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LAS VEGAS MEDICAL DISTRICT OPPORTUNITY SITE

5-year Progress Report

Prepared for:
City of Las Vegas

Draft Date:
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Concept rendering by Smith Group of a future mixed-use, pedestrian oriented Las Vegas Medical DIstrict.
(Image Source: Las Vegas Medical DIstrict Facilities Master Plan, 2015)

5-YEAR PROGRESS REPORT LVMD

The Southern Nevada Regional Transportation Commission (RTC) administers the Southern Nevada Strong Regional Policy Plan on behalf of the Southern Nevada Regional Planning Coalition (SNRPC). As part of this work, the RTC's regional planning team is updating the Southern Nevada Strong Opportunity Sites Implementation Strategies in order to assess progress made on these plans. This report focuses on the Las Vegas Medical District (LVMD) Opportunity Site and provides updated strategies for continuing planning and revitalization work in and around the LVMD. The regional planning team worked with various staff members of the City of Las Vegas as well as several stakeholders in order to assess and update the *SNS Medical District Opportunity Site Investment Strategy* (2015). The project team represents local and regional interests and the *Las Vegas Medical District Opportunity Site 5-year Progress Report* continues to reflect the goals and values of the Southern Nevada Strong Regional Policy Plan.

The *Las Vegas Medical District Opportunity Site 5-year Progress Report* project team is:

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EXECUTIVE SUMMARY

BACKGROUND

Throughout our history, Southern Nevada has weathered extremes. The Great Recession saw some of the country's highest rates of foreclosure and unemployment. Following decades of economic prosperity in the late-20th and early-21st centuries, the downturn shed light on the impacts that previously uncoordinated growth had on the region: limited choices for housing and transportation, unhealthy neighborhoods, fewer living-wage jobs, and widespread impacts from the sharp decline of the residential construction market and gaming industry.

In response, the Southern Nevada region came together and developed a collaborative, more inclusive vision for the future. This vision is the Southern Nevada Strong (SNS) Regional Plan. It is the region's first federally recognized regional plan and is adopted as the Southern Nevada Regional Planning Coalition's (SNRPC's) Regional Policy Plan (Regional Policy Plan). Through the plan, the Southern Nevada community seeks to build a foundation for long-term economic success and community livelihood by better integrating reliable transportation, housing, and job opportunities for all.

As part of the Regional Policy Plan, four specific locations – known as opportunity sites – were identified around the region. These opportunity sites were chosen for their ability to model the planning principles in the Regional Policy Plan. Subsequently, implementation strategies for progressing the Regional Policy Plan recommendations were developed for each of the four opportunity site locations.
Several years removed from the adoption of the Regional Policy Plan and the four (generally titled) SNS Opportunity Site Implementation Strategies, the Regional Transportation Commission's (RTC) regional planning team conducted an evaluation and update to each of these planning documents. The updates, generally titled SNS Opportunity Sites 5-year Progress Report, will provide each local jurisdiction with an assessment of progress made on their respective plans as well as with updated actions and ideas for continuing their work in these unique areas. This report, the Las Vegas Medical District (LVMD) Opportunity Site 5-year Progress Report (LVMD 5-yr Progress Report), focuses on the Las Vegas Medical District (LVMD) in the City of Las Vegas.

The SNS Medical District Opportunity Site Investment Strategy (SNS Investment Strategy) (2015) evaluated the LVMD's potential for becoming a world-class center of excellence, complete with medical, educational, and recreational facilities that support an urban live-work-play environment. It identified opportunities and barriers for revitalizing the LVMD and suggested projects, policies, and programs which could be implemented in order to better position the area for new infill and greyfield development and investment.
The plan identified four primary actions and four secondary actions for realizing this vision:

Primary Actions:
1. Secure commitments for facility expansion; coordinate investments, partnerships, and phasing
2. Demonstrate public commitment to district through investment
3. Determine an approach to district parking and parking management
4. Implement placemaking strategies and create a district identity

Secondary Actions:
A. Create safe, multimodal transportation connections
B. Set the stage for successful supportive uses
C. Improve the Charleston corridor
D. Provide for ongoing evaluation of the need for additional land

This report builds on these efforts.

The LVMD 5-yr Progress Report is organized into the following sections: Vision, progress, recommendations, case studies, and an appendix. The report revisits the vision for the LVMD, summarizing components of previous planning studies and confirming the city's vision for becoming a "premiere academic medical district." The progress section provides an updated assessment of the LVMD's strengths and challenges, as well as a detailed analysis of the progress made in implementing the primary and secondary actions adopted in the SNS Investment Strategy (2015). Six new "Big Ideas" are provided in the recommendations section. These big ideas were developed in partnership with the City of Las Vegas and, although not formally adopted, can guide continued planning and economic redevelopment work in the LVMD. Several case studies provide in-depth research around these big ideas, offering new strategies for addressing persistent challenges that remain in the LVMD. Finally, the appendices detail the research conducted by the regional planning team – literature review, existing conditions analysis, and stakeholder interviews – that inform this report.

PROGRESS

It is clear the City of Las Vegas has prioritized implementation of the vision and goals for the LVMD. Significant implementation progress has been made, as demonstrated by approximately 88% of the implementation strategies being either complete or on track. Specifically, the City has shown its commitment for realizing the vision for the LVMD by updating their land use and zoning policies, developing targeted incentives for encouraging economic development in the district, and investing heavily in upgrading the district's infrastructure, working to transform the district into a

pedestrian friendly, multimodal environment. Additionally, the LVMD is starting to gain recognition throughout the region as an asset and destination due to the City's investment in building a brand and identity for the LVMD. Several milestone projects are either completed or underway, setting the stage for redevelopment to proliferate in the near future.

These successes and accomplishments have created much energy and momentum for new development and growth in the LVMD and, as UNLV continues to expand and the Academic Health Center Campus emerges, it is important to acknowledge some challenges and barriers that remain in this work. Private investment in the LVMD is, for the most part, not yet visible. While significant new mixed-use development has occurred in Symphony Park, the district's core still lacks many supportive services such as new housing, retail, parks, and open space. The district's core has also not yet seen significant growth of its healthcare industry. The area lacks the necessary research and laboratory space to help facilitate expansion of its medical cluster and export-based industries. Connectivity between the medical core, Symphony Park, and the rest of the region remains limited as well.

Many of these challenges do have potential solutions on the horizon, such as the introduction of circulator transit (GoMed) that will improve connectivity between Symphony Park and the district's core. Nonetheless, it is important to continue to work to overcome these challenges to ensure sustained momentum and success in the redevelopment work happening in the LVMD.

RECOMMENDATIONS

By many measures, the progress the city and its LVMD partners have made in a short period of time is impressive. With the majority of the goals and strategies on track or completed, the need for an update is evident.

Six **"Big Ideas"** were developed to help guide this next phase of planning and redevelopment work in the LVMD.

1. Update the Facilities Master Plan (2015) and revisit the formation of formal governance for the LVMD, including advisory subcommittees for the district.
2. Support the build out of the UNLV Medical School and facilitate expediting this process where possible.
3. Expand the city's innovation efforts to focus on building an innovation ecosystem and innovation economy.
4. Continue improvements to infrastructure, open space, and connectivity (support active, healthy life styles and well-being).
5. Develop policies and programs to ensure that diversity and inclusion are intentional outcomes during redevelopment and revitalization of the LVMD and DTLV.
6. Dedicate city resources toward facilitating infill and redevelopment in areas that have been rezoned to the FBC, including the LVMD and throughout DTLV.

These ideas were developed through additional research around medical districts, academic healthcare campuses, innovation districts, and form-based code implementation, with particular

attention to how cities have contributed to the growth and success of these places in their own communities. Generally, it's recommended that future efforts focus on supporting the emergence of the UNLV Academic Health Center Campus as well as expanding the city's innovation economy. These efforts should support the expansion of research and development, education and workforce training, and entrepreneurial efforts in the district. Additionally, new resources and support are needed to help the development community understand and navigate the FBC, jumpstarting infill and redevelopment in the LVMD and throughout DTLV.

The city has much experience translating big ideas into reality. The successful redevelopment of Symphony Park, the designation of a downtown Innovation District, and the transformation of DTLV on the whole, due to the expedited implementation of Vision 2045 (2016), showcase the city's commitment and ability for bringing big ideas to life. The same attitude and expertise can be extended to this next phase of LVMD planning and implementation as well.

REGIONAL SIGNIFICANCE

As a region, we'll continue to encounter uncertain times. Threats from global and local markets and events will continue to have unforeseen economic and social impacts in Southern Nevada and historic cycles of "booms and busts" will remain a challenge for local and regional planning efforts. However, the Southern Nevada Strong collaborative and resulting Regional Policy Plan offer us a blueprint for weathering these storms. Residents live regional lives and regional collaboration is needed in order to achieve not only planning goals in the LVMD, but throughout the region. Combined, these goals reflect the aspirations of all Southern Nevadans, creating a more inclusive, sustainable, and resilient community in the future.

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SNS REGIONAL PLAN POLICY

OUR VALLEY, OUR VISION, OUR FUTURE

Southern Nevada regional priorities:

- Improve economic competitiveness and education.
- Invest in complete communities.
- Increase transportation choice.
- Build capacity for implementation.

Las Vegas City Hall. (Image Source: Elkus Manfredi Architects, n.d.)

1 | INTRODUCTION

Southern Nevada Strong (SNS) is the region's first federally recognized regional plan, and was adopted as the Southern Nevada Regional Planning Coalition's Regional Policy Plan (Regional Policy Plan) in 2015. Through the plan, the Southern Nevada community seeks to build a foundation for long-term economic success and community livelihood by better integrating reliable transportation, housing, and job opportunities for all.

As part of the plan, specific locations around the region were identified as being well-suited to model the principles identified in the Regional Policy Plan. These locations are known as the Southern Nevada Strong Opportunity Sites. Subsequently, Implementation Strategies were developed for each opportunity site. These reports provide implementation plans for utilizing the strategies and policies highlighted in the Regional Policy Plan for each location.

In total, there are four opportunity sites:

- Boulder Highway at Gibson Rd./Broadbent Blvd.
- Downtown North Las Vegas (DTNLV)
- Las Vegas Medical District (LVMD)
- Maryland Parkway Corridor

Each site is primarily stewarded by its corresponding local jurisdiction: City of Henderson, City of North Las Vegas, City of Las Vegas, and Clark County, respectively. Together, these sites provide an opportunity to model principles of sound urban planning to overcome unique challenges for regional and local planning across the Las Vegas Valley.

Five years removed from the adoption of the Regional Policy Plan and the Implementation Strategies¬, the Regional Transportation Commission of Southern Nevada's (RTC) regional planning team worked with local jurisdictions to review how implementation of these plans have progressed throughout the region. The review provides each local jurisdiction with an assessment of progress made on the Implementation Strategies that correspond to their opportunity site, as well as with updated ideas, actions, and strategies for continuing their work in these unique areas. The result of these efforts

are documented in four separate studies, generally titled the SNS Opportunity Sites 5-year Progress Report(s).

Initially, SNS Medical District Opportunity Site Investment Strategy (SNS Investment Strategy) (2015), evaluated the LVMD's potential for becoming a world-class center of excellence, complete with medical, educational, and recreational facilities that support an urban live-work-play environment. The primary purpose of the SNS Investment Strategy (2015) was to identify opportunities and barriers for achieving this vision. Subsequently, the SNS Investment Strategy (2015) recommended projects, policies, and programs that could be implemented to better position the site for new development and investment.

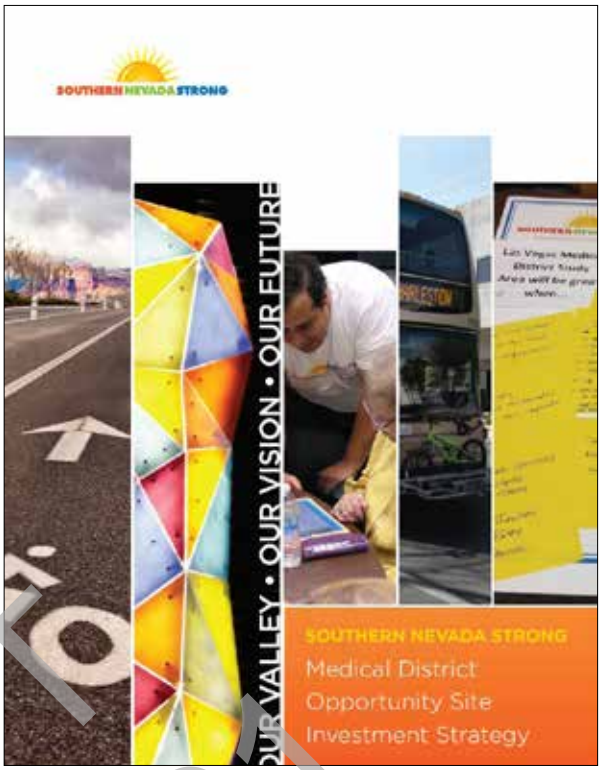
The plan identified four primary actions and four secondary actions for realizing the city's vision for the LVMD:

Primary Actions:

1. Secure commitments for facility expansion; coordinate investments, partnerships, and phasing
2. Demonstrate public commitment to district through investment
3. Determine an approach to district parking and parking management
4. Implement placemaking strategies and create a district identity

Secondary Actions:

A. Create safe, multimodal transportation connections
B. Set the stage for successful supportive uses
C. Improve the Charleston corridor
D. Provide for ongoing evaluation of the need for additional land



Each of these eight actions list several strategies for achieving these goals, which were then formalized in the Las Vegas Medical District Facilities Master Plan (Facilities Master Plan) (2015). Together, these documents have served as the primary planning documents for the LVMD. This report assesses the progress of these actions and strategies and also provides new research around academic medical campuses and innovation districts, which informs several new "big ideas" for continuing work in the LVMD. Several case studies showcase how similar ideas have been implemented in other communities. Ultimately, it is expected that this report will inform an update/addendum to the Facilities Mater Plan (2015), continuing work to build public confidence in the LVMD, diversify the economy in Downtown Las Vegas (DTLV), and encourage multimodal infrastructure, new development and infill, and continue building a unique sense of place centered on health and wellness in the LVMD.

METHODOLOGY

In order to conduct this assessment, the regional planning team partnered with the City of Las Vegas and sought to learn as much as possible about recent planning, infrastructure, and economic development work in the LVMD.

This included several investigative methods. First, RTC's regional planning team conducted a literature review of existing plans and studies that are relevant to the LVMD in order to learn about all of the planning studies and projects that have been completed, are in progress, or planned for the area. The team also spoke with several stakeholders to learn more about the work of various departments at the City and other partner agencies. Additionally, the team developed an updated existing conditions report to understand demographic and geographic changes that may have occurred around the site since it was last evaluated. The planning team also held several meetings with City planning staff throughout the duration of the project to discuss and verify findings. Findings have been incorporated throughout the report and were used to inform the progress assessment and recommendation sections. Additional details on this research are also provided in the Appendices section of this report.

Top: University Medical Center (UMC) is home to the valley's only Level 1 Trauma Center. The academic medical center is a core anchor within the LVMD. (Image Source: Ameresco, n.d.)

Bottom: Symphony Park, anchored by The Smith Center, World Market Center, the Lou Ruvo Center for Brain Health, Discovery Children's Museum, and the Las Vegas North Premium Outlets, provides for culture and entertainment in the eastern portion of the LVMD. (Image Source: Las Vegas Weekly, 2015)

ABOUT THIS REPORT

The remainder of this report is organized into the following sections: Vision, progress, recommendations, case studies, and appendices.

VISION

The vision section provides an overview of the community's vision for the LVMD, documents that guide planning and projects in the LVMD, and how this history is informing a renewed vision for the future. It is intended to synthesize the components of previous planning studies and projects, providing for a "one-stop" summary of where the district has been and where the LVMD is going in the future.

PROGRESS

The progress section provides an updated assessment on the strengths and challenges for progressing the vision of the LVMD. It highlights accomplishments and milestones that have been achieved as well as discusses challenges and barriers that persist for the City. This section also provides a detailed analysis of the progress that has been made in implementing the actions and strategies that were adopted in the SNS Investment Strategy (2015).

RECOMMENDATIONS

The recommendations section incorporates new research on academic medical campuses, innovation, and form-based code implementation, through which 6 "Big Ideas" have emerged as recommendations for moving the city's work in the LVMD forward. These big ideas are not formal recommendations, but are intended to inform future planning for the LVMD.

CASE STUDIES

The case studies section showcases how other communities have implemented "big ideas" similar to those presented in the recommendations section. This section focuses on innovation districts, economic diversification, equity-based investments, and form-based code implementation.

APPENDIX

Finally, the Appendices detail the research conducted by the regional planning team. The literature review is summarized in Appendix A and provides an overview of each plan that was reviewed as well as highlights areas which support the SNS Investment Strategy (2015). The team's existing conditions analysis is provided in Appendix B and Appendix C provides a list of the stakeholders who were interviewed as part of this process.

The information provided in the following report is intended to support the City of Las Vegas' planning and economic development efforts in the LVMD. The report is a tool for the City and its partners to further align their work with achieving the planning vision, actions, and strategies in the Regional Policy Plan (2015).

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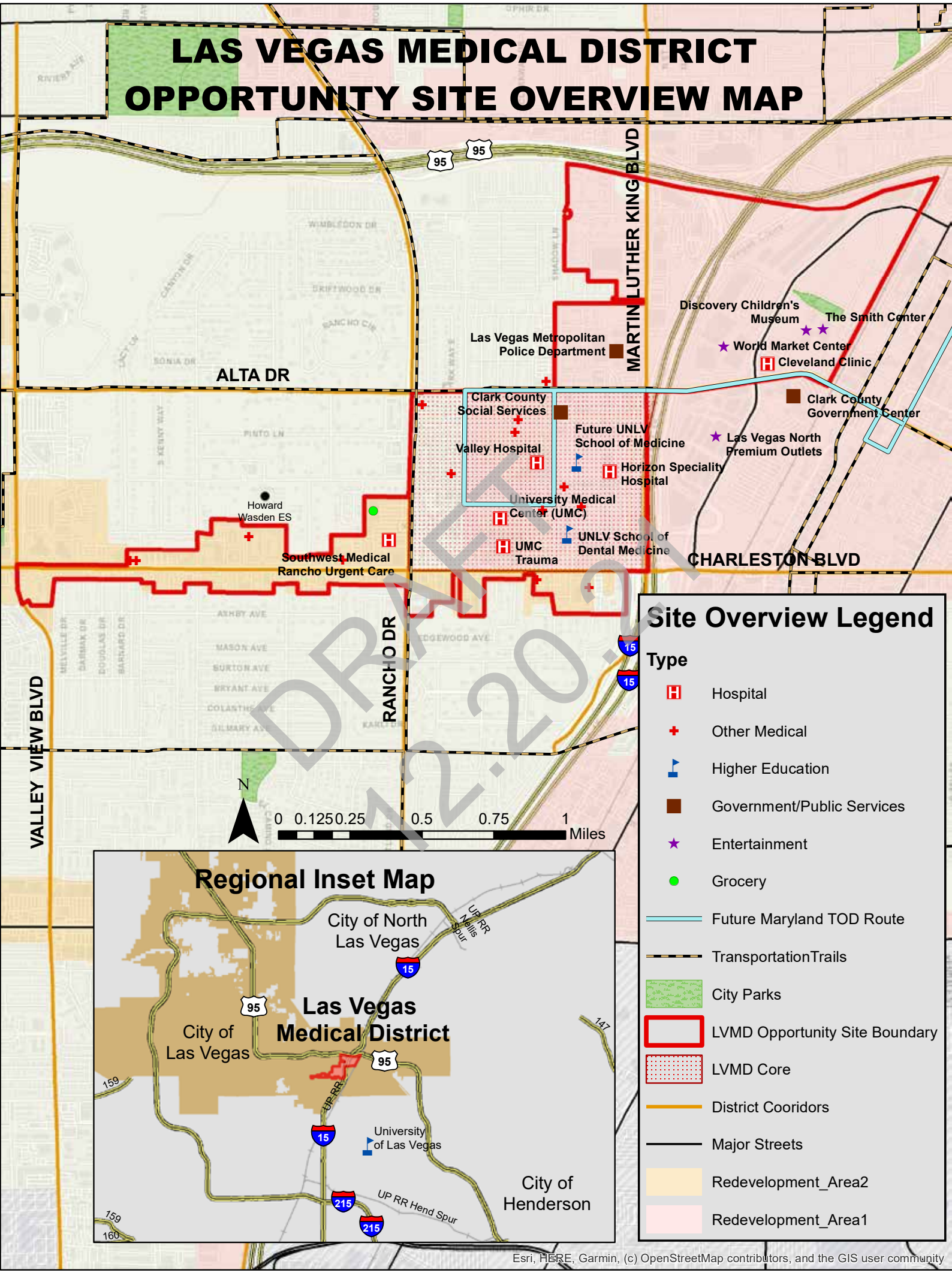
LAS VEGAS MEDICAL DISTRICT
OPPORTUNITY SITE OVERVIEW MAP



Regional Inset Map

Site Overview Legend

Type

- Hospital
- Other Medical
- Higher Education
- Government/Public Services
- Entertainment
- Grocery
- Future Maryland TOD Route
- TransportationTrails
- City Parks
- LVMD Opportunity Site Boundary
- LVMD Core
- District Cooridors
- Major Streets
- Redevelopment_Area2
- Redevelopment_Area1

2 | VISION

The vision for the Las Vegas Medical District (LVMD) is:

> *By 2030, the Las Vegas Medical District will be the clinical care, research, wellness, education, and training center of Southern Nevada and the premier academic medical district in the southwestern United States.*

Several planning efforts and documents guide planning and redevelopment efforts in the LVMD and in the downtown area on the whole. These documents include:

- the Las Vegas Medical District Facilities Master Plan (2015)
- the SNS Regional Policy Plan and the SNS Investment Strategy (2015)
- Vision 2045 (2016), a downtown Las Vegas master plan
- Smart Vegas (2019), a strategic plan for brinigng innovation to DTLV
- the 2050 Master Plan (2021)

Additionally, UNLV's master plan guides planning and development for UNLV's future Academic Health Campus. UNLV's Medical School, along with other facilities on Shadow Lane, provide for an academic anchor within the LVMD and their commitment to growth in the district is a key component for the district's future vision.

GUIDING DOCUMENTS

SNS MEDICAL DISTRICT OPPORTUNITY SITE INVESTMENT STRATEGY

The SNS Investment Strategy (2015) evaluated the LVMD's potential for becoming a world-class center of excellence, complete with medical, educational, and recreational facilities that support an urban live, work, play environment.

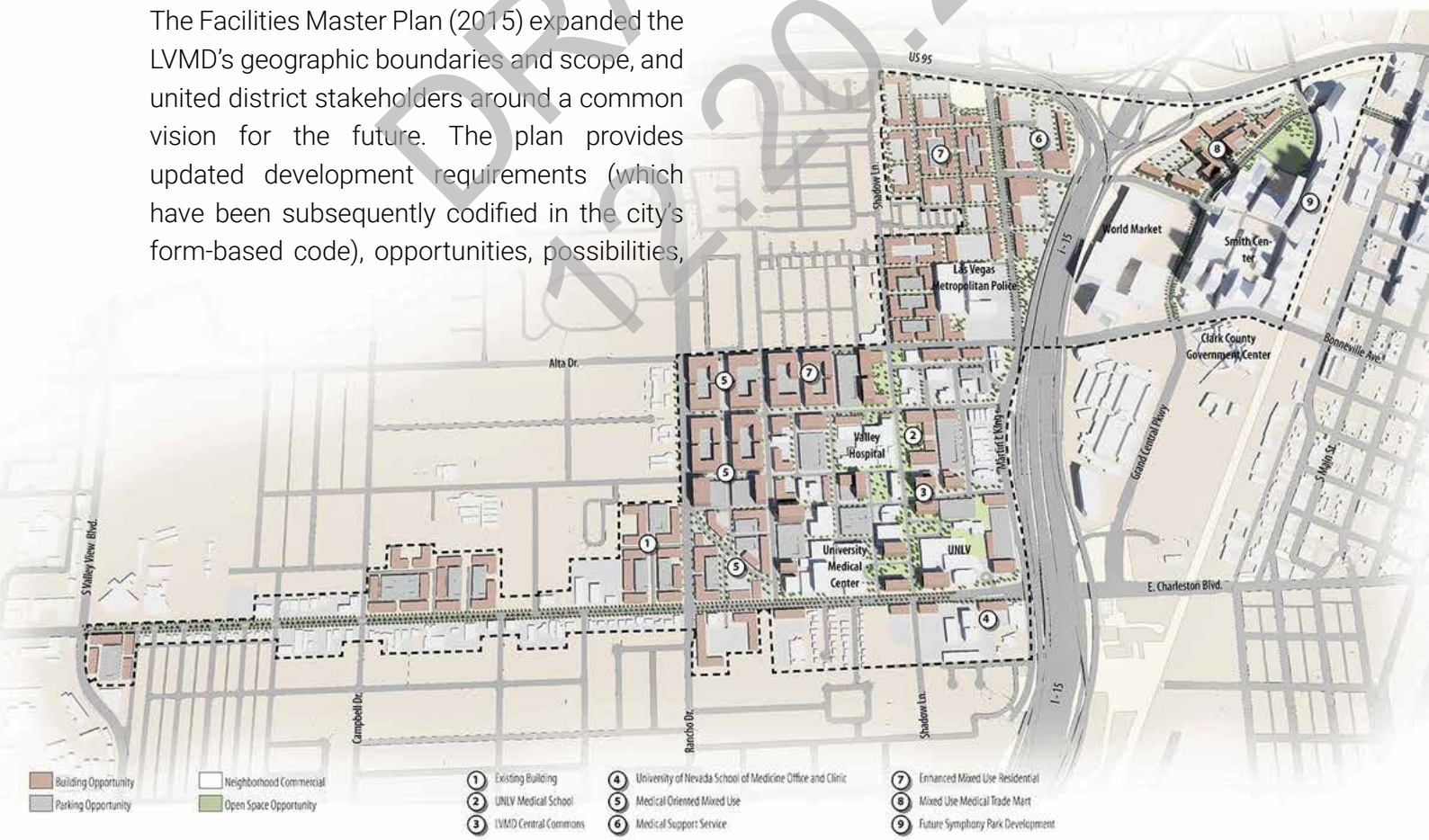
The primary purpose of the SNS Investment Strategy (2015) was to identify opportunities and barriers for achieving this vision and, thus, recommended projects, policies, and programs that could be implemented in order to better position the site for new development and investment. These strategies were formalized in the Facilities Master Plan (2015).

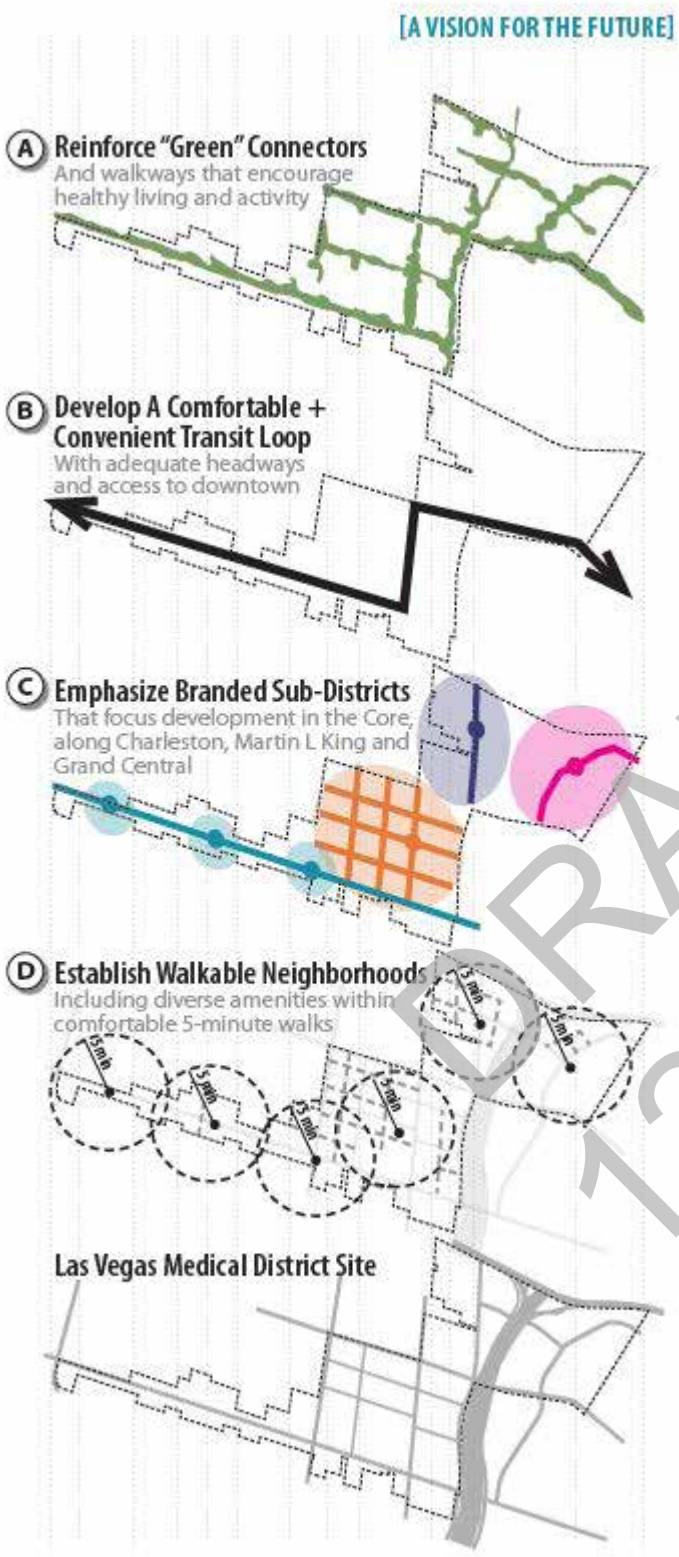
LVMD FACILITIES MASTER PLAN

The Facilities Master Plan (2015) expanded the LVMD's geographic boundaries and scope, and united district stakeholders around a common vision for the future. The plan provides updated development requirements (which have been subsequently codified in the city's form-based code), opportunities, possibilities, and new standards to make the district more economically competitive in the coming years. The vision, generally, is to establish a world-class medical district for the city and region.

The effort led to continued coordination amongst district stakeholders and the creation of several subcommittees to oversee and advocate for the implementation of the plan. Together with the City of Las Vegas, stakeholders have had much success in implementing the plan as well as strategies that were recommended in the SNS Opp Site Investment Strategy (2015). This coordination continues today.

Below: Las Vegas Medical District illustrative master plan map. (Image Source: Facilities Master Plan, 2015)





Top: Foundation themes in the Facilities Master Plan (2015) encourage an overlapping series of four primary systems in order to focus redevelopment and create incremental change opportunities.

Las Vegas Medical District Vision Statements

SNS Opportunity Site Investment Strategy

Vision: To create a world-class medical district, providing a broad range of benefits including jobs, convenient and safe access to medical care, the potential for outside investment, and innovation and industry spinoff.

LVMD Facilities Master Plan

Vision: By 2030, the Las Vegas Medical District will be the clinical care, research, wellness, education, and training center of Southern Nevada and the premier academic medical district in the southwestern United States.

Vision 2045

Vision: Downtown Las Vegas- "The LEGEND Reinvented" describes a future downtown that will become a network of interconnected, diverse neighborhoods that enjoy the highest quality of life built on the legacy and energy of local culture, green infrastructure, educational opportunity, and a robust and diversified economy. It envisions a downtown that becomes the cultural and economic hub of the region, where the environment is protected for future generations and where all people can better access the abundance of Las Vegas' unique cultural and social resources.

VISION 2045

Vision 2045 (2016) was created through extensive public engagement and provides a framework for creating a better, more inclusive downtown. The plan seeks to diversify downtown's economy though the creation of "centers of excellence," and the development of mixed-use, employment, lifestyle, and cultural and tourism hubs. Through a series of unique districts, complete with green infrastructure, multi-modal transportation options, and place-defining assets, downtown will become an economic and cultural hub for the city and region.

The plan identifies the LVMD as a potential employment and transit hub for the downtown area with a focus on civic and institutional uses in the core and mixed-use residential on the periphery. Symphony Park is envisioned as a lifestyle and transit hub and is considered a separate district in the Vision 2045 (2016) plan, although it is included within the LVMD boundaries in the Facilities Master Plan (2015).

SMART VEGAS

Vision 2045 (2016) also envisions downtown as a vibrant tech and creative community. As part of the USDOT Smart City Challenge in 2015, the city established downtown as an Innovation District in 2016. The designation enables city staff to pursue partnerships in automated vehicle (AV) technology, advanced mobility, and other advanced technology companies and to establish demonstration sites to pilot and deploy new technologies throughout DTLV. The designation also seeks to take advantage of synergies between technical, creative, medical, and media industries as these sectors grow in DTLV.

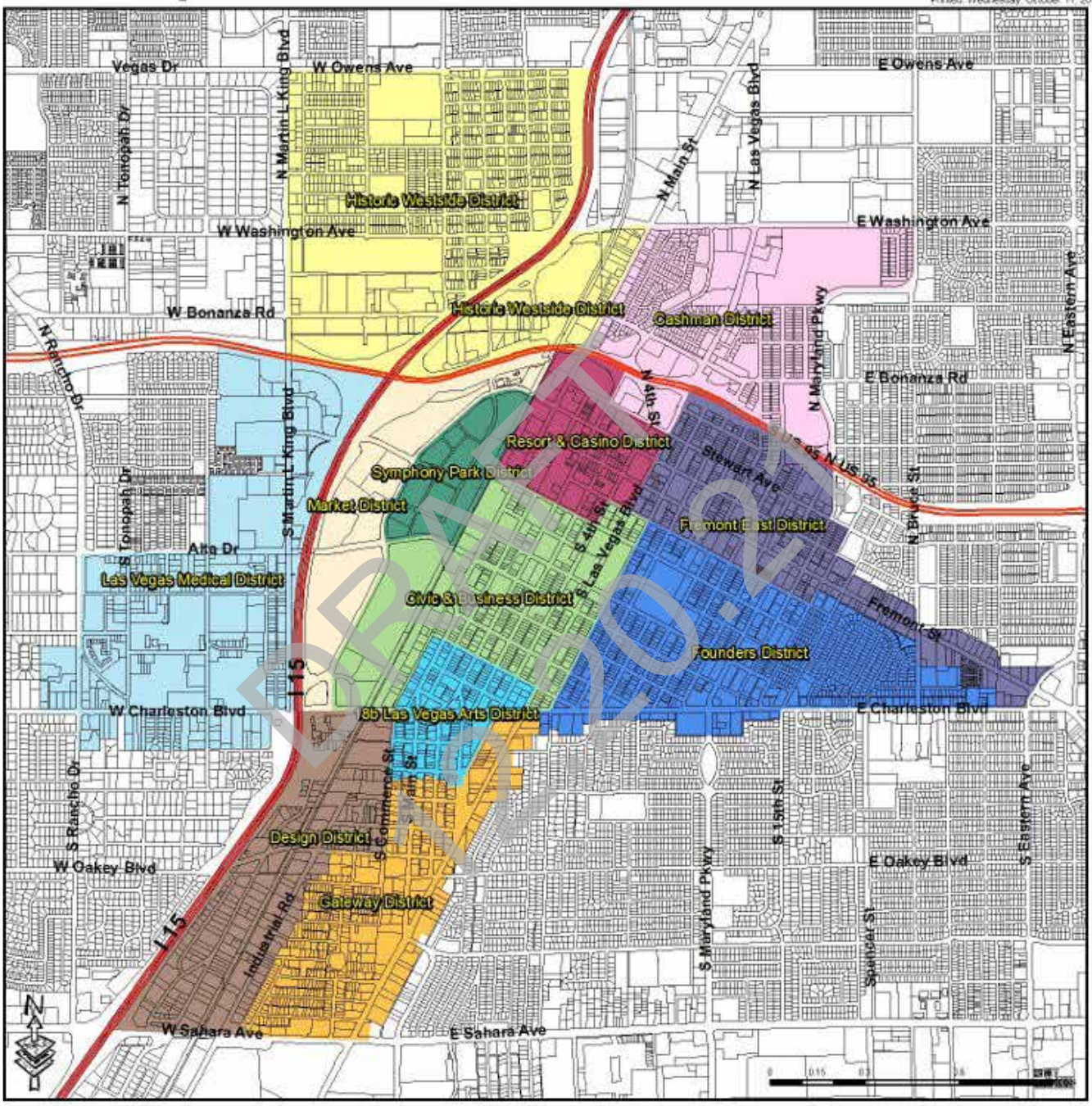
Additionally, Vision 2045 (2016) identifies an innovation corridor within the Civic and Business District to house tech headquarters, research incubators, collaborative spaces, and cultural and community amenities such as a sports park and bike trail. The plan calls for investment in high speed infrastructure, space for build-to-suit HQ campuses, creative offices, and flexible incubator space as well as new technical training facilities around key skill sets such as medical, hi-tech manufacturing, customer fulfillment, hospitality, food production, and sustainability. To facilitate this goal, recommendations include identifying and recruiting targeted companies, advertising and offering available incentives, assisting with site location and procurement, and facilitating cooperative structures with local education and research institutions, such as UNLV and the newly established Medical School.

Complementary to these efforts, the city adopted Smart Vegas (2019), a plan to create a more efficient, innovative, and cutting-edge smart city. Smart Vegas (2019) commits the city to integrating innovative technologies and new data to improve city management and services through adopting smart technologies across public services and infrastructure. These efforts align with the vision for the city's Innovation District and can work to further cultivate innovation and economic diversification in DTLV.

Opposite: Downtown master plan district map.

Downtown Masterplan

City of Las Vegas



Legend

- 18b Las Vegas Arts District
- Cashman District
- Civic & Business District
- Design District
- Founders District
- Fremont East District
- Gateway District
- Historic Westside District
- Las Vegas Medical District
- Market District
- Resort & Casino District
- Symphony Park District

GIS maps are normally produced only to meet the needs of the City. Due to continuous development activity this map is for reference only.

Geographic Information System

Planning & Development Dept.
702-229-6301

CITY OF LAS VEGAS NEVADA

WHAT'S NEXT FOR THE LVMD?

As downtown and the LVMD continue to grow and evolve, the visions, goals, and strategies of these various planning efforts are still relevant today. It is clear the city has prioritized implementation of the SNS Investment Strategy (2015), Facilities Master Plan (2015), and Vision 2045 (2016), as is evidenced by the speed at which goals and strategies are progressing. Central to this progress is the creation of UNLV's School of Medicine, the construction of the Medical Education Building, the rebranding of UNLV's Shadow Lane Campus into the "UNLV Academic Health Center Campus," and the introduction of several new mobility technologies and pilot projects in the Innovation District. With many of the initial goals and strategies of earlier planning efforts completed or underway, it is time to evaluate this progress and set new goals for the future.

LVMD FUTURE VISION

As UNLV moves to expand within the LVMD, the city has already begun to think about what it will mean for the district to have an academic medical campus on the periphery of downtown. Once the campus is complete, there will be new opportunities for research and development, commercialization, and economic cluster activity in the LVMD and DTLV.

While previous plans sought to demonstrate public commitment to the district and set the stage for redevelopment, new plans will focus on supporting the emergence of the UNLV Academic Health Center Campus and expanding the city's innovation efforts to support the expansion of research and development, education and workforce training, entrepreneurial efforts, and continued economic diversification in DTLV.

Vision: By 2030, the Las Vegas Medical District will be the clinical care, research, wellness, education, and training center of Southern Nevada and the premier academic medical district in the southwestern United States.

The vision remains the same, now with increased emphasis on becoming a "premier academic medical district." Efforts will continue to contribute to the establishment of a world-class "center of excellence," complete with medical, educational, and recreational facilities that support an urban live-work-play environment.

Opposite: Concept rendering of the new proposed Medical Education building. (Image source: Nevada Health and Biosciences Asset Corp.)

UNLV Shadow Lane Campus

With the UNLV School of Medicine up and running, and the Medical Education Building being developed by the Nevada Health & Bioscience Corp. (NHBC), UNLV is preparing to more fully establish their Shadow Lane campus as the UNLV Academic Health Center Campus. As a part of this process, UNLV is also planning to engage in a master planning update process for their Shadow Lane and associated facilities in the LVMD area.

Before jumping into the master planning process, the UNLV Health Medical and Health Sciences team is conducting an academic health organizational study to gain more insight into how other academic health centers are organized and what physical and programmatic components are needed. Once this study is completed, UNLV intends to update its master plan that looks to knit the urban fabric of the district and campus together in the Shadow Lane corridor and the LVMD area.

The long-term vision for this area is to transition a significant portion of UNLV Medical and Health Sciences programs into the Academic Health Center Campus. Once the new Medical Education Building is open, UNLV will look to use any vacated existing space for other UNLV Medical, Health Sciences and other needs. There is no specific timeline for moving all of UNLV's health sciences into the UNLV Academic Health Center Campus. The master plan will focus on program needs and logistics and will determine logical steps for Academic Health Center Campus development. As funding and conditions allow, UNLV will proceed to develop their new Academic Health Center Campus in the LVMD.

LVMD

OPPORTUNITY SITE GOALS

Primary Actions:

1. Secure commitments for facility expansion; coordinate investments, partnerships, and phasing
2. Demonstrate public commitment to district through investment
3. Determine an approach to district parking and parking management
4. Implement placemaking strategies and create a district identity

Secondary Actions:

A. Create safe, multimodal transportation connections
B. Set the stage for successful supportive uses
C. Improve the Charleston corridor
D. Provide for ongoing evaluation of the need for additional land

Photo credit: Bizuayehu Tesfaye, Las Vegas Review Journal.

3 | PROGRESS

The SNS Investment Strategy (2015) evaluated the potential for the LVMD to become a thriving live-work-play urban center. The resulting plan identified four primary actions and four secondary actions for realizing this vision (see opposite page).

Each of these actions is accompanied by several strategies for achieving these goals.

This section assesses the progress made on these strategies. **Approximately 88% of the implementation strategies are complete or on track,** confirming that the city is well on its way to achieving its goal of establishing a world-class medical district. . Yet, challenges do remain for realizing this goal. The following pages provide details on progress of these strategies, highlighting accomplishments and milestones as well as persistent challenges and barriers that will need to be addressed as redevelopment efforts continue in the LVMD

Each strategy was assessed using the following scale:

- **Complete:** Strategies considered to be done with the exception of ongoing maintenance and evaluation.
- **Current Priority:** Strategies are on track with some progress made. The strategy remains current and relevant although some modifications may be needed.
- **Pause & Resume:** Strategies are not feasible or unknown at this time. Little to no progress has been made. The strategy may be revisited in the future, but the timeline for revisiting the strategy is not clear and it is not a current priority.
- **Honor & Let Go:** Strategies found to be not feasible. Existing conditions have likely made these strategies too difficult to implement or they are outdated at this time.

ACCOMPLISHMENTS/ MILESTONES

It is clear the City of Las Vegas has prioritized implementation of the vision and goals for the LVMD. Significant implementation progress has been made, as demonstrated by the majority of implementation strategies (87.5%) being either complete or on track. Specifically, the City has shown its commitment for realizing the vision for the LVMD by updating their land use and zoning policies, developing targeted incentives for encouraging economic development in the district, and investing heavily in upgrading the district's infrastructure, working to transform the district into a pedestrian friendly, multimodal environment. Additionally, the LVMD is starting to gain recognition throughout the region as an asset and destination due to the City's investment into building a brand and identity for the LVMD. Several milestone projects are either completed or underway, setting the stage for redevelopment to proliferate in the near future.

Major milestones (highlighted in bold) and accomplishment include:

- **2015: The LVMD Advisory Council completed and adopted the LVMD Facilities Master Plan to guide planning and investment in the LVMD,** and created the Planning Subcommittee and Marketing Subcommittee to coordinate planning and development, and branding and marketing, respectively, in the district.
- **2016: The LVMD Advisory Council and Marketing Subcommittee adopted a brand for the district** and subsequently launched a website to help market the district to residents and visitors in the region. Gateway signage showcasing the brand has also been installed in various locations in the district.
- **2016:** The City's Economic Development department developed a targeted industry program for the LVMD which provides incentives for property rehabilitation, renovation, and expansion for targeted industries who relocate or expand in the LVMD.
- **2017: UNLV opened the Kirk Kerkorian School of Medicine,** located in a temporary facility within its Shadow Lane campus with a class of 60 students. This class graduated in 2020, the first of many graduating classes to come.
- **2018:** The RTC, in partnership with the City, was awarded $5.3 million in federal grant funding for GoMed, a project to deploy new technologies to provide safer and more efficient short-trip transit services and improved pedestrian safety within the LVMD.
- **2018: The City piloted Form-based code (FBC) in the LVMD,** updating its land use and zoning policies in the district's core to better align their development standards to achieve the desired compact, mixed-use, and urban development form that is desired for the district. FBC has since been adopted for the entire LVMD and in various areas downtown.
- **2019: Project Neon is completed,** including improvements to the I-15 underpass and Complete Streets improvements on Martin Luther King Blvd. and Wellness Way.
- **2019:** The City's Capital Improvement Plans have **prioritized infrastructure and Complete Streets improvements** on all major streets in the LVMD. Improvements are complete on Martin Luther King Blvd. and Wellness Way, and design has been completed for improvements to Shadow Ln., Pinto Ln., Rancho Dr., and Charleston Blvd., with construction happening over the next several years.
- **2019: Valley Hospital began renovations**

on its Emergency Department, which were completed in the summer of 2021. The project was made possible with New Market Tax Credit (NMTC) funding and further solidifies Valley's commitment to a long-term presence in the LVMD. This was also the first development project to be approved under the new FBC.

- **2020:** UNLV and Nevada System of Higher Education (NSHE) partnered with the non-profit Nevada Health and Bioscience Corp. (NHBC) to develop UNLV's School of Medicine's first permanent building in the LVMD. **NHBC recently broke ground on a 135,000 SQFT, five-story Medical Education Building** at the southeast corner of Pinto Ln. and Shadow Ln. The ground breaking solidifies UNLV School of Medicine's long-term presence in the LVMD and the new building will see classes expand to 120 students (current capacity is 60) once the building is operational.
- **2021:** The City has entered into an Exclusive Negotiation Agreement for City-owned parcels at the southeast corner of Shadow Lane and Wellness Way, which will see a mixed-use parking garage built in the LVMD. The agreement is currently awaiting approval by the NSHE board next year.
- **2021**: The City entered into an Exclusive Negotiation Agreement with Axios Nevada, who will have two years to determine if high-capacity transit can be implemented on Charleston Blvd. without the use of public tax dollars.
- **2021**: Symphony Park has seen the completion of **several new mixed-use developments**, including a new mixed-use parking garage, housing, and retail. These developments include the Auric Symphony Park mixed-use, luxury apartment complex and the Parc Haven luxury apartment complex.
- **Future:** UMC is getting ready to complete façade renovations using redevelopment funding, committing to a long-term presence in the LVMD. Many other negotiations are also in the works to expand medical services and biomedical research in around the district. These negotiations are still in preliminary stages.

Top: Branded street banners line Charleston Blvd., contributing to the district's character and sense of place.

Bottom: The North Parking Garage and Retail for Rockhurst University is a mixed-use structure with ground floor retail/office and parking above. (Image source: bnim.com)

CHALLENGES/BARRIERS

These successes and accomplishments have created much energy and momentum for new development and growth in the LVMD. Previous planning efforts laid a strong foundation for redevelopment and new construction is now beginning to emerge, catalyzed by the recent groundbreaking of the UNLV Medical Education Building. As UNLV continues to expand and the Academic Health Center Campus emerges, more shovel-ready projects will materialize. Thus, it is important to acknowledge some challenges and barriers that will need to be addressed while working to fully realize the vision of the LVMD.

While there is much redevelopment energy currently within the LVMD, most of the redevelopment momentum has been in the way of public investment. Private investment in the LVMD is, for the most part, not yet visible. Outside of the Medical Education Building, new development in the district is still primarily in negotiation and exploration phases. For those without intimate knowledge of redevelopment efforts in the LVMD, it may appear as though there is little private interest.

The district's core has also not yet seen significant growth of its healthcare industry. The area lacks the necessary research and laboratory space to help facilitate expansion of its medical cluster and export-based industries.

Development of supportive services such as housing, retail, parks, and open space has largely occurred in the Symphony Park area, outside the district's core. Within the core, there is limited round-the-clock activity and the area lacks parks and public open space as well. Connectivity between Symphony Park and the district's core is limited as the I-15 creates a significant barrier, especially for non-vehicular transportation such as walking and biking. Additionally, new housing development in Symphony Park is primarily high-end units, which may not be affordable to lower-wage medical workers and students.

New parking options have also been constructed in Symphony Park but parking within the district's core is scarce. Efforts to manage shared parking amenities within the core have not been supported by a majority of land and business owners and connections to these new amenities in Symphony Park are limited. There is, however, a tentative development agreement in place for a mixed-use parking garage to be constructed within the LVMD core near the future site of the UNLV Medical School, pending approval by the NSHE board next year. Additionally, GoMed will add circulator services that connect these different areas of the district, potentially reducing the demand for more parking within the district's core.

The COVID 19 public health and economic crisis also caused a global slowdown and many things, from work-life balance to the need for more office and retail space, are being re-evaluated as things begin to open back up. Many of the district's healthcare stakeholders were on the frontlines of the pandemic and some of the previous collaborative activities necessarily slowed or paused. Working through these challenges, stakeholders are now assessing how and when future collaboration should occur. It will likely differ from the collaborative efforts of the past.

Key challenges and barriers include:

- Healthcare services have expanded region wide in recent years but there has been **very little new healthcare development**

within the LVMD. One of the primary goals of these past planning efforts is to attract a concentration of healthcare services and industries to the district's core in order to support a cluster economy here. Little expansion or relocation of primary and secondary medical services have occurred inside the LVMD and the City's targeted industries program has not seen new services move into the LVMD as anticipated. The City will likely be hiring outside advisory services to help revamp these strategies, with the goal of bringing more medical cluster growth to the district in the future.

- On the ground results of the City's new FBC have been slow to materialize. Adopting the FBC in the LVMD was the first time this type of code was used in the Las Vegas Valley. **Only a few new construction permits have been issued** in the LVMD's core since adopting the FBC in 2018. **Parcel sizes and land values within the district may also slow redevelopment efforts** as parcel assembly requires time and patience and land prices are high.
- Despite efforts across the region to incentivize mixed-use, high-density, and transit-oriented development (TOD) types, **new development types have been slow to materialize region-wide**, outside of a few standalone examples. The FBC encourages compact, dense, mixed-use, and pedestrian-friendly development, which will be difficult to achieve without infill, greyfield development, and adaptive reuse of existing buildings. While the local development community lacks this experience, many national developers and builders have successfully implemented new building types in other communities, providing solutions that can work here in the region as well.
- High-capacity transit (HCT) (i.e. light rail and bus rapid transit) can often be a catalyst for redevelopment but the region has been **hesitant to publically invest in HCT,** beyond a few express bus routes in the region. Existing land uses and housing densities may not support HCT investment, but developers are also hesitant to invest in TOD without significant new investments in transit. It's a chicken and egg problem. However, other communities have seen successful transformations of auto-oriented streetscapes into transit-oriented environments through creative public-private partnerships and the ingenuity of the private sector. The city is currently working with Axios Nevada to determine if HCT can be implemented in the Charleston corridor without the use of public dollars.
- RTC expanded its downtown Bike Share program into the LVMD in 2019, but removed it shortly afterwards due to low ridership. As a result, there remains limited options for multimodal connections between Symphony Park and the district's core. There is also limited multimodal connectivity between the LVMD and surrounding neighborhoods.
- Due to public health concerns and the economic crisis brought on by the COVID 19 pandemic, and changes to the work environment such as telework and the redirection of funding resources, advisory and staff committees for the LVMD were restructured. This proved to be necessary to streamline decision making and reduce capacity burdens among stakeholders. As these advisory structures adapt and change, it will be important to evaluate their ability to operate long-term. A future, **independent governance structure may be necessary** to ensure collaboration and coordination are sustained in the LVMD.

SECURE COMMITMENTS IN THE LVMD

Around the same time as the SNS Investment Strategy (2015) was being finished, the LVMD Advisory Council developed a LVMD Facilities Master Plan (2015). Both were adopted by the City to guide planning and investment in the district (see discussion on p.16), providing certainty around the vision and goals for the district as well as clarity around desired public investment and outcomes in the district.

Since the adoption of these plans, the Advisory Council, as well as ancillary subcommittees, have continued to play an important role, providing leadership, advocacy, and support for progressing development and investment in the LVMD. Up until the onset of the COVID 19 pandemic in early 2020, these groups met regularly to discuss planning and development needs in the district. While the Advisory Council provided oversight and leadership for the district, the Marketing Subcommittee and Planning Subcommittee also played important roles in advancing goals and strategies within the LVMD, creating and marketing a brand for the district, and coordinating the timing of infrastructure and development activities, respectively. While there was some discussion with these stakeholders about adopting a formal governance structure, such as developing a Business Improvement District (BID), no formal governance structure was ever adopted.

These bodies have been extremely successful in advancing the implementation strategies and providing leadership for the district, but their large and diverse membership has also brought about some challenges. With no formal governance in place, the diverse range of stakeholder interests make it difficult to validate consensus for decision making in for the district. A future, independent governance structure may be necessary to ensure leadership, collaboration, and coordination are sustained in the LVMD.

Stakeholders do find value in sharing information and communicating regularly with one another. This was made clear in many of the stakeholder discussions that took place during the development of this report. Regular meetings have been helpful for anticipating "what's next" in the district, and for positioning each organization to take advantage of planned growth in the district, while supporting one other when making individual, organization-based decisions.

There is some concern, however, that due to the varied interests of committee members, that it may not be the best environment for stakeholders to completely divulge all of their strategic plans. Due to the nature of real estate and development industries, it is oftentimes necessary to keep business interests private from competitors in the industry, especially early on in the process.

Additionally, due to public health concerns and the economic crisis brought on by COVID 19, the Marketing and Planning Subcommittees were paused, as City staff and stakeholders necessarily refocused their time and resources elsewhere. During this pause, City staff is reevaluating how to provide for a better decision-making and strategic planning structure, while allowing for information sharing to continue. It's not yet clear how this

	PRIMARY ACTION 1: SECURE COMMITMENTS FOR FACILITY EXPANSION; COORDINATE INVESTMENTS, PARTNERSHIPS, AND PHASING	COMPLETE	CURRENT PRIORITY	PAUSE & RESUME	HONOR & LET GO
1.1	Leverage the leadership of the Advisory Council to champion for the cause of a revitalized Medical District; adopting the Facilities Master Plan as policy would add weight to the plan.	●			
1.2	Clarify the role of the Advisory Group so that they can continue to play an important leadership role in the revitalization of the LVMD; consider the possibility of moving to a more formal governance structure for coordination, decision-making, and funding of shared priorities.	●			
1.3	CLV to play an important role in increasing certainty (decreasing risk) for potential developers; clarify intent with publically owned land such as Symphony Park; increase clarity in desired public outcomes.		●		
1.4	Coordinate phasing and implementation plans with development; seek agreements with private sector on phasing strategy, desired public investment, and desired public outcomes.		●		

Table 3.1

new structure will be set up, but it's expected that the Advisory Council, and Marketing and Planning Subcommittees will undergo some changes before resuming in the future.

In addition to nurturing these committees, the City has worked hard to increase transparency around planned improvements, investments, and intentions for publicly-owned resources and land in the LVMD. The City developed an infrastructure construction phasing plan to communicate the timeline of planned infrastructure and street improvements, and updates the plan regularly to keep track of changes as they occur. The plan, as well as other planning documents for the district, are published on the LVMD's website.

The City also publishes development opportunities for Symphony Park, including a map of available land parcels, on its website in the Economic Development section.

UMC, Children's Hospital of Nevada. (Image source: David Magazine)

DEMONSTRATE PUBLIC COMMITMENT TO THE LVMD

The LVMD Facilities Master Plan was finalized and adopted in 2015, documenting the City's commitment to bringing new development, industry, and investment to the LVMD. The plan includes research into other peer medical districts throughout the U.S. and, through this research, it became clear one common element shared by successful medical districts is the existence of at least one full four-year medical school. Thus, the accomplishment of opening UNLV's School of Medicine in 2017 and, subsequently, breaking ground on a new 135,000 square foot medical education building in 2020 is a major milestone for the district. It is anticipated the completion of the medical school, which is slated to open in summer 2022, will catalyze new development and bring new services to the district.

The LVMD Facilities Master Plan (2015) also includes a high-level evaluation of capacity constraints for the district, including possible constraints for vehicular traffic, public transportation, domestic water, flood plain, stormwater, sewer, electric infrastructure, natural gas, and fiber infrastructure. The largest capacity constraints were found for vehicular traffic and public transit access. Electric, gas, and fiber infrastructure were also flagged for upgrades in order for significant development to occur. Other utilities and infrastructure were generally found to be adequate.

Subsequently, the City has invested heavily in upgrading infrastructure within the district. Infrastructure improvements are complete on Martin Luther King Blvd. and Wellness Way,

Lou Ruvo Centre for Brain Health. (Image source: City of Las Vegas)

and additional improvements are planned for Shadow Ln., Pinto Ln., Charleston Blvd., and Rancho Dr. While COVID 19 has delayed the start of some of these improvements, all have been designed and programmed into the City's CIPs and are scheduled to begin between early 2021 and late 2024. The scope of these improvements is similar for all streets, including upgraded utility infrastructure, fiber, and Wi-Fi access in the district. On Rancho Dr., these improvements will also include the undergrounding of existing utilities, contributing to a more desirable streetscape for residents and users of the LVMD. (See p. 34 for a more robust discussion on these infrastructure improvements.)

Symphony Park has its own master plan, which defines the vision for the area and its connection to the medical core of the district. The area is envisioned as four unique areas, one of which is the Medical Office District, anchored by Cleveland Clinic. Cleveland Clinic may not expand its physical location in the near future, but the City remains committed to seeing this area developed with additional medical services. Available land in this area

	PRIMARY ACTION 2: DEMONSTRATE PUBLIC COMMITMENT TO THE DISTRICT THROUGH INVESTMENT	COMPLETE	CURRENT PRIORITY	PAUSE & RESUME	HONOR & LET GO
2.1	Finalize and adopt the Facilities Master Plan and Centennial Plan, include specific funding strategies for infrastructure and parking facilities; identify public funds that are available to support key public projects and the timeline they will be developed on.	●			
2.2	Develop a toolkit of incentives to address a range of development and attract new residents and employees to the area; consider expansion of the RDA to include the entirety of the LVMD.		●		
2.3	Identify roles for other regional partners and secure commitments of policy and financial support.		●		
2.4	Evaluate existing utilities and plan for future infrastructure to ensure adequate capacity for desired revitalization.		●		
2.5	Determine and commit to uses on Symphony Park site; determine if Cleveland Clinic will move forward with expansion.	●			
2.6	Work with UNLV to secure a medical school and develop a legislative agenda to advocate for state funding for LVMD's future; target conversations so that the medical school is located on OS 4.	●			

Table 3.2

will be reserved until a compatible developer and/or tenant is found.

The city's economic and urban development department also developed the Targeted-Industry Program as a way to incentivize additional medical and supportive uses to locate in the LVMD. The program provides financial support for property and business owners for property rehabilitation, renovation, or expansion, including relocation into the district. Unfortunately, this program hasn't been utilized as anticipated, so it will likely be revisited in the near future to better incentivize the expansion of healthcare services and supportive research facilities into the district.

Additionally, the City is in the process of updating citywide policies that will better support infill and redevelopment through high-density and mixed-use development in the future. The City recently adopted the 2050 Master Plan (June 2021), prioritizing more efficient and sustainable land use, open space, and improved transportation and infrastructure. As part of this effort, the City is introducing new zoning place types in its development code (Title 19), which will support these land use goals.

PARKING AND PARKING MANAGEMENT

Following the adoption of the SNS Investment Strategy (2015) and the LVMD Facilities Master Plan (2015), the City dedicated staff to study and determine an approach to parking and parking management in the district. Looking to other medical districts for inspiration, the City came up with a plan for shared parking facilities and management in the district. The plan looked to create a central parking association to manage and maintain shared, fee-to-park facilities for the district. The proposed association would be managed and staffed by the City. Under this plan, the City would work with institutions in the district that already owned large surface parking lots to implement paid parking mechanisms as well as look to add additional transportation options, such as shuttles, to the district to help reduce demand for parking.

Unfortunately, the plan did not yield actionable results from partners and stakeholders in the district. Additional parking strategies were also pursued by the City, including evaluating World Market Center as a site for overflow parking and partnering with Club Ride, RTC's transportation demand management partner, but neither solution was found to be feasible at the time. Ultimately, the City pursued a public-private partnership to develop a parking garage in the district instead.

Near the end of 2020, the City entered into an Exclusive Negotiation Agreement (ENA) with G2 Capital Devco, LLC. (G2) for three City-owned parcels at the southeast corner of Shadow Lane and Wellness Way, near the future site of UNLV's Medical School. The ENA is to develop, at minimum, a mixed-use building that includes 50,000 square feet of office space, 5,000 square feet of ground-level retail, and a minimum of 600 parking stalls with a limited, still to-be-determined, number for public use. A development agreement has since been reached between the city and G2 and is awaiting approval by NSHE early next year.

G2 has a successful history of mixed-use development in the valley, including a recent project developing mixed-use, student housing on UNLV-owned land near the Maryland Parkway campus.

The RTC, in partnership with the City, was also awarded a federal grant to develop an autonomous transit vehicle circulator and connected pedestrian safety project, branded as GoMed, for the LVMD. The circulator is planned to operate on a 3.3 mile route, providing transit service at 8 minute frequencies between the Bonneville Transit Center (BTC) and the LVMD. Additional transit shelter and pedestrian safety improvements are also planned as part of GoMed (see discussion on p. 36).

Two new mixed-use parking garages have also been developed in Symphony Park, increasing parking options inside of the district, although outside of walking distance for users whose trips end in the district's medical core. The GoMed circulator, once operational, can provide transport between parking in Symphony Park and services located in the core.

Additional transit options are also likely on

	PRIMARY ACTION 3: DETERMINE AN APPROACH TO DISTRICT PARKING AND PARKING MANAGEMENT	COMPLETE	CURRENT PRIORITY	PAUSE & RESUME	HONOR & LET GO
3.1	Consider the formation of a transportation management association (TMA).	●			
3.2	Inventory existing parking and explore minimums and maximums.			●	
3.3	Evaluate the City's role on parking provisions (3 possible approaches: Continue current approach, "right-size" the system, City and TMA partnership).	●			
3.4	Collect data on current parking utilization to understand peak usage times, employee commute patterns, and parking inventory in the LVMD; clarify current parking needs for the LVMD.		●		
3.5	Identify future parking demand and possible locations for shared parking facilities; estimate future parking needs and create a parking plan with shared parking partnerships and a location for a future shared parking garage.		●		
3.6	Explore funding options for the construction of a shared use parking facility.				
3.7	Explore circulator within district and partnering campuses.				

Table 3.3

the horizon, connecting residents to the LVMD from other areas in the region as well. The City recently completed the Maryland Parkway Transit-Oriented Development Plan (2021), which provides recommendations for spurring TOD around planned BRT stations along Maryland Parkway. This route, when implemented, will connect the LVMD to downtown Las Vegas and UNLV's Maryland Parkway campus. Additionally, the City is exploring a development agreement with Axios Nevada to determine if HCT can be implemented in the Charleston corridor without the use of public dollars. Over the next two years, Axios will develop a master plan to determine the feasibility of HCT and TOD in the Charleston corridor.

Furthermore, OnBoard (2020), the region's mobility plan, identifies the implementation of HCT on Maryland Parkway and Charleston Blvd. as Phase I projects, meaning they are projected to be completed in the next 10 years. OnBoard also identifies rapid transit on Rancho Dr. as a Phase I project, which would further increase the efficiency of transit service in the district. Together, these transit projects are expected to improve transit in the district and throughout the Valley, and should decrease parking demand in the district.

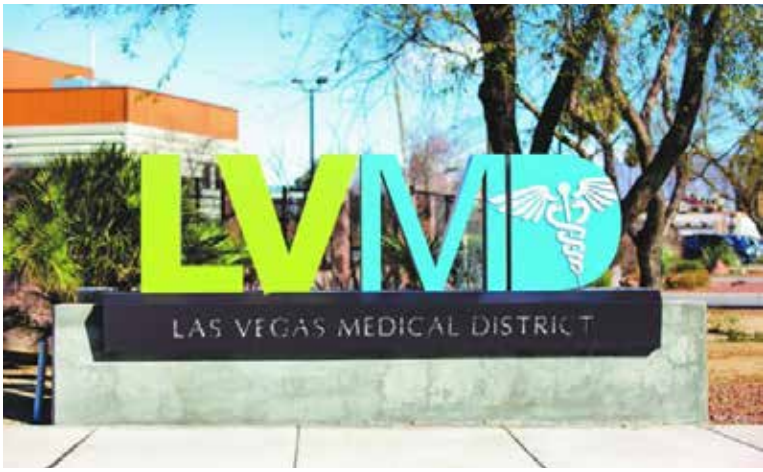
PLACEMAKING AND DISTRICT IDENTITY

Vision 2045 (2016) envisions DTLV as a network of interconnected districts, complete with open space, trails, and green infrastructure, so that residents can comfortably participate in active transportation and multimodal activities. In order to realize this vision, the City adopted new zoning and development regulations, known as form-based code (FBC). The FBC was first adopted in the LVMD.

The FBC includes open space requirements for all major developments, with the intention of building a network of open spaces that provide for a range of uses and characteristics. It also establishes a range of pre-approved open space types, which are required to be developed alongside property development in varying degrees, depending on the zone and size of the project.

In the LVMD, open space for public gathering is required for all new medical and office developments of 10,000 square feet or greater. The space must be publically accessible during normal hours of operation and easily observed from the street or from pedestrian circulator areas. Landscape variances are not available in the LVMD, ensuring that high-quality open space is included in future development.

Additionally, the FBC establishes district-specific standards for street trees to promote tree palettes that contribute not only to thermal comfort in DTLV, but to the unique brand and identity of each downtown district. Thoroughfare standards also provide streetscape guidelines that contribute to walkable environments and support district character and placemaking.



District gateway signage at Wellness Way and Martin Luther King Blvd. (Image source: City of Las Vegas)

Additional placemaking was done as part of Project Neon too. Gateway signage welcomes users on Martin Luther King Blvd. and Wellness Way to the LVMD and street improvements include the creation of Beardon Park, a linear park with seating and play equipment adjacent to the roadway. Wall sculptures and color-changing lighting helps connect the LVMD across the I-15 underpass and artistic sculptures at Grand Central Parkway and Charleston Blvd. provide for aesthetic interest as medical district users transition between Symphony Park and the district's core. District branding will also be displayed on new transit shelters as part of the GoMed grant.

Future street improvements include the widening of sidewalks, adding trees, improving lighting and pedestrian infrastructure, and upgrading technology at intersection signals and pedestrian crossings. Currently, improvements are planned for Shadow Lane, Pinto Lane, Charleston Blvd., and Rancho Dr. Phased work is currently planned through 2025, which includes the introduction of BRT

	PRIMARY ACTION 4: IMPLEMENT PLACEMAKING STRATEGIES AND CREATE A DISTRICT IDENTITY	COMPLETE	CURRENT PRIORITY	PAUSE & RESUME	HONOR & LET GO
4.1	CLV to explore a more aggressive open space requirement for the LVMD; seek to follow strategies and recommendations from peer CLV Xeriscape Program and CLV Office of Sustainability; Create streetscape guidelines that contribute to district identity and branding.	●			
4.2	Focus on streetscape improvements along Shadow Ln. on two street sections: (1) Alta Dr. between Rose St. and Shadow Ln. and (2) Shadow Ln. between Alta Dr. and Pinto Ln.; focus on increasing sense of security through designated crosswalks and bold roadway markings for all modes of transit; include accessibility upgrades.		●		
4.3	Create district identity and branding and utilize marketing, and recruitment strategies for seeking new investment in the LVMD; integrate brand during implementation of placemaking; incorporate brand into signage/wayfinding, public art, gateways, open space, and streetscape design.		●		

Table 3.4

on Maryland Parkway, connecting students from UNLV's main campus to the Medical School and other UNLV facilities in the LVMD.

Improvements on Charleston Blvd. also include: Widening the road, adding a landscaped median, and adding signals and crossing at the intersections of Tonopah Dr. and Westwood Dr. to increase pedestrian safety and connectivity with the neighborhoods south of the district. Improvements on Rancho Dr. also encompass a larger scope, including the undergrounding of utilities.

Other improvements that have been completed in the district include the installation of smart street light sensors and updated lighting, as well as upgrading the fiber infrastructure to improve connectability and Wi-Fi access in the district.

Las Vegas Form-based Code diagram representing different transect areas.

SAFE, MULTIMODAL TRANSPORTATION

The City has invested significantly in creating a safe, multimodal environment in the LVMD and continues to work to ensure this vision becomes a reality.

In addition to the pedestrian improvements that are being implemented as part of the City's Capital Improvement Plans for the district (see discussion p. 34), GoMed will also bring pedestrian improvements to the district. The circulator project will upgrade many transit stops in the district. These upgrades will include new shelters that are equipped with smart technologies that increase comfort levels and safety of transit users. Additionally, transit shelters will be retrofitted to include displays with real-time transit information and stops on the GoMed circulator route will be upgraded with dynamic wayfinding kiosks as well.

The GoMed project is also installing new pedestrian detection technology throughout the district to increase pedestrian safety and awareness among drivers. Pedestrian detection sensors will be located at 20 key signalized intersections and uncontrolled crosswalks within the district, automatically detecting the presence of pedestrians in the roadway. The technology is expected to improve clearance time for pedestrians to cross at signalized intersections or activate flashing beacons to signal that pedestrians are in the roadway and uncontrolled crossings. Additionally, 300 connected vehicle on-board units will be installed in vehicles of drivers that frequently travel through the LVMD. These will interface with connected vehicle roadside units and update drivers with pedestrian safety and speed limit alerts. The transit AVs will also have connected vehicle on-board units installed and will be receiving safety alerts as well.

Options for reducing vehicle use in the district are being explored but are limited. Club Ride has explored transit demand partnerships in the district, but facilities for shared parking are not available and many employers have said they do not have the resources to retrofit their facilities with amenities that would encourage active transportation options for commuters. Additionally, Bike Share was expanded into the LVMD in 2018, but was subsequently removed due to low ridership.

Several recent planning studies seek to identify areas and strategies for increasing open space in downtown and in the LVMD. The Downtown Civic Space and Trails (2019) proposes to create better connections within and to the LVMD through an expanded trail network and the LVMD Facilities Master Plan (2015) proposes several options for incorporating and organizing open space in the district. UNLV's growth into a new Academic Health Center Campus will also introduce new open space to the district and the FBC requires open space be included with all new development in the district (see discussion p. 34).

Recent studies and projects also seek to create improved connections between the LVMD, downtown, and other surrounding neighborhoods. Project Neon completed underpass improvements that create a more consistent identity across the I-15 and

	Secondary Action A: Create safe, multimodal transportations connections	Complete	Current Priority	Pause & Resume	Honor & Let Go
A.1	Create partnerships and policies to encourage employees to utilize alternative transportation methods over single-occupant vehicle commutes; encourage employers to provide employee showers, lockers, and changing facilities.				●
A.2	Improve pedestrian infrastructure and facilities by upgrading sidewalks and adding trees; Improve bicycle infrastructure and facilities by creating end of trip facilities, designate Shadow Lane as a shared road with sharrows and traffic calming measures; Improve transportation infrastructure and facilities, transit stops should include shelter, benches, and timetable information.		●		
A.3	Confirm and clarify locations for open space/plazas throughout LVMD and implement path improvements.		●		
A.4	Create a consistent identity across I-15.		●		
A.5	Ensure appropriate transitions to surrounding neighborhoods.		●		

Table 3.5

the Master Mobility Plan (2016) identifies opportunities to connect Symphony Park to downtown via pedestrian bridges and improved transit and roadways. Sidewalk infill is also prioritized in the City's Master Mobility Plan (2016). Similarly, the Regional Bike and Pedestrian Plan (2017) reveals the LVMD as a low equity area in need of active transportation investments and identifies several opportunities for shared use paths and enhanced bicycle facilities east of the I-15 in Symphony Park and in the medical district core. Additional transit projects and street improvements (see discussions on p. 34 and 40) will also create more connections between the LVMD, downtown, Maryland Parkway, UNLV, and surrounding neighborhoods.

The downtown loop is a free shuttle transporting residents and vistors to major attractions in DTLV. GoMed seeks to build on this success, bring similiar services to the LVMD. (Image source: City of Las Vegas)

CREATE SUPPORTIVE USES

New development has been slow to materialize in the core of the medical district. Despite implementing FBC, a progressive planning strategy for encouraging denser urban development, only a few projects have been approved, since it was adopted in 2018. Despite efforts across the valley to incentivize mixed-use, high-density, and transit-oriented development types, development types have been slow to change region-wide. Many studies, including the Regional Policy Plan (2015), attribute this to the fact that the region lacks local experience in financing and constructing these types of projects. Additionally, the FBC is new to the region, and it may take some time before developers are comfortable moving projects through this new system.

Additionally, it's surmised by city staff and local stakeholders that lack of development in the district may be a result of many parcels being too difficult to develop within a reasonable budget. Small parcels in the district are difficult to develop, even with the new density allocations in the FBC, likely due to high land prices which makes parcel assemblage, infill, and redevelopment difficult.

However, the City has managed to acquire some strategic parcels throughout the district and is actively seeking opportunities to partner with developers to provide supportive uses in strategic locations. The arrival of the UNLV Medical Education Building will also bring some additional retail options to the district and it's anticipated the building, once open, will catalyze new development in the district as well. The City's 2050 Master Plan also identifies infill as a priority strategy for managing future growth and the City is actively working to better support and incentivize infill development citywide.

The Maryland Parkway TOD study also looked at how to better incentivize new development around select BRT stations on the future route. One of the stations studied is located in the LVMD at Shadow Lane and Alta Dr. The City's 2050 Master Plan also identifies infill as a priority strategy for managing future growth and the City is actively working to better support and incentivize infill development citywide build on existing economic, physical, and social assets to create denser, TOD around BRT stations. Strategies from the study provide new ideas for bringing supportive uses such as housing and retail into the medical district core.

Meanwhile, new development is flourishing in Symphony Park. More than 600 future residential units have recently been constructed, complete with ground floor retail opportunities. These developments are now open and leasing space. The demand for retail space has declined due to COVID 19 and the resulting economic crisis and it's not yet clear how the global pandemic will affect retail or other commercial outlets long-term. It may take longer than anticipated to fill available spaces with tenants.

New convention space was also recently completed at World Market Center, providing meeting and conference space for medical and academic gatherings in the future.

Two mixed-use parking garages were also

	Secondary Action B: Set the stage for successful supportive uses	Complete	Current Priority	Pause & Resume	Honor & Let Go
B.1	Based on Master Plan expansion recommendations, explore opportunities for institution's needs for supporting housing and retail uses, specific locations for new housing and retail, and opportunities to co-locate housing and retail with institutional expansion.		●		
B.2	Coordinate placemaking improvements and multimodal improvements to support new housing developments and supportive retail uses.		●		
B.3	Explore opportunities to partner with developers to provide supportive uses in appropriate locations		●		

Fig. 3.6

recently completed, providing increased parking opportunities in Symphony Park. Parking within the LVMD's medical core remains limited. Connectivity between Symphony Park and the district's core is limited as the I-15 creates a significant barrier, especially for non-vehicular transportation such as walking and biking. However, a tentative development agreement is in place for a mixed-use parking garage to be constructed within the LVMD core near the future site of the UNLV Medical School. Additionally, GoMed will add circulator services that connect these different areas of the district.

Top: Two new parking structures have been completed in Symphony Park, offering 1,300 spaces each, along Robin Leach Lane. (Image source: walterpmoore.com)
Bottom: The Auric Symphony Park, a mixed-use development with housing and retail, is now open in Symphony Park. (Image credit: Southern Land Company)

IMPROVE THE CHARLESTON CORRIDOR

Much of the work contributing to the improvement of the Charleston corridor has already been discussed. The Charleston corridor is prioritized in the City's Master Mobility Plan (2016) and envisions a multimodal roadway with center-running transit, travel lanes in each direction for local traffic, bike lanes, and wider sidewalks. Many of these improvements are programmed in the City's Capital Improvement Plans (see discussion p. 30 and 34) and are scheduled to begin in 2022.

Currently, improvements to Charleston Blvd. are planned for the roadway stretch between Martin Luther King Blvd. and Rancho Dr., but future capital improvement projects will likely continue to expand these improvements both to the east and west. Expanding these improvements to the LVMD's western boundary at Valley View has the potential to support future revitalization efforts as redevelopment in the LVMD expands outside the core.

OnBoard (2021) also identifies Charleston Blvd as a Phase I priority project for HCT improvements and the City is currently working with Axios Nevada to explore the feasibility of privately-operated light rail in the corridor. The increased transit service and efficiency of HCT would help establish the Charleston corridor as a major east/west connection, linking the LVMD to downtown and residential neighborhoods on the outskirts of downtown, as well as increasing connections to the Maryland Parkway corridor.

The implementation of HCT on Charleston Blvd. could also result in increased TOD and mixed-use development in the LVMD, increasing the number of supportive uses in the corridor. FBC now covers the entirety of the LVMD, including the south side of Charleston Blvd., after an initial piloting phase for the new code system. The code seeks to encourage redevelopment of the single-family parcels that line the south side of Charleston Blvd. businesses, allowing for higher density and mixed-use development.

Opposite Page: Rendering of potential future high-capacity transit line along Charleston Blvd. (Image Source: Axios Nevada)

	Secondary Action C: Improve the Charleston Corridor	Complete	Current Priority	Pause & Resume	Honor & Let Go
C.1	Explore opportunities to partner with developers to provide supportive uses in appropriate locations; support Charleston as an east/west connection to downtown.		●		
C.2	Make Medical District streetscape improvements along Charleston Blvd (see the Charleston Corridor plan).		●		
C.3	Make key improvements along Charleston Blvd including expansion of sidewalks and ADA improvements, added stormwater catchment and retention planters, and a visual linkage identifying Charleston as a major transportation corridor (connecting commuters to I-15 and downtown), increase lot coverage maximums and create minimums, reduce setbacks and encourage mixed-use, pedestrian development, explore appropriate building heights		●		

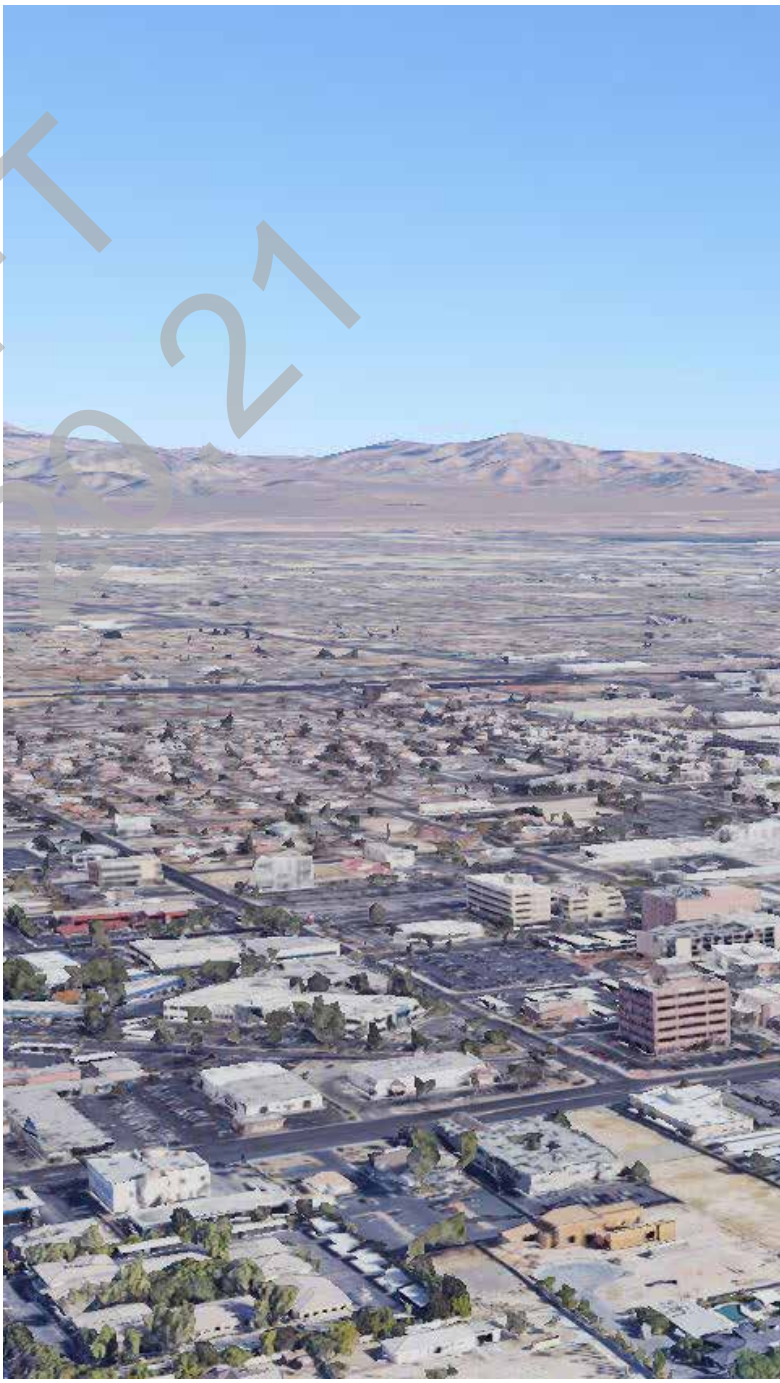
Table 3.7

EVALUATE NEED FOR ADDITIONAL LAND

Land availability in the district continues to be an issue, particularly in the core and near UNLV's expanding Shadow Lane campus. As such, the City is regularly evaluating land availability and options for future expansion.

Much of this work is currently focused on supporting UNLV's growing Shadow Lane campus, as it transitions to an Academic Health Center Campus. It will be difficult to create a cohesive campus while navigating the challenges posed by existing private property that is located throughout the proposed area. UNLV's master planning process will look to identify opportunities for future expansion and connection within the proposed campus, and the City remains committed to working with UNLV in order to see the vision for an Academic Health Center Campus realized.

Additionally, the City is currently evaluating other expansion opportunities for the district as well as how to better connect the district to existing neighborhoods to the north and west of the district. As new transit and parking options come to the district, there will also likely be opportunities to redevelop some of the surface parking area into mixed-use commercial and housing, providing more supportive uses for the district in the future.



Google Earth image of the LVMD core, looking northeast. Charleston Blvd. runs east-west through the center of the image. (2020)

	Secondary Action D: Provide for ongoing evaluation of the need for additional land	Complete	Current Priority	Pause & Resume	Honor & Let Go
D.1	Continue to evaluate the demand for additional land as implementation advances in other areas of the LVMD.		●		

Table 3.8

LVMD

BIG IDEAS

1. Update the Facilities Master Plan (2015) and revisit the formation of formal governance for the LVMD, including advisory subcommittees for the district.
2. Support the build out of the UNLV Medical School and facilitate expediting this process where possible.
3. Expand the city's innovation efforts to focus on building an innovation ecosystem and innovation economy
4. Continue improvements to infrastructure, open space, and connectivity (support active, healthy life styles and well-being)
5. Develop policies and programs to ensure that diversity and inclusion are intentional outcomes during the redevelopment and revitalization of the LVMD and DTLV
6. Dedicate city resources toward facilitating infill and redevelopment in areas that have been rezoned to the FBC, including the LVMD and throughout DTLV.

Concept rendering of the new proposed Medical Education building.
(Image source: Nevada Health and Biosciences Asset Corp.)

4 RECOMMENDATIONS

By many measures, the progress the city and its LVMD partners have made in a short period of time is impressive. With the majority of the goals and strategies on track or completed, it's reasonable to conclude that these plans are reaching the end of their functional lifecycle. The need for an update is evidenced by the speed at which implementation is moving.

As the city prepares for these next steps, the regional planning team conducted additional research around medical districts, academic healthcare campuses, innovation districts, and form-based code implementation, with particular attention to how cities have contributed to the growth and success of these places in their own communities. Through this research, 6 "Big Ideas" were identified as recommendations for moving the city's work in the LVMD forward. These big ideas are not formalized in any planning document. The intention is that these ideas inform future planning and economic development efforts in the LVMD.

Generally, it's recommended that future efforts focus on supporting the emergence of the UNLV Academic Health Center Campus as well as expanding the city's innovation economy. These efforts should support the expansion of research and development, education and workforce training, and entrepreneurial efforts in the district. Additionally, new resources and support are needed to help the development community understand and navigate the FBC, jumpstarting infill and redevelopment in the LVMD and throughout DTLV.

This section presents 6 big ideas for achieving these goals (see opposite page).

The city has much experience translating big ideas into reality. The successful redevelopment of Symphony Park, the designation of a downtown Innovation District, and the transformation of DTLV on the whole, due to the expedited implementation of Vision 2045 (2016), showcase the city's commitment and ability for bringing big ideas to life. The same attitude and expertise can be extended to this next phase of LVMD planning and implementation as well.

WHAT ARE INNOVATION DISTRICTS?

While not all academic medical campuses are defined and designated innovation districts, research finds that successful, "premiere" academic medical districts share many characteristics of innovation districts nationwide. Thus, research for recommendations looked at shared qualities that have contributed to the success of both academic medical districts and innovation districts nationwide. These characteristics are best explained through the innovation lens.

Generally, innovation districts are defined as geographic areas where industry-leading anchor institutions and companies co-locate (i.e., cluster economy) and connect to and support start-ups, business incubators, and accelerators. Central to this co-location is a **culture of open innovation and knowledge sharing**, as well as a physical realm that strengthens the opportunity for knowledge spillovers (or "collisions" as Tony Hsieh used to say) through shared spaces, around-the-clock activity, and dense, mixed-use urban development (Katz and Wagner, 2014; Wagner, Andes, Davies, Storring, Vey, 2017; and Baily and Montalbano, 2018).

Anchor institutions within innovation districts are often universities, medical centers, or other large firms. Academic medical campuses and health centers in particular act as anchor institutions in a majority of the more successful innovation districts nationwide and are, of course, central to academic medical districts. **Research and development (R&D) is the foundation of these innovation-based economies.** Research turns into commercialization, which turns into production and industry, providing for what's considered the biggest gap in 21st century economies,

The benefits of clustering that produced industrial districts, and then science parks, are intensifying in ways that we are just beginning to understand. A growing body of research shows that employment density not only eases resource, goods, and labor sharing, but also enhances innovation. This happens by enabling a more seamless transfer of knowledge within and across firms, workers, and supporting institutions—in turn facilitating the creation and exchange of new ideas that fuel even greater economic activity and growth.

(Source: Katz and Wagner, p. 7, 2014)

Zappos' grand opening at the former Las Vegas City Hall building. Zappos founder and former CEO, Tony Hsieh believed that random encounters increase innovation and productivity. In 2013, Hsieh estimated he spent 1,000 "collisionable hours" annually in DTLV (based on the number of weeks, days per week, and hours per day he was free to wander in downtown (Burke, 2013). (Photo Source: Localadventurer.com)

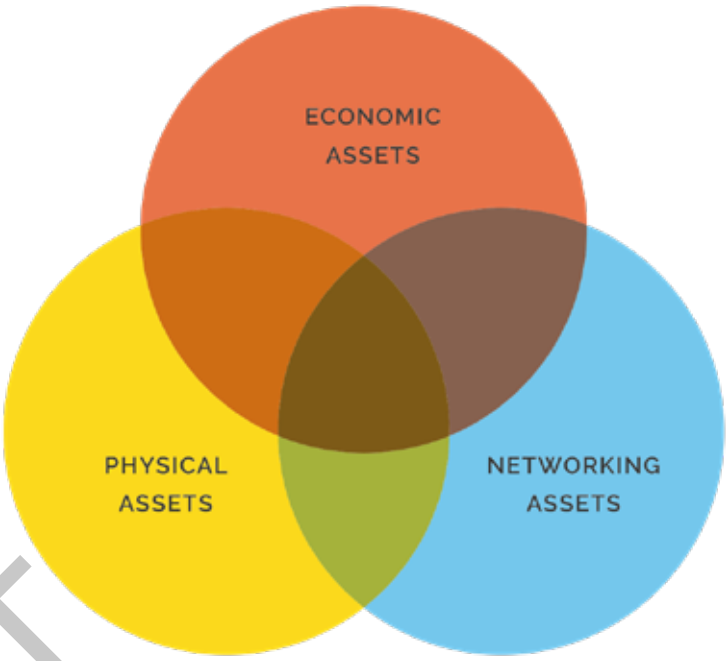
exports (Katz and Wagner, 2014). In other words, innovation districts and academic medical districts are successful when they provide for a robust export-based economy.

Academic medical campuses, or other large firms in the life sciences industries, are particularly successful in bringing in R&D funding and supporting a R&D community, and thus can provide for a supportive entrepreneurial environment of startups, venture capital firms, and incubator and co-working spaces. In addition to the life sciences, other sectors typical of innovation districts are technology, engineering, and creative industries. These primary sectors then draw supportive uses such as retail, service, professional office, and housing.

While the makeup of innovation districts vary widely, all contain what Brookings has labeled "innovation assets," which include (Katz and Wagner, 2014):

1. Economic assets: Organizations that drive and support an innovation environment through R&D, commercialization, and industry.
2. Physical assets: Public and private spaces that contribute to connectivity, collaboration, and innovation.
3. Networking assets: Relationships between district stakeholders and the community that are committed to a shared vision and have the potential to lead and shape the district.

Connectivity and geographic proximity are at the heart of successful innovation districts and innovation ecosystems. Generally, these areas are physically compact, transit accessible, have good broadband and wireless infrastructure, and offer mixed-use housing,



A leading scholar on networks, Granovetter, differentiates networks as having either "strong ties" or "weak ties," which are determined by factors such as frequency of contact, emotional intensity of the relationship, and reciprocity of commitment between actors. Both types of networks are critical to the success of innovation districts

- *Networking assets that build strong ties focus on strengthening relationships in similar fields and include: "Tech regulars," workshops and training sessions for specific fields, cluster-specific meetings, industry-specific conferences and monthly meetings*
- *Networking assets that build weak ties focus on building new, cross-sector relationships and include: Networking breakfasts, innovation centers, hack-a-thons across industry clusters, tech-jam start up classes, and choreographed open spaces between highly programmed buildings.*

Research on proximity and density takes on new meaning in what is called the "age of convergence." The move to create denser enclaves of innovation thus appears to be a critical shift for communities that are not already wired for collaboration.

(Source: Katz and Wagner, 2014)

office, and retail, providing for a live-work-play environment for workers and visitors alike (Katz and Wagner, 2014). **Investment in these physical assets is where cities are critical partners in the overall success of innovation districts.** Physical assets are also generally what's missing the most in burgeoning innovation districts nationwide (Hachadorian and Vey, 2018). Much like the southern Nevada region, many 20th century cities remain auto-oriented with significant infrastructure barriers that limit multi-modal and social connections to neighboring assets and communities. Thus, cities can make the biggest impact when investment and resources are directed at improving the physical environment by providing for transit, connectivity, and public open and civic space.

Lastly, innovation districts are by nature **risk tolerant.** In fact, innovation is rooted in the idea of embracing and spreading risk (Katz and Wagner, 2014). The open culture and interplay between numerous organizations and within and across many sectors allows for trial and error before eventually "scoring a goal" (i.e. commercializing products). When innovation assets combine with a supportive, risk-taking culture, they create an ecosystem that facilitates idea generation and accelerates commercialization, producing an export-rich, innovation-based economy nationwide (Hachadorian and Vey, 2018).

WHAT MAKES AN INNOVATION DISTRICT SUCCESSFUL?

Innovation districts are on the rise and, thus, much academic attention has been paid to understanding what makes innovation districts successful. While there is no magic formula for success, research finds commonalities between innovation districts that are nationally and globally recognized as successful.

First and foremost, an innovation district designation alone is not enough to jump start an innovation-based economy or ecosystem. Many innovation districts lack the minimum threshold of innovation-oriented firms, start-ups, institutions, or clusters that are needed to create an innovation ecosystem nationwide (Katz, Vey, and Wagner, 2015). Innovation districts must have existing economic assets, including proven core economic cluster industries, business and mentorship capabilities, and market demands both within and outside the district in order to succeed.

Innovation districts must also have the ability to rise above their competitors. Cities throughout the U.S. are racing to become the next center of innovation economy and, soon, many cities will find themselves far behind those that manage to establish these advanced economies. Those who pull ahead will do so because of their ability to innovate and converge across multiple sectors (Katz and Wagner, 2014). District stakeholders need to build their capacity to connect seemingly dissimilar industries through collaborative research, knowledge-sharing, and technology.

For example, Oklahoma City's innovation district discovered that two of its major cluster industries, health and energy, share several common technologies and techniques including imaging, sensors, robotics, and big data analytics. Multiple stakeholders in these industries agreed to hold a joint symposium on big data and many other large and small gatherings are now planned. **Economic convergence,** the melding of disparate sectors and disciplines, is necessary for inventing new products, expanding companies, growing jobs, and enhancing long-term viability and fiscal stability in an innovation district (Baily and Montalbano, 2018).

Innovation districts must also have people – people to lead and people to work – as well as access to resources in order to thrive (Baily and Montalbano, 2018). Cultivating an innovation ecosystem is not an easy feat. Innovation districts must have strong leadership made up of actors who have the ability and determination to navigate the complicated relationships and competing interests that naturally occur between district anchors, firms, and other stakeholders in the district. Additionally, leaders must have the capacity to rally various actors under a common vision and to ensure adequate resources are available to support growth and longevity in the district. This includes access to funding, mentorship, equipment and technology, and physical space for innovation to occur. The existence of a strong research community and skilled workforce are also essential for the long-term success of an innovation district.

Innovation districts also need a supportive community that recognizes the district's success as an important aspect for the surrounding community and region. Neither the public nor private sector can create a successful innovation district alone. Both must invest time, energy, and resources into the district. Federal, state, and local funding play a key role in the development of innovation districts and cities and public entities can contribute heavily through investments in infrastructure and physical assets, and by ensuring that the regulatory environment is not too cumbersome for development needs in the district. Private entities must also have demonstrated buy-in, committing funding, people, and physical assets as well. Additionally, private entities often influence the culture of the district more so than policymakers and public entities. District stakeholders should encourage and facilitate knowledge-sharing, networking, and

Innovation District Success Factors

- **Core competency –** Existing economic clusters must be good at something.
- **Access to funding –** Sources are needed to fund growth and support entrepreneurial activity in the district.
- **People –** strong leadership and highly qualified researchers are equally important for supporting an innovation-based economy in the district.
- **Business capabilities –** Organizations in the district need business skills and access to mentorship and training to order to develop and grow businesses.
- **Sophisticated demand –** Market demands must exist both within and beyond the district.
- **Infrastructure –** Physical assets within the district should provide for good connectivity and networking opportunities.
- **Culture –** A culture built around knowledge sharing is essential for innovation districts and a uniqueness of place and quality of life will attract talent.
- **Regulatory environment –** Development regulations should encourage and facilitate development.
- **People –** A skilled workforce is necessary for a sustainable innovation district.

Not all success factors must be present in the beginning, but enough must be present to allow positive dynamics of a successful cluster to develop.

(Source: Baily and Montalbano, 2018)

shared activity in the district.

Lastly, patience is a key ingredient for success. There is no fixed timetable for when innovation districts start to reach a critical mass and become self-sustaining. Needs within the district will change as the district grows and matures. It's important for district stakeholders to remain steadfast in their efforts, evaluating progress and adjusting as needed to ensure the district remains on track to meet its goals.

Unsuccessful districts share some commonalities as well. Generally, efforts to launch innovation districts have failed due to decision makers not having a comprehensive understanding of market demands, existing industry capacity, or the inability to generate interest and buy-in from the private sector (Baily and Montalbano, 2018). Efforts have failed due to government's tendency to focus on "white elephants," chasing projects that ultimately offer little benefit to the district yet cost much to bring in. Lack of transparency and picking winners using a top down approach, with little advisement or support from the business community, have also led to failures when recruiting businesses or creating industry incentives to promote growth within innovation districts. Instead, the framework for these initiatives must come directly from district stakeholders and industry experts, who have the on-the-ground knowledge to shape policy and build support within the community. Innovation districts thrive when they leverage their community strengths in industry and research, instead of attempting to select industry winners or leveraging real estate plays (Baily and Montalbano, 2018).

INNOVATION IN LAS VEGAS TODAY

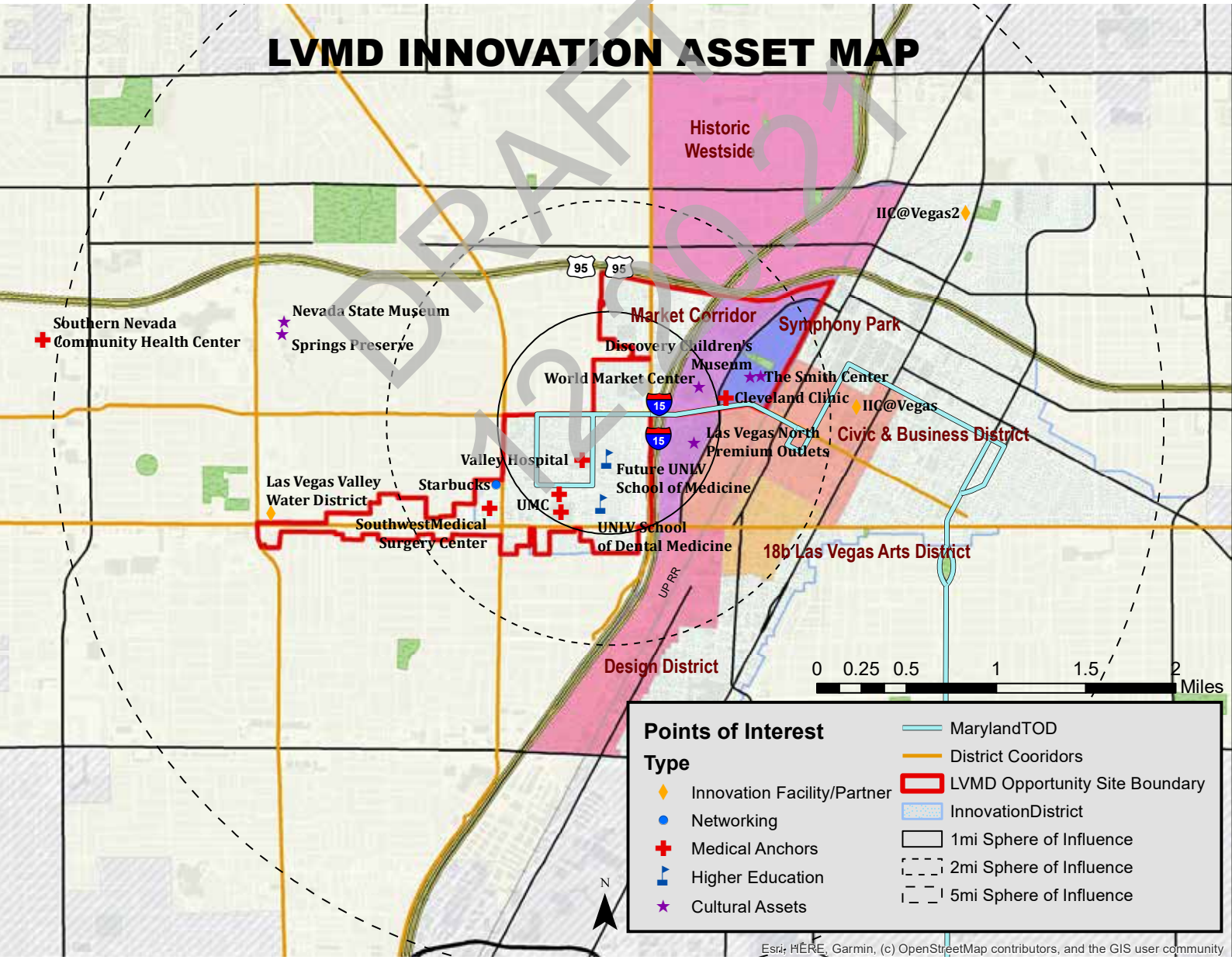
As UNLV begins its transition towards developing an Academic Health Center Campus, the LVMD too must prepare to differentiate itself from other, typical medical districts in the region and state. Instead, the LVMD can be a place where healthcare, research, and innovation meet.

The city has already established DTLV as an Innovation District and much is happening that can support increased innovation-based efforts in the LVMD as well. The city is working to transform DTLV into a technology incubator for sustainable and environmentally-conscious mobility technologies. After becoming the first state in the country to pass legislation authorizing the testing of autonomous technologies, the city quickly became known as one of the best places to test and develop autonomous and connected vehicles. Additionally, the city is currently in the process of upgrading its infrastructure in DTLV to provide for state-of-the-art telecommunications and broadband infrastructure, while also upgrading its infrastructure for connected vehicles and the use of data analytics to provide a safer and more efficient mobility system.

DTLV is also striving to become a testbed for new technologies in alternative energy and new legislation seeks to make Nevada a leader in clean and renewable energies as the state diversifies its economy. Southern Nevada is a national leader in water conservation and, with the LVMD's proximity to the Las Vegas Valley Water District (LVVWD), a unique opportunity exists to explore cross-sector collaboration in water, energy, and healthcare. With the region's dominance in the tourism industry, medical tourism and education as well as tech-based gaming, also a regional strength, present strong opportunities for cross-sector

pollination as well.

With many anchor institutions already in place, the City is in a unique position to capitalize on its early momentum and expand these efforts into the LVMD. Supporting the growth of UNLV's Academic Health Center Campus and encouraging new cross-sector collaboration can help to establish the LVMD as a place where healthcare, research, arts, and technology collide.

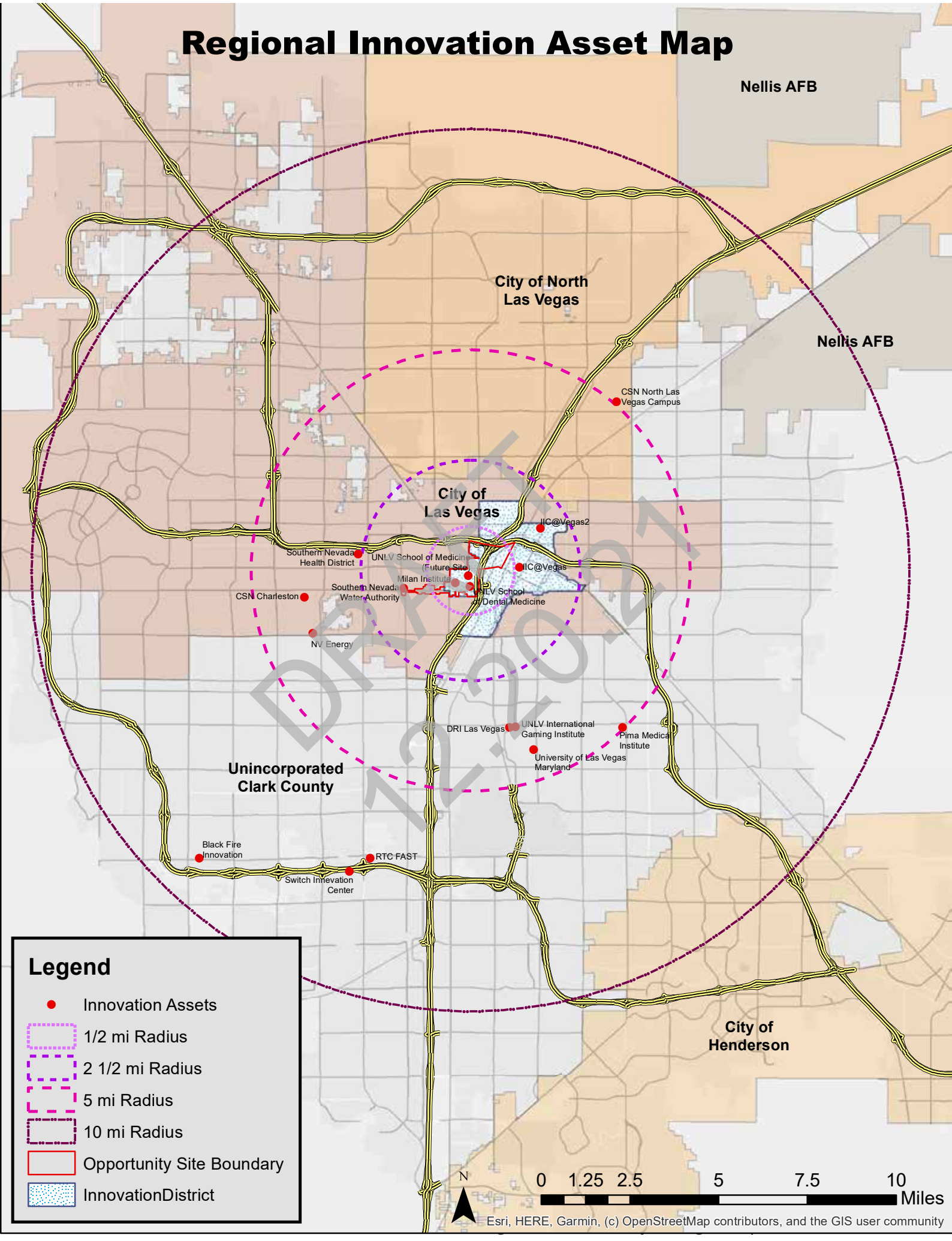


PAST INNOVATION ACCOMPLISHMENTS

- **2013:** Zappos moved their headquarters downtown, a move that has attracted several small- and mid-sized tech companies and start-ups to downtown in recent years.
- **2016:** The City designated DTLV as an Innovation District
- **2018:** The City piloted a self-driving shuttle in partnership with Navya that circulated around downtown, providing new opportunities to expand upon the company's autonomous technology.
- **2018:** The City embarked on a ground-breaking public/private partnership with Nippon Telegraph and Telephone (NTT) and Dell Technologies to leverage new technology and edge analytics to improve public safety.
- **2019:** The City piloted several "smart" technologies including motion-detecting cameras, Lidar mapping of downtown roadways to support systems used in programming autonomous vehicles, pedestrian detection technologies, building a GPS Base Station network to provide highly accurate land measurements and road mapping that better meets the needs for operating unmanned aerial vehicles (UAVs) and autonomous vehicles, and detection technologies that recognize when vehicles drive the wrong way or when the built environment is vandalized.
- **2019:** The International Innovation Center @Vegas (IIC@Vegas) opened in DTLV as a collaborative workspace for companies developing emerging technologies. Shortly after opening, the facility reached capacity, prompting the opening of a second location, also in DTLV.
- **Current:** The City is developing a robust downtown wireless network. The public-private partnership will see 4G or better connections throughout downtown to support communication between vehicles, roadside infrastructure, and traffic management centers.
- **Current:** The City, in partnership with RTC, is developing a GoMed circulator, which will provide autonomous and connected vehicle service, test new pedestrian safety devices, and experiment with smart transit shelters, providing new transit connections connecting between the LVMD and DTLV.

REGIONAL INNOVATION ASSETS

- **2004:** RTC became the official operator of the Freeway and Arterial System of Transportation (FAST). It is one of the first integrated intelligent transportation systems in the country. The state-of-the-art regional traffic signal system can support data exchange for testing of connected and autonomous vehicles and continues to adopt cutting-edge technologies for transportation management today.
- **2015:** Switch, in partnership with UNLV, opened its Innevation Center to facilitate collaboration between students, entrepreneurs, businesses, investors, and non-profits. Switch is headquartered in Las Vegas and is the world's only Tier 5-rated colocation facility.
- **2018:** UNLV received R1 status by the Carnegie Classification of Institutions of Higher Education for "very high research activity." It is the youngest university in American history to achieve this status.
- **2018:** LVVWD and Southern Nevada Water Authority (SNWA) were inaugurated into the Leading Utilities of the World, a global network of the world's most innovative water utilities and agencies. Both LVVWD and SNWA were recognized for innovation, advances and solutions to water challenges.
- **2019:** Nevada sees a 60% increase in


Regional Innovation Asset Map
Nellis AFB
City of North Las Vegas
Nellis AFB
CSN North Las Vegas Campus
City of Las Vegas
IIC@Vegas2
Southern Nevada Health District
UNLV School of Medicine (Future Site)
IIC@Vegas
Milan Institute
Southern Nevada Water Authority
UNLV School of Dental Medicine
CSN Charleston
NV Energy
DRAFT 12.20.21
DRI Las Vegas
UNLV International Gaming Institute
Pima Medical Institute
University of Las Vegas Maryland
Unincorporated Clark County
Black Fire Innovation
RTC FAST
Switch Innevation Center
City of Henderson
Legend
Innovation Assets
1/2 mi Radius
2 1/2 mi Radius
5 mi Radius
10 mi Radius
Opportunity Site Boundary
InnovationDistrict
N
0 1.25 2.5 5 7.5 10
Miles
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

National Institute of Health (NIH) funding over the past 5 years, from $25.5 million in 2014 to $40.7 million in 2019, although the state still lags behind the national average.

- **2021:** The UNLV Incubator (UNLV Inc.) opened near the Hughes Center. The facility is 5,000 sq. ft., featuring student and facility startup offices alongside some of the community's top companies (Boeing, Las Vegas Sands, and AFWERX, the innovation arm of Nellis Air Force Base).
- **2021:** The UNLV Black Fire Innovation hub at the Harry Reid Research and Technology Park opened. A partnership between Caesars Entertainment and UNLV, the space is part of a growing tech district in the southwest and is a testing ground for new ideas in gaming, technology, entertainment, and integrated resort experiences. The hub also provides office space for UNLV's Office of Economic Development, who works to attract industry-sponsored research, develop UNLV's intellectual property, and partner with companies and organizations to bring new products to market. Companies like LG, Panasonic, Intel, and Adobe can work alongside some of the community's longest standing local enterprises, all working together to create the "next big thing."
- **2021:** UNLV professor, Dr. Ashkan Salamat made an unprecedented discovery: Room temperature superconducting, which allows energy to transfer from point A to point B without any energy loss. The Department of Energy is calling this discovery the "Holy Grail" of energy efficiency and Las Vegas has an unprecedented opportunity to transform itself into an energy hub.

Opposite Page:

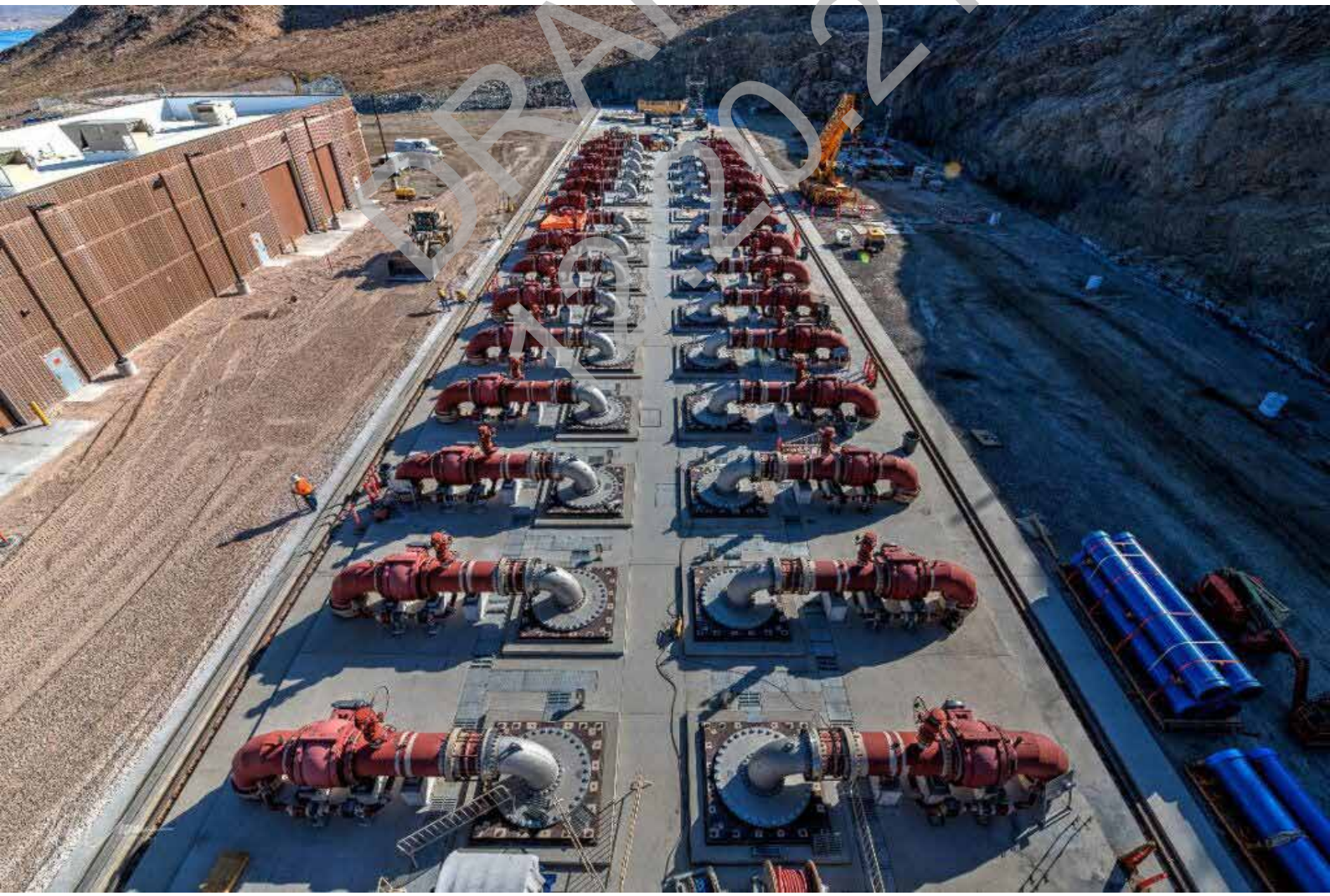
Top right - The City of Las Vegas offered free rides on a self-driving shuttle bus, which at the time was billed as the "largest self-driving pilot project in the US." (Hawkins, 2017) (Image Source: The Verge)

Top Left - Attendees gather outside during a grand opening event at the International Innovation Center in DTLV. (Image Source: Wade Vandervort, 2019)

Bottom center - Engineering a deep-water solution, SNWA and its member agencies, including the LVVWD, initiated the engineering design and construction of a 24-foot diameter intake tunnel and Low Lake Level Pumping Station to ensure 2.2 million Southern Nevadans maintained access to their drinking water. The new Low Lake Level Pumping Station includes 34 of the world's largest and deepest submersible pumps that have a capacity to move more than 900 million gallons of water per day.
(Image Source: Nevada Business Magazine)


FREMONT
THE FUTURE IS HERE
Free AAA Self-Driving Shuttle
HOP ON
AAA
100%


INTERNATIONAL
INNOVATION
CENTER VEGAS



BIG IDEAS

As the city prepares itself for a new phase of planning and development in the LVMD, spurred by the ground-breaking of the UNLV Medical Education Building, the regional planning team has developed 6 "Big Ideas" to guide this work. These ideas were developed in partnership with the City and were informed by active planning documents such as Vision 2045 (2016) and the 2050 Master Plan (2021) as well as through discussions with various City partners and district stakeholders and through the past experiences and successes of planning and redevelopment work in the LVMD. Additional research into academic medical districts and healthcare campuses, innovation, and form-based code implementation inform these recommendations as well.

These big ideas are not adopted as formal recommendations for the LVMD. The intention is that these ideas inform future planning and economic development efforts in the LVMD.

UNLV School of Medicine groundbreaking. (Image source: Nevada Health and Bioscience Corporation)

Recommended actions	
Big idea 1: **Update the Facilities Master Plan (2015) and revisit adopting a formal governance structure for the LVMD, including advisory subcommittees for the district.**	A. Conduct an innovation district assessment using Brooking's Assessing your innovation district: A how-to guide to inform an update/addendum to the Facilities Master Plan (2015). (See sample assessment, Table 4.7 and Case Studies section p. 68). B. Seek a formal governance structure for the district with dedicated resources and staff to guide and oversee decisions and collaboration in the LVMD. C. Reassess current advisory subcommittees and restructure as needed to improve collaboration and growth in the LVMD. D. Build off of momentum created by the GoMed project to further foster collaboration and coordination between the city's offices of innovation, economic development, redevelopment, public works, and planning to expand ideas around innovation into the Medical District. E. Develop 10-12 indicators to track progress toward district goals over defined periods of time. (See Assessing your innovation district: A how to guide for example metrics.)

Table 4.1

Recommended actions	
Big idea 2: **Support the build out of the UNLV Medical School and the expansion of UNLV's Academic Health Center, and facilitate expediting this process where possible.**	A. Continue to assist with land accumulation on the east side of Shadow Lane to facilitate future growth of the UNLV Academic Health Center. B. Support the expansion of UNLV's health sciences schools into the district, seeking locations for temporary and shared facilities and new construction as needed. C. Encourage the expansion of UNLV's innovation facilities (e.g. UNLV Inc. and Black Fire) into the LVMD and DTLV. D. Encourage other academic medical institutions to expand into the LVMD, providing for shared facilities and partnerships opportunities with UNLV and medical anchors in the district.

Table 4.2

Recommended actions	
Big idea 3: **Expand the city's innovation efforts to focus on building an innovation ecosystem and innovation economy in the LVMD and throughout DTLV.**	A. Consider hiring a district manager who is a proven "innovation cultivator." This person should have experience thinking and acting horizontally, encouraging cross-sector collaboration and economic convergence. B. Restructure the targeted incentives program to support the pursuit of talent, technology, and entrepreneurial growth in the district. C. Develop incentives, laboratories, and shared facilities to support and grow R&D, entrepreneurism, and start-ups. D. Facilitate cross-sector collaboration in the life and health sciences, engineering, water conservation, renewable energy, technology, and the arts. E. Increase connections with adjacent supportive districts in DTLV to increase connections with existing technology, arts, and manufacturing communities. F. Enhance access to capital and provide more public information and transparency around investment opportunities. G. Expand innovation facilities (IIC@Vegas) into the LVMD and create connections to existing facilities in DTLV.

Table 4.3

Innovation Cultivators

The rapid growth and impact of national intermediaries (or innovation cultivators) shows real promise in helping innovation districts grow and steward their networking assets and stimulating new innovation opportunities.

- Innovation cultivators can think and act horizontally, encouraging people and firms to interact and work together in ways and at a scale previously unseen

- The growing role of innovation cultivators is helping innovation districts evolve from the traditional "research and development" models to a "search and development" ones, where crucial answers to innovation questions and technological challenges are discovered by facilitating collaboration and cross-sector pollination within the district.

(Katz, Vey, and Wagner, 2015)

	Recommended actions
Big idea 4: **Continue improvements to infrastructure, open space, and connectivity that support networking opportunities as well as active, healthy life styles and well-being.**	A. Continue investments in streetscape improvements that support Complete Streets and multi-modal access and activity. B. Invest in the development of open and civic space that encourages gatherings and organic activity in the district. C. Seek creative solutions and partnerships for managing and maintaining public spaces within the district. (This may be an opportunity to build support and solutions for more formal governance in the district as well.) D. Facilitate programming within open and civic spaces in the district and support cross-sector collaboration with networking and programming events. E. Continue to improve connections between the LVMD, Symphony Park, and DTLV, particularly across infrastructure barriers such as the I-15. F. Seek easement agreements for future development to increase accessibility and connectivity as new development occurs in the future. G. Extend infrastructure improvements and connection to outlying areas and adjacent DTLV districts such as the Historic Westside, Charleston planning subarea, and 18b Arts District.

Table 4.4

Opposite Page: Brookings Institution Vice President Bruce Katz discusses the innovation potential of Buffalo, NY. (Photo credit: Eileen Koteras Elibol, Image source: https://www.innovationtrail.org/post/brookings-bruce-katz-talks-billion-buffalo)

Recommended actions	
Big idea 5: **Develop policies and programs to ensure that diversity and inclusion are intentional outcomes during the redevelopment and revitalization of the LVMD and DTLV.**	A. Assess existing measures to promote diverse and inclusive growth in the district and develop intentional strategies to ensure residents and communities surrounding the LVMD have access to opportunities in the district. B. Ensure residents in adjacent communities have access to opportunities in the district through improved transportation choices and connections. C. Increase workforce development opportunities and job placement opportunities that connect adjacent communities to jobs and economic opportunity in the district. D. Develop programs that connect large firms to small businesses within the district that can provide contract service needs. E. Remove existing barriers to ADU development to increase density, student and affordable housing options in existing low-density neighborhoods surrounding the district. Develop complementary programs and incentives that help low-income households construct ADUs and encourage homeowners offer these units to low- and moderate-income residents. (See case studies p. 98).

Table 4.5

Historic Westside

The Historic Westside is a culturally rich and diverse community, struggling with economic and urban challenges that are rooted in its past as a historically segregated African American community. The area experienced years of disinvestment and neglect from public and private entities alike, leading to some of the poorest economic outcomes within the city.

Recent decades have seen the population diversify and today just over half (51.1%) is Black/African American and 35% are Hispanic/Latinx. The median household income for residents here is less than half of that citywide, just under $25k/year. Unemployment in the area is typically two to three times that of the city and the majority of residents (72%) rent their homes. There are almost no public-facing businesses in the area, basic services are primarily located outside of the community, and the community has a high rate of vacant and abandoned properties.

Located approximately 2.5 miles to the northwest of the LVMD's core, the Historic Westside community is uniquely positioned to benefit from development, job growth, and educational opportunities in the LVMD. With direct access into the LVMD via Martin Luther King Blvd. and City Pkwy./S. Grand Central Pkwy., there is an opportunity to connect minority residents, who are often underrepresented in innovation industries, with future employment opportunities in the LVMD. Additionally, the Health Care Center and Workforce Opportunity Center envisioned at the recently renovated Historic Westside School, a community anchor in the neighborhood, can provide connections to the LVMD, aligning workforce training opportunities within the neighborhood to jobs inside and just beyond the community.

Development opportunities in the Historic Westside can also help to get ahead of affordability issues that are emerging in the LVMD and throughout DTLV. Affordable housing here can not only benefit residents of the Historic Westside community, but can provide affordable options within close proximity to the LVMD for employees and students as well. (See Case Studies section p. 72 for more discussion on diversity and inclusion opportunities in innovation districts.)

Recommended actions	
Big idea 6: **Dedicate city resources toward facilitating infill and redevelopment in areas that have been rezoned to the FBC, including the LVMD and throughout DTLV.**	A. Expand on the community design center pilot operating in the Historic Westside School, providing rotating or "floating" opportunities to assist the development community with understanding and navigating the FBC the LVMD and other DTLV districts. B. Develop a FBC user guide or pattern book that illustrates the intentions and development potential in the new code to help facilitate a cultural shift in development practices region wide. C. Explore new technologies that assist the public in visualizing development opportunities under the new FBC. (See case study p. 96). D. Expedite zoning recommendations of the 2050 Master Plan, including piloting and implementation of TOD zoning along future high capacity corridors such as Charleston Blvd. Explore additional zoning and development code amendments to increase infill, density, and redevelopment in the LVMD and DTLV such as revisions to planned developments to allow for more infill. E. Participate in a learning coalition around FBC implementation to share and learn from communities undergoing similar challenges across the country.

Table 4.6

Community Design Center

The City of Las Vegas has recently launched a Community Design Center pilot, which locates planning staff on site in various locations throughout DTLV to assist both the development community and residents with understanding and navigating the FBC in DTLV districts. Community Design Center staff are designated personnel that guide downtown development projects through land use entitlement and permitting processes as well as address the community's questions and concerns about proposed developments.

The pilot is currently being tested in the Historic Westside community with plans to expand into other DTLV districts. As this program expands, other opportunities for design center staff may include: coordinating implementation of land use, community development and public real improvements in DTLV, overseeing the development of area plans, and overseeing preservation and conservation of DTLV's existing neighborhoods and historic resources. (See Design Works case study on p. 92.)

The City of Las Vegas has recently installed gateway signage as part of placemaking efforts in the Historic Westside.

LVMD PRELIMINARY INNOVATION ASSESSMENT

Brookings Institute, in collaboration with Public Spaces, developed an in-depth how-to guide for assessing innovation districts. The guidebook is designed to help district leaders and stakeholders assess or "audit" their regional innovation economies and local innovation districts in order to inform investments for the future. More information on this guide as well as several sample assessments are provided in the Case Studies section of this report (see p. 68).

Such an audit may be a helpful next step in preparing for the next phase of revitalization and redevelopment in the LVMD. An assessment of this nature can provide critical information on LVMD's strengths, weaknesses, and opportunities in order to inform how to best target resources toward innovative and inclusive economic development for the future.

A preliminary assessment of the LVMD is provided on the opposite page. This assessment is based on a cursory review of the strengths, challenges, and opportunities related to growing the LVMD into an academic/innovation-based medical district. The assessment, however, did not explore the level of detail that is discussed in Brooking's how-to guide. Should the city decide to continue planning in this direction, a more detailed assessment is recommended (Big Idea 1a).

STRENGTHS

- UNLV has roughly doubled its level of R&D activity over the last decade and recently achieved a R1 research university classification.
- The region is experiencing growth in venture capital investment, performing near the national average.
- Water conservation expertise and innovation is a strength in the region and LVVWD is located just outside the district.
- Springs Preserve is located just outside the district and is a significant education and cultural asset for the region.
- Gaming technology is a regional strength.
- Natural advantages for solar technology and renewable energies
- Geographic connectivity
- Home of region's only Level-1 trauma center
- Lou Ruvo Cleveland Clinic is a significant R&D stakeholder located within the district.
- Proximity to downtown and burgeoning amenity-rich districts (e.g. Arts District, Fremont East)
- Growing demand for bioscience research (60% growth in NIH awards over the last 5 years) but still performs far below peer regions
- City has piloted and implemented a variety of merging mobility technologies and a similar attitude can be extended to other industries
- Although retail services in the district are limited, residents and visitors to the district frequently visit the amenities that are available (e.g. Starbucks on Rancho Dr.)

CHALLENGES	OPPORTUNITIES
• The region struggles to develop and attract highly skilled workers. Regional economy is dominated by tourism and service industries, resulting in lower skilled jobs and an economy that is vulnerable to recessions. • Low population growth among ages 25-44 or early-to-mid level career workers. • Competition between local governments to attract high-value firms to their jurisdiction hinders their use of collective regional assets and limits economic diversification efforts. • Regional activity related to innovation and high-technology business formation and growth is limited. • Expenditures in life sciences R&D are considerably lower than the national average (26% of the total at UNLV as compared to 58% nationally). UNLV has vastly lower R&D expenditures than peer universities, averaging roughly $73 million annually. • Nevada's R&D expenditures as a share of GDP are also one of the nation's lowest. Innovation outputs for the region are also low compared to peer regions. • Nevada is in bottom quintile when it comes to bioscience research and development per capita ($30 per person compared to national average of $144 per person) and also for NIH funding ($13 per person compared to national average of $94 per person). • Nevada's share of science and engineering degrees ranks 50th in the nation. • Nevada's small businesses attract very little federal support. • Redevelopment constraints associated with land assembly and uncertainties in navigating a the new FBC. • I-15 is a significant infrastructure barrier that limits LVMD's connectivity to the rest of DTLV and the city's Innovation District. • The district remains low-density and auto-centric with limited options for transit and multi-modal activities • Few amenities exist to encourage around-the clock-activity in the district.	• Explore opportunities for cross-sector research and collaboration (e.g. bioscience, healthcare, water conservation, renewable energy, technology) • Focus public investment on creating public spaces for collaboration, networking, and social interaction (e.g. civic plazas, open space, shared facilities) • Collaborate with existing workforce development efforts to expand training opportunities for needed jobs in the district. (Focus these efforts in surrounding neighborhoods affected by economic disparities.) • Create more connectivity to Symphony Park and Downtown amenities (e.g. Arts District and East Fremont). • Provide laboratory space that meets the needs of researchers in bioscience industries. • Provide facilities for startups and foster partnerships for entrepreneurial mentorship and support. • According to Vision 2045, areas of opportunities include: bio-tech manufacturing, robotics, 3-D printing, enhanced/virtual reality, virtual gaming, film production, fashion, and other creative arts.

Table 4.7

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5 | CASE STUDIES

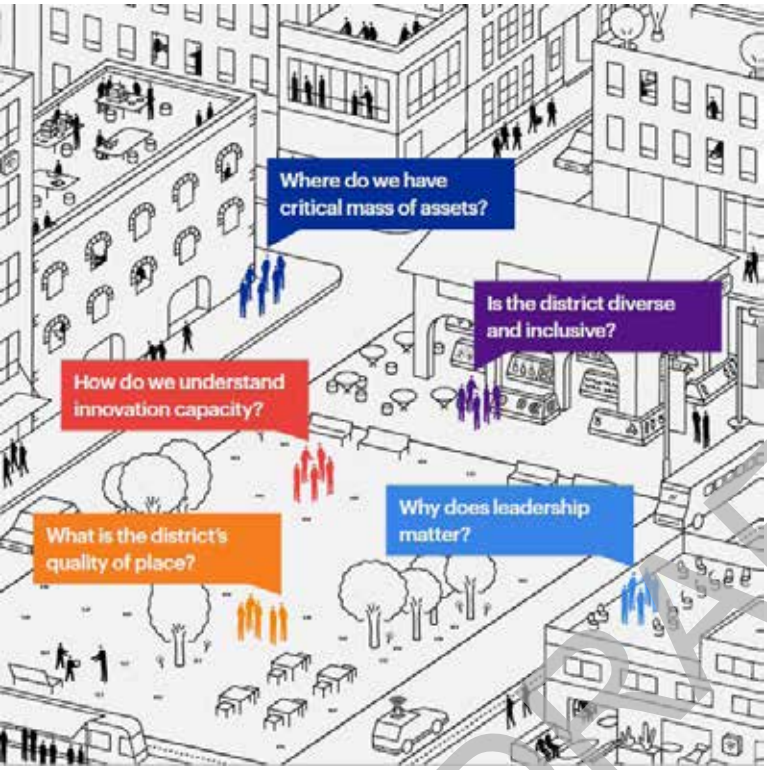
The following section contains several case studies, providing in-depth examples of how some communities across the country are addressing planning goals and challenges that are similar to those that guide redevelopment in the LVMD. Collectively, these case studies provide additional detail on how cities are assessing and investing in academic medical centers and innovation districts as well as information on how cities are working through the challenges of transforming past auto-centric development into vibrant live-work-play communities.

Case studies include:

- How-to-guide for assessing innovation districts, complete with sample assessments and district comparisons
- Discussion on challenges and solutions for form-based code implementation
- Sample accessory dwelling unit (ADU) policies and programs with a focus on affordable housing policies

Opposite Page
Top: Google streetview of the Charleston corridor, looking west toward Shadow Lane.
Bottom: Rendering of re-imagined Charleston corridor with high-density, mixed-use development and Complete Streets infrastructure. (Image source: LVMD Master Plan)

ASSESSING INNOVATION DISTRICTS: A HOW-TO GUIDE



Graphic depicts five big questions to explore when assessing innovation districts. (Image source: Anne T. and Robert Bass Initiative on Innovation and Placemaking)

The Anne T. and Robert M. Bass Initiative on Innovation and Placemaking, a collaboration between the Brookings Institution and Project for Public Spaces, aims to inspire public, private, and civic-sector leaders to make transformative place investments that generate widespread social and economic benefits. As part of these efforts, Brookings has completed extensive research into innovation districts and economies, including on-the-ground studies of many established, emerging, and aspirational districts across the nation and globe. Brookings recently published Assessing your innovation district: A how-to guide. The guidebook is designed to help district leaders and stakeholders assess or "audit" their regional innovation economies and local innovation districts in order to inform investments for the future.

Such an audit may be a helpful next step in preparing for the next phase of revitalization and redevelopment in the LVMD. The assessment can provide critical information on LVMD's strengths, weaknesses, and opportunities in order to inform how to best target resources toward innovative and inclusive economic development for the future.

The audit how-to guide explores five big questions:

1. Critical mass: Where are the region's highest concentrations of innovation assets?
2. Innovation capacity: Is the district leveraging and aligning its distinctive advantages to grow and strengthen district firm's innovation capacity?
3. Diversity and inclusion: Does the district have an inclusive, diverse, and opportunity-rich environment?
4. Quality of place: Does the district have physical and social assets that attract a diversity of firms and people, increase interactions, and accelerate innovation outcomes?
5. Leadership: Does the district have the leadership necessary to succeed?

The guide is complete with sample questions that "auditors" will want to ask and provides sample methods and data sources for collecting information to answer these questions. The guide also provides advice on the types of indicators that district stakeholders may want to track in order to gauge their district's progress and success over the long-term.

CRITICAL MASS

The 21st century has seen a shift in market demands and demographic preferences which has led to the revitalization of cities and urban places across the country. This trend has resulted in the clustering of economic activity and talent, often near medical centers, universities, or other anchors, leading to a rise of innovation districts nationwide.

While the innovation district template has been embraced, many designated districts lack the minimum threshold of innovation-oriented firms, start-ups, institutions, or economic clusters needed to grow and sustain an innovation ecosystem. Most regions will only be able to support one or two innovation districts, therefore, leaders must understand whether or not they have a critical mass of innovation assets (economic, physical, and networking) to generate and sustain the growth, development, and vitality that an innovation district demands.

Proximity and co-location of these assets is key. "Success of these districts is measured in steps, not miles." While labor moves within a shed of approximately 40 miles, knowledge sharing occurs at a scale of less than one. Thus, leaders must know if a critical mass of well-connected innovation assets exist within the district in order to set realistic expectations for the future.

QUESTIONS TO EXPLORE INCLUDE:

1. Where are the region's highest concentrations of economic activity?
2. Where are the region's innovation assets clustered?
3. Are the identified areas physically connected to the city, region, and beyond?

INNOVATION CAPACITY

Ultimately, the success innovation districts depends on its ability to support an innovation-based economy. A robust innovation ecosystem sees innovation drive economic growth through research, patents, commercialization of knowledge, and exported goods. To assess this ability, district leaders and stakeholders need to understand the research strengths of the district (inputs), how this knowledge is shared and transferred throughout firms and organizations (connectivity and networking capabilities), and the number of new firms, products, and growth (outputs) produced.

R&D alone accounts for 1/6th of productivity growth in the U.S. Cities are now learning they can create economic advantages by finding points of economic convergence across multiple industries (see Oklahoma City example), especially when those industries locate offices, research facilities, and co-working spaces near one another. In order to make this leap, cities need to understand both the inputs and outputs of their district so that district stakeholders can leverage and align distinctive advantages to strengthen their innovation capacity within the district. With this understanding, meaningful interventions and strategies can be planned and developed for improving innovation capacity in the future.

QUESTIONS TO EXPLORE INCLUDE:

1. What are the region's innovation anchors and research strengths?
2. What are the advanced industry clusters within a district and region?
3. What are the connections between industry and non-industry anchors?
4. What are the commercial activities of anchors?
5. What is the size and scope of entrepreneurship?

DIVERSITY AND INCLUSION

Innovation districts are at their best when they provide for an inclusive, diverse, and opportunity-rich environment. Many innovation districts across the country are located near low- and moderate-income neighborhoods and communities. This proximity offers a unique opportunity to expand employment and educational opportunities for these communities within the district itself. This starts with a firm commitment from district leaders and stakeholders towards diversity and inclusion.

District leaders need to work to understand the potential challenges facing residents in adjacent communities to better connect these residents to economic opportunity in the district. It's essential that the economic benefits of innovation districts, often spurred by public investments and efforts, reach community residents as well. For example, minorities are often underrepresented in tech industries, despite the fact that a large percentage of these jobs don't require a four-year degree. Thus, there is a need to understand how the district can provide equitable, broad opportunities for workers with a range of skills and backgrounds.

Additionally, early commitments to this work can ensure district leaders get ahead of affordability challenges and other equity concerns that may arise as the district develops. Many innovation district leaders are now starting to develop workforce training partnerships as well as policies to preserve affordability and diversity in the district. This is a slow process that requires patience and long-term investments in relationships, but innovation districts are uniquely positioned to address some of the social equity challenges of today. Growing better and more accessible jobs for some of our most disadvantaged populations, innovation districts have the potential to be opportunity-rich places for everyone.

QUESTIONS TO EXPLORE INCLUDE:

1. What are the district's baseline measures of diversity? Where do disparities exist?
2. Does the district provide equitable, broad opportunity for a range of workers?
3. Are nearby neighborhood – and their residents – connected to district growth?
4. Do district actors have intentional policies and programs in place to increase diversity and opportunity?

QUALITY OF PLACE

More and more, demographic preferences show that people value quality of place and placemaking over the traditional, auto-centric development patterns of the past. Quality of place is an especially important aspect of attracting new workers and talent. Innovation ecosystems are most successful when the environment supports the culture that is needed to make these districts thrive. A mix of uses, ample space (both formal and informal, public and private) for interaction among district stakeholders and workers, and a range of activities and services that promote use of the district during both the day and night are needed. Thus, when assessing an innovation district, it's important to take stock of the physical and social assets that attract firms and workers to the district, and that increase interactions and innovation outcomes in the district.

Of the various qualities that make innovation districts thrive, this is perhaps the area where cities and public investment can make the biggest impact. It is also what is most lacking in the majority of innovation districts across the

country. Legacy planning and design burdens, such as infrastructure, surface parking, and outdated building types and uses, can make it extremely difficult to create connectivity and open space in places that are already established and urbanized. Additionally, land use is slow to change. Public entities should not get discouraged and should strive to provide quality of place as the district grows and develops.

Furthermore, public entities and district leaders should value the public process of shaping place characteristics of the district as much as the outcomes themselves. Placemaking requires an understanding of details only residents, workers, and firms in and around the district can provide. By establishing an inclusive community-based process for placemaking, district residents and stakeholders will value and invest in incremental progress towards this vision.

QUESTIONS TO EXPLORE INCLUDE:

1. Does the district possess an adequate level of internal connectivity?
2. Is there sufficient proximity and mixing of people?
3. Is the innovation district limited by legacy burdens that impede its ability to transform into a contemporary hotbed of innovation?
4. Does the public realm within the innovation district engage and serve a diversity of users?

LEADERSHIP

Strong leadership by a variety of firms and individuals is needed to ensure innovation districts reach their full potential. Leadership needs will change as the district grows and matures, but, generally, leaders can serve as a champion, play a convening role, or serve as a catalyst for growth and investment in the district. Leadership may come from a number of district stakeholders, including anchor institutions, public entities, community-based organizations (non-profits and non-governmental organizations), or even the residents themselves. Ultimately, long-term success comes from a collaborative approach, both from public and private sectors. Leaders should also lead by example, implementing internal policies and practices that advance innovation, inclusion, and quality of place. Assessments should, therefore, ensure innovation districts have the leadership necessary to succeed.

Life is Beautiful music festival provides for unique cultural and networking activities in DTLV. (Photo credit: Chase Stevens; Image source: Las Vegas Review Journal, 2016)

QUESTIONS TO EXPLORE INCLUDE:

1. Are institutional, form, and non-profit leaders innovating within their own organizations in ways that help advance the district?
2. Are district leaders informally collaborating and organizing themselves around a set of shared interests and goals?
3. Have leaders established a more formalized governance structure – when necessary – to guide district development?

EXAMPLE ASSESSMENTS

The how-to guide was developed while working with three cities on the ground: Oklahoma City, Philadelphia, and Pittsburgh. The process sought to understand the unique strengths and challenges in each district in order to inform change and impact in the future. All three cities have established innovation districts, anchored by academic medical centers and other large firms and institutions. Using the audit process, Brookings was able to work with city and district leaders to inform new policies and programs that are guiding work in these innovation districts today.

Generally, these assessments led to following conclusions: In Oklahoma City, the audit found that the district had significant strengths in health and life sciences, energy, geosciences, and engineering, and efforts are now focused on **supporting cross-sector collaboration and economic convergence** between these industries. In Philadelphia, the audit found that the district has particular expertise and potential in precision medicine. Economic development efforts here are now focused on pooling resources to **support research and commercialization capacity** in this area. The Oakland neighborhood in Pittsburgh is a naturally occurring innovation district with many innovation assets. The audit helped city leaders and stakeholders come together to form a coalition called InnovatePGH in order to improve technology business attraction strategies and workforce training programs that **better connect surrounding residents to opportunities** in the district.

An in-depth overview of each of these assessments is provided in the following section. This format was then used to guide additional research into two additional academic medical districts: the Anschutz Medical District, and the Buffalo Niagara Medical Campus. All five districts provide valuable insights for the next phase of planning and redevelopment in the LVMD.

Photo credits:
Anschutz Medical Campus (University of Colorado, n.d.)
Oklahoma City Innovation District (okcinnovation.com, n.d.)
University District - (University City District, 2017)
Oakland Innovation District (pittsburgh-id.com, 2019)
Buffalo-Niagara Medical Campus - (bnmc.org, n.d.)

EXAMPLE ASSESSMENTS: OKLAHOMA CITY INNOVATION DISTRICT

The Oklahoma City Innovation District is a 1.3 square mile area anchored by the Oklahoma Health Center. The health center cluster includes the University of Oklahoma Health Sciences Center (UOHSC), the University Research Park, and the Oklahoma Medical Research Foundation, as well as business support organization i2E, the Oklahoma City Veterans Affairs (VA) Medical Center, and the Dean McGee Eye Institute. The region is also becoming a global center for advanced energy technology, evidenced by General Electric's Global Research Oil & Gas Technology Center recent opening in the district. The district is adjacent to but disconnected from Automobile Alley, a popular amenity-rich corridor with coffee shops, boutiques, restaurants, and a co-working space, and downtown, which is home to several major energy headquarters.

The area has experienced substantial growth in the last decade, but the district lacks the density and diversity of innovation assets that are prevalent in more mature districts. The district also lacks governance and organizing structures to strategically connect these assets to one another and to the rest of the region and, without intermediaries working on the district's behalf, there are significant gaps in linking organizations to capital, mentorship, technology transfer, co-working spaces, and other activities. Additionally, the district is bisected by a major interstate, limiting connectability and multi-modal access in the district.

STRENGTHS

- The district is already a vital part of the region's economy (district employs almost 5% of the city's total workforce) and the region is emerging as a global center for advanced energy technology.
- The recent opening of GE's Global Research Oil & Gas Technology Center in the district provides opportunities to innovate across the healthcare and energy industries.
- District is extremely competitive in securing R&D NIH funding although R&D expenditure is considerably less than peer districts.
- UOHSC is one of the few campuses in the country to house a comprehensive set of professional and medical schools
- Automobile Alley has a large volume of pedestrian traffic and downtown is home to several major energy headquarters.

Top: Following Brookings Institute assessment, the Alliance for Economic Development for Oklahoma City and the State of Oklahoma commissioned an Innovation District and Capitol Environs Land Use and Strategic Development Plan to establish a vision and implementation blueprint for the district. The process was informed by nearly 500 community members through surveys, seven community forums, and 60 user group interviews.(Image source: Perkins & Will)

Opposite Page: Oklahoma City Innovation District (Image source: Perkins & Will)

CHALLENGES	OPPORTUNITIES
• District lacks the density and diversity of organizations that make up more mature innovation districts. • District is auto-oriented, has limited connectivity to proximate amenity-rich areas, and lacks gathering space for networking. • Low-income residents in neighboring communities are disconnected from employment opportunities in the district, despite the fact that 55 percent of district jobs do not require a four-year degree. • District does not have enough buy-in and investment from its private-sector actors. • District does not have a robust entrepreneurial support system and lacks a pipeline for building talent in the community and region.	• Improve innovation challenges by establishing a formal structure, such as the Oklahoma Center for Energy and Health, which will be a physical and programmatic umbrella to support collaboration, innovation, and growth in the district. • Improve support for technology-based economic development and entrepreneurship through focused initiatives and partnerships. • Improve placemaking in the district by implementing new land use and real estate development tools, improving mobility and connectivity within the district and between the district and other regional innovation hubs, and increase networking opportunities. • Improve equity and inclusion for residents in surrounding neighborhoods through workforce development, education, entrepreneurship and small-business support, and neighborhood revitalization.

EXAMPLE ASSESSMENTS: UNIVERSITY DISTRICT, PHILADELPHIA

The 1.5 square mile district consists of a 10-block radius where University City and the west end of City Center merge. These areas are growing towards one another, creating a globally relevant innovation district, although the two hubs are separated by a river. The district is anchored by University of Pennsylvania, Penn Medicine, Children's Hospital of Philadelphia, Drexel University, Wistar Institute, and large firms such as Comcast. The district is also home to numerous innovation organizations such as University City Science Center (the nation's oldest and largest urban research park), Drexel Ventures, Benjamin's Desk, and the new Pennovation Center. It is increasingly becoming a desirable place to live and the district is set to see explosive growth over the next two decades with several major projects planned or underway.

Research expertise in in genetics, therapeutics, clinical trials, and health informatics, combined with private sector strength in pharmaceuticals, make the region a leading life sciences hub and capacity in engineering, automation technology, computer sciences, and high-tech startup communities is starting to grow. The city is also home to growing clusters of digital health financial services, advanced manufacturing, and media firms, and academic institutions are successfully creating connections with industry, however, the city remains significantly behind peer cities in terms of industry partnerships. District leaders lack a sense of urgency and cohesion and connections between institutions and the private sector are weak. Innovation institutions lack the structure and support needed to fully support the economic potential of the region. Additionally, the district has inclusion and place challenges. Despite experiencing substantial job growth in recent years, these employment opportunities are not benefitting neighboring communities and residents, where poverty and unemployment rates remain high, and median incomes remain low. Underutilized parcels and a lack of activity also contributes to a lack of activity along the districts primary corridor and connectivity and access are limited between the two hubs and for residents living in the area.

STRENGTHS

- The region's "eds and meds" sector is one of the strongest in the country and is a leading life sciences hub; the district hosts approx. 16% of the city's total jobs.
- Over $680 million in funding from the NIH flow through the district, more than double that of any peer district in the country.
- The city's startup environment is improving and research capacity in engineering, automation technology, computer sciences and high-tech industries continues to grow and develop.
- Academic institutions are successfully creating connections with industry and collaboration exists around institutional support for research startups.
- Overall, the district is a dense urban environment with good "physical bones" and place assets although some placemaking challenges do exist.

Opposite Page: The innovation district in the University City-Center City area of Philadelphia. (Image source: Brookings Institute)

CHALLENGES	OPPORTUNITIES
• District leaders lack a sense of collective urgency and efforts are mostly ad hoc. • Industry presence in the district is low and spatial and programmatic connections among institutions and the private sector are weak. • The district lacks the level of serial entrepreneurs, talent, capital, and national prominence needed to drive sustainable tech employment and growth. • Relationships between district research institutions and industry are weak, and the region's philanthropic community isn't invested enough in technology-based economic development. • Employment opportunities in the district are not benefitting neighboring communities and residents, despite over 55% of district jobs not requiring a 4-year degree. • Underutilized parcels and a lack of multi-modal access and activity on Market Street make connectivity between activity hubs difficult.	• Improve innovation challenges by establishing a formal structure, such as an Innovation Council, with the authority and influence to establish a vision, and subsequently oversee and encourage collaboration, innovation, and growth in the district. • Undertake a series of initiatives aimed at growing the city's advanced industry clusters (starting with Precision Medicine). • Improve the strength of the regions entrepreneurial ecosystem by leveraging the resources of anchor technology firms and creating entrepreneurial focused initiatives. • Improve equity and inclusion for residents in surrounding neighborhoods through anchor-based skill-building, education, and procurement initiatives aimed at connecting low-income residents to district jobs. • Create a connected corridor task force to improve connections between the region's employment hubs and innovation assets, starting with Market Street.

EXAMPLE ASSESSMENTS: OAKLAND INNOVATION DISTRICT, PITTSBURGH

Pittsburgh is poised to be a leader in reshaping the global economy. A concentration of assets are located in the 1.7 square mile Oakland Innovation District, anchored by the University of Pittsburgh (UPitt) and Carnegie Mellon University (CMU), dozens of startup companies, co-working spaces, and the University of Pittsburgh Medical Center (UPMC). South Oakland is home to the Pittsburgh Technology Council, Pitt research facilities, and large scientific and technology firms and just beyond the district's borders are Chatam University and Bakery Square (home to Google and Pitt's Human Engineering Research Laboratories and UPMC Enterprises). Additionally, the Almono brownfield site, which will potentially serve as one of the nation's largest autonomous vehicle testing sites, Downtown Pittsburgh home to the national headquarters to PNC Bank, Highmark, PPG Industries, and U.S. Steel are also located just outside the district. Broadly, three advanced industry clusters in manufacturing, technology, and healthcare, represent critical pieces for the city's future economy and all three sectors rely on the strength of the university sector within the innovation district.

Despite these assets, the region has not fully translated their scientific and technical strengths into a true innovation-based economy. Many of the region's prime industries, including technology, have a large disconnect between their core competencies (e.g. high research activity) and economic activity or output (e.g. low employment share compared to the national average). A lack of industry presence in life sciences also limits the impacts of academic research. The entrepreneurial ecosystem is also limited and the city has not developed a robust talent pipeline, threatening its ability to compete for the long-term. Existing initiatives and investment levels are not meeting the levels needed to sustain an innovation economy, and the district is surrounded by some of the city's poorest neighborhoods, where residents have high rates of long-term unemployment and poverty within the city.

STRENGTHS

- The region is home to high-skilled workers, world-class research institutions, and technology-intense advanced manufacturing.
- The region has three clusters of export-oriented advanced industries – advanced business and health services, manufacturing, and technology – and academic and technical strengths.
- The city has become a hotbed of domestic direct investment from technology companies seeking access to high-end engineering and computer science talent.
- UPMC and its partnership with UPitt is a unique asset and is recognized as one of the nation's top hospitals and attracts patients from outside the region.
- Pittsburg ranks 9th among top 100 cities for the amount of university R&D given the size of its economy.
- The region stands out as a leader in biomedical research, innovation, and clinical excellence.
- UPitt is the 5th highest recipient of NIH funding and academic research; expenditures are 350% the national average.
- CMU was awarded the Advanced Robotics Manufacturing (ARM) Innovation Hub by the Department of Defense.
- The region is a powerhouse in digital technologies.
- Philanthropic foundations in the region view technology-based economic development as a critical component of their social missions and invest accordingly.
- Improved placemaking has attracted young workers to the city in recent years.

CHALLENGES	OPPORTUNITIES
• The city's scientific and technical strengths have not fully translated into broad-based economic activity or growth • The difference between economic inputs and outputs is stark, suggesting the connection between research and industry strengths is weak. • The lack of significant industry presence in life sciences limits the impact of academic research. • The region's entrepreneurial ecosystem is not producing a significant number of high-growth startups. • The region sees below-average growth in venture capital funding (remains lower than the national average). • Pittsburgh is not recognized as a destination for entrepreneurial talent. • Pittsburgh's average worker is older than the national average, with many expected to retire in the next decade, and population growth remains stagnant. • The region has not made enough of an effort to upskill workers and existing skill-based training initiatives have not led to greater economic inclusivity in low-income neighborhoods surrounding the district.	• Greater investment and activity is needed in four broad areas: innovation clusters, the Oakland innovation district, high-growth entrepreneurs, and workforce development. • Launch a new initiative, such as Innovate PGH, to rally new and existing resources into that can build and support the region's innovation clusters. • The Oakland Innovation District needs to be defined, marketed, and better connected to the regional economy. • New strategies are needed to better connect the district to nearby employment centers and downtown. • Improve the entrepreneur ecosystem through initiatives that better connect young startups with large firms and funding that is not available in existing research grants. • Build capacity for startups in life sciences, health IT, and other clinical care solutions with initiatives that support the substantial upfront costs associated with these industries. • Launch a global accelerator to grow and attract emerging companies in specific life sciences fields. • Create a talent alliance coalition of employers, existing workforce development organizations, and educational institutions to connect residents to skills-based jobs in the Oakland Innovation District.

Planned Innovation Research Tower for the Oakland Innovation District in Pittsburgh. (Image source: Walnut Capital Management)

EXAMPLE ASSESSMENTS: ANSCHUTZ MEDICAL CAMPUS (AMC), AURORA

The Anschutz Medical Campus (AMC) is the largest academic health center in the Rocky Mountain region, consisting of 238 acres, which includes more than 11 million square feet of state-of-the-art medical and research facilities. The campus includes the University of Colorado's (CU) health professional schools and is anchored by two nationally ranked hospitals: UCHealth University of Colorado Hospital and Children's Hospital Colorado. Other anchors include the VA Medical Center and the Fitzsimmons Innovation Community. Together, campus priorities center around education, research, innovation, and patient care and the area is recognized as one of the top public urban academic and research districts in the nation.

Dating back to the late 19th century, CU's health sciences programs had been primarily located at the Denver campus until the early 1990s, when a new location was needed to ensure the school could continue to expand and grow. At the same time, the Fitzsimmons army base, which included a historically prominent military hospital, was due to be closed. Recognizing this opportunity, local, state, and university leaders worked together to secure the Fitzsimmons campus for an expansion of the University of Colorado's Health Sciences Center with the goal of centralizing and connecting health education, care, and research within a single campus.

The Anschutz Foundation donated more than $90 million towards the construction of new education, research, and patient care facilities and, in 2008, the academic and research

Strengths

- AMC is recognized as an engine of growth for the region.
- Seven primary stakeholders work collaboratively to plan and develop the campus according to a shared vision and goals. Stakeholders include: Children's Hospital Colorado, City of Aurora, VA Medical Center, Fitzsimmons Redevelopment Authority, CU Anschutz, UCHealth Hospital, and University Physicians, Inc.
- When the Fitzsimmons army base was decommissioned, land conveyance agreements ensured that land within the campus would be used for educational purposes. As such, UC has ample area for expansion and growth within the district.
- The campus is located approximately 9 miles east of CU Denver and is connected by Colfax Avenue, a major arterial in the region.
- The campus is served by light rail, and bus, and CU provides a campus to campus shuttle between the Denver and Anschutz campuses, as well as to the VA Medical Center, National Jewish Health Center, and downtown Denver. Services are free to to faculty, staff, students, and employees of other facilities served on the route. Service arrives and departs every hour.
- Three entities operate courtesy shuttles within the campus and individual transport via small electric carts is available upon request.
- CU has a deep history and rich culture around research and innovation, bringing in $600 million plus in research grants annually.
- Colorado has a vibrant startup ecosystem, providing state support for commercialization, entrepreneurship, and a critical mass of product development expertise.
- Campus institutions have strengths in cutting edge research, deep understanding of biology, disease modeling, and clinical mechanistic studies
- The area surrounding the campus has densely developed neighborhoods with a traditional urban grid of streets and pedestrian-scaled residential blocks. The area is also

CHALLENGES	OPPORTUNITIES
• CU Denver and CU Anschutz have different missions which can be difficult to navigate at times. • While cutting edge research is a strength of the district, there is little knowledge or expertise to advance solutions from concept to commercial value. • Access to capital is limited (this is typical for inland states as most commercialization has historically located on the coasts). • Initial Public Benefit Conveyances from the federal government require that land transferred to CU be used exclusively for educational uses, limiting CU's ability to explore the type of shared facilities that are desired in academic health centers and innovation districts. • The regional light rail service only services one side of campus; much of the campus is over a mile from the station that serves it. • The campus lacks density and area constituents require greater proximity and connectivity than are currently being provided. • The campus' pedestrian network is incomplete and bicycle facilities are limited. • Three organizations independently manage their own parking systems. All entities support strategies for alternative modes of transportation, but, despite having an active transportation demand management association, these services and policies are not coordinated. • Historically, there has been little effort to connect new investments at the campus to expand employment opportunities or services to the existing community, despite having one of the highest poverty rates in the state. • Campus staff across all organizations lacks diversity and does not reflect the demographics of the greater community.	• While stakeholder collaboration is strong among campus organizations, it can still be improved. Create more opportunities for integration, cross-sector convergence, and collaboration between institutions, entities, schools, colleges, community, and businesses on campus. • Support future innovation and commercialization of research by providing first-rate infrastructure, utilities, IT, and support services. • As land conveyance agreements expire, develop hybrid, multi-use facilities that enable interdisciplinary teamwork, collaboration, and advancement. • Improve transportation infrastructure to connect all modes to the campus and surrounding community and coordinate parking and transportation demand strategies among campus stakeholders to pursue a coordinated plan. • Utilize smart growth strategies to ensure the long-term sustainability of the campus and increase the variety of activities and amenities that contribute to a lively 24/7 community. • Create opportunities for campus institutions to play a greater role in supporting the community through workforce training and job placement opportunities. • Increase campus staff diversity through the local hiring of Aurora's diverse community. Create an environment "without borders" that is physically and symbolically integrated with the community.

operations of all of CU's health sciences schools relocated to the AMC. The move included the founding of the School of Public Health, a collaborative venture between the University of Colorado, Colorado State University, and the University of Northern Colorado. UCHealth University of Colorado Hospital and Children's Hospital Colorado also moved their facilities to the AMC, realizing the benefits of being in a fully integrated health sciences campus.

Six professional health schools offer over 40 different degree programs: College of Nursing, Colorado School of Public Health, Graduate School, School of Dental Medicine, School of Medicine, Skaggs School of Pharmacy and Pharmaceutical Sciences. The Fitzsimmons Innovation Community offers specialized life sciences lab and office space as well as quality of life benefits including housing, schooling, and childcare options on the campus. As of 2012, three partner institutions have invested over $4 billion in new facilities and infrastructure, making it the largest medical-related development in the U.S.

University of Colorado Denver Anschutz Medical Campus map The Fitzsimmons Innovation Community is planned for the area in the northwest corner of the map. (Image source: University of Denver)

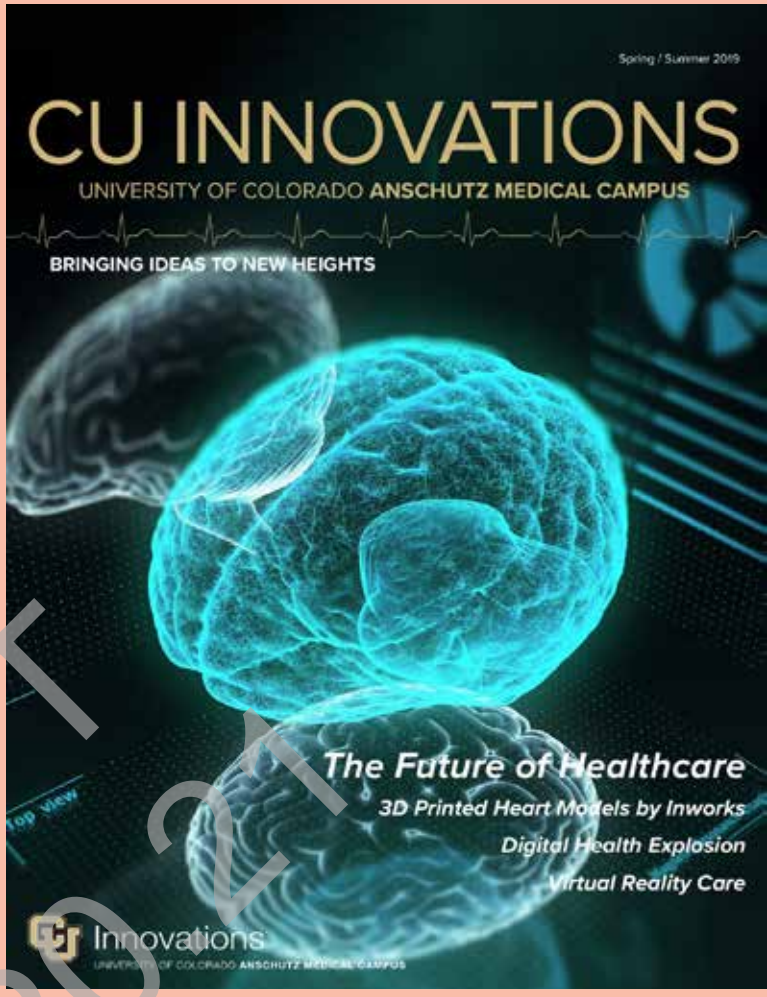
Innovation at University of Colorado Anschutz

Innovation has long been part of the culture in the AMC. For researchers, this provides for connections to abundant research opportunities and a network of collaborative relationships with specialists and leaders in their fields. Patients also benefit from the culture of innovation with faster, easier access to the most innovative treatments and a variety of services provided in a concentrated area.

Upon their expansion into the AMC, CU invested heavily in growing its innovation culture. The University invested in building talent and infrastructure for translational research and made necessary changes to cultivate a pro-entrepreneurial environment. Catalyzing this transformation was the awarding of several grants and philanthropic donations for supporting translational research, something not typically supported by NIH grants. Ultimately, CU developed the Colorado Clinical and Translational Sciences Institute, which oversees and engages in this work.

CU also restructured its technology transfer office, now called CU Innovations, in order to adopt a fresh perspective and remove barriers to innovation and commercialization at the university. The office works in collaboration with academic and administrative offices to create pathways for traditional patent licensing and management, and to identify gap funding (various funding mechanisms have been set up) for commercialization. The office also helps connect technology development experts with faculty and offers training programs so that faculty can better understand how to move from research to commercialization. The office operates an Entrepreneur in Residence program which helps connect faculty with experts in commercialization and product development.

CU's investment fund provides the university with flexibility to invest in both internal and outside technologies as well. CU Innovation works closely with other hospital partners on the campus and technology development, start-up formation, business development, and venture development are also within the office's responsibilities.



The CU Innovations newsletter is a collection of healthcare innovation news, distributed by the University of Colorado Anschutz Medical Campus. (Image source: pubhtml5.com)

Fitzsimmons Innovation Community

The Fitzsimmons Innovation Community (FIC) opened in 2000 as part of CU's expansion into the area. The organization provides flexible and specialized life sciences lab and office space as well as shared scientific and administrative resources with the opportunity to work alongside the CU's clinicians and researchers. Members of the community have direct access to CU's core lab facilities as well. Located within the FIC, the Gates Biomanufacturing Facility is the only site of this kind within a 500-mile radius of the campus, providing for commercialization of research discoveries into products suitable for human use. Combined with research at CU, the FIC has supported the AMC becoming a hub for groundbreaking clinical trials with approximately 600 ongoing at any given time among health care providers on the campus.

FIC is also committed to providing a live-work-play environment in the campus. They provide for multiple housing options in the AMC and also operate Composite Primary, a unique workplace-based and extended-year school for children ages 3-5th grade. The composite education model utilizes curriculum that is student driven and inquiry based. Student to teacher ratios are 9:1 with multi-age groupings of children within a classroom. Composite Primary also offers extended daycare and enrichment programs during school breaks.

FIC is also involved with the Aurora Science and Tech Middle School, preparing students for future jobs in life sciences and technology. These early investments in education help to create a strong pipeline for future workers for the AMC.

Diversity and Inclusion

The closure of the Fitzsimmons army base brought significant job loss to the City of Aurora and the community surrounding the campus now has one of the highest poverty rates in the state. Additionally, surrounding communities are much more diverse than the existing make-up of the AMC, with many immigrant and refugee populations living throughout the City of Aurora. The campus recognized a need to do better and has begun to invest in improving diversity and inclusion policies in the AMC.

Together, campus institutions hired an executive director to establish a Community-Campus Partnership (CCP) program with the goal of connecting with and providing services for the communities surrounding the campus. The effort began with data collection that helped to make a strong case for establishing the program. Only 5 percent of employees lived in the surrounding neighborhoods and staff demographics were not reflective of the community. Thirty campus and community representatives came together to guide the development of the CCP, which was funded by the chancellor at CU, the vice chancellor at CU Anschutz, and The Denver Foundation. More recently, the University of Colorado Hospital and Children's Hospital Colorado committed to help fund the initiative as well.

To start, a delegation of campus and community leaders were sent to Cleveland to learn about the Greater University Circle Initiative, a program that seeks to give residents greater connection to the resources of anchor institutions in the Cleveland community. The learning exchange also provided leaders with an opportunity to learn about the Step Up to UH program, a hire local program with Cleveland's University Hospital.

Subsequently, the CCP established a Hire Local Program which provided staff support to community members looking for and applying for jobs on the campus. Staff also helped to connect applicants to other wrap around services such as transportation and child care. The program included cohort training opportunities complete with agreements from various campus institutions to interview every candidate who completed the cohort training and applied for a job on campus. Unfortunately, the Hire Local Program was cut due to COVID-19 related budget restrictions.

The CCP is still working to find new paths forward to provide for equitable relationships between the community and campus. Currently, the CCP focuses on two primary zip codes, which makes up just under one-third of the city's residents. They are hopeful new programs will be established soon.

Opposite page: Phased build out map of the Fitzsimmons Innovation Community. When fully built, the community will feature a pedestrian friendly environment, access to two light rail stations, and direct access to the Anschutz Medical Campus and hospitals.

EXAMPLE ASSESSMENTS: BUFFALO NIAGARA MEDICAL CAMPUS

The Buffalo Niagara Medical Campus is a 120-acre medical campus located in downtown Buffalo. It's anchored by the University of Buffalo's (UB's) medical college, UB's NYS Center for Bioinformatics and Life Sciences, and UB's Clinical and Translational Research Center, as well as the Roswell Park Cancer Institute, the Jacobs Institute, and the Hauptman-Woodward Medical Research Institute. The campus is known for its excellence in clinical care, research and education.

The campus has the locational advantage of sharing resources with and being located next to America's largest trading partner – Canada. Additionally, the region has a disproportionate presence of advanced manufacturing and clean energy firms as well as many critical physical assets for economic growth, including nationally renowned architecture, historic buildings, industrial corridors, and other urban amenities. However, even with a well-developed advanced research community, the region has seen little job growth and little formation of new firms and businesses. The region has also experienced significant sprawl despite very little population growth and in the last decade, the city's poverty rate has grown faster than the national average.

The campus is managed by the non-profit organization Buffalo Niagara Medical Campus, Inc. (BNMC), which was formed to facilitate collaboration and address shared issues amongst campus member institutions. Their mission is to further economic growth, ignite urban revitalization, and build a strong, thriving community, with a particular focus on the neighborhoods embedded in and surrounding the campus. Program areas include workforce and procurement, entrepreneurship, healthy communities, neighborhoods and housing, energy, transportation access and safety, infrastructure, and youth and education.

STRENGTHS

- The campus is known for its excellence in clinical care, research, and education and has a robust R&D community connected to the universities
- Disproportionate presence of advanced manufacturing and clean energy firms
- SUNY Buffalo is a regional powerhouse for R&D – received $348 million in R&D funding in 2009 which is much higher than peer metros
- City's carbon footprint per capita has decreased while the average carbon footprint per capita of the 100 largest metros of the nation has increased
- Region ranks 46th out of top 100 metros in exports, exporting $6.4 billion worth of goods and services in 2010; its largest export industries are also its largest clusters
- Region has a small but highly skilled population of immigrants and a relatively fast-growing share of mid-skilled workers
- Unmatched proximity to one of the world's greatest resources of clean, cheap hydro power (Niagara Falls)
- Campus is managed by the non-profit BNMC, providing leadership and collaboration for the district stakeholders and area residents.

Among many programs and initiatives, BNMC manages and maintains a NYS-certified business incubator, the Innovation Center, which has become known as the epicenter of entrepreneurial activity in the medical campus. The center supports idea generators, business modelers, start-ups, service providers, and growth and scaling for post-launch companies. It also provides office and wet lab space, co-working spaces, classroom-style space for educational programs and workshops, and

CHALLENGES	OPPORTUNITIES
• Traded sector continues to contract (accounted for 37.2% of metro's total jobs in 1998 but only for 23.8% in 2010). • Population has only grown by 4.2% between 1950 and 2000, but the region has experienced significant sprawl, straining resources. • Buffalo's poverty rate has grown faster than the national average and its median household income is less that the national average; these disparities are even greater when looked at by race. • Region does nor commercialize the ideas generated here nor scale the innovation through entrepreneurial start-ups. • Region underperforms as a border community due to lack of regional and strategic partnerships with most significant trading partner. • Workforce is aging and region's college graduates leave because there are "no jobs."	• Opportunity to become one of the nation's global hubs of innovative clean energy given concentration of jobs, intensity of jobs, and presence in sectors like waste-to-energy, hydropower, and geothermal. • Opportunity to exploit its unique, bi-national position on the border: Golden Horseshoe – megaregion that includes Buffalo-Niagara and Canada – is North America's fastest growing global metropolis. • Accelerate innovation, commercialization, and production in advanced industry sectors of the economy. • Better align skills with jobs to take advantage of the region's high skilled and fast-growing workforce.

networking events.

The Buffalo Niagara Medical Campus is a consortium of the region's premier health care, life sciences research, and medical education institutions, all located on 120 acres in downtown Buffalo. (Image source: visitbuffaloniagara.com)

MutualCity Methodology for Collaboration

BNMC has become known for their unique and comprehensive approach to community engagement and collaboration, coined the MutualCity approach. These efforts include embedding opportunities for community engagement and discussion into their organizational operations. Representatives from neighborhoods in and around the district are voting members on the Board of Directors and the organization prides itself on its open doors policy, providing regular opportunities for neighborhood input. BNMC hosts quarterly stakeholder meetings, called "Four Neighborhoods, One Community," and also hosts several "At the Table" mealtime conversations where residents eat a meal with one another while sharing and discussing information about their shared community.

Additionally, BNMC developed the "Go Buffalo" community outreach program, where neighborhood "champions" work to facilitate information of BNMC's community initiatives with neighbors and represent neighborhood interests back to the organization. BNMC also hosts in-depth leadership trainings with organizations, institutions, and residents to better align campus institutions with community needs. Through this work, BNMC developed the Orchard Community Initiative to focus on housing and workforce needs. BNMC also developed the "Neighborhood Explorer" program as a way to encourage employees in the district to patronize local campus businesses and to raise awareness about campus amenities. The organization is also constantly conducting studies and surveys that lead to new strategies for connecting residents with economic opportunities in the campus and to assist with other challenges that residents incur (e.g. parking, housing affordability, etc.).

Top right: Artist Ashley Johnson installs a street mural to calm traffic and encourage more pedestrian activity in the Buffalo Niagara Medical Campus. (Image source: buffalorising.com, 2021)

Top left: A BNMC partnership brought a community gargen into the Fruit Belt neighborhoods to bring readily accessible healthy foods to residents in and around the Buffalo Niagara Medical Campus. (Image source: buffalorising.com, 2018)

Bottom left: BNMC "At the Table" event, where reidents come together to "break bread" with one another. (Image source: https://bnmc.org/community/, n.d.)

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FORM-BASED CODE IMPLEMENTATION

One of the major recommendations of Vision 2045 (2016) was to adopt a form-based code (FBC) throughout DTLV as the city seeks to transform past auto-oriented development patterns into a high-density, mixed-use, and pedestrian-friendly environment. However, the formal adoption of FBCs and other similar codes is still somewhat new among municipalities in the U.S. and implementation has been slow, yielding mixed results nationwide. In response, many communities are experimenting with new ideas and resources to better support implementation of FBCs.

BENEFITS AND CHALLENGES

FBC is a regulatory zoning tool that is lauded by planning academics and professionals for its ability to implement New Urbanist principles and "traditional" neighborhood features, such as mixed land uses, more sustainable forms of development (compact and high-density), and multi-modal streets complete with public open space. Additionally, the adoption of FBC has been especially popular due to its purported ability to clarify development expectations. Developers should save time and money due to a streamlined and expedited governance and approval process. Citizens should also feel more comfortable with the development process, knowing their concerns about the built environment have been incorporated into the code and that projects should better reflect their vision for the community.

Other benefits of FBCs may include less strain on fiscal resources, as compact development requires less infrastructure to maintain, and better public health outcomes through increased opportunities for walking and cycling. Research also finds that traditional neighborhoods (those that exhibit qualities of mixed-use, walkable communities) have generally had better long-term values when compared to conventional auto-centric areas. Thus, FBCs may also enhance the long-term value of areas where it has been successfully implemented.

Despites these benefits, cities have found it challenging to implement FBCs and developers have been slow to embrace these regulatory changes. FBCs have seen the most success when used in areas that have plenty of raw land for new development, but they have been less successful in transforming existing urban areas. Generally, it's surmised that this is because the effects of conventional zoning are deeply embedded in cultural norms and development processes, causing resistance from residents and developers alike who are used to traditional zoning and approval processes. But, FBCs are not panaceas and there may a variety of issues that contribute to these attitudes.

Research finds that FBCs work best when they allow for by-right development. Any left-over processes that allow for discretionary approaches to development negate the predictability of the process, amplifying regulatory concerns which can return to negotiated zoning and time-consuming hurdles in the development process. Additionally, the community vision that guided development of the FBC may not be economically feasible for the development community. Voluntary FBCs, often adopted as a development incentive alongside conventional zoning codes, have not been very effective, which may show that there is disagreement in the private sector about the economic benefits of FBC.

The FBC itself may also be too lengthy and complex or generally difficult to understand. Some FBCs contain many sub-districts which, in addition to explanatory language, can bloat the code. Use restrictions within the code, similar to that of conventional zoning, is also problematic and can overly complicate the code. Ideally, implementation of FBCs must seek to find a balance between the degree of prescription required and the amount of discretion necessary in order to achieve the desired results. The code must be simple and straightforward, but there also must be a process for finding solutions that were not anticipated when the regulations were drafted and adopted.

Many communities are successfully implementing FBCs. The topics and examples below highlight some of these efforts, providing new strategies which may be adopted by the City as they look to progress development in areas where the FBC has been adopted, including in the LVMD.

DESIGN SUPPORT

For much of the 20th century, communities have had systems in place that support the implementation of conventional codes. This system has relied heavily on planning technicians – personnel that are familiar with and adept at communicating the administrative complexities and requirements of conventional codes to the public. FBCs, however, are heavily design-oriented and the review process will likely need to change in order to accommodate the new code requirements. This may require additional training for existing staff or new staff to supplement the skill sets of current personnel. It may also require new committees and boards, or a change in members, to oversee the approval process in order to bring more design-related expertise into the fold.

There are several ways in which cities are introducing more design-savvy personnel into their planning processes. Some are hiring "town architects," who interpret and supervise the implementation of design-heavy codes. This concept was developed during the Seaside planning process in order to ensure that the intentions of the Seaside Plan and Code were implemented and preserved throughout the town's growth. Town architects oversee a number of urban-design related issues, including the layout of streets and open space, site and building design, and code and regulation approvals. They often manage special design districts and/or master planned communities, and their role is well-suited to oversee approval processes of FBCs as well.

Other communities are building out their staff

SEASIDE, FL.

Seaside is an 80-acre community in the Florida Panhandle that is heralded as the first New Urbanist community. Designed by Andres Duany and Elizabeth Plater-Zyberk, the plan sought to create a mixed-use, connected, and walkable environment that would yield a better quality of life.

Rendering of Type IV typologies in the Seaside Urban Code, intended to private houses, small apartment buildings or bed and breakfast inns along the coast. (Image source: seaside.library.nd.edu)

Design Works, Tallahassee, Fl.

The Tallahassee-Leon County Planning Department is working hard to improve the built environment in its region. While the county does not have a FBC, they do have several design review districts with regulations that are similar to FBCs, seeking to achieve mixed-use, walkable results. These districts require that projects provide high-quality aesthetic, architectural, and urban design elements as well as be compatible with nearby development. In order to assist the development community with "raising the bar" on their project submissions, the planning department created DesignWorks. DesignWorks is an urban design team that consists of professionals with backgrounds in architecture, landscape architecture, and other design-related professions. The team provides design consultations in order to help developers, architects, engineers, and property owners achieve their best work.

The team also works internally with other departments to incubate and develop ideas before they are executed in the public realm and takes on special projects such as way finding or developing design guidelines. Citizen participation has also led to project development and implementation of civic projects such as the Civil Rights Heritage Walk and the Smokey Hollow Commemoration in Cascades Park. The department is a testament to the region's commitment to improving the quality of private and civic development as well as the public realm.

Improved wayfinding installed in Tallahassee to enhance connectivity and navigation in the city. (Image source: https://kccitallahassee.com/)

Opposite page: Example of zoning analysis using Zonar software. (Image source: Gridics. https://www.youtube.com/watch?v=7NhFLg7G-dI)

to include professionals that include skills in architecture and urban design in order to better assist developers in pre-application and approval processes in FBC areas. The Tallahassee-Leon County Planning Department created a new professional urban design team, DesignWorks, to assist staff and developers with application reviews in the region's design districts.

Alternatively, Raleigh, North Carolina, has invested heavily in its existing staff as well as its development community to ensure that everyone understands how the FBC (adopted in 2013) works. Immediately after adopting the code, the city conducted extensive public outreach, providing 3-6 presentations per week to communicate the intentions and regulations of the new code to design professionals, civic groups, and neighborhoods. Additionally, the city provides extensive training that still continues today (as needed) for all development services employees and others who may interact with the code. Such a structured approach was key in the successful implementation of their code.

Several cities are also adopting new technologies for helping both internal staff as well as the development community navigate FBCs. Gridics, a planning and zoning software

New Technologies for Code Visualization

Several cities, including Albuquerque, New Mexico and Miami, Florida, have worked with Gridics to better understand the realities and potential outcomes of their municipal codes. Using a software application called Zonar, planners and the development community can visualize the development potential of their development codes in 3D.

The software uses a city's zoning code to determine what possible development can occur on specific parcels given the pertinent zoning codes. The software can be used for land use studies, testing new zoning scenarios, and visualizing potential development scenarios. The tool can be used for a variety of applications including:

- 3D modeling of master planning development scenarios for transit corridors, districts, blocks, and neighborhoods.
- Compare current codes to proposed changes to better understand the development impact.
- Provides data for financial projections including potential tax revenues and real estate valuations.
- Calculate infrastructure demand of potential future development scenarios.
- Model and test economic incentives for furthering land use goals.
- Provide more accurate and clear guidance for intended outcomes that improve communication with elected officials, community stakeholders, and community residents during public processes.

The City of Miami's Planning and Zoning Department recently adopted Zonar to help them better visualize current and (potential) future zoning ordinances. One application looked to better understand the potential impacts of zoning changes near a proposed linear park underneath the Miami Metrorail's elevated tracks, the Underline.

Existing zoning treated frontages along the proposed park like alleys, with little provisions for pedestrian interaction. Miami planners sought to activate this underutilized urban space by encouraging pedestrian-friendly development and active uses along the dense corridor. The use of Zonar enabled the City to quickly understand the impact of proposed zoning changes along this corridor, including setback changes for properties fronting the proposed park. This allowed planners to test a variety of small changes that helped to mitigate the loss of potential development and to provide incentives to property owners that garnered their support for the project. The Underline is now under construction.

The City of Albuquerque utilized Zonar to analyze proposed zoning code changes that sought to increase density around transit stations along a new BRT transit line. The software was used for tax and financial forecasting and to analyze potential infrastructure demand. It was also used to model new incentives for denser development. The analysis helped planners identify unwanted outcomes that could occur with the proposed zoning changes, including non-compliance of empty parcels, and the results ultimately informed the resulting zone changes.

designed for public agencies, has been used by cities to help streamline citizen services while integrating 3D maps showing the development potential of different zoning areas. Similarly, Symbium is being used by planners and homeowners in California to navigate and visualize the regulatory aspects of residential construction in the state.

Design review boards are also well-suited to oversee the development process in areas governed by FBCs. These boards typically function as decision-making bodies for new development and property improvements, ensuring that the aesthetic and architectural quality of projects achieve the desired design intentions for a particular area, and is compatible with the existing environment. Boards are often made up of community members who have expertise in architecture, urban design, and other design-related fields and may include other positions such as community residents or cultural stakeholders as well. Design review boards typically oversee special design districts such as preservation and cultural districts. This type of board may too be well-suited to oversee approval processes for FBCs.

USER GUIDES

Several communities have found that user guides, FAQs, and other graphic-heavy informational tools have greatly assisted with implementation of FBCs as well. These tools can be helpful both internally for development services staff as well as externally for the development community.

FBCs deviate greatly from the conventional codes of the past, introducing new language and new ways of looking at regulations and requirements for the built environment. It can be difficult for some to adapt to this new way of

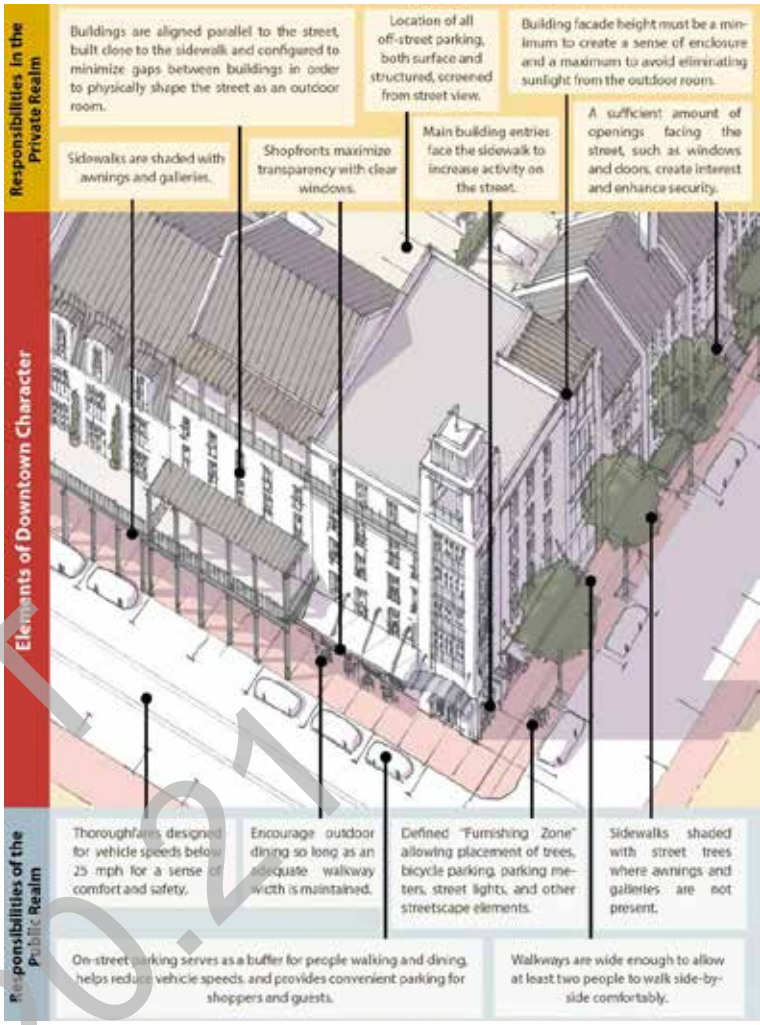


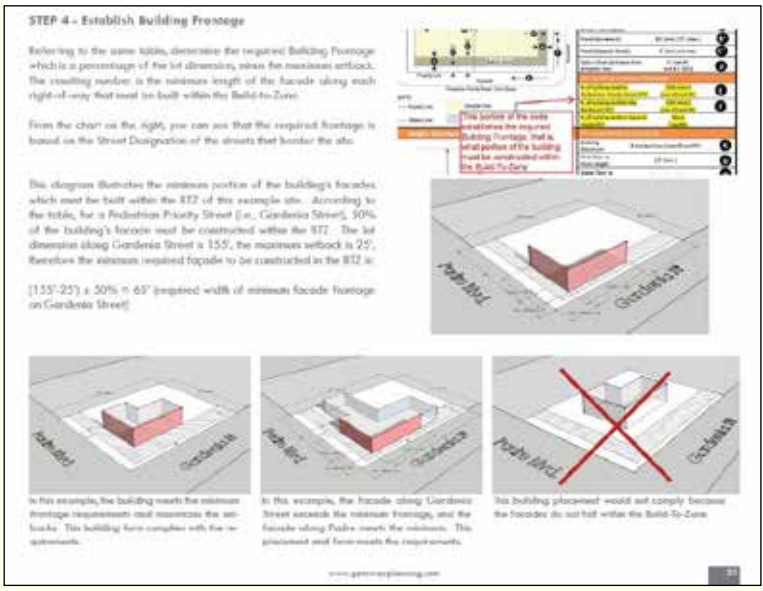
Illustration demonstrating the intentions of a FBC adopted for Downtown Lafayette, LA. (Image source: Development + Design Center, Downtown Development Authority, 2019)

thinking. Cities have found that internal tools, such as comparison charts and application checklists, can greatly assist staff and other code users during their transition to the new code. Charts that highlight changes in the code by comparing old and new provisions side-by-side are a particularly useful and successful tool for navigating these complex regulatory changes.

Additionally, application checklists can help staff stay on track and organized when reviewing development applications. Checklists can also assist applicants and direct them to self-help options instead of relying on staff to answer questions as they come up. Checklists will need to identify all

Padre Blvd and Entertainment District FBC User Guide

In 2010, the City of South Padre Island, Texas, developed a plan to revitalize Padre Blvd and its adjacent Entertainment District. This plan included the development of a FBC to help implement the vision of the plan, which was adopted in 2011. Alongside the code, the city created a FBC user guide to provide developers, builders, and the design community with guidance on how to apply the code in different contexts.

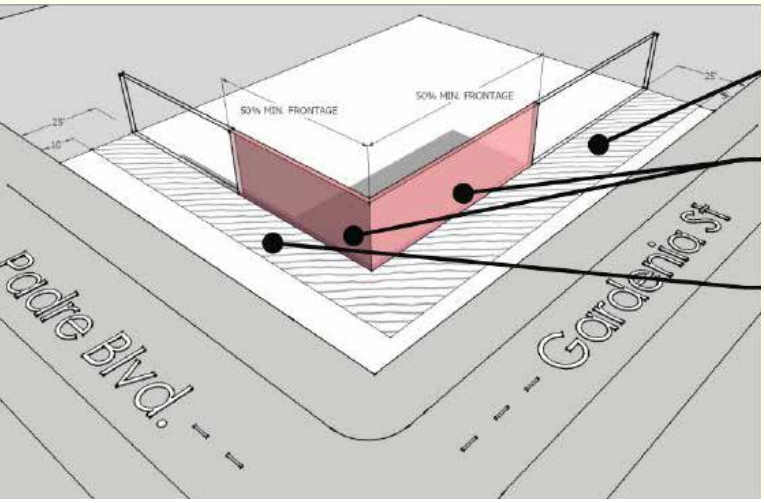


Above and below: Sample page and site specific sample diagrams from the Padre Blvd and Entertainment District FBC User Guide.

The guide includes a general introduction to FBCs as well as an overview of the city's initiative to revitalize South Padre and the Entertainment District. The majority of the guide is a step-by-step manual that walks users through determining which section of the code applies based on the project scope and determining in which character zone (i.e. sub-district) their project is located. The guide also shows users how to establish their "build-to-zone" (min. and max setbacks) and building frontage and building height requirements (including special frontage standards for certain streets and areas of the corridor). Additionally, the guide provides steps for determining additional requirements such as parking and landscaping provisions.

Particularly of note, the guide also includes examples of typical development projects for each character zone, elaborating on the general intentions for each zone. The guide is heavily illustrated, providing graphics explaining how to apply the standards and regulations, sample calculations where applicable, and diagrams that illustrate what to expect of the development review process.
Other communities have produced similar guides, including:

- City of Frisco, Texas, Form-based code manual: The manual seeks to provide developers and buildings with a starting point for interpreting the city's FBC standards and with guidance for how to deviate from the standards in a manner that is acceptable so as to take advantage of the streamlined administrative process.
- Miami, Florida, Miami21: The code preamble provides step-by-step instructions for navigating various sections of the code and the city's website provides an abbreviated version on "using the code."
- Nashville, Tennessee, Downtown Code: The introduction of the code provides an abbreviated how-to-use-this-document guide.



of the required content for the application submittal, including short descriptions and references to relevant sections in the code so applicants can easily find the information they need. Checklists should also distinguish any requirements that may not be applicable to all developments and provide the applicant with a guide to relevant choices where the code allows.

Several communities have developed application checklists:

- Arlington County, Virginia, Columbia Pike FBC Development Application Checklist
- Malta, New York, FBC Project Applications (includes pre-application and application checklists)
- Colorado Springs, Colorado, FBZ Development Plan Application Requirements

Communities are also finding that user guides and FAQ documents are helpful tools for implementing FBCs. FBCs can be lengthy and difficult to understand even for design-savvy individuals. Thus, user guides that effectively provide "how-to" language and illustrations, in layperson's language, can help users determine which regulations and standards apply to their project. Illustrated graphics are key to creating successful user guides, in order to help users understand how to interpret the language in the code. Some guides, such as the Padre Blvd. and Entertainment District FBC User Guide, provide development examples for each sub-district or zone in an effort to provide developers with basic examples of projects that conform to the code. An abbreviated version of this can also be provided as a FAQ document or in lieu of a full guide, depending on the community's needs.

CONTINUOUS COMMUNITY ENGAGEMENT

Typically, FBCs see heavy community engagement while they are being developed but community engagement tends to fall by the wayside after the code has been adopted. It's commonly believed that good form-based codes are created to carry-out the vision of the community and, therefore, there is a relatively low need for community engagement and discussion once implementation begins. Furthermore, the streamlined approval process of FBCs purposely do away with public hearing processes for conforming development applications, which is often the only outlet communities have for community input. Many community members are reluctant to "give-up" their voice in the development process and a lack of continued discussion and communication once the code has been adopted may result in backlash against the plan. Thus, it's important to continue providing outlets for community input and feedback, while being careful not to hinder the streamlined benefits of FBCs.

The city of Fort Worth, Texas, provides one example of how to maintain community involvement in the application review process in its FBC areas. Applications that conform to the FBC are administratively approved but applications that are non-compliant are referred to community partners who are located in neighborhoods who will be affected by the project. Together, these stakeholders work with the applicant to discuss options for revising the project so that it better meets the community's needs without compromising the developer's functional and economic requirements. Solutions are then proposed to the city, who provides the final approval for the project. This allows for some variances on the code while ensuring the community still has a voice in this process.

As with all planning documents, FBCs are living documents and they will need to be amended over time. Community feedback is an essential part of this process, as input from the development community can identify what is not working within the code and feedback from residents and community stakeholders can identify what is not working well for the community. This type of open communication can foster trust and commitment in the implementation process. Thus, having a method to collect and incorporate such feedback improves communication with the community as well as the effectiveness of the code.

The city of Denver, Colorado incorporates community feedback into regular updates and amendments to its form-oriented code. In their experience with the code, they were able to collate feedback into four categories: clerical error, clarification, minor policy or rule changes, or major policy or rule changes. The first three categories include clarifications, rules of measurements and definitions, and internal inconsistencies that are bundled into annual amendments to the code. The latter category includes the creation of new districts or new approaches to form regulations and are considered individually, vetted by staff, and discussed with the community. Furthermore, Denver holds a weekly technical team review meeting, where input on the code is discussed and categorized for action. This process has resulted in clarity for community members, who now trust that the code will continue to reflect their needs as they change over time.

Arlington County created a FBC Advisory Work Group (AWG) to oversee and provide clear direction for implementing the vision for Columbia Pike, a planning sub-area that utilizes two different FBCs to direct development in

The Arlington Mill Community Center is part of the County's efforts to transform Columbia Pike into a walkable urban environment. (Image source: HITT Contracting, Inc., 2013)

commercial centers as well as the surrounding multi-family residential areas. The FBC AWG is made up of Columbia Pike stakeholders, area developers, members from civic associations, and members of the county's Zoning Committee of the Planning Commission and other advisory commissions. Meetings are held monthly and are open to the public, providing an avenue for residents to remain aware and involved in implementation of the Columbia Pike FBC. Consistent communication and ongoing opportunities for community feedback is key for successful implementation of FBCs.

It's also important that communities keep talking about their codes, tracking implementation goals and sharing successes as community visions are achieved. Arlington County also keeps track of the projects built in the Columbia Pike planning area and shares project details on its website, communicating community benefits such as the number of new residential units and new public amenities. Success stories like these need to be shared so that communities know the exactly how the code is benefitting their community.

ACCESSORY DWELLING UNITS (ADUs)

Accessory dwelling units (ADUs) have gained attention over the last decade by planners and policymakers as a way to increase housing stock and flexibility within existing neighborhoods and communities. But while many communities support the development of ADUs, construction of these units is lacking throughout much of the country. Many cities are working to change this trend, providing resources and policies to encourage more ADU construction in their cities.

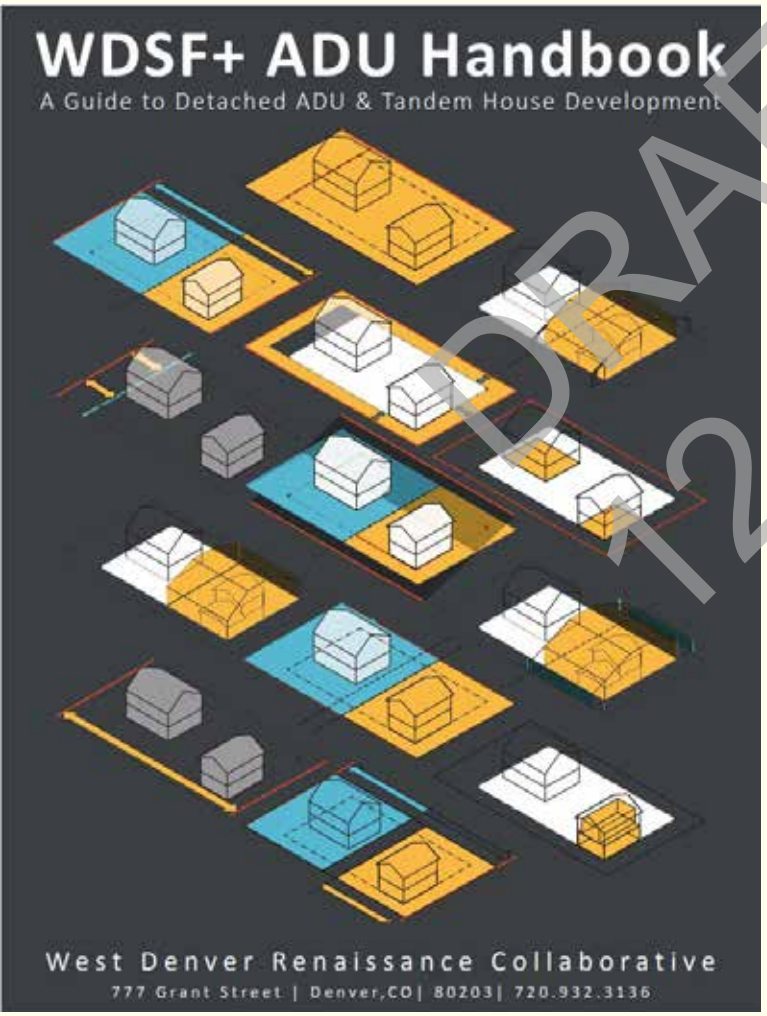
Historically, ADUs were constructed by property owners to respond to housing shortages and affordability challenges, but construction of ADUs decreased with the rise of single-family suburbs in the 1950s. However, changing demographics and housing preferences show that ADUs can again provide beneficial solutions for some of the housing challenges being faced now and in the future.

ADUs AS HOUSING STRATEGY

Housing benefits of ADUs include:

- ADUs can support changing demographics and preferences, providing for smaller households, elderly households, family flexibility, and multi-generational living.
- ADUs provide solutions for "aging-in-place," providing for supplemental income, living quarters for caregivers, and opportunities for companionship and socialization.
- ADUs are a Smart Growth tool, allowing infill units to be built in areas with existing infrastructure.
- ADUs help increase density without significantly altering the character of existing neighborhoods.
- ADUs facilitate the growth of mixed-income neighborhoods, providing additional benefits for more vulnerable populations such as improved employment, mental health, and educational opportunities.
- ADUs typically provide more affordable rental options in established neighborhoods and targeted policies and incentives may increase the stock of affordable housing for extremely low- and low-income households
- ADUs can increase student and workforce housing options in neighborhoods and communities near universities and employment centers, allowing low- and middle-income residents to save on other costs such as transportation.
- ADUs can provide an extra source of income for homeowners and may help to increase property values.

Because construction costs are relatively low (compared to new development), ADUs generally provide for more affordable housing than is currently being produced. Research shows that when ADUs are leased as long-term rental units, the majority are leased for below-market rental rates. Affordable housing advocates are supportive of ADUs as a solution for increasing affordable rental units and mixed incomes in established communities. While ADUs are typically offered at lower than market rate rents, these units are still usually higher than community's most vulnerable residents can afford. In response, some cities are creating initiatives to encourage property owners to provide ADUs as long-term rentals to low- and extremely-low income households.



Top: ADU studio. (Image source: Spacesmag.com, 2021)
Bottom: WDSF+ ADU Handbook

West Denver Renaissance Collaborative (WDRC)

The West Denver Renaissance Collaborative (WDRC) was established to facilitate revitalization and equitable development in west Denver. As the area is redeveloped, WDRC is committed to improving the livelihood of existing residents and preserving west Denver's rich, multicultural character. The collaborative has produced various programs and resources in response to the need for affordable housing strategies alongside redevelopment of West Denver.

The West Denver Single Family Plus (WDSF+) initiative seeks to stabilize low-income homeowners and minimize displacement in the community by providing targeted homeowner resources, connections to trusted home services, and equitable access to detached ADU and tandem home construction in west Denver. Currently, nine neighborhoods are eligible for assistance under this program.

Working with the City and County of Denver as well as the Denver Housing Authority, the collaborative has produced a nationally award-winning ADU pilot program for developing low-income serving ADUs in the West Denver community. Under the program, homeowners save an average of $50-70k through assistance using pre-approved designs, and technical assistance with entitlement, financing, and construction services. Additionally, property owners can qualify for up to $30k in loans that do not have to be repaid if the owner agrees to rent the ADU at an affordable for 25 years. Residents who are at risk of foreclosure or are facing dire financial circumstances also have the option to join in a community land trust for affordable housing preservation and can then use that equity to invest in the development of an ADU to help supplement their income sources.

The WDSF+ ADU Handbook is intended to provide interested property owners with information to help them navigate the process of building and managing ADUs. It provides information about what ADUs are and their benefits and possibilities. The handbook also provides information for understanding the development process, zoning, and design rules, and how to finance and manage the construction of ADUs. Finally, the handbook covers guidelines and information about managing and operating ADUs as rental units.

BARRIERS AND RECOMMENDATIONS

Despite these possible benefits, many barriers still exist to ADU construction, such as costly permitting processes, zoning hindrances, and access to capital and financing sources.

Typical barriers include:

- Lack of knowledge and experience about ADUs and their benefits for homeowners and communities contribute to a lack of interest among property owners.
- The process may be too intimidating for some people who have little experience in building and development.
- Permitting and construction is pricey and many homeowners may not be able to afford construction, especially low-income households who may benefit the most by having additional sources of income.
- Lack of capital is challenging even for more income-stable households as most financial institutions do not take into account future value or rental income on residential loans.
- Existing zoning and permitting requirements may make ADU construction risky and difficult, particularly in communities where ADUs need special or conditional permitting approvals.

Recommendations for removing barriers:

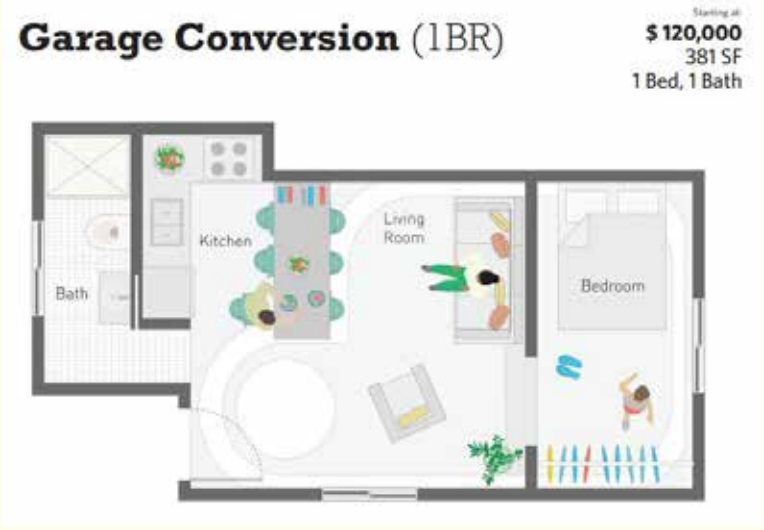
- Market ADUs to homeowners in communities that would benefit from additional housing options and increased density.
- Provide user-friendly educational resources that detail the benefits of ADUs, how to navigate development processes, financial resources for construction, and how to manage tenant-landlord relationships.
- Reduce and waive fees associated with ADUs and streamline permitting processes to lower administrative and development costs associated with ADUs.
- Provide incentives and programs for the development of ADUs as long-term, affordable rental units.
- Provide low-interest loans and other financial assistance to low-income households to assist with the development of ADUs.

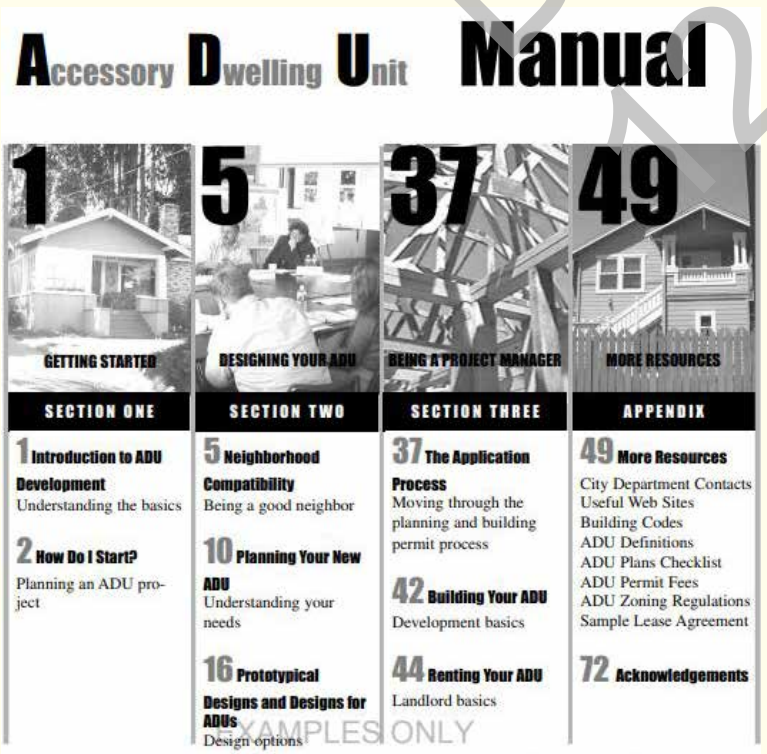
As ADUs become more popular, municipalities will need to remain flexible in their policies so as to adapt to possible consequences that may arise. With the onset of short-term rentals (STRs), ADUs in communities with little or no regulation on this industry may see an increase in ADUs being used primarily as STRs. While research shows that limiting the use of ADUs correlates to a lack of ADU construction, the proliferation of ADUs as STRs negates many of the benefits associated with ADU construction. Real estate investors may also be more aggressive in profiting on this model, leading to displacement of existing community members who are income- and/or housing-insecure.

City of Las Vegas Existing ADU Conditions

A review of the development code finds some barriers to ADU construction in the City of Las Vegas do exist:

- Special use permits (SUP) are required to construct ADUs. The unpredictable nature of SUP processes may be too onerous, costly, and risky, discouraging ADU construction for some property owners.
- Unless the principle dwelling unit is owner-occupied, the ADU may not be offered or occupied as a rental unit. This may discourage the development of ADUs as additional rental housing among investors and landlords.
- The lot/parcel size must exceed 6500 SqFt (approx. 0.15 acres) in order to build an ADU. This may be limiting in neighborhoods where lot sizes are smaller.
- The required setbacks for ADUs may be restrictive, causing development to be unfeasible.





LA Mas, The Backyard Homes Project

LA Mas is an urban design nonprofit that builds initiatives to promote neighborhood resilience as well as elevate the voices of working class communities of color. LA Mas developed The Backyard Homes Project (BHP) as an affordable housing initiative to encourage the development of ADUs as affordable housing units.

The BHP is a one-stop resource center that enables homeowners to build ADUs. In exchange, homeowners agree to rent their ADU affordably to a Section 8 voucher holder for a minimum of 5 years. The program offers homeowners assistance with financing, design, permitting, construction, and leasing support for building and renting ADUs.

Homeowner incentives include:

- Free project management
- Affordable design and construction services
- Optional financing in the form of a permanent mortgage product
- Landlord training and tenant support services
- Possible signing bonuses for new Section 8 landlords

As part of the BHP, La Mas created several off-the-shelf ADU designs. The Homeowner Design Package includes various options for floor plans, exterior styles, product and material selections, and design upgrades for ADUs. Each option also has a baseline cost that includes everything necessary for obtaining a Certificate of Occupancy from the City of L.A.

Accessory Dwelling Unit Manual Santa Cruz, Ca.

The City of Santa Cruz developed an ADU Manual to help residents navigate the process of building ADUs. The manual provides information on how to navigate the planning and design process for developing ADUs, including sample prototypes complete with examples of possible siting, massing, floorplans, and elevations. The manual also provides information on the construction process and best practices for managing landlord-tenant relationships.

Top and middle: Floor plan and exterior options from The Backyard Project Homeowner Design Package. (Image source: La Mas)
Bottom: City of Santa Cruz ADU Manual, Table of Contents

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