

Vision onMain

September 30, 2018



onMain

Dayton's Imagination District

“Redeveloping this 38 acres is a rare opportunity to advance the community-minded missions of both Premier Health and the University of Dayton in a meaningful way on the doorstep of downtown Dayton.”

Mary Boosalis, president and CEO of Premier Health

“As anchor institutions, we’re committed to working with community and development partners to build upon our missions and values in a way that ensures this property continues to offer a strong, authentic sense of place and serves broad community interests.”

Eric F. Spina, University of Dayton President





Contents

1 Context
p. 5

2 Vision
p. 13

3 Plan
p. 19

4 Details
p. 29

Letter to the Community

On behalf of Premier Health and the University of Dayton, we are honored to share this exciting vision for the 38 acres of land that served as the home of the Montgomery County Fairgrounds for more than 160 years. When we came together to purchase this property, our two institutions were determined to develop a plan that would authentically build on our own institutional missions and values, promote economic development, and foster a unique sense of place that serves broad community interests. As values-based, community-serving institutions with a long history of partnership on initiatives that advance and support community and economic development it was our responsibility to conduct a first-rate planning process that invited input from a wide-variety of community members, and challenged everyone involved to think big in imagining the future.

As a result of the process with community stakeholders, we envision a vibrant pedestrian-friendly mixed-use development. A place where inventive minds can work, live, learn and play. While exciting and impactful, this vision will take years to realize.

We are grateful to all who enriched the process with their ideas and insights and look forward to taking the next step with our stakeholders to turn this vision into a reality that advances the missions of Premier Health and the University, boosts the economic vitality of the city, and adds to the stability and health of the surrounding neighborhoods.

Mary Boosalis
President and CEO
Premier Health

Eric F. Spina
President
University of Dayton

Acknowledgments

Steering Committee

Mary Boosalis

President and CEO,
Premier Health

Eric F. Spina

President,
University of Dayton

Paul Benson

Provost and Executive Vice
President for Academic Affairs,
University of Dayton

Chris Butler

Chief Consumer Officer, Premier
Health

Andrew Horner

Executive Vice President for
Business and Administrative
Services, University of Dayton

Buddy LaChance

Vice President of Real Estate,
Premier Health

Lindsay Lease

Project Coordinator,
onMain

Anita Moore

Board Chair, Premier Health

Rick Omlor

Trustee, University of Dayton

Craig Self

Chief Strategy Officer, Premier
Health

Dori Spaulding

Project Manager (Former),
Fairgrounds to Future

Molly Wilson

Vice President for Marketing and
Communications, University of
Dayton

Advisory Committee

Branford Brown

Executive Director
Miami Valley Urban League

Ted Bucaro

Executive Director,
Government and Regional Relations,
University of Dayton

Mikki Clancy

Chief Operating Officer,
Miami Valley Hospital

Shelley Dickstein

City Manager,
City of Dayton

Hunter Goodman

Executive Director,
Fitz Center for Leadership at the
University of Dayton

Sandy Gudorf

President,
Downtown Dayton Partnership

Brian Heitkamp

President,
CityWide Development

Jeff Hoagland

President and CEO,
Dayton Development Coalition

Brady Kress

President and CEO,
Dayton History

Julie Liss-Katz

Chief Government Affairs Officer,
Premier Health

Nikol Miller

Community Relations Manager,
Greater Dayton RTA

Belinda Stenson

Director,
Minority Business Development,
Dayton Area Chamber of Commerce

Support

Montgomery County Agricultural Society

Greg Wallace, Executive Director

Lori Page, Deputy Director and Treasurer

Dale Spencer, Facilities and Maintenance
Manager

Aaron Collette, Grounds Manager

Miami Valley Urban League**Dayton Gospel Mission****Kennedy Union, University of Dayton****St. Mary's Hall, University of Dayton****Premier Health System Offices****44 stakeholder groups**

Over 800 community members who
participated in the process

Consultant Team

Planning NEXT

Ninigret Partners

Stantec

W-ZHA, LLC

Zimmerman Volk Associates

Align 2 Market

Capital Partnerships, LLC

Context

1

Project Goals

The Site

Economic Context





About the Partners

Premier Health and the University of Dayton are anchor institutions in the region with strong traditions of service and giving back to the Dayton community.

Premier Health

Mission: We will improve the health of the communities we serve with others who share our commitment to provide high quality, cost-competitive health services.

- » Over 14,000 employees (second largest employer after Wright Patterson AFB)
- » Over 2,500 physicians in 70 specialties
- » Over 72,000 inpatient admissions and 885,000 outpatient visits
- » Invested \$160 million for free care and other unpaid services to low-income families in 2016
- » Has provided \$17.3 million in community projects and services

The University of Dayton

Mission: The University of Dayton is a top-tier Catholic research university with academic offerings from the undergraduate to the doctoral levels. We are a diverse community committed, in the Marianist tradition, to educating the whole person and linking learning and scholarship with leadership and service.

- » Over 2,500 employees including 612 full-time and 401 part-time faculty; 10,900 total students
- » Ranks second in the country for sponsored materials research and first among Catholic universities for all sponsored engineering research
- » The Fitz Center collaborates with urban neighborhoods and organizations to develop leadership capacity for community building
- » Ranks second among Catholic universities for its sustainability initiatives and eleventh in the country for entrepreneurship studies

Project Goals

The University of Dayton and Premier Health have drafted a set of overarching goals that represent the highest aspirations for the planning process and development. Realizing these outcomes will require dedicated efforts and time.

Process

The desired outcomes...

- 1** Interested parties feel they have been heard through the various engagement opportunities.
- 2** Facilitation aligns with the values of each institution (mission and identity).
- 3** The larger community views the planning effort as a success.
- 4** The two institutions—as well as other like-minded organizations—deepen their partnerships through implementation opportunities.

Place

The desired outcomes...

- 5** Improvements to the site contribute to and are consistent with the values and missions of the institutions.
- 6** Improvements to the site also advance the economic strength of the city and the health of the surrounding neighborhoods.
- 7** The site—in its transformation—is authentic and remains a landmark and destination for Dayton.
- 8** Businesses and a younger demographic (talent retention) are attracted to this place.
- 9** The site is a safe, walkable place, with a mix of uses that is physically connected to adjacent places, including the river, and promotes healthy living.
- 10** There is a long-term, forward-oriented approach to development that addresses emerging technology and land needs.

Economics

The desired outcomes...

- 11** Development on the site will be supportive and complementary of other community planning and development initiatives.
- 12** Residents in the city and surrounding neighborhoods have employment opportunities associated with the construction and final development.
- 13** The redevelopment will leverage private and public investments for both this site and the surrounding community.
- 14** A long-term leadership and ownership role is of interest to the institutions.

The Site

The fairgrounds site and the intersection of Stewart and Main streets have a history that runs deep in Dayton's past. For 160 years, the site has served as a community destination and was once the economic and innovation engine for the city and the agricultural showplace for the region.





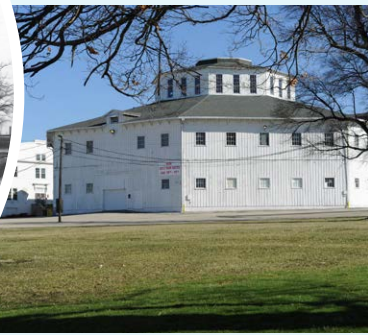
The Montgomery County Fair was first held at the site in 1856.



UNIVERSITY OF DAYTON



The Roundhouse dates from 1874 (left), reconstructed in the 1950s (shown today below).



National Cash Register Company was established in 1884 and originally headquartered at Stewart and Main (left) (area today below).



Economic Context

Understanding the economic context is key to a realistic, implementable plan.

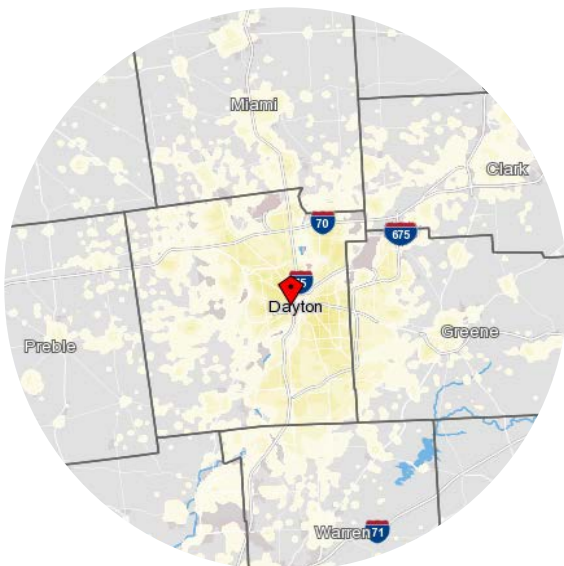
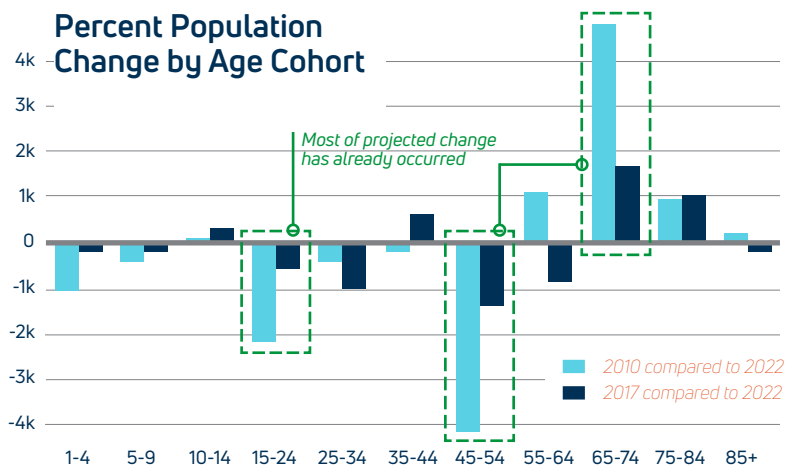
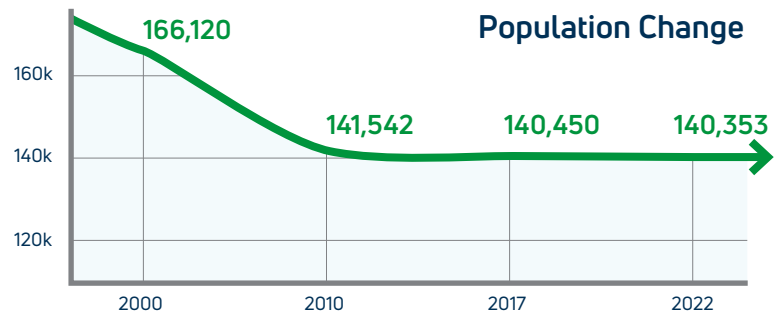
Demographics

Dayton's population decline has stabilized.

Dayton is a city with a population of 140,000 people living in approximately 58,000 households. Dayton's population has stabilized after a decline of 25,000 people since the 2000 census.

However, the population is aging and there are fewer family households.

Important demographic changes have taken place within the city and will continue. The city is getting older with declines in key demographic categories including millennials (25 to 34) and Gen Xers (45 to 54). The median age in Dayton in 2000 was 32.4. In 2022 it is forecast to be 36.4. Moreover, family households will also shrink from 55% of all households in 2000 to 51% in 2022. This trend has some important implications for the housing market and housing stock in Dayton. There is a projected decline of 7,900 households that would typically seek family-scale housing.



One of the potential ways to reverse this trend is to look at commuting patterns and create housing options for people who work in the city but live outside of it. The labor shed, as it is called, shows the preponderance of commuters into the city come from south of the city. However, the data also shows one other important piece of information. Workers age 29 or younger on average commute farther than the commuting workforce as whole. Notably 11% live distances equal to Cincinnati or Columbus compared to 8% of the overall commuting workforce. This long distance commuting workforce combined represents approximately 8,500 people.

Employment

The City of Dayton has approximately 86,000 jobs¹ and approximately 3,700 businesses paying over \$4.2 billion in wages. Since 2011 approximately 5,000 jobs have been added but the largest increases took place in 2012. Since 2012, employment has hovered between 84,000 and 86,000 jobs.

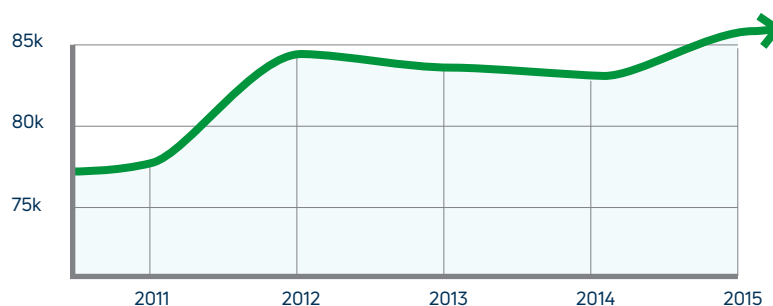
Healthcare and social services are the dominant job sectors. Healthcare and social services are the dominant job sectors employing approximately 27,000 employees, more than the next three largest industries combined.

Manufacturing and Information sectors have declined. Job losses since 2011 have been concentrated in the manufacturing and information sectors (which consists of media and software businesses). Growth in healthcare and social services have more than offset these losses. However, the job skills in the manufacturing and information sectors are not necessarily transferable to the healthcare and social services sectors so while the employment totals have been offset, the impact on individual workers have likely not been.

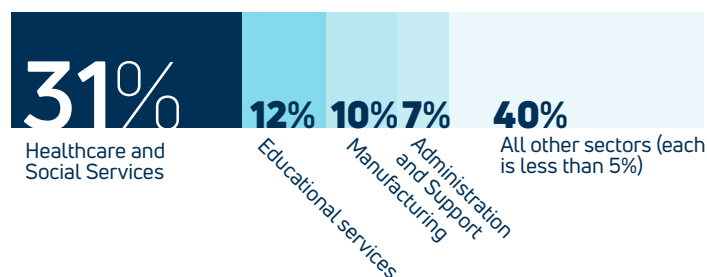
Downtown has added jobs while other parts of Dayton have lost jobs. Job growth has also not been evenly distributed throughout the city. Analyzing federal workforce data typically used for transportation planning, it appears that the greater downtown area has added more than 9,000 jobs since 2011 while the city has added only 5,000 total, suggesting substantial job losses in other parts of Dayton.

1. Because Ohio does not report employment data at a city or town level this is based on two data sources including one provided by the Ohio Labor Market Information Office

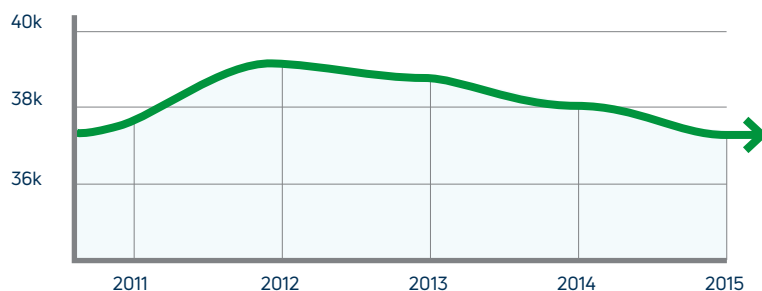
Job Growth



Employment by sector



Job Establishments



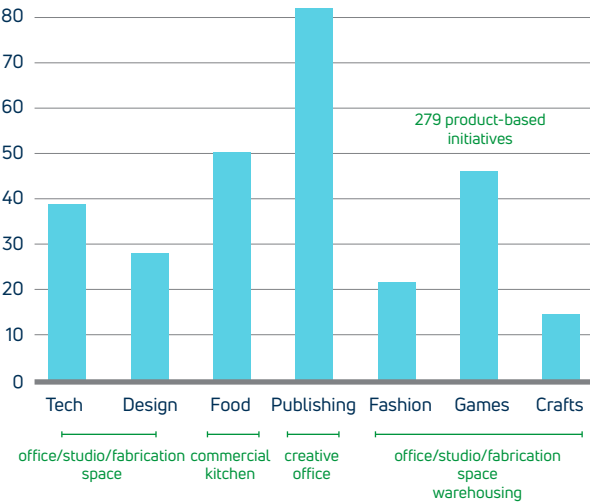
Wages have increased substantially, but the number of businesses has declined. Total wages in the city are up over \$720 million from 2011 totaling \$4.1 billion. Average wages are over \$48,000 which represents a 9% increase since 2011. However, while employment and wages have been growing in Dayton, the number of businesses has been shrinking. Dayton has lost approximately 200 businesses since 2012, returning to business level of 2011.

Industry diversification is key to long-term prosperity. One of the key considerations for Dayton is with its dependence on healthcare and social services employment and educational services (as well as the regional economic impact of Wright Patterson Air Force Base) is how much of the local and regional economy is tied to federal budgetary decisions. Diversification from this dependence is in the long term interest of Dayton.

To that end, a high-level review of the entrepreneurial activity of the community was conducted to understand where the focus of activity is located. Kickstarter was used as a proxy. Based on Kickstarter data (which includes funded and not funded projects), there were 444 campaigns spread across seven product fields. Of note is the number of food and publishing (which includes digital media) activities.

444
Kickstarter campaigns
in seven product fields

Kickstarter Campaigns within Dayton



Housing market

The optimum market position for new rental dwelling units within the mixed-use redevelopment was determined based on the housing preferences, financial capacities, and lifestyle characteristics of the target households; the site’s location, visibility and physical attributes; and the rental housing market context in the Dayton market area.

A target market analysis determined that, given the proximity of the study area to the University of Dayton and the Miami Valley Hospital, and based on a 15% to 20% capture of the annual potential rental market (a typical capture rate range for rental development near universities/ medical institutions), the **fairgrounds area could absorb between approximately 125 to 150 new rental multi-family units per year over the next five years—or 625 to 750 rental multi-family units over the five-year timeframe.**

- » The study established that an annual average of 810 households, with incomes of \$45,000 or more per year represent the potential renters of new units within the Fairgrounds redevelopment each year over the next five years.
- » The annual incomes of these 810 households can support base rents, not including utilities, ranging from \$850 to \$2,400 per month for studios, and one- and two bedroom apartment flats and mezzanine lofts. Supportable base rents have been established at 25 to 30 percent of each of the target households’ annual gross incomes, keeping rents within prospective renters’ financial capabilities.
- » The weighted average unit rent of the 625 to 750 studio, one-, and two-bedroom units is \$1,438 per month for a weighted average net unit size of 798 square feet (a weighted average rent per square foot of \$1.80).
- » Based on the recommended unit rents, sizes, and configurations, absorption is forecast at an average of between 125 and 150 units per year. Annual absorption of 125 to 150 units requires a capture rate of 15 to 19 percent of the 810 renter households that make up the annual potential renter market for the fairgrounds redevelopment.

The market for new condominiums is very small, and even at a 15 percent capture (a high capture rate for for-sale units), would mean absorption of 14 units per year.

Vision

2

Vision
Principles
Process



Vision

This is an opportunity to...

Represent the best of Dayton as a city of innovation, entrepreneurialism, creativity, sustainability and inclusiveness.

Establish a unique platform to create, build and demonstrate solutions across a range of disciplines from health care, energy, housing, environment, business creation and neighborhood wellbeing.

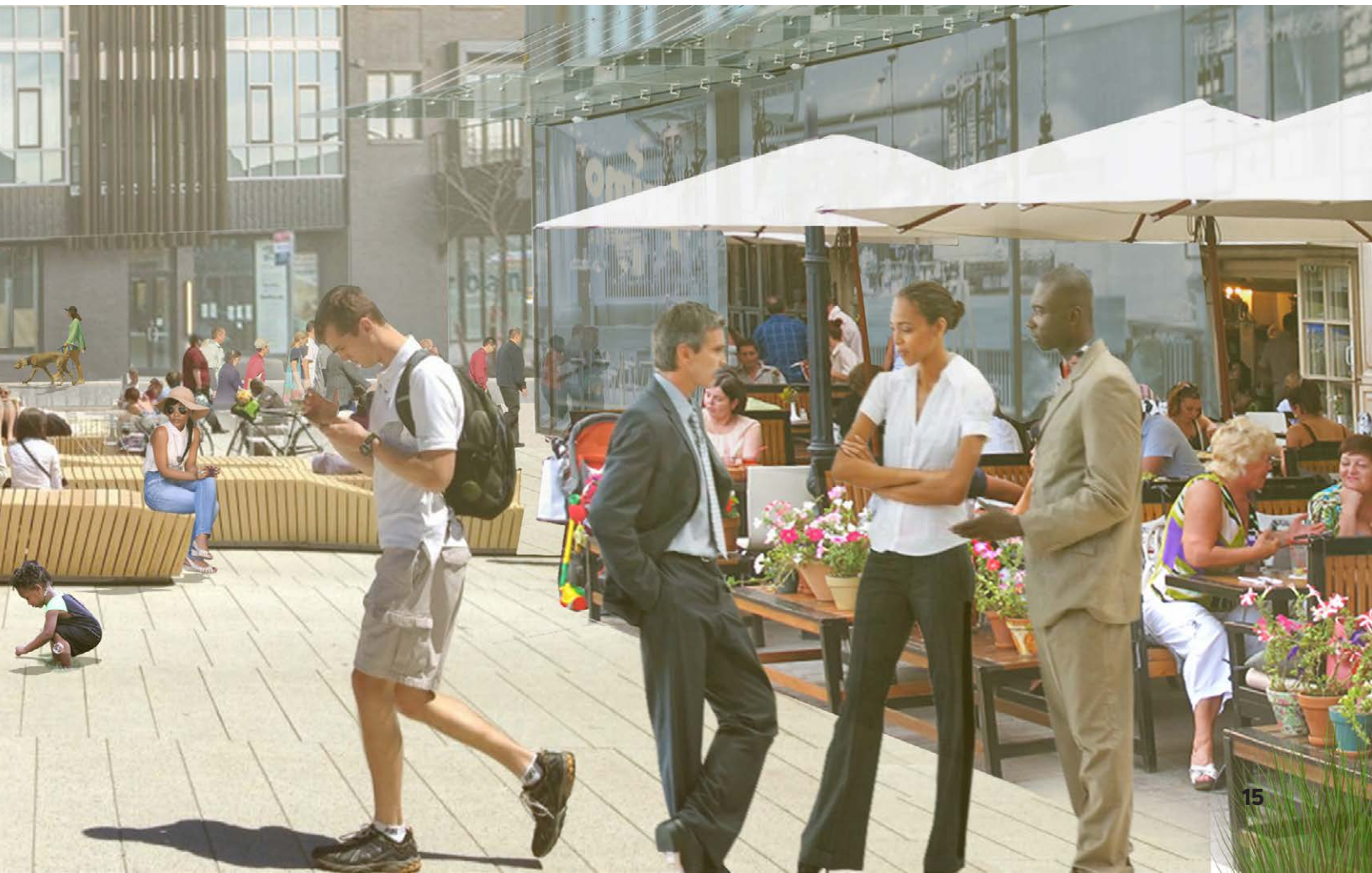
Create a density of ideas, activity and collaborations that can propel the next wave of businesses and entrepreneurs to bring jobs and opportunity to Daytonians and the Miami Valley.



Create a setting that connects people, neighborhoods, businesses and institutions.

Establish a neighborhood unlike any other in the Miami Valley that demonstrates a new type of walkable urban environment.

Establish development standards that reflect the missions and values of the two institutions by integrating environmental sustainability and wellness into the design.



Principles

The following principle statements describe the intended characteristics of development of the site.

Development policies are intended to promote...

1

Sustainable values

Development of the site will reflect the institutions' values for holistic sustainability: environmental, economic, social and emotional. This means: respect for nature and environmental systems; commitment to realizing financial benefit for the investors, community and individuals; inclusion of community spaces and housing choices for a range of community members; and fostering affection for the place.

2

Advanced and integrated technology

The site and its structures will reflect creative thinking for building materials, energy use, data analytics and sensor technology. Dayton has a powerful history of invention and innovation. This site represents the future for these same attributes.

3

Flexibility (adaptable) over time

The site of the former fairgrounds is relatively large at 38 acres. It also exists in real estate market with less than a robust demand. Build out of development will take several years and there is a need for flexibility and adaptability over time.

4

Healthy living choices

The layout of the site will be thoughtful in supporting the wellness of its employees and residents. This includes an attractive and safe public realm for walking, biking and other recreation. It will also be a place that minimizes unhealthy emissions.

5

A distinct but integrated "place"

Living, working, learning and playing will be possible throughout the site. It will be a place that is occupied 24-hours a day, seven days a week. It will become an integrated, mixed-use neighborhood in the truest sense, distinct from conventional development.

6

A high-quality public realm

A great neighborhood must have high-quality, carefully-designed streets and public spaces and this site will have them. This also means strong "edges" of the development where buildings are built to the street, framing the public place for people to move (walk, bike and drive) as well as congregate.

Physical design is intended to feature...

7

Unique amenities to enliven streets and common spaces

The site development will create a vibrant neighborhood where the streets, sidewalks, plazas and parks are well-designed. Opportunities to animate the streets and ground-level activity of buildings will be maximized.

8

Regard for the bluff and its potential

The north side of the site is a bluff with steep slopes down to Apple and Stewart streets. While it offers unique views to downtown and other neighborhoods, it is barrier for connectivity. The development of the site will respect the unique landform and maximize its potential as an amenity.

9

Respect for the site's history

Future development will respect the site's—and adjacent area's—history, especially as it relates to the fairground activities. This can be large gestures, like the goal of maintaining the Roundhouse, or small gestures, like public art.

10

Connection to anchors and larger community

The site will be not be an "island." It will have connections—physical and visual—to Miami Valley Hospital, the University of Dayton and adjacent neighborhoods. It will also have connections to the Great Miami River trail network.

11

Concentrated mass in initial phase

The initial development activity will be concentrated in way that creates a density of activity and interest. This will create a more impactful demonstration of progress than if development is dispersed.

12

Development progressing from the edges inward

To create a positive tone for initial development, the initial projects should be constructed along the Main and Stewart streets. This will signal progress (while deeper parcels take longer to develop) and build confidence in the community and from potential investors.

Process

The planning process was informed by technical analysis and the intuitive insight of individuals, community groups and other stakeholders.

Community Input

Community input was gathered during public workshops on November 2, 2017 and January 25, 2018. Online engagement opportunities were offered following each of these workshops. In addition to the public workshops, 42 stakeholder groups were interviewed to provide insight from a particular perspective and/or organization leader within the community. Over 850 people were engaged offering ideas, feedback and comments during the process. All input was considered by the planning team.

Technical Analysis

Technical analysis included a physical assessment, market opportunities and infrastructure needs. Market opportunities looked at long-term demographics to predict future demand trends, in both emerging and maturing markets. Housing market analysis projected demand by unit types, achievable rents/sales and target demographics. A similar assessment of supply, demand and future opportunities was conducted for office and commercial uses.

The infrastructure assessment examined conditions related to stormwater and sanitary systems, water, natural gas and power utilities, transportation access and connectivity and opportunities to preserve or restore historic structures on the site.



Plan

3

Program Elements
Design Concepts
Initial Phases
Buildout
Conditions for Success



Program Elements

The land use program for the site is summarized by the following six elements.

Employment

This area will become an additional employment center that will expand and diversify the Dayton economy with a focus on multi-tenant research, technology and innovation uses.

Catalytic Building

A catalytic building, supported by each of the partners is intended to serve as an anchor for the initial phase of development of the district and show momentum. The building would reflect the interest and needs of each institution.

Community uses

The site will integrate community services and facilities and a range of neighborhood amenities such as connections to the bikeway network and riverfront, access to fresh food and unique public gathering spaces.

Greenspace

Greenspace is integrated into the site through urban agriculture and infrastructure such as raingardens. As development progresses, some greenspace is replaced by rooftop gardens and vertical urban agriculture.

Residential

The site will feature mixed income housing that supports an integrated neighborhood with opportunities for the district's workforce to live close to work, supporting the principle of sustainable healthy environments.

Retail

The retail strategy is to promote an active first floor. The desire is for local-based retail that is supportive of the neighborhood as the primary objective. It is not intended to be a retail destination.

Perspective...

- » This is an ambitious program both in the initial phase as well as build out.
- » Premier Health and the University of Dayton intend to serve as enablers of the development ecosystem versus the executors of everything.
- » While the institutions have made initial investments, they intend to retain control of the land and lead the development activity, leveraging investment by public private partnerships will be critical to the success.
- » Both institutions are partnership oriented and will seek others to help realize the program and overall vision.

Platform...

- » The buildings, infrastructure and public spaces can be utilized as a platform for new technologies and approaches to urban living
- » Buildings can act as demonstration sites and companies can use the buildings as test/demonstration facilities for their technologies.
- » The infrastructure utilizes new materials, sensors and approaches that can be deployed to test real world environments.

Design Concepts

Any specific designs for the site should consider four concepts: views, public realm, edges and mobility/connectivity.



Views

The Roundhouse is preserved and restored and becomes a focal point within the development.



Public Realm

Public gathering spaces such as plazas and open space are integral with development. Amenities such as outdoor dining create a neighborhood feel and contribute to the energy of the place.



Edges

The character of the site is defined by improving edges along Main and Stewart streets. Along Main Street, bring buildings to the street and include ground-floor retail and community uses and wide sidewalks. Along Stewart Street, use of a tree lawn and greenspace provides greater pedestrian separation from vehicular traffic.



Mobility / Connectivity

Emerging technology in the form of an autonomous shuttle complements bike facilities and comfortable pedestrian sidewalks to shorten perceived distance between campus, hospital and the development.

Initial Phases

At 38 acres, the onMain site is large. The partners are committed to working with partners as well as moving at a deliberate pace to realize the vision given the local economic conditions. It could take 10+ years before this phase is realized.

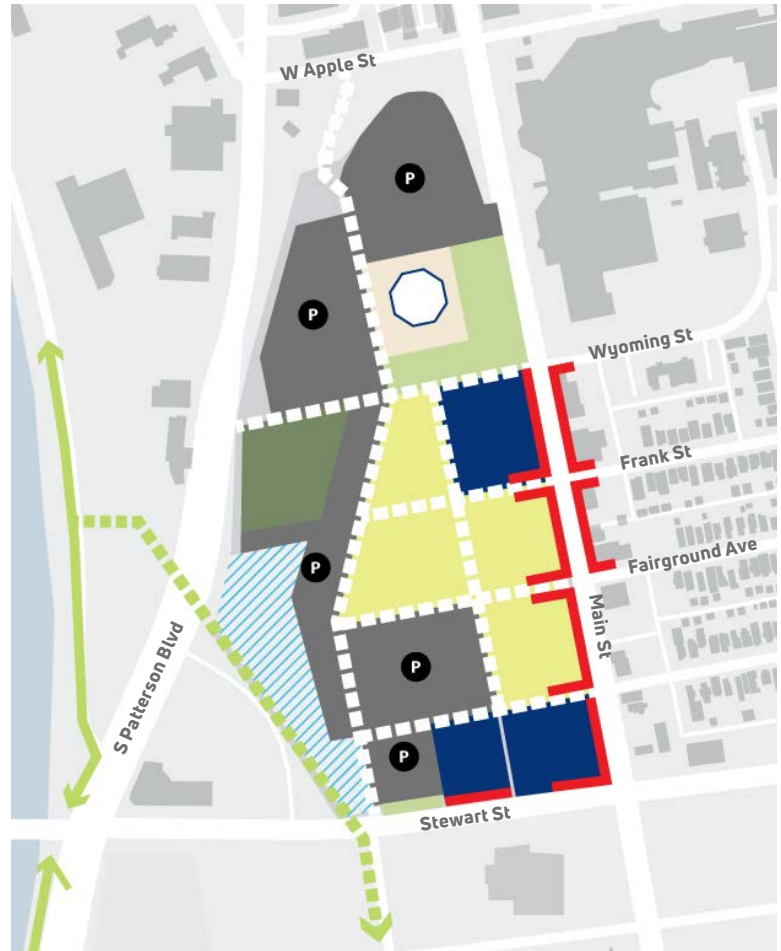
The initial development

As illustrated in the circle below, the first phase of development is intended to:

- » Start along Main and Stewart streets, creating a critical mass of activity with a mix of employment, housing, retail and supportive community uses
- » Establish core infrastructure (streets, utilities)
- » Stabilize the Roundhouse
- » Provide a high-quality public realm and community space
- » Feature urban agriculture on land at the western edge of the site
- » Utilize the area near the old canal for stormwater management

As shown to the right, continued development will:

- » Progress along Stewart Street, then move from the edges inward
- » Connect the Roundhouse to Main Street with greenspace and events plaza
- » Provide a high-quality public realm and community space
- » Feature urban agriculture on land at the western edge of the site



PROGRAM

	Start	Initial phases cumulative
■ Employment	225,000 sq ft	350,000 sq ft
■ Housing	245 units	565 units
■ Retail/Active (ground floor)	60,000 sq ft	85,000 sq ft
■ Urban Agriculture	4 acres	2 acres (plus rooftops)
● Surface Parking	1,210 spaces	1,265 spaces
□ On-street Parking	250 spaces	250 spaces
■ Green Space / Landscape	○ Roundhouse	
■ Plaza / Hardscape	■ Green Infrastructure	



Main Street and Stewart Street Looking Northwest



Feature urban agriculture on land at the western edge of the site



Connect the Roundhouse to Main Street with greenspace and events plaza



Catalytic Building

First Step

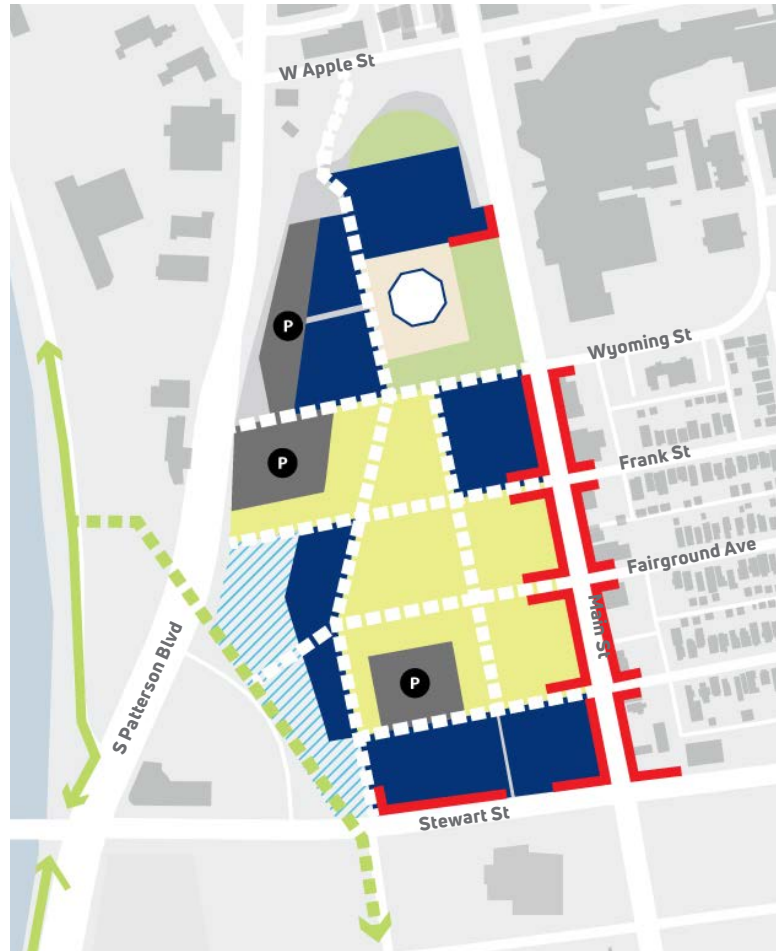
The first step in the development will focus on employment uses intended to catalyze other development.

Buildout

Buildout of the site could follow several scenarios depending on identification of partners, strategic investments, market demand and early design decisions. Realizing the build out will take time and is determined by the rate of success of the initial phase.

Buildout...

- » Depends on key strategic partnerships with investors and institutions who desire to be on the site
- » Responds to institutional needs, strategic priorities and market opportunities
- » Maintains a high-quality design and active public realm
- » Integrates emerging technology and wellness



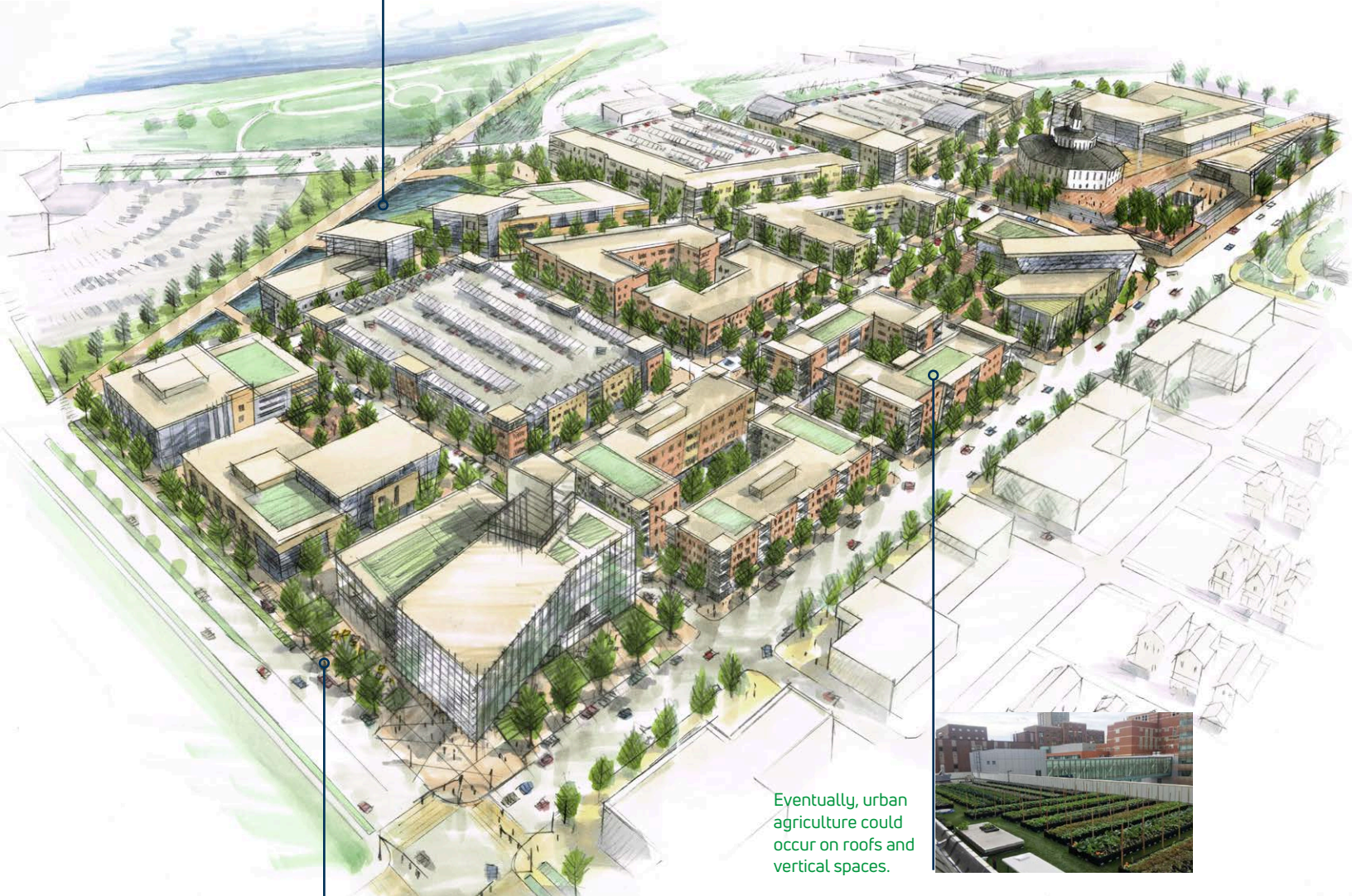
BUILDOUT PROGRAM (cumulative)

■ Employment	760,000–1,100,000 sq ft
■ Housing	780–1,200 units
■ Retail/Active (ground floor)	85,000 sq ft
■ Urban Agriculture	roofs/walls
● Structured Parking	2,050–2,350 spaces
□ Surface Parking	on-street
■ Green Space / Landscape	
■ Plaza / Hardscape	
○ Roundhouse	
■ Green Infrastructure	

Main Street and Stewart Street Looking Northwest



Canal Park, green infrastructure.



Eventually, urban agriculture could occur on roofs and vertical spaces.



Emerging mobility technology through an Shared Autonomous Vehicle (SAV) shuttle could connect the site to Miami Valley Hospital, University of Dayton and surrounding neighborhoods.



Conditions for Success

Public Realm and Community Uses

Roundhouse Restoration

The institutions hope to facilitate the restoration of the historic Roundhouse structure to better reflect the historic look and grandeur. This would involve recreating the original window openings and placement, addressing the exterior siding, installing new doors and dormers, and re-creating and re-installing the cupola on the top of the structure. The Roundhouse has the potential to serve as an important community gathering space within the site where all people feel welcome to enjoy this historic landmark. A variety of uses could occupy the Roundhouse, from a community event space to agriculture processing and production space to a farmer's market venue.



Roundhouse Plaza

The site area immediately surrounding the Roundhouse has the potential to further serve as a central community gathering space open to all people. The design and programming of the site would allow for many different outdoor events and activities, including: active spaces, contemplative spaces, as well as space for festivals and events. In doing so, it would become a meaningful community asset. One key aspect to the success of the Roundhouse plaza is the direct connection to Main Street. In the depiction below the existing retaining wall is removed and re-imagined as a tiered social space that welcomes people into the plaza, up to the Roundhouse, and, ideally, into the larger neighborhood. There is also the ability to terrace the grade change to create a direct path up to the bluff to provide access to one of the best views of downtown from the site.

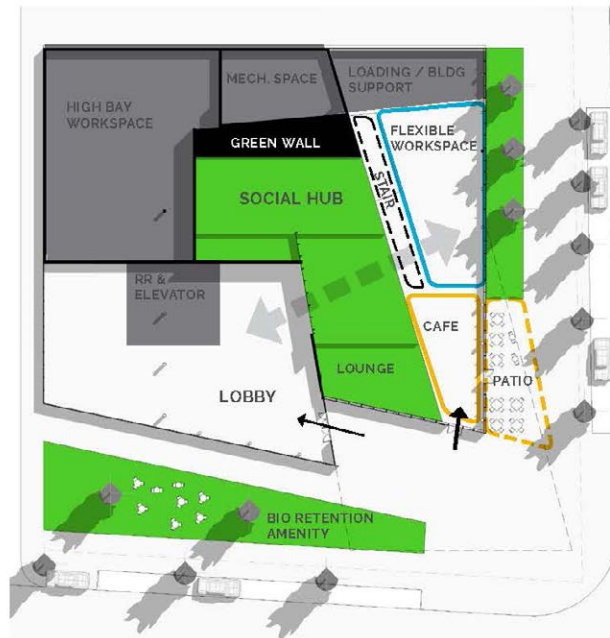
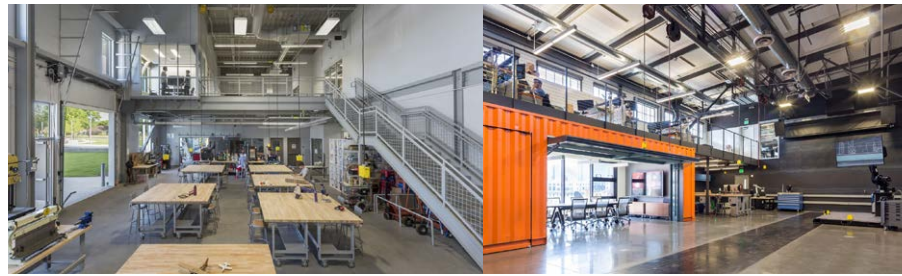
Conceptual renderings of the restored Roundhouse and plaza. Below, looking northwest from Wyoming Street and Main. Left, looking south from Apple and Main Streets.



Catalytic building

Program Highlights

To catalyze development activity, an employment-oriented building is envisioned at Stewart and Main streets. The catalytic building would be the first employment building on the site and would be 80,000 to 150,000 square feet. The program would focus on research, development and business acceleration as well as state-of-the-art education and training. It could include a simulation center that can be used by healthcare providers across the region. The catalytic building would be flexible through a mix of high-bay and standard office, research bench space, classrooms, conference space and auditorium. This flexibility will allow it to accommodate a range of needs from research, prototyping, testing and fabrication. The building would have a mix of tenants including university research, healthcare research, smaller tech firms and outside research and development teams. The facility would also have a resident-accessible open studio / lab facility that can be used by schools and the maker community.



The interior of the building would have flexible work and research spaces as well as community space on the first level as shown in the diagram (left).

Conceptual rendering of the catalytic building (below).



Supportive Uses

Retail

Retail uses are important to activate street activity and ensure success of the employment and residential uses. OnMain is not conceived as a retail destination. Because of this goal, the first floors will need to be addressed creatively to be part of the financing of the buildings. As part of the commitment to engage the community in the development, a master lease arrangement for some of the first floor space can be linked to the creation of a retail / neighborhood business incubator program that will create a pipeline of neighborhood-based entrepreneurs. The entrepreneurs will have the opportunity to capture some of the economic value and disposable income from the development.



Residential

Mixed-income housing is a key value of onMain leadership. There are a number of approaches to supporting mixed-income housing which include federally-qualified low-income housing. However, the need for taxable property to help finance the infrastructure and programmatic investments makes this difficult. The intent is to utilize an employer-supported housing model that has two components. Some residential developers will be able to lease the land at a discount. In return for receiving this land at a discount, rents for some employees working within the designated district can be leased at below-market rents. Rents could be further subsidized by employers through direct payments as offsets for the need to build parking.

Encouraging the district's workforce to live closer also helps supports the developments' goal to promote sustainable, healthy environments.



Details

4

Advanced Technology for Energy
Shared Parking
Green Infrastructure
New Mobility Technology
Wellness Approach
Urban Agriculture and Food Security
Architecture and Character



Thinking Differently About Development

The vision for onMain includes demonstrating the values of the institutions and the best thinking about making an enduring, prosperous and memorable place. This requires thinking differently in a number of ways on how development could be realized. The long-term commitment to the development by the institutions—and their values—makes thinking differently possible.

Considering Advanced Technology for energy

The use of advanced technologies is an essential objective of the vision for the fairgrounds development.

The residential and commercial building sector accounts for about 74 percent of electricity use and 40 percent of all U.S. primary energy use. Energy use in buildings depends on a combination of good architecture and energy systems design, and on effective operations and maintenance once the building is occupied.¹

District Energy

The primary advantages of a district energy system are greater reliability, lower maintenance costs, the ability to switch fuels when fuel supply economics change, and (sometimes) competitive energy rates. The main drawback is the higher capital investment and consequently higher fixed costs. Owners with longer investment horizons and lower expected ROI's, such as the hospital and university, may be able to justify investment in a district energy system for the long-term benefits. If the hospital and university choose to retain ownership of the site, implementing a district energy system would be easier by avoiding the

questions of ownership, maintenance and access that arise when multiple owners are involved.

Cogeneration and trigeneration power plants are typically used for these systems. A network of smaller, distributed cogen or trigen plants will likely be more efficient than a single large plant. A distributed network can be built in phases and add built-in redundancy to the system. These systems can be located in building basements or rooftops.

Energy Storage and Distribution

The solar orientation of the site and anticipated building heights are generally favorable for photovoltaics (PV). Small-scale wind energy on buildings is possible but is neither efficient nor significant in terms of energy generated. PV is more efficient than wind in terms of dollars invested versus kilowatt-hours received, although the introduction of solar tariffs on imported PV panels may change the magnitude of benefit. Small wind turbines on buildings can serve an educational purpose and demonstrate a visible commitment to renewables, but should not be expected to contribute a significant amount of energy.

If renewable energy is produced on site or locally via micro-grids, it will need to be stored and distributed over time. Distributed energy storage (DES) offers benefits to building owners by storing excess power from on-site generation and optimizing energy costs, storing it when costs



Photovoltaics installed on rooftops are a favorable solution to on-site energy generation (bottom). Micro wind production is less efficient but may serve educational purposes (top).

1. Quadrennial Technology Review: An Assessment of Energy Technologies and Research Opportunities, U.S. Department of Energy. September 2015

are lower and distributing it when costs are higher. Battery systems are a common form of localized energy storage and distribution. Lithium-ion and lead-acid batteries are often used for residential buildings, while higher-capacity sodium-sulphur and advanced lead-acid batteries are typically used in commercial buildings. Flywheels can smooth out power variations where power quality is a concern.² A representative DES offers storage capacity in 500kWh increments (up to 2MW) with a physical dimension similar to a shipping container.

Net Zero-Energy

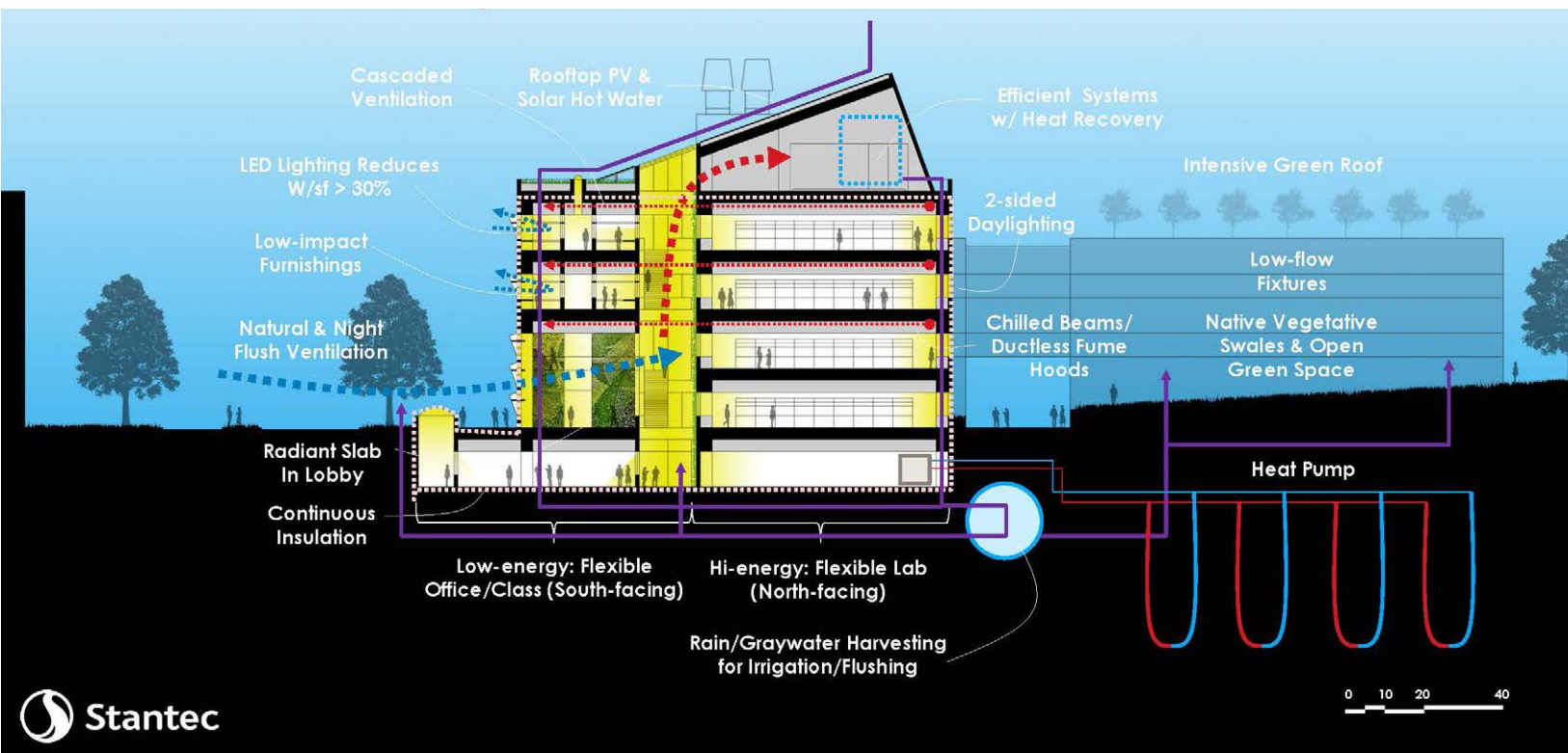
A Net Zero-Energy Building (NZEB) is one with greatly reduced energy needs through efficiency gains, such that the balance of energy needs can be supplied with renewable technologies. The options for Net Zero and sustainable design are based on both old and new methods. These design methods are not static, but are continually being reviewed for changes related to developments. Examples include passive solar design, underfloor air systems, radiant

heating floor systems, solar photovoltaics (PV), natural ventilation and daylighting, green roofs, wastewater reductions, and rainwater harvesting. Engineering solutions can be complex and expensive however, and simpler techniques that rely on lower cost sustainable architecture principles can often perform better.

One example of how sustainable design can produce multiple benefits is demonstrated with green roofs and rooftop solar PV arrays. Green roofs help insulate the building, lowering heating and cooling costs. They also regulate temperature on the roof which can prevent the PV arrays from overheating. The weight of the green roof system also mitigates wind uplift and reduces the need for additional anchoring for the arrays.

Occupants and maintenance staff also need to understand the importance of their role in achieving the energy goals of these structures. Ongoing monitoring of actual energy performance is required to adjust the systems as necessary and ensure that performance is meeting design goals.

2. Electricity Storage: Technologies, Impacts, and Prospects, Deloitte Center for Energy Solutions. September 2015.



Considering Shared Parking

Traditional parking studies and zoning codes assume that each use needs its own supply of parking. Effectively, this approach mandates the construction of multiple parking spaces per car, which is inefficient. Moreover, this often requires extensive construction of structured parking and/or significant land to devote to surface parking.

However, parking demand changes for different uses throughout the day. For example, peak demand at an office building may be just before lunch at 11:00 am, while peak demand for a residence is likely overnight when people have returned home. In contrast, the office parking may be half empty at 5:00 pm, and totally empty at night when the residential demand peaks.

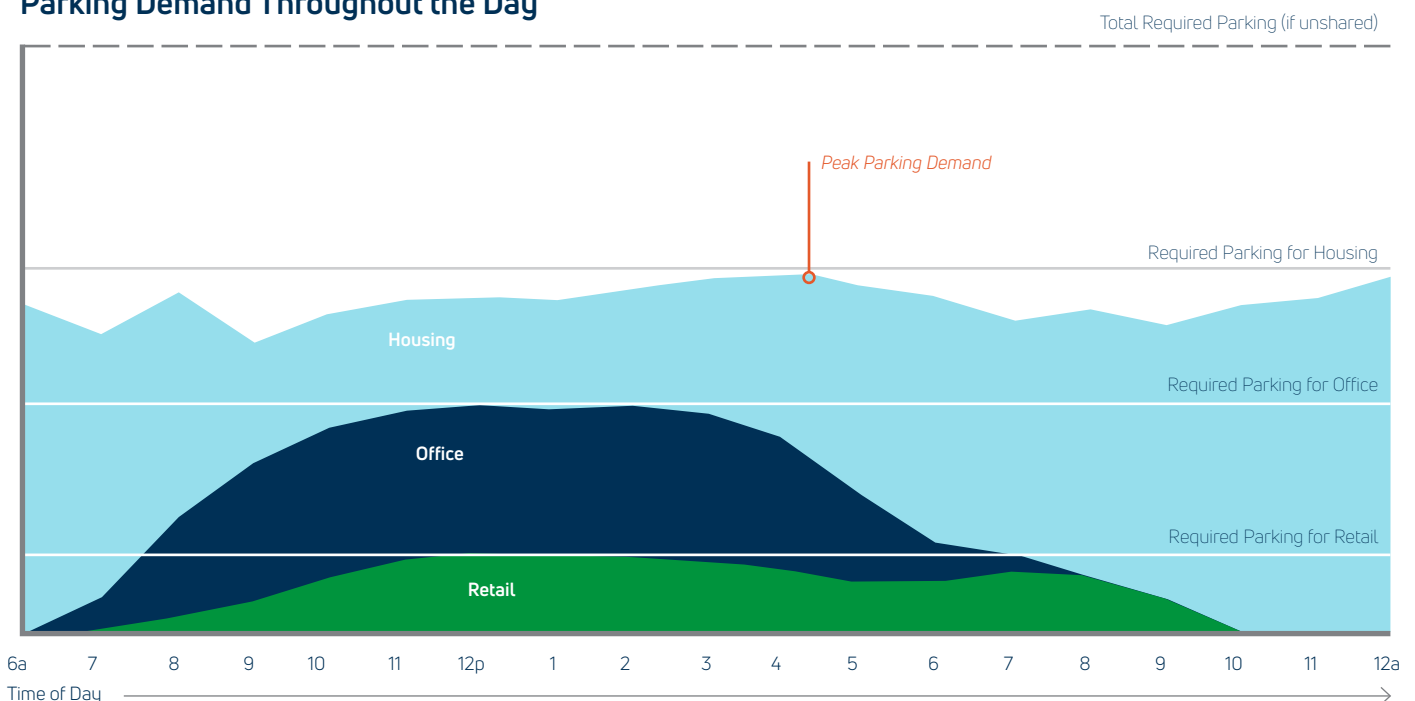
To minimize the cost of providing parking, all parking for onMain should be shared to the fullest extent possible. To more appropriately plan for the parking demand for the redevelopment of the fairgrounds, the intensity of parking required for each use was modeled, as well as how that demand would change throughout the day. Looking at these peaks throughout the day provides a much more accurate estimate of how much parking would be required at the peak for the overall development.

All parking for onMain should be shared to the fullest extent possible.

Specifically, shared parking provides the following benefits:

- » In a shared parking approach, fewer spaces are necessary to support more built uses
- » Shared parking allows parking to be consolidated and away from the center of activity, which can instead be focused on the environment for people walking and biking. People on foot are more likely to visit multiple destinations, which is good for retail in particular.
- » Shared parking promotes a mix of uses by allowing built parking spaces to efficiently serve more than one use
- » Consolidated, shared parking can limit costs as it allows for more efficient site planning
- » The site may also support parking from adjacent uses with excess demand, generating additional revenue

Parking Demand Throughout the Day



Site-Specific Strategies

In relatively dense mixed-use areas, one parking space can serve multiple uses over time, but also for one user. Customers, visitors, employees and residents can visit multiple destinations on foot, on transit or on a bicycle and only park once. For example, the office employee who drives to work but walks to purchase lunch and then back to the office has just reduced the parking demand for the lunch restaurant by one space.

OnMain is mixed use and will likely create these types of synergies and “internally captured” trips.

Surface parking lots and on-street parking should be used in the initial phases due to the expense of structured parking, the amount of available land, and the changing nature of mobility. In the future, the need for structured parking will be evaluated using the latest methods of shared parking and parking demand to prevent overbuilding expensive parking structures.

Parking Demand Methodology

The methodology to estimate parking demand incorporates adjustments for both shared parking and internally captured trips. For comparison, three parking demand scenarios for multiple build-out programs were modeled:

1. **Unshared Parking Demand** where each use requires its own supply of parking
2. **Shared Parking** where each use would share a communal parking supply
3. **Shared Parking with Internal Capture**, which assumes that approximately **10% of trips are internally captured**.

Peak Parking Demand

The table at the bottom of the page provides an overview of the estimated peak parking demand. Note that the parking industry generally considers a facility “full” if it is over 90% occupied; ideally there are always some spaces available, and this cushion accounts for seasonal changes, special events, etc. Therefore it is advisable to build to approximately 110% of the peak.

All of these scenarios are likely conservative (i.e., the higher end of what is likely), as they do not incorporate:

- » Reductions for people who walk, bike or take transit to/from the site
- » Parking demand reductions from any transportation demand management (TDM) programming, i.e. programs such as:
 - » Parking pricing
 - » Subsidized transit passes
 - » Information campaigns
 - » Bicycle facilities, such as racks, showers and locker rooms

An adapted shared parking model (derived from the Urban Land Institute’s Shared Parking Manual [2nd Edition, 2005] and the Institute of Transportation Engineers Parking Generation [4th Edition, 2010]) was used for the analysis. These sources draw on databases of national parking generation rates per unit of development as well as how that demand changes over time.

Parking Demand Ratios

Use	Rate
Retail	2.55 spaces per 1,000 square feet
Office	2.47 spaces per 1,000 square feet
Medical Office/Lab	3.20 spaces per 1,000 square feet
Apartments	1.00 spaces per unit*

Estimated Peak Parking Demand by Development Scenario

Scenario	Retail	Office	Medical Office	Residential	Estimated Unshared Parking Required	Estimated Peak Parking Demand	Estimated Peak Parking Demand + Internal Capture*
Initial Phase	85,000 sf	125,000 sf	225,000 sf	470 units	~1,600	~1,300	~1,200
Buildout	85,000 sf	500,000 sf	500,000 sf	670 units	~3,700	~3,200	~2,900

Considering Green Infrastructure

The traditional approach to managing stormwater uses “gray” infrastructure, engineered approaches that direct rainfall to catch basins and pipes, often underground and out of sight. “Green” infrastructure is increasingly popular and relies on natural systems to retain, treat and filter rainfall. There are cost and environmental benefits to thinking differently about stormwater management.

Benefits

Green infrastructure can provide multiple benefits, managing stormwater, creating green space, adding landscape to streets and sidewalks and contributing to an aesthetically pleasing environment. The long-term benefits of green infrastructure systems include:

Environmental

- » Improves air and water quality
- » Offsets climate change
- » Restores ecosystems and habitat
- » Increases groundwater recharge

Economic

- » Increases property values
- » Can be used to obtain grants or tax credits
- » Maintenance costs of surface systems can be lower (problems are immediately visible and can be more easily accessed than below-ground systems)
- » Can reduce maintenance costs for buildings (providing shade and wind reduction near structures)

Social

- » Enhances recreation
- » Enhances quality of life
- » Reduces excessive heat
- » Reduces crime (more people outside = less crime)
- » Reduces noise pollution (trees, green roofs and permeable pavements dampen sound)
- » Can be used as educational opportunities

By uncovering and utilizing the original canal bed, managing stormwater results in a unique amenity for the community.



Cost

Comparing the cost of gray versus green stormwater infrastructure depends on a number of factors, including:

Cost and availability of open space

- » In walkable urban areas, most developers prefer to install concrete vaults/cisterns within the building footprint as opposed to landscaped systems that take up valuable land. This is likely the case for the fairgrounds site, to maximize buildable area for development.
- » When land is available, surface systems usually take up a smaller footprint than subsurface systems. For example, a surface system may be designed with 25:1 loading and a subsurface system at 10:1.

Landscape requirements/goals

- » Funds allocated for general landscaping can provide multiple benefits by creating green infrastructure.
- » Green infrastructure requires ongoing maintenance that must be budgeted to preserve its function.

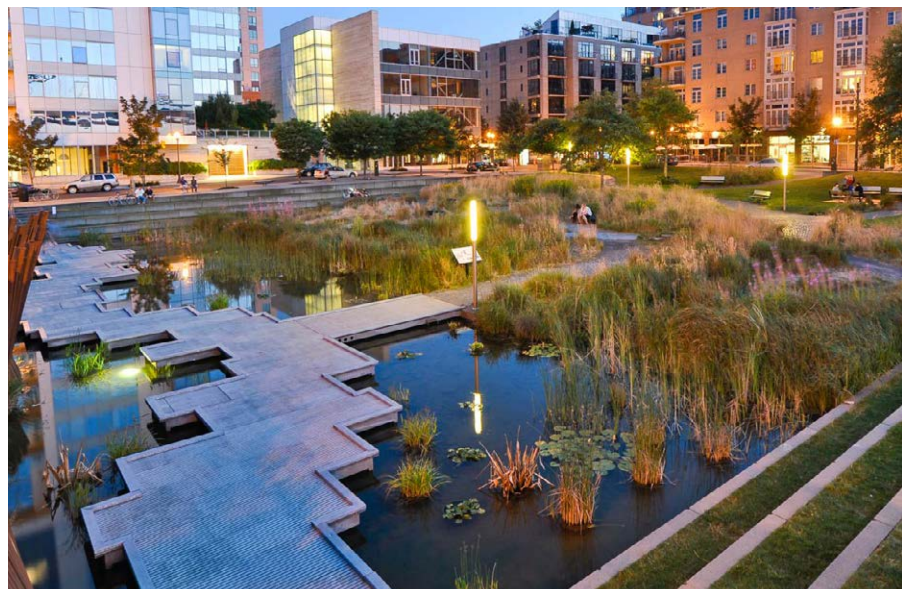
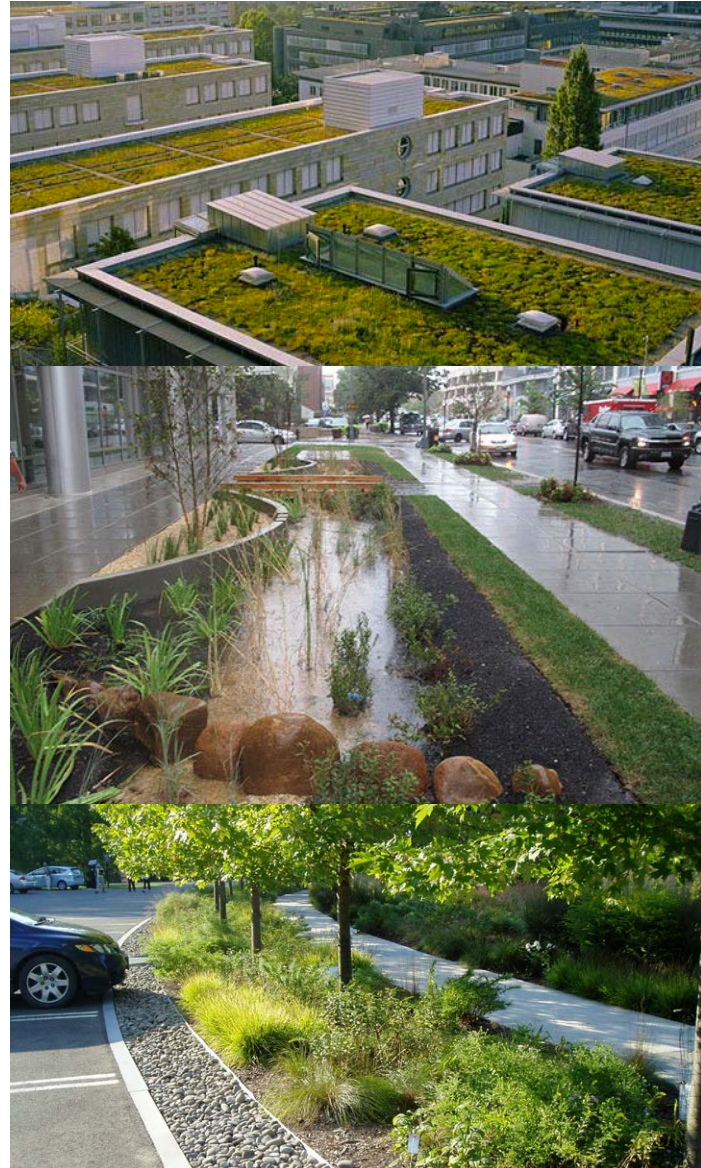
Stormwater goals

- » Managing a small, water quality storm event has less intensive requirements than managing a 100-year storm event.

Education

- » Sustainable design, quality of life and innovative techniques can be hard to quantify in dollars. Green infrastructure can be a highly visible way to demonstrate these principles while educating the public.

Green roofs, pervious pavement or raingardens are all examples of green infrastructure.



Tanner Springs Park in Portland, Oregon encompasses a city block and gathers and processes stormwater for the area.

Considering New Mobility Technology

Emerging mobility technology through an Shared Autonomous Vehicle (SAV) shuttle could connect the site to Miami Valley Hospital, University of Dayton and surrounding neighborhoods.

Shared automated vehicles are purpose-built and designed for low-speed environments. They can integrate with multi-modal networks or act as a stand-alone circulator service. Their versatility makes for easy implementation in a variety of use-cases such as urban cores, private campuses and master-planned communities. Their flexibility makes for simple route and operational style modification such as fixed-route or on-demand. Deployments can support existing transit infrastructure by affordably filling in gaps in service or act as a convenient first/last mile shuttle to reduce parking demand and congestion.



These vehicles use an array of advanced sensors and communication devices along with proprietary software to safely navigate their operational domain. Vehicles utilize a remote supervisor/fleet manager to monitor vehicle status and intervene in-case of emergency.

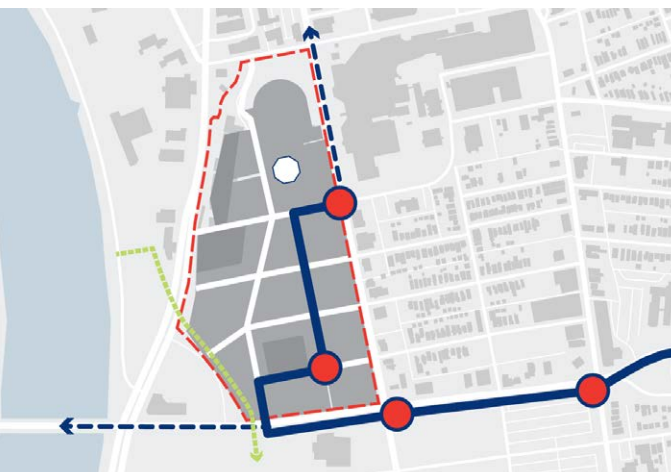
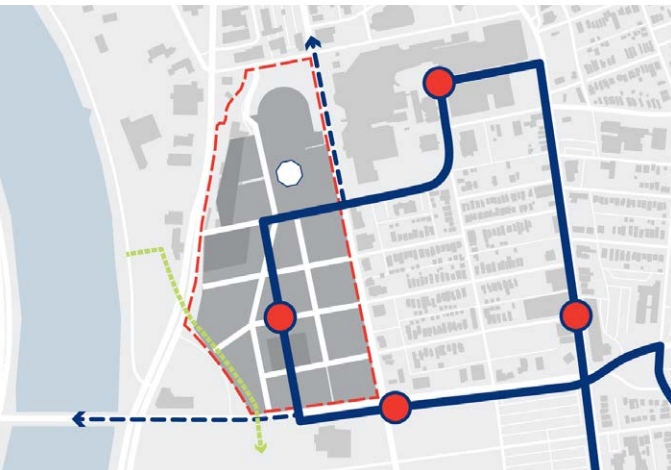
Further SAV feasibility considerations including detailed routing options, intersection design and station design are contained in the Operations Manual.

Network Feasibility

The feasibility of two types of routing schemes have been initially considered: a loop route and a linear route.

The loop route utilizes existing infrastructure as well as new infrastructure for the operation of the SAV shuttle. While this routing does provide connectivity to a number of destinations, it may be difficult to retrofit space for the SAV shuttle in key areas (e.g. Brown Street). Also, the nature of a loop does mean that there is a further distance that the vehicle will travel to complete the circuit which contributes to higher operational costs (e.g. maintenance) over time.

An alternative routing scheme, the linear route, reduces the amount of travel that the vehicles are required to do. This linear routing scheme can be expanded to other areas. This route would also operate on a mix of existing infrastructure and new infrastructure, with the special considerations for each noted in the following section.

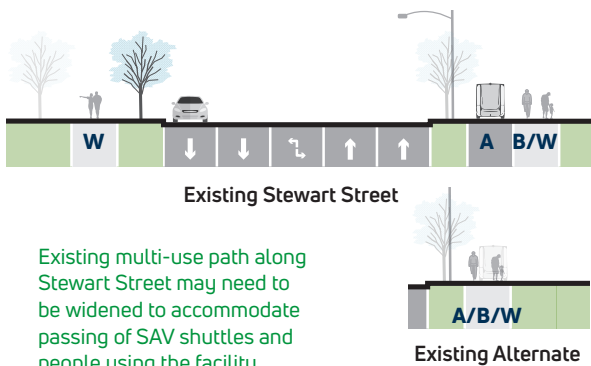


Accommodating SAV shuttles

Two contexts currently exist in the study area: retrofit (i.e. changes to existing infrastructure on West Stewart Street) and new build (i.e. incorporation of discussed design considerations in the redevelopment). These contexts create different opportunities for the street cross sections.

Retrofit. For the retrofit context, minimizing reconstruction and justifying impact to existing uses will be important to consider. This is particularly true when the autonomous vehicle space is required to be separate from other vehicles within the cross section. A possible option to use the multi-use path on the south side of the street has been considered. In this case, two options are possible, either a designated space for the SAV shuttle adjacent to the multi-use path or the sharing of the multi-use path. These possibilities are sketched below.

Further design review is needed to determine the appropriate treatment, but it appears that the multi-use path may need to be widened in order to accommodate passing of SAV shuttles and people using the facility.

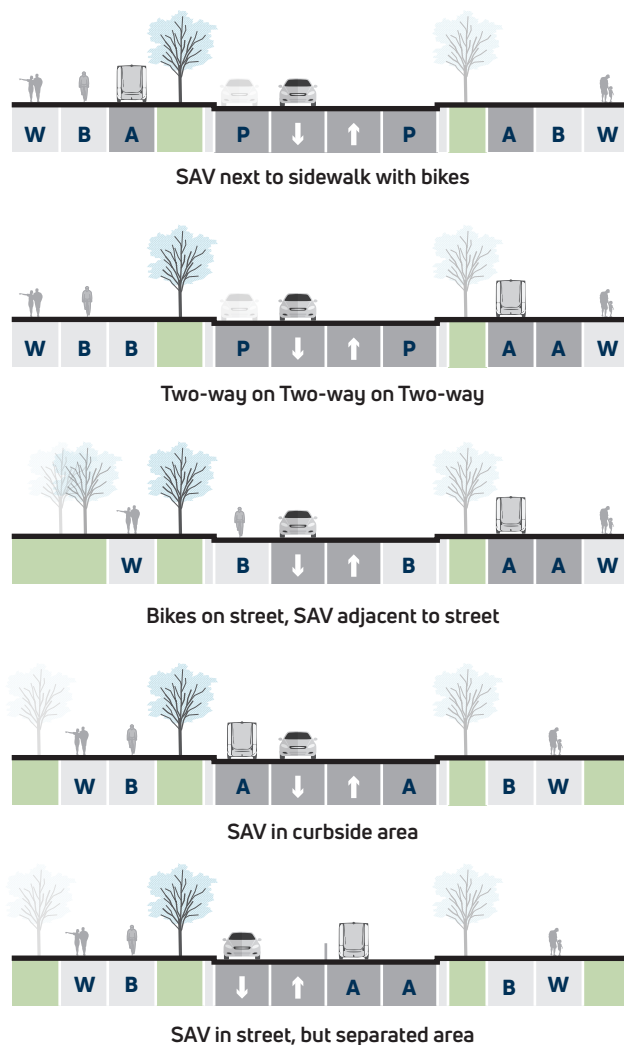


New build. The new-build possibilities could have the autonomous vehicles operate outside of the travelway as shown in the top three cross sections below. Alternatives could include the removal of on-street parking, street trees and/or the removal of the separated bikeways. In the least, it is expected that two lanes for motor vehicle travel, two lanes for autonomous vehicles and a sidewalk on both sides of the street is required.

The bottom two possibilities have the autonomous vehicles operate within the travelway but in separate space.

A fundamental assumption in the development of these options is that the autonomous vehicles are separate from the human-driven vehicles. While this is likely necessary for the initial deployment and adoption of the vehicles, this may change to a fully shared or entirely autonomous carriageway, depending on the technology capabilities.

Note that separated bikeways have been shown in these cross sections for completeness, though they may not be part of the cross section.



Considering a Wellness Approach

The design of neighborhoods and communities has a powerful influence on human health. As more people are interested in living in walkable urban areas, design needs to make human health a central focus.

The WELL Community Standard is a performance-based system for measuring and certifying features of the built environment that impact human health and well-being. It marries best practices in design and construction with evidence-based medical and scientific research—harnessing the built environment as a vehicle to support human health and well-being. It addresses ten concepts—air, water, nourishment, light, fitness, temperature, sound, materials, mind and community—as a framework to turn urban design into a tool for improving public health.

The WELL Community Standard is primarily concerned with the way buildings interact with each other in the landscape. However, since people spend 90% of their time in buildings, the Community Standard requires some buildings to be certified under a health and wellness building standard like LEED (Leadership in Energy and Environmental Design) or the WELL Building Standard. The WELL Community Standard is currently in its pilot stage; the related WELL Building Standard has more than 700 projects in 32 countries pursuing certification.

The WELL Community Standard contains a mix of design strategies, policies, and performance-based strategies to address each of the ten concepts. This is an example of a wellness approach that would be given thoughtful consideration to ensure opportunities for healthy lifestyles for all who live, learn, work and enjoy the development.

Air

Clean air is a critical environmental determinant of human health. Strategies and policies to consider include air quality monitoring, smoking bans, parking restrictions and charging stations for electric vehicles. The parking restrictions described in the standard include unbundling the cost of parking (no “free” parking) and providing carpool, car-share and bicycle parking.

Water

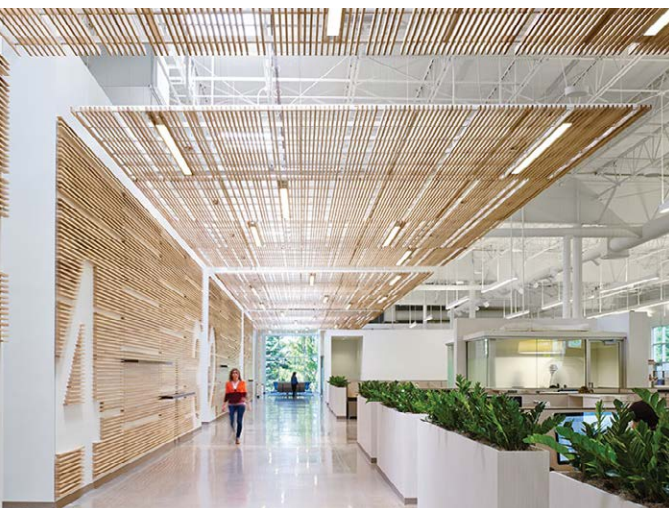
Clean drinking water is essential for maintaining health and preventing disease. Strategies and policies to consider include water quality testing, drinking water access such as outdoor water fountains and hydration stations, water feature sanitation, and stormwater management such as low impact development (LID) techniques. LID includes green roofs, rain gardens, bioswales and rainwater harvesting.

Nourishment

Poor nutrition is a major contributor to numerous preventable chronic diseases. The local food environment is closely linked to dietary behaviors and food choices. Strategies and policies to consider include healthy food procurement, convenient access to fresh fruits and vegetables, urban agriculture such as rooftop gardens, breastfeeding support and food security measures.

Light

Lighting in the community serves many important purposes but can disrupt people’s natural circadian rhythms, which can impact numerous physiological processes including sleep. Strategies and policies to consider include a lighting master plan, a lighting control schedule that automatically dims nonessential lighting, obtrusive light control for exterior lighting, light trespass mitigation for sleep, and use of a lighting designer to ensure appropriate levels of illumination based on the function and use of a space.





Fitness

Physical inactivity is linked to numerous chronic diseases and conditions, including diabetes and obesity. The design and operation of the built environment constitute powerful and sustainable interventions that promote more active ways of living. Strategies and policies to consider include mixed-use development (a given on the fairgrounds site), design to encourage walkability and pedestrian-scale design, bicycle infrastructure, mass transit support such as bus or shared autonomous vehicle, indoor and outdoor physical activity spaces and fitness programming available to residents and employees.

Temperature

Extreme heat and cold can significantly impact a community, leading to increased mortality especially among vulnerable populations like the young, elderly and sick. Strategies and policies to consider include public education about extreme heat and cold events, urban heat island mitigation with green roofs and cool pavements, and increased vegetation along streets and in public spaces.

Sound

Acoustic comfort is a subjective measure and does not imply an absence of sound. The significance of health effects from environmental noise exposure such as traffic varies. Strategies and policies to consider include sound planning to identify noise-sensitive spaces; noise maps of day, evening, and nighttime environmental noise; planning for acoustics; and noise level limits.



Materials

The health and environmental impact of many man-made chemicals and additives is largely unknown, and the potential hazards significant. Strategies and policies to consider include waste stream management, construction remediation, careful assessment of outdoor structures and their chemical treatments, and consideration for landscaping and pest control measures.

Mind

A complex relationship exists between the mind and body, and the built environment can be a powerful tool to help mitigate adverse health outcomes. Design strategies include integrating greenery into streetscapes to reduce environmental stress; providing outdoor play spaces for children; creating restorative green, blue and built spaces; and preserving scenic views. Policies to consider include access to mental health services and support for mental health crises and substance abuse services.

Community

Health inequities exist between different parts of the population, and improving community design is one way to combat these negative outcomes. Equity, public health and the distribution of power are some of the issues that can be addressed. Strategies and policies to consider include community visioning (underway), health impact assessment (HIA), safe social spaces, public open spaces including those privately owned like residential courtyards, housing equity and affordability, digital connectivity, celebration of place, public art, and post-occupancy surveys to gauge sentiment.

Community gathering spaces provide necessary social spaces that benefit both mind and body.

Urban Agriculture and Food Security

There is an opportunity to use a portion of the onMain site to help address some of the food access issues in the community. "Food deserts" are one measure of food access. There are two approaches to measuring "food deserts" centered around the availability of a grocery store. The USDA model measures whether a grocery is available based on distance from a resident. It looks at distances between 1 and 10 miles. The farther away the grocery store, the more of a food "desert" exists. The other option is the approach used for Community Development Financial Institutions (CDFI) which measures a "food desert" based on how far someone has to travel to reach a grocery store compared to the average distance traveled for market area. Based on the USDA methodology, areas adjacent to the fairgrounds represent a food desert. The CDFI approach shows the area is not a food desert. The downside of the CDFI approach is it does not take into account transportation access which can be a major hurdle for a significant portion of the population that does not have access to a car.

Because of these food desert issues, numerous activities across the City to address the food access issue are occurring. One major example is the Gem City Market which is a retail distribution approach. Gem City Market is still in its nascent stages of development.



Sources of food on the site could be provided through an urban agriculture program. Initially this could take a traditional form on the ground.

Fresh local food from the site's agriculture program could be distributed through a permanent farmer's market venue utilizing the roundhouse.



Given the resource limitations in Dayton there is a desire to allow the Gem City Market the opportunity to develop its customer base and not compete for financial resources during its start up stages therefore a "grocery store" approach was not viewed as a desirable approach.

However, there is still an opportunity for the property to play a role in the access to fresh food supply problems in Dayton. That role could be as a supplier of fresh food product that can be sold and distributed through GEM City, convenience stores, bodegas, and potentially through a "Farmers' Market" that utilizes the Roundhouse. The Farmers Market would not be positioned as a "stock up" trip but instead sell a limited supply of fresh vegetables and fruits. Therefore, the property addresses the food access issue through the supply-side with broad, local distribution rather than compete with existing retail outlets. It would not be competing with other local neighborhood gardens or other fresh food initiatives. In fact, it would be contributing to greater scale enabling the potential for food processing and distribution jobs to emerge.

Due to the phased nature of the development program, the urban agriculture approach could start as raised beds, converted containers for hydroponics, or greenhouse structures as interim uses. Over time, the urban agricultural model could move to rooftops, be added to parking structures or continue through GrowPods or other urban agricultural techniques. It can also double as an urban agriculture research facility in conjunction with the University of Dayton Hanley Sustainability Institute and other potential partners.



Eventually, as development takes place, urban agriculture could occur on roofs and vertical spaces.

Architecture and Character

Materials

- » Honest and authentic
- » High proportion of glass
- » Durable especially at ground level
- » Restrained in colors and textures

Mass and form

- » Simple geometries
- » Form reflects program
- » Treatment of corners should be different than interior buildings
- » Strive for depth within façade
- » Variety in form and massing

Sustainability

- » Consider orientation
- » Consider percentage of glass on different facades
- » Use of sun screen and sun shading where appropriate
- » Utilize passive solar techniques

Placement and Activation

- » Buildings should be placed with minimal setbacks, to create street wall
- » Buildings should respect the grid structure
- » First floor program should activate street and design should accommodate openings that create transparency and access to street

Detailing

- » Details reflect overall design approach
- » Everything is designed
- » Cohesive with building form





onMainDayton.com