
PUBLIC REALM	GREEN SPACE		●																												
	PEDESTRIAN-SCALE LIGHTING	●		●					●	●	●		●	●	●	●	●	●													
	STREET FURNITURE	●		●	●		●			●			●	●	●	●	●	●													
	MOBILE VENDING/RETAIL SPACE	●		●	●		●																								
	COMMUNITY DESIGN ELEMENTS					●						●	●																		
CUSTOMER EXPERIENCE	DIGITAL MOBILITY PAYMENT					●																									
	PLACE PROGRAMMING	●				●	●	●				●	●																		
	PUBLIC BATHROOMS		●			●		●	●			●																			
	DIGITAL SCREENS FOR BOOKING	●	●	●	●	●	●	●	●																						
	PUBLIC WIFI	●	●	●	●	●	●	●	●			●	●																		
	PUBLIC CHARGING OUTLETS	●		●	●		●			●			●	●																	
INFORMATION	WAYFINDING				●					●			●	●	●																
	REAL-TIME TRAVEL INFORMATION		●			●					●																				
	HUB AREA MAPS	●				●	●					●	●																		
	COST	\$\$\$	\$\$	\$	\$\$\$	\$\$	\$\$\$	\$	\$\$	\$\$\$	\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$			

● RECOMMENDED AMENITY ● EXISTING AMENITY

05 Implementation Factors

Key Considerations

As a large university, UNT has many different campus affiliate groups whose needs must be taken into consideration when implementing campus mobility hubs. Especially when compared with off-campus mobility hubs, mobility hubs on the UNT campus can present more complex user needs, operating environments, configurations, and governance structures. Crucial to the success of a mobility hub network on is the consideration and management of these complexities during the implementation phase.

The following sections detail some considerations when planning, designing, and implementing mobility hubs on the UNT campus. Refer to the Regional Campus Mobility Hub Catalog for more detailed guidance.

Governance

UNT will lead mobility hub implementation on its campus property, but there will almost always need to be coordination with DCTA, shared mobility providers, the City and County of Denton, NCTCOG, or other agencies to implement campus mobility hubs. The campus-led governance model is the best fit to pursue for on-campus mobility hubs, particularly when integrated with a campus building, public space, parking facility, or shuttle stop. Partnerships with other implementors and facilitators are likely to be needed, especially if there are hub elements located on City right-of-way, transit facilities, or private property, but the university should lead planning and project coordination.

Multi-campus partnerships are needed for select cases where a mobility hub or mobility hub network requires coordination between multiple universities. This can occur when two campuses are nearby and a mobility hub network plans to span to or near both campuses in the same city (e.g., UNT and TWU). This type of partnership is also needed for a mobility hub network that exists between a campus and its satellite campus facilities (e.g., UNT Health Science Center), or between two universities in the same system (e.g., UNT Denton and UNT Frisco).

The City Agency-led approach focuses on mobility hub investments and coordination within the public right-of-way and/or on City-owned properties, like parking lots, underutilized parcels, parks and more. In most cases, local municipalities would own and manage all or a portion of a mobility hub with amenities at the curb or on City-owned sidewalks, at both on- and -off campus mobility hubs. This could come into play at UNT Denton often when looking to remove on-street parking or alter the roadway right-of-way, as the City of Denton owns the street right-of-way on UNT campus. When considering infrastructure improvements, consult UNT's Campus Master Plan to identify coordination opportunities.

To understand and monitor how your hubs perform, collect and analyze Key Performance Indicators (KPIs) and other metrics on an annual basis, at minimum, and quarterly for more responsive evaluation and iteration. Performance measures should be tied to established mobility hub goals and outcomes and reflect the evaluation framework. For best results, segment your performance metrics by the type of campus affiliate. Partnering with campus researchers to support performance monitoring can strengthen the university's role in mobility hub implementation. The following are a small sampling of key performance measures.

- # of daily transit boardings and alightings
- # of new transit transfers at hubs

- Bike share, scooter share, and car share average trip distance/trip duration for trips starting or ending at the mobility hub
- # of average daily and peak microtransit and shuttle boardings and alightings
- Average daily bike parking utilization
- Arrival mode share to hub
- Average access distance (miles) of hub user
- Peak hour pedestrian counts
- # conflicts between vehicles, pedestrians, and cyclists

Equity

Campus mobility hubs promise convenient, reliable, and sustainable transportation for all. To ensure that promise truly reaches all at UNT, equity and community engagement must be centered at all stages of the hub design and implementation. UNT serves a wide range of people with varying transportation needs, abilities, and disadvantages. Mobility hubs should offer amenities for everyone that use them, but have a targeted focus on mobility support and community infrastructure for BIPOC affiliates, low-income affiliates, people with varying abilities, women, non-binary, and transgender affiliates, younger and older campus users, non-English speakers, and immigrant communities.

To center equity at UNT mobility hubs, implementers must thoughtfully and meaningfully engage these communities and commit to human-centered design throughout the planning and designing of mobility hubs. There are three types of opportunities that can be incorporated into mobility hub implementation to ensure community co-creation and uplift – programs, processes, and hub features. Mobility hub implementation partners should coordinate with the UNT Office of Disability Access, the Multicultural Center, and Division of Inclusion, Diversity, Equity and Access to ensure campus mobility hubs and their connecting services are inclusive and equitable spaces.

Branding

UNT has a strong and recognizable brand – incorporating UNT’s branding into the campus mobility hubs will help solidify them as a core part of the UNT experience. Campus affiliates should be able to easily identify a mobility hub and comprehend that the hub is where transportation options and information can be found. Campus mobility hubs should be experienced as vibrant and inclusive public spaces that reflect and enhance the identity and cultures of UNT.

Consistent branding and design across campus hub locations is important to establish both a sense of a place at the hub and consistency for the customer. The look and feel of a branded hub is an identity, a gateway signal, and a clear explanation of services by visual and other sensory cues.

Mobility hub branding and design guidelines should:

- Be recognizable from a distance, acting as a landmark or beacon for a concentration of expected mobility resources and opportunities
- Provide a predictable expectation that hub features at any given location across the region are the same or similar as a hub in another area

- Help users navigate to and within a hub, with appropriate wayfinding, orientation, and informational signage
- Signal to travelers how to use hub elements if they are unfamiliar with certain available options

Ideally, UNT's mobility hubs should have a consistent naming convention that is connected to the UNT or Mean Green aesthetic. At a minimum, a branded name should signal that hubs help people move and connect with community. Regardless of implementation partner, this core message should be consistent for all materials – branding, talking points, website, and printed materials.

Figure 9 UNT Branding at the Union

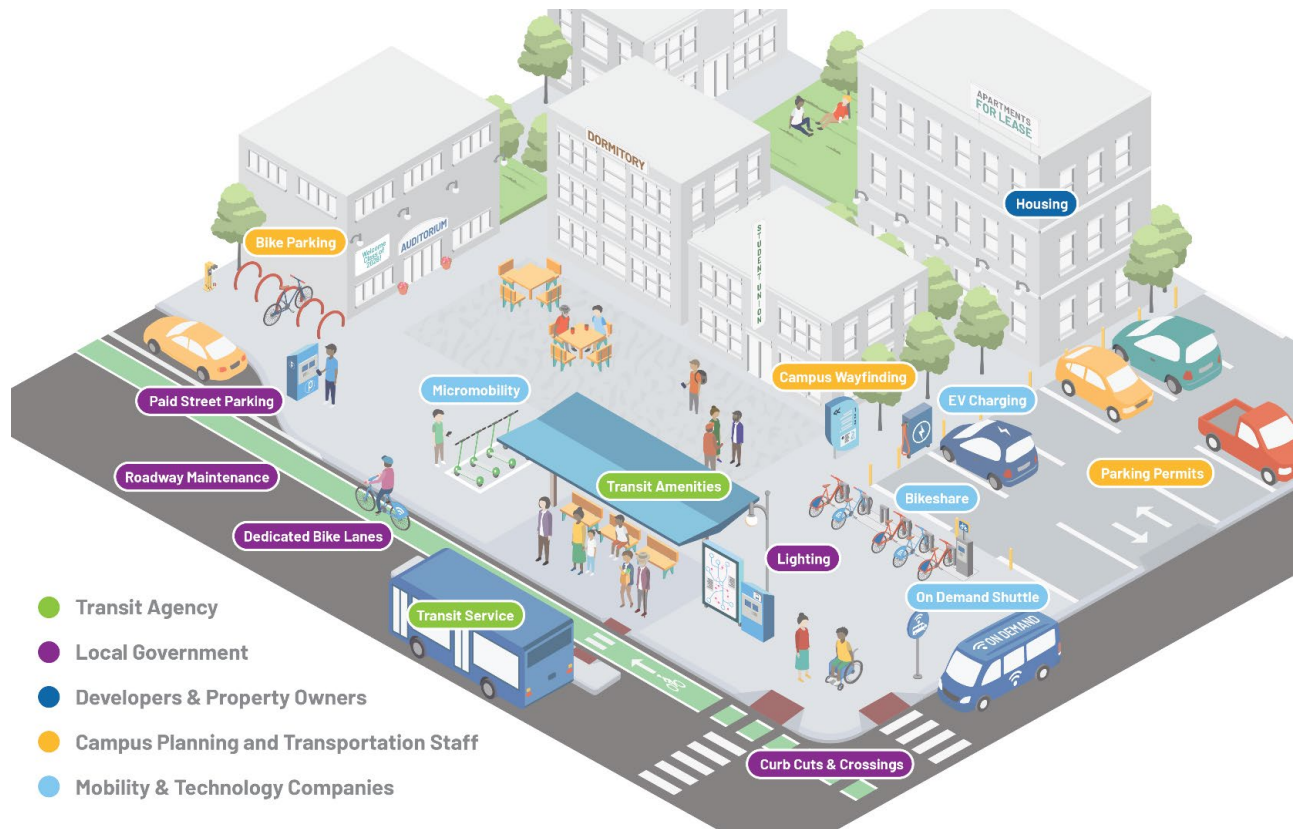


Source: UNT Denton

Management

There are a variety of potential groups that can lead management of UNT's mobility hubs. Ultimately the group or groups with the most resources and capacity to manage hubs make the best hub managers. The Transportation Services department at UNT currently manages parking and transportation options on campus, and therefore are already well engrained into the transportation fabric of the campus and likely have connections to the local municipality and transit agency. Depending on the location of the hub, certain departments at the City of Denton may be best to lead management of UNT's hubs – including the Street Operations or Sustainability departments. In the end, management of UNT's mobility hubs will likely be in partnership among multiple groups. The next section goes into detail on some of the partner opportunities to implementing mobility hubs at UNT.

Implementation Team and Partner Opportunities



Campus mobility hubs will rarely be owned, maintained, and serviced by just one entity. On- and off-campus mobility hub planning and implementation at UNT requires constant collaboration and leveraging skills, authority, and capacity across a broad range of partners. Each mobility hub project will have a team of public agency, private sector, community, university, and mobility provider partners.

Early in the planning process, UNT’s project lead(s) should convene its team of ongoing partners to clearly determine pre- and post-implementation roles, responsibilities, and expectations. Regardless of their role before or after implementation, partners should be engaged throughout the process. While some partners would satisfy multiple roles, it takes a multi-disciplinary team to plan, design, implement, and manage a mobility hub. From here, you can build out a governance and management plan for each mobility hub project.

University Partners

UNT Campus Planning/Transportation Services Staff

UNT’s Planning department within their Facilities team and their Transportation Services department are ideal leads for mobility hub implementation. They are familiar with the manpower needed to build out new construction on campus, and they likely have relationships with the local municipality and DCTA. As the Facilities team leads implementation of UNT’s Capital Improvement Program (CIP), they would be the main implementers for large mobility hub construction efforts. Transportation Services manages bicycles, transit, and parking on UNT campus, and will be a key partner in mobility hub implementation.

Campus Affiliates

Other campus affiliates that could be part of the implementation team include the UNT Office of Sustainability, the Urban Policy and Planning program, members of the We Mean Green Fund Committee, the Student Government Association, faculty, staff, and students, among others. These campus affiliates are daily users of the UNT campus who have a vested interest in its growth. The development of an advisory committee to oversee campus mobility hub implementation and provide recommendations and ongoing feedback would be beneficial to the implementation of a hub network at UNT.

Town and Gown

The City of Denton maintains a strong town and gown relationship with UNT and influences a large proportion of the jobs, residents, and overall city culture. Coordinating and aligning priorities between UNT and the City of Denton is a key component of implementing a successful mobility hub or hub network through collaboration.

The City and UNT should consider an integrated project delivery approach to support both on- and off-campus hub implementation. They should also coordinate infrastructure decision-making. UNT does not control the roadway right-of-way that pass through its campus property. Developing a memorandum of understanding (MOU) with the City to transfer ownership and maintenance of certain public spaces intended for your campus mobility hub would likely ease implementation of campus mobility hubs.

Researchers

Student- and researcher-led work at UNT can be immensely useful to support hub planning and implementation, or integrate new technology into mobility hub operations. For example, UNT Denton recently received a grant from NCTCOG and the North Texas Center for Mobility Technologies to install an advanced 5G edge-computing network, which can enable connected infrastructure, autonomous operation, and performance monitoring.

Additionally, research programs at UNT can take part in the performance monitoring component of campus mobility hubs. This role would especially fit within the undergraduate planning department or transportation research department within the college of engineering.

UNT can also integrate student-led analysis, research, and methodologies to support campus mobility hub planning. Recent student project have also been done to [assess bike infrastructure and bike safety](#) in the City of Denton in 2022, examining gaps in bicycle infrastructure and where they overlap with instances of cycling collisions. This work can support local mobility hub network planning, aligning mobility hub locations and opportunities for bicycle network expansion.

Local Partners

Shared Mobility Providers

Cities across the North Central Texas region have built mobility partnerships with shared mobility providers to expand mobility options and connect people to and from transit. These partnerships can be extended to UNT and the greater Denton area where they don't already exist. Car share is the current primary shared mobility service offered in Denton today, but shared micromobility services have existed in the DFW region in the past and are likely to come back in the future. Cities, universities, and transit agencies can leverage assets, public resources, and funding to operate new services and invest infrastructure to meet public mobility objectives.

Denton and UNT have built partnerships with private mobility companies like Via and Zipcar, testing new regulations, innovative service agreements, and more efficient uses of public right-of-way while expanding mobility options. Micromobility service companies such as Bird, Lime, Spin, and Veo are not currently operating in Denton, but there remains an opportunity for future partnerships. Mobility hubs are a natural place to convene, house, and market these permitted or contracted services. But more mobility should not be at the expense of better integration at mobility hubs.

The City of Denton, UNT, and DCTA should collaborate with mobility service providers on regulations and operating requirements to ensure permitted mobility services integrate into mobility hubs throughout the region. The City and UNT should test new types of infrastructure, information systems, and digital tools with shared mobility vendors – especially at mobility hubs. In exchange, the City and UNT should offer multi-year license agreements to partners committed to integration in exchange for new mobility investments. UNT should provide clear expectations for the performance, operation, and management of shared mobility partners at mobility hubs and integrate those expectations into service level agreements.

Denton County Transportation Authority

The Denton County Transportation Authority (DCTA) operates UNT’s shuttle buses, the fixed-route bus system in Denton, the Via-operated GoZone shared ride service, and the A-Train, which connects Denton to Dallas. UNT maintains a partnership with DCTA through its shuttle bus and E-Ride program, and maintaining that partnership in order to implement mobility hubs on campus will be crucial to the success of the mobility hub network. Often, mobility hubs are built on a backbone of fixed-route transit, and this concept is especially important within the campus context. Mobility integration and coordination at bus stops, shuttle stops, and other transit facilities like rail stations and park-and-rides will be a key element of a partnership between UNT and DCTA.



DCTA transit options

Source: Denton County Transportation Authority

Transportation Management Associations

Transportation Management Associations (TMAs) are non-profit organizations formed to coordinate and manage mobility programs and access improvements on behalf of private and public employers, business districts, and local governments. TMAs have traditionally served as commute coordinators, mobility managers, and central clearinghouses for transportation-related education. While Denton does not currently have a TMA, this does not mean there can't be one in the future. Given the large university presence in Denton, a local TMA could expand its

mission to ensure integrated connections and high-quality access to diverse transit and shared mobility services at mobility hubs on the UNT campus. A partnership between UNT and a Denton-area TMA could see UNT handing off some of the responsibility for management, operations, maintenance, and performance measurement at hubs on UNT campus.

Other Contributors

Property Developers

UNT's integration within Denton creates opportunities for partnership with property developers in mobility hub implementation. The area surrounding UNT has seen significant development in recent years, particularly in locations to the south near Eagle Drive and north of campus at Jagoe Street. Future residential and commercial developments like these are opportunities to integrate mobility hub amenities that connect UNT to the surrounding area. Mobility hub elements can be integrated into the lobbies of residential complexes through real-time transit information displays; bike racks and micromobility stations can be included in new commercial developments; and efforts to bolster the bicycle and pedestrian infrastructure network should always be undertaken when building out new developments near campus.



Source: UNT Off-Campus Housing

Regional and State Agencies

Large regional and state agencies are not likely to have as much of an opportunity for a hands-on approach to implementation as some of the more local agencies and contributors. TxDOT's most likely contribution is through funding, unless the mobility hub implementation is part of a larger, statewide effort. NCTCOG, which oversees the 16-county region, has more potential to assist in the implementation of a mobility hub network at UNT, particularly by providing guidance in planning, design, and policy. NCTCOG could also assist in facilitating an implementation

team, or by providing partial funding. NCTCOG, in partnership with local agencies or with UNT, can also assist in performance monitoring the mobility measures at the hub network. NCTCOG and TxDOT have access to resources that UNT or Denton may not have access to on their own.

Implementation Pathways

The mobility hub implementation balances short-term piloting and flexible integration with longer-term implementation and sustainable funding sources. UNT has several implementation methods at its disposal. NCTCOG's Regional Mobility Hub Catalog provides more implementation details related to partnership, phasing, and procurement opportunities.

Pathway 1: Retrofits and Incremental Layering

Retrofitting of an existing bus or shuttle stop area at UNT with additional mobility features and community amenities beyond the anchor transportation services is a typical implementation pathway. A prime example of this would be a retrofit of Union Circle mobility hub. Retrofitted hubs at UNT might include:

- **Layering:** Strategic restructuring of space and offerings. This is an incremental and tactical approach to certain retrofit projects, wedging amenities into identified underutilized spaces at existing stations, stops, parking facilities, plazas, and more.
- **Revamping:** Major service and infrastructure investment. Revamp retrofits are often longer implementation efforts programmed into capital improvement cycles or with grant funds.
- **Priority lane improvements:** Critical gaps in the bike and transit network and new connections should be identified during planning and targeted for investment. UNT can reprioritize street space to extend bike lanes and add transit only lanes at the doorstep of its mobility hubs. Conversion of internal campus roadways to pedestrian-only thoroughfares or woonerfs (pedestrian-priority shared streets with a typical speed limit of 5mph for cars) can improve access to and safety at hubs.



Source: UNT Denton

Pathway 2: Piloting and Demonstrations

UNT might elect to pilot campus mobility hubs first, starting with low-cost and temporary testing before making more significant retrofits. UNT could use piloting to test the long-term viability of shared mobility modes, new features considered for inclusion, wayfinding practices, pop-up retail and parklets, and more. Semi-permanent features should be applied in phases, with routine evaluation to regularly rethink configurations, operating procedures, or even mobility provider regulations. Pilot amenities and services can be scaled or enhanced over time.

The demonstration pathway can help UNT learn about how community and campus programming or activation techniques may work in similar locations or hub types and to investigate specific features that will fill gaps in access or address critical mobility needs at the UNT campus and key hub destinations in Denton.

Pilot implementation is a means to an end and should not be the only approach to mobility hub implementation – it is best paired with intentional funding with a long-term strategy. Candidate hub locations at and near UNT with a strong foundation of bicycle and pedestrian infrastructure are the best locations for pilots.

Pathway 3: Project and Development Integration

Campus hub design and construction can be integrated into broader UNT and City capital projects or designed and planned as part of DCTA's ongoing high-capacity transit expansion, campus shuttle planning, and station area planning. The routine cycle of street reconstruction, paving and redesign projects, intersection repair, and network improvements on UNT and City of Denton property can be opportune times for mobility hub amenity installation and maintenance. Examples of current City of Denton capital projects that could align with mobility hub installation include the Bonnie Brae Street widening near Rayzor Ranch and the Sycamore Sidepath project connecting the A-Train Station to the UNT Campus. Mobility hubs proposed at DCTA bus stops and rail stations should complement the underlying transit services.

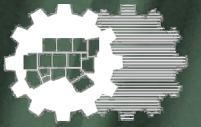


Source: NTdaily.com

Pathway 4: Long-Term Programming

UNT should integrate long-term mobility hub infrastructure into its capital improvement program (CIP). This pathway is reserved for mobility hub amenities and access that are fixed and may include integration with campus buildings, street/sidewalk projects, or other utility work. Projects in UNT's CIP have a minimum cost threshold to be included, including \$1 million for new construction projects and \$2 million for renovation projects.

UNT campus planners and administrators can also integrate campus mobility hub concepts and specific amenities into its long-range campus plan, future development plans, and future updates to its parking and transportation planning documents. UNT contains roadways that are controlled and operated by the local municipality, and as a result would need to coordinate closely with the local municipality to implement long-term mobility hubs.



North Central Texas
Council of Governments

