PHOENIX BIOMEDICAL CAMPUS

2017 MASTER PLAN AND COMPREHENSIVE DEVELOPMENT PLAN **UPDATE**

AYERS SAINT GROSS

April 2017

INTRODUCTION

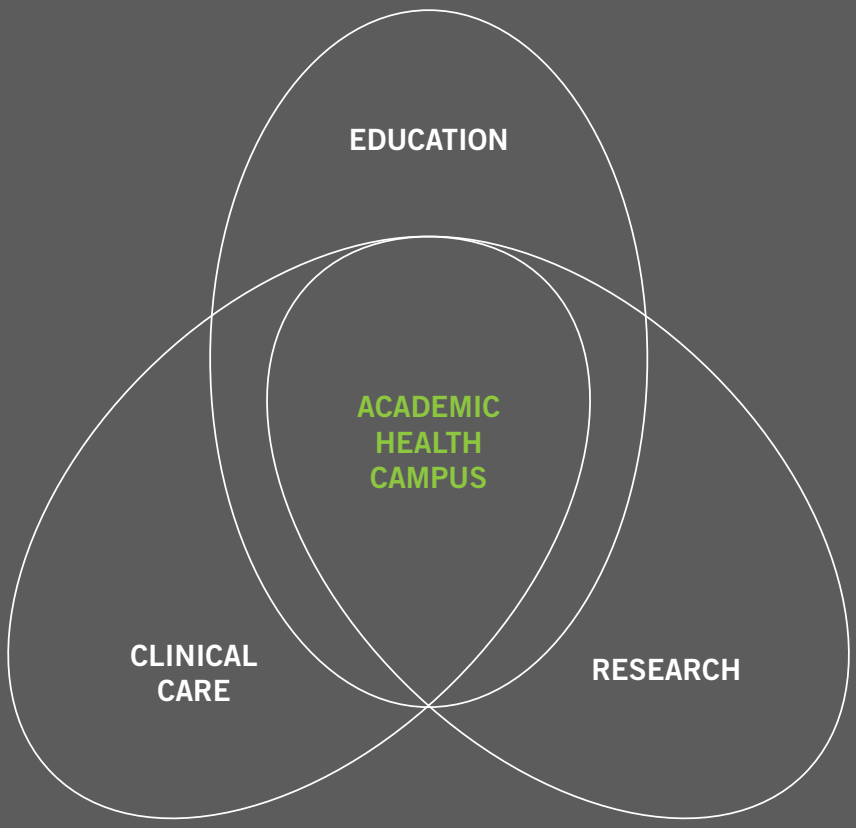
The design and development of this comprehensive planning document for the campus has been commissioned by the University of Arizona and the City of Phoenix under agreement with Ayers Saint Gross.

The scope of the study provides development and planning principles, functional adjacencies and infrastructure organization. The plan determines near and long term land uses and summarizes campus capacities.

The Phoenix Biomedical Campus Master Plan Update has been completed in workshop based process with additional focus groups on technical and community input. This document should be seen as complementary to the previous 2008 and 2010 Master Plans. It retains and reinforces the fundamental planning and development patterns inherent in those plans.

MISSION OF THE CAMPUS

The Phoenix Biomedical Campus is dedicated to advancing biomedicine and biosciences through research, education and clinical practice with continuing focus in the areas of medical specialties, bioengineering and bioinformatics.



THE NEXUS

CONTENTS

EXECUTIVE SUMMARY

OVERVIEW OF PROCESS

Commissioned by the University of Arizona (UA) and the City of Phoenix, the planning process for this 2016 Phoenix Biomedical Campus (PBC) Master Plan Update is a highly focused effort within a limited time frame. A series of workshops were held as the primary method for gathering data, reviewing topics, and addressing potential solutions. All of the workshops and support sessions focused on a specific set of integrated planning issues and their corresponding implications. These workshops were supported by additional technical sessions which specifically examined engineering configurations and infrastructure capacities.

PLANNING BOUNDARY

The planning boundary for this update is limited to south of Fillmore Street, including the existing Mercado site. For the purposes of this document, the **'Super Block'** can be defined as the area between Fillmore Street and Van Buren Street. The **'Mini Block'** can be defined as the area between by Van Buren Street and Monroe Street. Both blocks are bound by 5th Street to the west and 7th Street to the east. The properties to the east of 7th Street and north of Fillmore Street are not included in the planning area for the 2016 Campus Master Plan Update.

KEY PLANNING QUESTIONS

The PBC Master Plan Update is tasked to address a specific set of integrated planning issues. The primary topics for the update can be distilled as the following questions:

- What is the current built condition on the campus, and what is the resulting capacity for future programs?
- Are there limitations or parameters that impact the potential future yield and/or the buildable sites?
- How can the campus continue to fulfill its mission as an asset to the downtown community, both through place and program?
- As an urban campus, how do the proposed build-outs comply with the original yields and metrics developed in the 2010 PBC Master Plan Update?
- What are the physical planning changes from the 2008 Campus Master Plan required to successfully support the topics above?

BANNER HEALTH CLINIC

At the technical work session, Banner Health representatives provided an overview of their future clinical program needs which are desired to be located near the PBC and College of Medicine. Due to programmatic and site plan requirements, it is not anticipated a clinic could be located within the boundary of this Master Plan update.

Additional site analysis will occur and options will be developed by Banner Health for coordination with UA and City of Phoenix outside of this process.

FUTURE PROGRAMS

Projected future program requirements have been described in two timeframes:

- Over the next 10 years, the UA anticipates the development of approximately 750,000 GSF of academic, research and support space within the PBC area where it can be integrated into the existing facilities.

- In the longer term, PBC partner institutions anticpate the development of up to an additional 1.3M GSF, including parking, in the Phoenix Biomedical Campus area.

BROAD BASED INPUT

A critical piece to the planning process was to solicit input through a community forum. This event was held on campus and was attended by institutional representatives and community members. The open forum generated positive input from daily users and informed the update with specific tactics aimed at better integrating the campus into the downtown community.

CAMPUS AND COMMUNITY FEEDBACK

Campus users and community members offered insightful and supportive perspectives of the campus and its intent.

The key topics of feedback are:

- Creating easier access through the campus for the neighboring community, specifically with east-west connections.

- Diversifying the character and types of exterior spaces on the campus -- emphasizing people-focused outdoor spaces.

TECHNICAL PARAMETERS AND SUMMARY

The integrated process of developing the campus to date has carefully delivered infrastructure commensurate with each of the buildings. Infrastructure decisions made on a building-by -building approach has served the campus well during its infancy of development. At this juncture, with planned future development on the Super Block reaching upwards of 2M GSF, future utility design, systems and engineering capacities will need to transition to a campus-focused approach.

This comprehensive approach will leverage the quantity of built space and the proximity for new opportunities both on- and off-campus for increased efficiencies and consolidated utilities.

KEY RECOMMENDATIONS

KEY RECOMMENDATIONS

This 2016 PBC Master Plan Update does not provide any significant changes to the original intent of the physical plan established in the 2008 Comprehensive Development Campus Master Plan and the subsequent 2010 Update. The projected building site locations, green space network, and program metrics and yields are all in alignment with the previous plans.

The overall campus plan metrics and yields for the entire PBC area have not been significantly altered by the more detailed planning review within this Update's planning boundary.

The key adjustments made to the campus plan through this Update are intended to optimize both existing and future building development, elevate the infrastructure planning to a holistic campus-wide approach, and enhance connections between community and campus.

The existing and future facilities planned for the general PBC area will generate a significant utility demand, which may be best served through a more efficient, district-wide central plant/utility strategy. The utility needs of the projected future growth should be analyzed in an effort to provide the most efficient and effective central plant/utility response possible.

The Banner Health Clinical Facility that is currently in planning is closely aligned with the University of Arizona PBC programs, however, its scope, scale, density*, parking and access needs are not consistent with the needs and conditions of the campus area within this Update's planning boundary. Therefore a clinic building is better located outside the planning boundary, on a site to be determined.

As development occurs, additional bike parking and amenities should be integrated. (ie. shower facilities, repair stations, etc.)

Density -*

The use of the word "density" in this document refers to measures of building bulk and coverage of land. It is acknowledged that this is not to be confused with the same term in the form-based zoning code (applicable to the PBC) which utilizes the word "density" only in reference to residential dwelling units.

GOALS

The Goals of the 2016 PBC Master Plan Update focus how a built environment focused on energy and people can create a vital on-campus community while improving and influencing urban development beyond its edges.

The goals seek to fulfill the original intention of the campus as a vibrant place, heavily integrated into the fabric of downtown, which has evolved dramatically over the past decade and will continue to do so.

Conversations during the process of the Update frequently centered on the potential of using what has been completed as the standard for future development and its quality. Underlying this directive is the ability to create new systems of increasing magnitude as the area shifts from a series of singular buildings to a holistic campus.

The origin of these goals and their inherent values were derived from discussions within the workshops and community forum. The planning process seeks to understand what physical conditions can reinforce these high level aspirations for the campus.

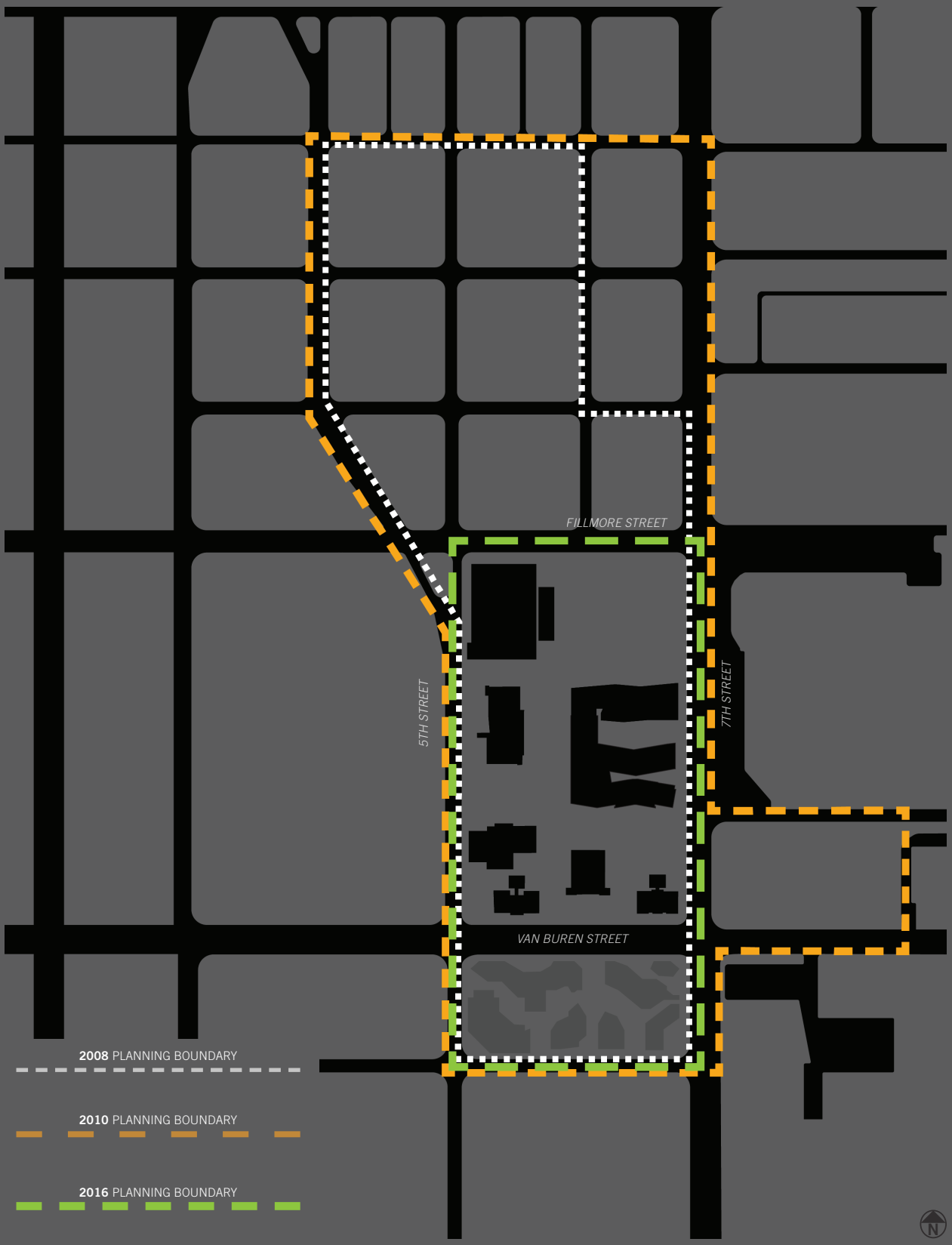
1. **Optimize the Super Block to best meet the anticipated needs of PBC partner institutions.** Build on the well-executed campus plan and facilities already in place; Prepare for anticipated growth types and densities in a manner that conforms to City of Phoenix, Downtown Code.

2. **Consider systems and planning decisions at the campus-scale versus the building scale.** As the Phoenix Biomedical Campus has developed over time, planning decisions have been based on a building by building, or project by project basis. In order to create a more cohesive and comprehensive campus, the 2016 PBC Master Plan Update recommends that decisions are approached at a campus scale through its existing and future partnerships and relationships.

3. **Integrate with the evolving residential community neighboring the campus.** As the Phoenix Biomedical Campus develops, it brings opportunity for the amenities of an urban landscape into the surrounding neighborhoods. This includes retail, greater densities, clinical and educational services, and multi-modal linkages to regional systems.

4. **Support the downtown educational community and expanding initiatives.** As each of the PBC partner institutions plan for academic, research and clinical growth, the PBC Master Plan Update plans for flexible and variable growth to support expanding and evolving initiatives.

5. **Continue to relate the campus green space network to the community and its users.** The PBC Master Plan Update addresses the preservation and expansion of the planned green space network while enhancing and activating the character and quality of the open environment through safety, ground floor transparency and shade.


FILLMORE STREET
5TH STREET
7TH STREET
VAN BUREN STREET
2008 PLANNING BOUNDARY
2010 PLANNING BOUNDARY
2016 PLANNING BOUNDARY
N

PLANNING BOUNDARY

In 2015, Phoenix City Council authorized entering into an agreement with the University of Arizona for development rights to the remaining City-owned parcels south of Fillmore Street. In conjunction with that authorization, Phoenix City Council authorized an update to the PBC Master Plan in the limited study area. That same year, Phoenix City Council authorized entering into an agreement with Arizona State University for the remaining City–owned parcels north of Fillmore Street to Garfield Street for the development of its Health Solutions Project.

The development agreements reflect the existing facilities, and further establish a planning and development direction in which the University of Arizona will be responsible for and guide the development of the area between Fillmore Street and Van Buren Street. Arizona State University will focus its development efforts north of Fillmore Street to Garfield Street.

By focusing within these areas PBC partner institutions can better plan and program their own future needs while also working holistically to develop the campus.

The agreements in place reinforce the City of Phoenix development criteria -- including overall site yields and optimization of existing infrastructure and utility capacity.

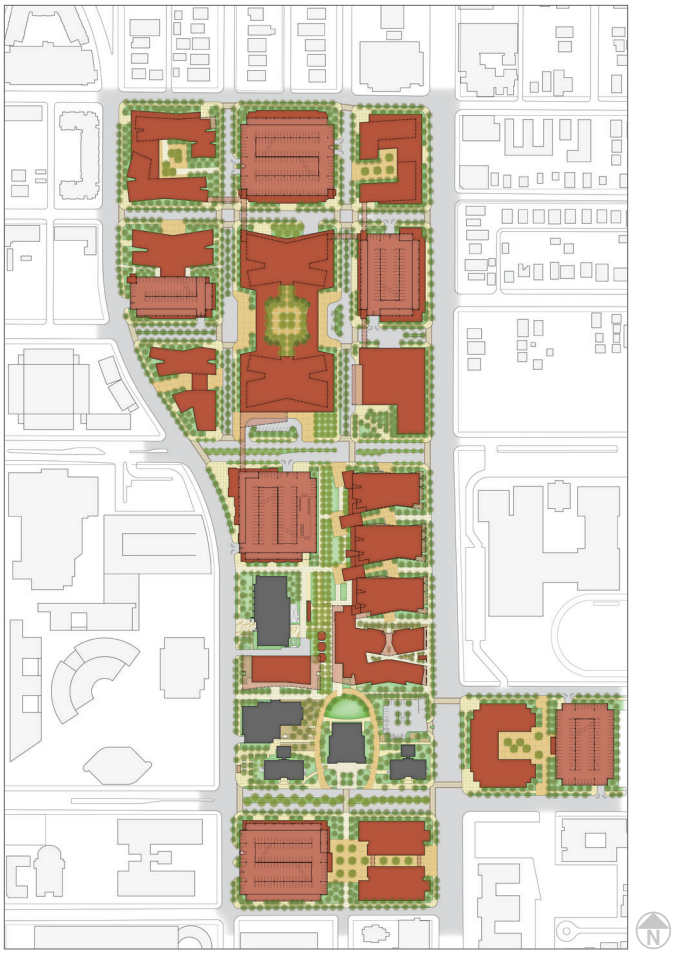
The planning boundary for this Update is limited to the University of Arizona controlled properties between Fillmore Street and Van Buren Street (referred to as the Super Block) and the existing Mercado site Van Buren Street and Monroe Street (referred to as the Mini Block). Both blocks are bound by 5th Street to the west and 7th Street to the east.

The properties to the east of 7th Street and north of Fillmore Street are not included in the planning area for this Update, but future development of these areas has been considered in the review of campus-wide infrastructure/utility systems and the integration with surrounding neighborhoods.

COMPARING THE PLANS

2008 COMPREHENSIVE DEVELOPMENT AND CAMPUS MASTER PLAN

The 2008 Comprehensive Development and Campus Master Plan provided the development and planning principles, guidelines and concepts for the campus including: the open space network, program distribution, a series of interconnected spaces that encourage integration (mixing bar), below grade functions, and a phasing/ implementation plan. This plan is the most comprehensive of the planning efforts and its vision has been applied to each of the updates.



2010 COMPREHENSIVE MASTER PLAN UPDATE

The 2010 Comprehensive Master Plan Update provided specific planning scenarios for the overall campus. These scenarios generate development options to satisfying the targeted built yields, land uses, and programmatic needs of the campus. Each of the four scenarios examines specific uses in various configurations on the campus and compares the program locations, overall yields, and densities which result.

2016 CAMPUS MASTER PLAN UPDATE

The 2016 Master Plan Update is a highly focused effort and reviews areas or conditions on campus that require detailed planning and refinement within a limited planning boundary. The plan looks to address limitations or parameters that impact future yields and sites, improve connectivity and access on the campus, enhance outdoor spaces and offer recommendations on how to transition from a building-by-building approach to a campus approach.

2016 PLANNING AREAS AND TOPICS

After a thorough review of the existing conditions of the campus, significant changes to the civic structure and organization are not necessary. As the campus has developed, there has been a successful balance between built and open space which is organized in a clear yet flexible manner.

At this juncture, with user populations on campus and future programs reasonably predicted, the 2016 Update will review areas and conditions on campus that require detailed planning and refinement. They include:

- The north end of the mixing bar at Fillmore Street and its relation to the future corner research building.
- The central green space and how it resolves at Fillmore Street and the Cancer Center.
- The size and position of a potential Central Plant.
- Confirmation of the Research Lab Building south of TGen.
- Redevelopment of the Mini Block to maximize and increase density
- Review long-term site Service Strategies and Methods.

THEMES

OVERVIEW

The themes for the 2016 PBC Master Plan Update translate the aforementioned goals into specific areas of focus for the planning effort. The themes tie together the aspirational, strategic vision of the campus. The themes then combined with the various campus systems, results in the physical plan.

2016 PBC MASTER PLAN UPDATE THEMES

Optimize the infrastructure and land resources.

- Balance program, land area and density profiles
- Identify thresholds for advancing utilities
- Define land (sites) for future development
- Optimize infrastructure utilization

Reinforce connections between campus and community.

- Connect green spaces to community
- Provide community resources
- Support broader downtown initiatives with physical linkages of transit, bicycle and pedestrian connections

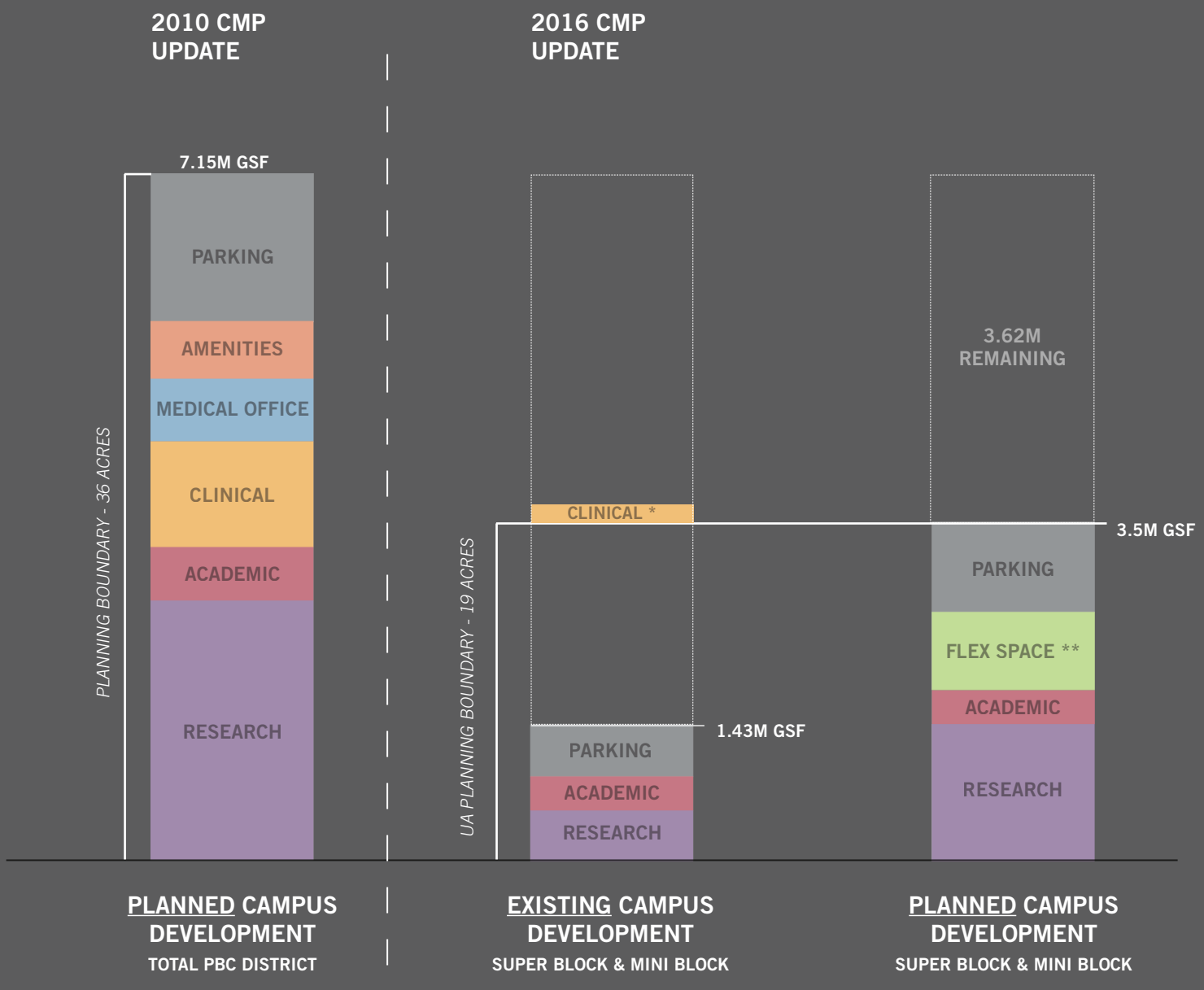
Strategic alignment of future program growth + land capacity.

- Achieve strategic goals for PBC academic programs
- Achieve aligned goals for research
- Support City of Phoenix, Downtown Code
- Preserve future development options

MISSION OF THE UPDATE

The 2016 Phoenix Biomedical Campus Master Plan Update will describe development strategies for fulfilling future programs while continuing to build an urban Campus.

The resulting plan will preserve future program capacity while creating long-term system efficiencies.



** CANCER CENTER LOCATED OUTSIDE OF 2016 PLANNING BOUNDARY*

***FLEX SPACE IS EQUAL TO THE CAPACITY OF THE MINI BLOCK*


F.D.C.
600

STATE OF THE CAMPUS TODAY

The Phoenix Biomedical Campus has been the setting for significant incremental development over the past decade. The completed individual projects form the nucleus of a campus aligned with the original master plan.

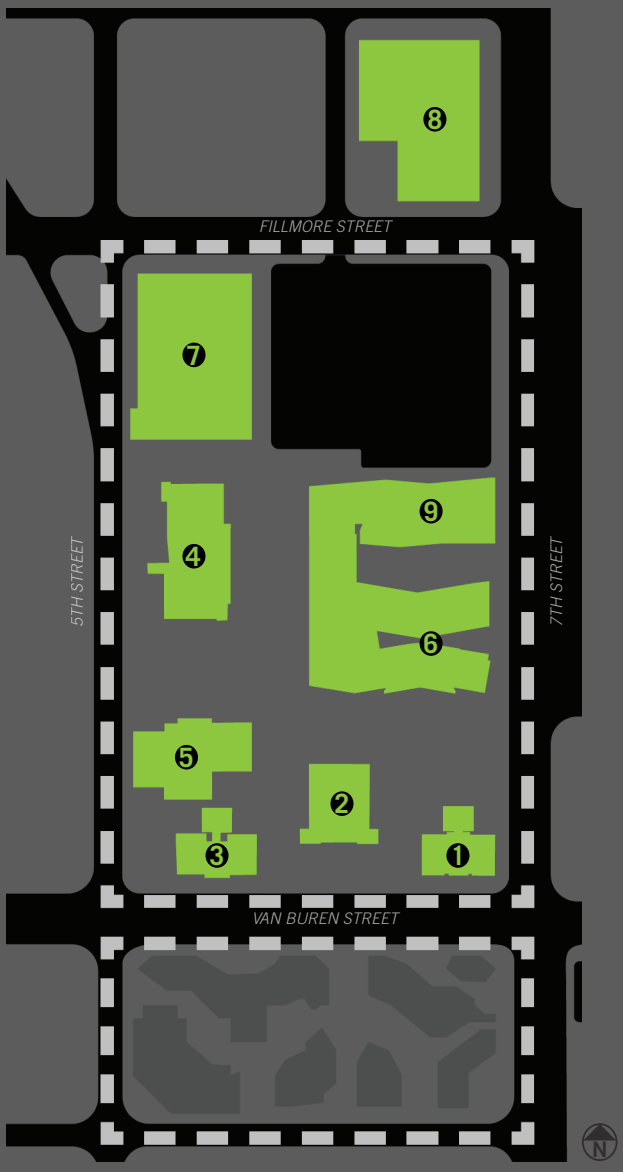
Today, the resulting cumulative scale and configuration of the built space provides new opportunities for both confirming long-term programmatic needs and capacities as well as implementing new scales of campus systems.

This analysis will complement and reinforce the previously projected programmatic capacities and the urban character described in the previous comprehensive development plan.

At this juncture, the Update for the PBC will focus on investigating efficiencies and applications of campus-scaled systems as well as determining the key parameters and timing for their implementation.

The completed analysis will develop a set of cross referenced characteristics and guiding metrics fully interweaving campus systems and constructed program space.

PBC PROJECTS COMPLETED AND ONGOING



1. COM I
2. COM II
3. COM III
4. TGEN
5. ARIZONA MEDICAL COLLABORATIVE
6. HEALTH SCIENCE EDUCATION BUILDING
7. PARKING STRUCTURE
8. CANCER CENTER
9. BIOMEDICAL SCIENCES PARTNERSHIP BUILDING

1. COM I, 1912/2007

Size: 27,000 GSF
Major Programs: ADMINISTRATIVE

4. TGEN, 2004

Size: 144,000 GSF
Major Programs: RESEARCH LABS

7. PARKING STRUCTURE, 2015

Size: 400,000 GSF
Major Programs: PARKING, RETAIL SPACE

2. COM II, 1912/2007

Size: 29,000 GSF
Major Programs: THEATER

3. COM III, 1912/2007

Size: 27,000 GSF
Major Programs: ADMINISTRATIVE

5. ARIZONA BIOMEDICAL COLLABORATIVE I, 2007

Size: 120,000 GSF
Major Programs: RESEARCH LABS

6. HEALTH SCIENCES EDUCATION BLDG, 2012

Size: 268,000
Major Programs: ACADEMIC

8. CANCER CENTER, 2015

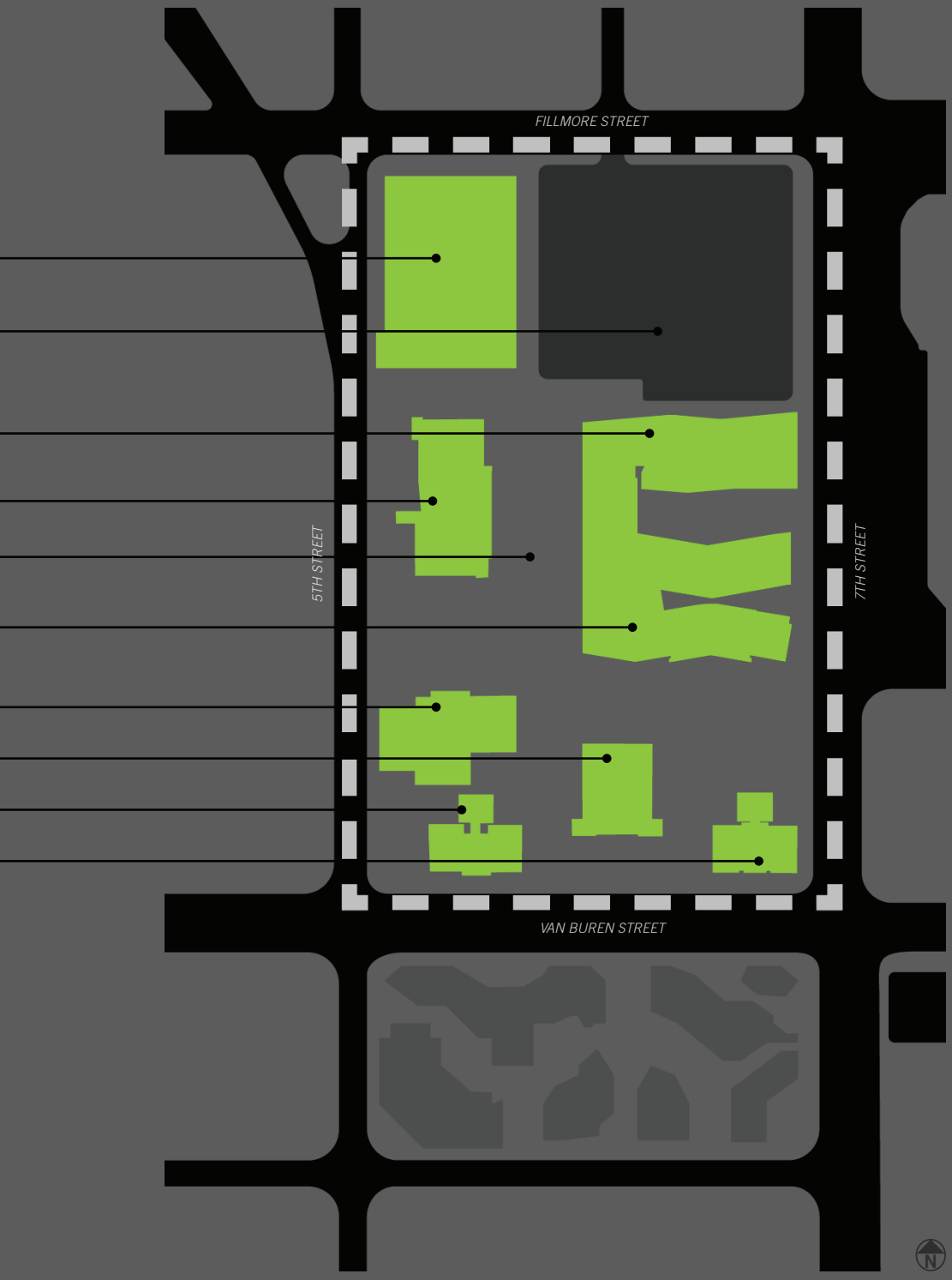
Size: 220,000 GSF
Major Programs: CLINICAL, RESEARCH LABS

9. BIOMEDICAL SCIENCES PARTNERSHIP BLDG, 2017

Size: 245,000 GSF
Major Programs: RESEARCH LABS

PBC PROJECTS COMPLETED AND ONGOING

PARKING STRUCTURE	*400,000 GSF*
SURFACE PARKING	*150,000 SF*
BIOMEDICAL SCIENCES PARTNERSHIP BLDG	*245,000 GSF*
TGEN	*144,000 GSF*
CORE FACILITIES	*20,000 GSF*
HEALTH SCIENCES EDUCATION BLDG	*268,000 GSF*
ABC I	*120,000 GSF*
COM II	*29,000 GSF*
COM I	*27,000 GSF*
COM III	*27,000 GSF*



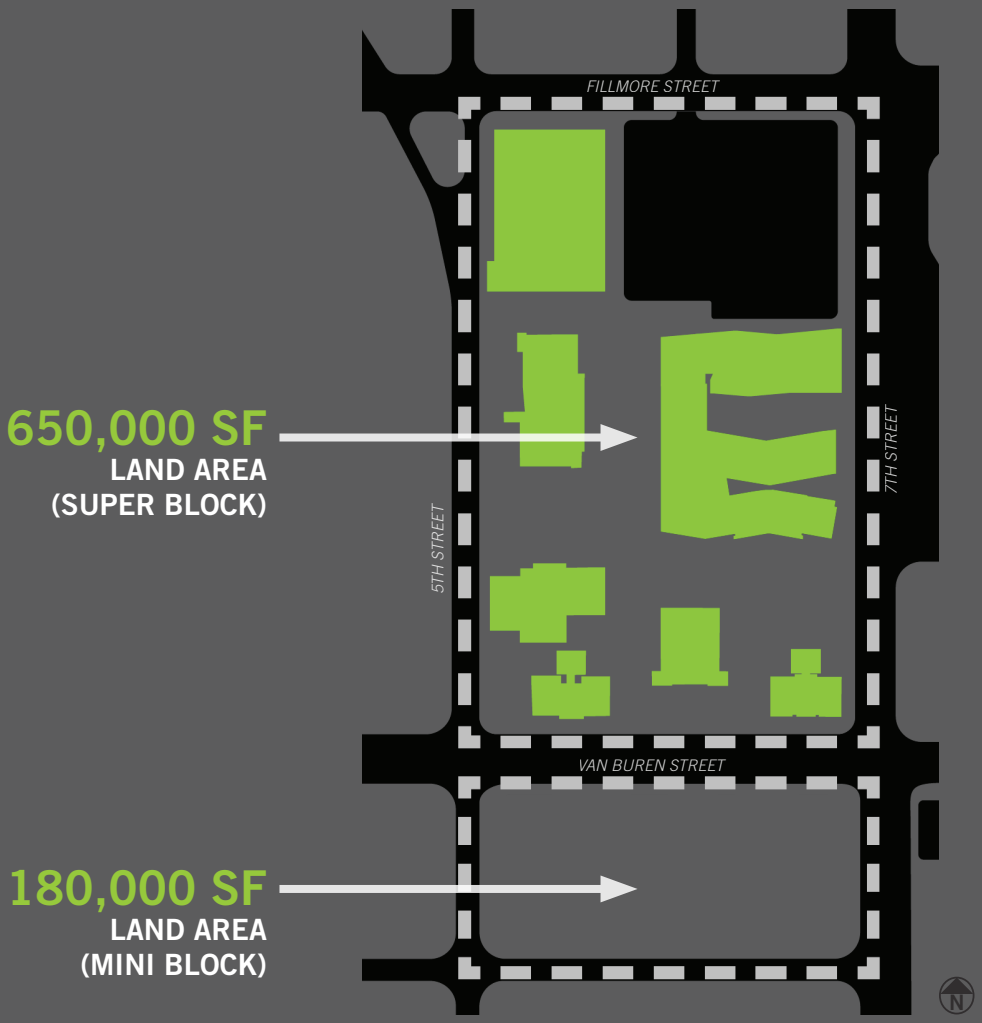
650K SF
LAND AREA
SUPER BLOCK

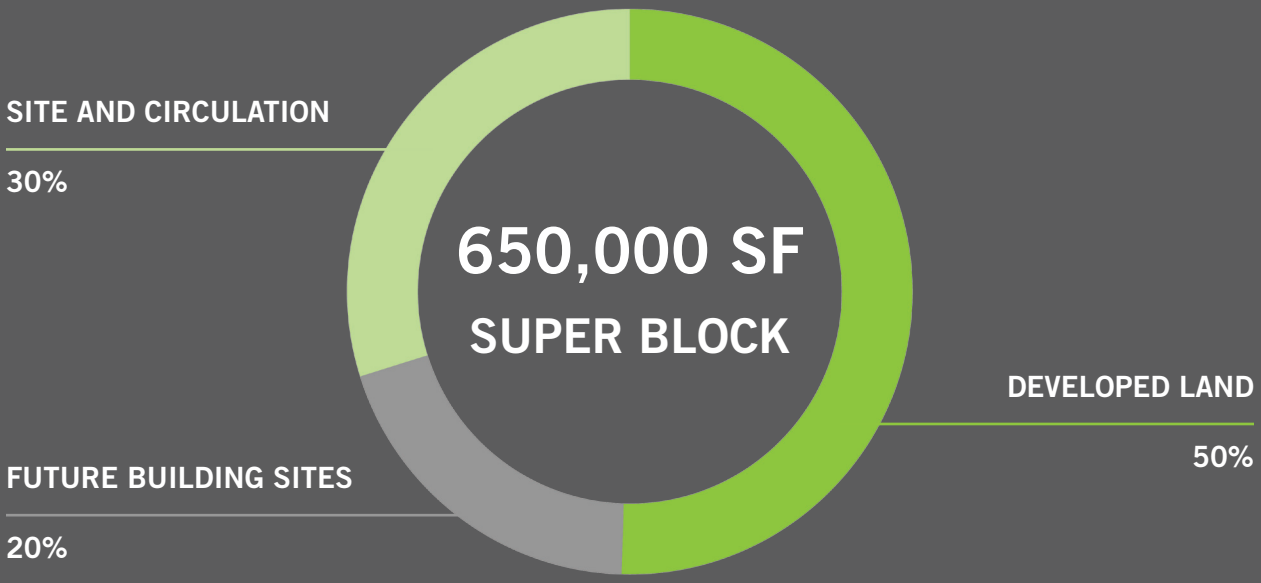
1.43M GSF
EXISTING DEVELOPMENT SUPER BLOCK

2.3 *
EXISTING FAR

** This reflects the low density historic buildings and large open 'horseshoe' located on the super block.*

CURRENT STATUS





INVENTORY OF SITE USE

SITE USES	SURFACE AREA
BUILDING FOOTPRINTS	215,000 SF
BUILDING SUPPORT	11,500 SF
UTILITIES	11,000 SF
ADA ACCESS AREAS	3,000 SF
SURFACE PARKING	150,000 SF
GREEN SPACE	66,000 SF
FIRE LANE	6,500 SF
TOTAL DEVELOPED	**328,000 SF**
SITE AND CIRCULATION	194,000 SF
INTERIM SPACE USE (FUTURE BUILDING SITES)	128,000 SF
TOTAL	**650,000 SF**

DOWNTOWN EDUCATION NETWORK

The evolving use patterns and growing population in downtown Phoenix will create new opportunities to provide even more expansive and diverse educational resources. The PBC's geographic position allows it to play a key strategic role in interweaving the existing and planned educational elements in the downtown area.

Arizona's three largest public higher education institutions, University of Arizona, Arizona State University, and Northern Arizona University will continue to have a significant impact on the urbanization of downtown. Each of these institutions has expanded within the downtown core, and intend to further increase their presence with greater programming, expanded facilities and new partnerships.

The ASU Prep Academy lies to the east of the PBC and the Biosciences High School is within the future planning of the campus. The Arizona Science Center, Heritage Square and Science Park are adjacent to the south and round out the neighboring key educational resources of downtown.

The proximity and programmatic interactions between these downtown constituents should be reinforced and become more physically interconnected over time as growth occurs. Long-term key connections that will reinforce the Downtown Education Network are:

- The extension of the Central Spine south through the Mini Block to the Arizona Science Center and Heritage Square.

- Connections and alignments that will create east west corridors of connectivity - these connections should be pedestrian and bicycle oriented if possible. Community and user feedback suggested reinforcing the presence of the east west connections particularly at the center of campus.

- The connection from ASU Downtown to PBC through Arizona Center. The configuration of Arizona Center does not currently support a linear or even straightforward path, this connection over time could be enhanced but requires participation by a private property owner.


10 MINUTE WALK
5 MINUTE WALK
5TH STREET
7TH STREET
GARFIELD STREET
MCKINLEY STREET
FILLMORE STREET
PIERCE STREET
VAN BUREN STREET
2ND STREET
4TH STREET
MIXED USE HOUSING
PHOENIX BIOMEDICAL CAMPUS
BIOSCIENCES HS
ASU DOWNTOWN CAMPUS
ARIZONA CENTER
PHOENIX BIOMEDICAL CAMPUS
ASU PREP
PHOENIX BIOMEDICAL CAMPUS
HERBERGER THEATER
PHOENIX CHILDREN'S MUSEUM
HERITAGE SQUARE
PHOENIX CONVENTION CENTER
SYMPHONY HALL
ARIZONA SCIENCE CENTER
PHOENIX CONVENTION CENTER
TALKING STICK RESORT ARENA
CHASE FIELD
EDUCATIONAL
HOUSING
ENTERTAINMENT
LIGHT RAIL LINE & STOP
WALK TO PBC FROM LIGHT RAIL
2016 PBC UPDATE PLANNING BOUNDARY

DEVELOPING A LONG-TERM PLAN
SITE CAPACITIES AND PROGRAMS

A core aspect of the 2016 PBC Master Plan Update is to confirm future program capacities and describe a potential sequence or placement of each element over the next 10 years on the Super Block, and approximately 15 years on the Mini Block -- this method will form the updated development plan.

Three sets of parameters must be studied and balanced to achieve this planning response:

- Net Buildable Areas: Determining available and viable surface areas of the campus to build upon.

- Facility Programs: Generating a theoretical and desirable profile of future programmatic space.

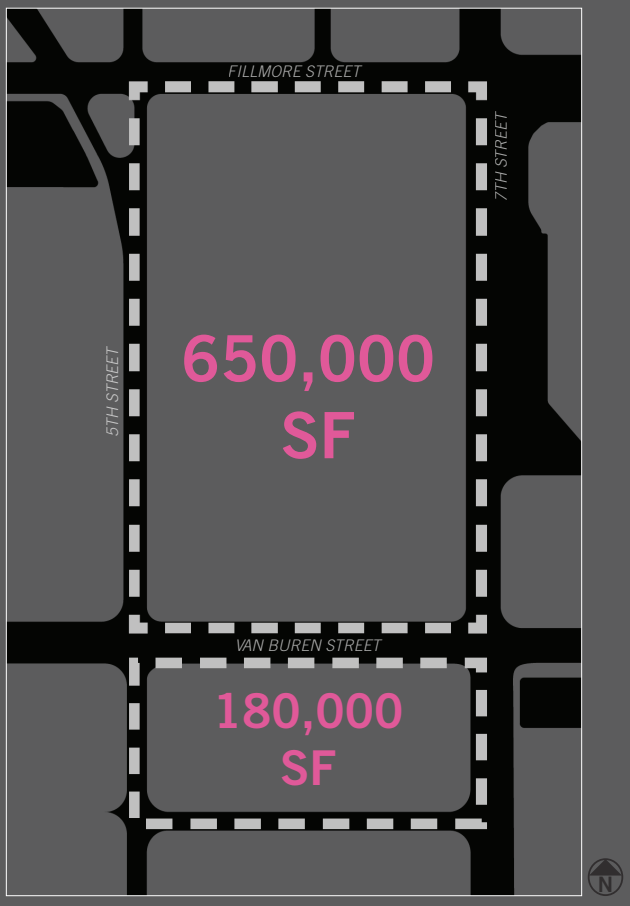
- Technical Assessment - reviewing and determining the capacity of the current infrastructure and incremental requirements to support each facility as it comes on line.

Once these primary drivers are in place, a secondary set of factors including parking ratios and projected populations will be used as overlays to adjust the program profiles. For example, certain program types such as academic or clinical uses, create heavier parking demands than research space. By comparing and contrasting programs and populations profiles, space projections dedicated to parking can be better tuned.

The resulting building profiles are considered in a phased sequence scaled to become likely building project scopes. In the case of this update, the capacities are translated into three-dimensional building envelopes. As prototypical forms, these elements have been adapted to the existing civic structure of the master plan.

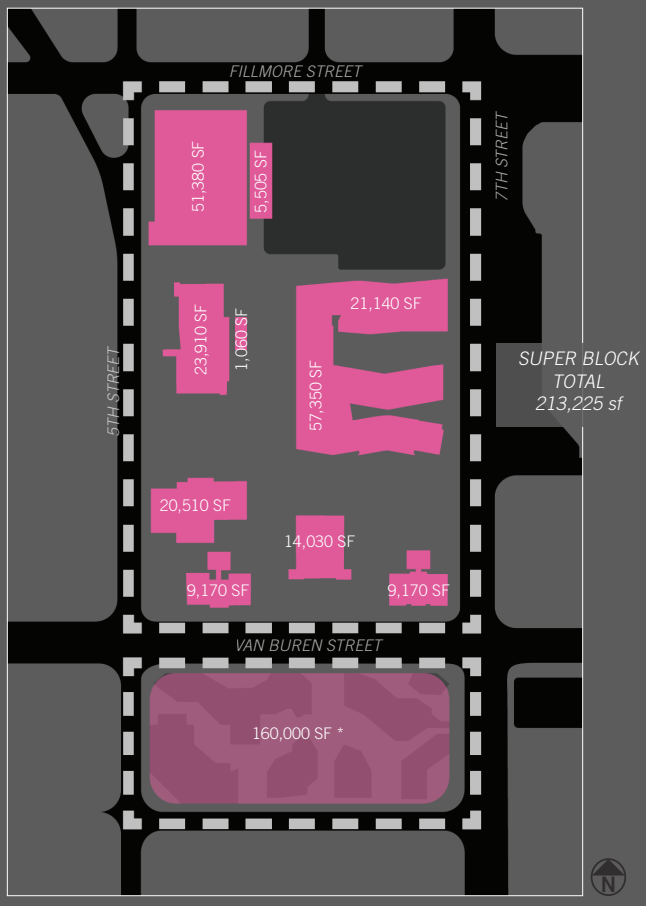
The pattern of green spaces between the buildings going east-west has been preserved in scale and function. Likewise, the north-south spine and large central mall is reinforced. No changes have been implemented to the campus organization to accent the size and scale of future programs.

CAPACITY: SITE YIELDS AND DEVELOPMENT PROFILES



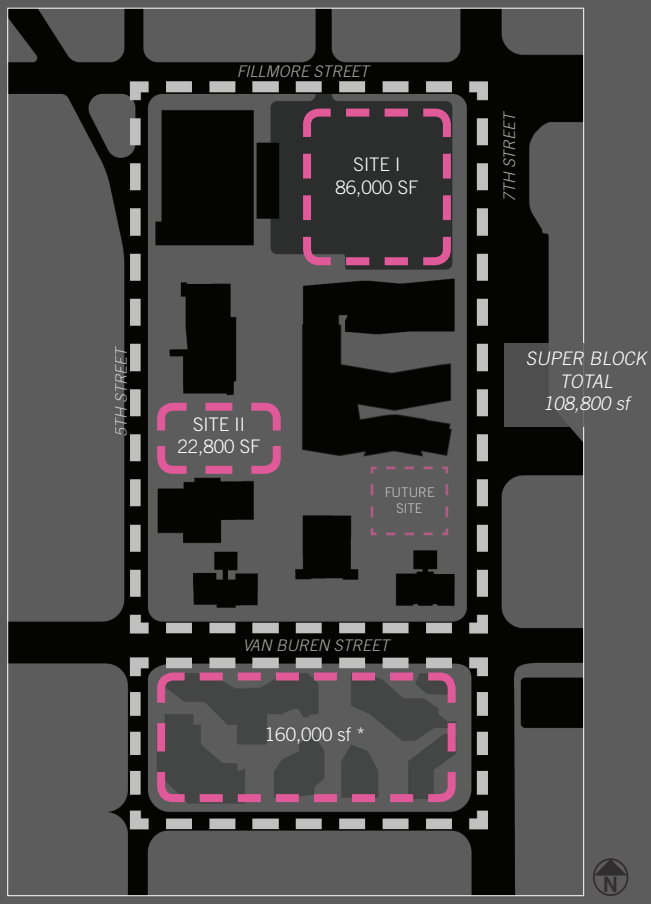
LAND AREA
830,000 SF PBC TOTAL

The total land area within the 2016 planning boundary is approximately 830,000 sf. The super block comprises 650,000 sf and the mini block 180,000 sf.



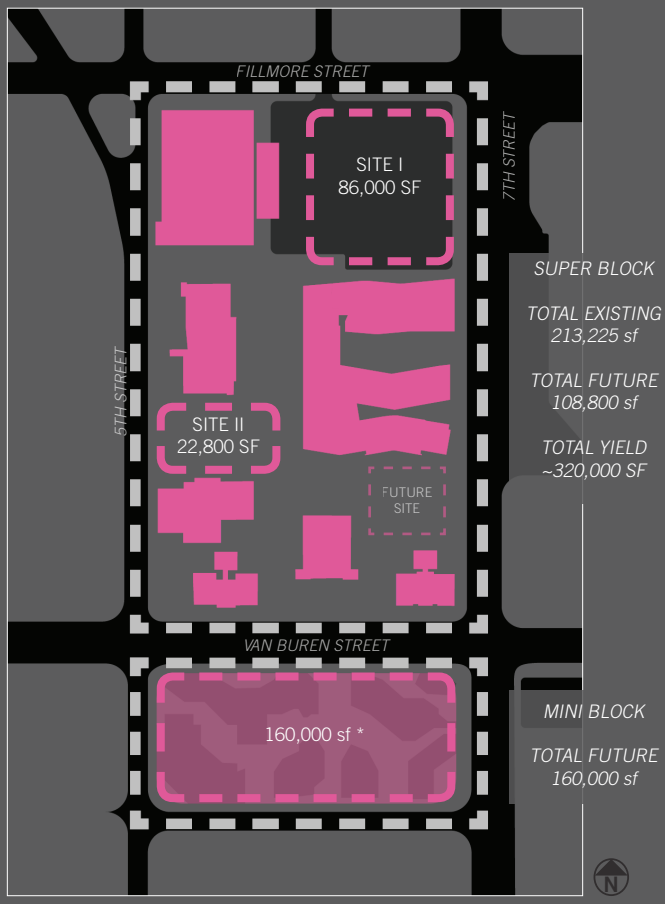
EXISTING FOOTPRINTS
373,225 SF PBC TOTAL

The total site use by buildings is 373,225 sf. The super block comprises 213,225 sf of that amount, and the buildable footprint area of the Mini block is 160,000 sf.



FUTURE DEVELOPMENT
268,800 SF PBC TOTAL

The total future site development is approximately 268,800 sf. The super block is comprised of two buildable sites, totaling 108,800 sf. The buildable footprint area of the Mini block is 160,000 sf.



TOTAL LAND CAPACITY
~480,000 SF PBC TOTAL

The summation of the existing site use and the future site development for the super block offers a total yield of approximately 320,000 sf. Adding the future site development of the mini block to this results in a total of nearly 480,000 sf for future land development.

CAPACITY: SITE YIELDS AND DEVELOPMENT PROFILES

SITE AND CAMPUS DENSITIES

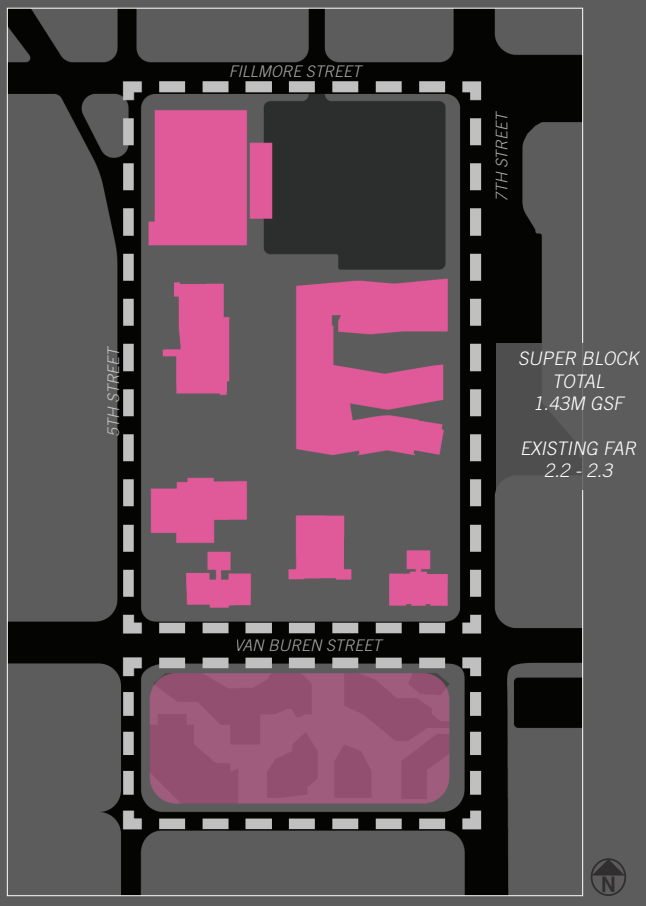
The existing Floor Area Ratio (FAR) of the super block is 2.3 - This is the ratio of 1.43M GSF of existing facilities over the 650,000 sf of land area.

The low density historic buildings and large open 'horseshoe' located on the super block results in a FAR that is lower than the targeted density (FAR) of 4.9 for the campus.

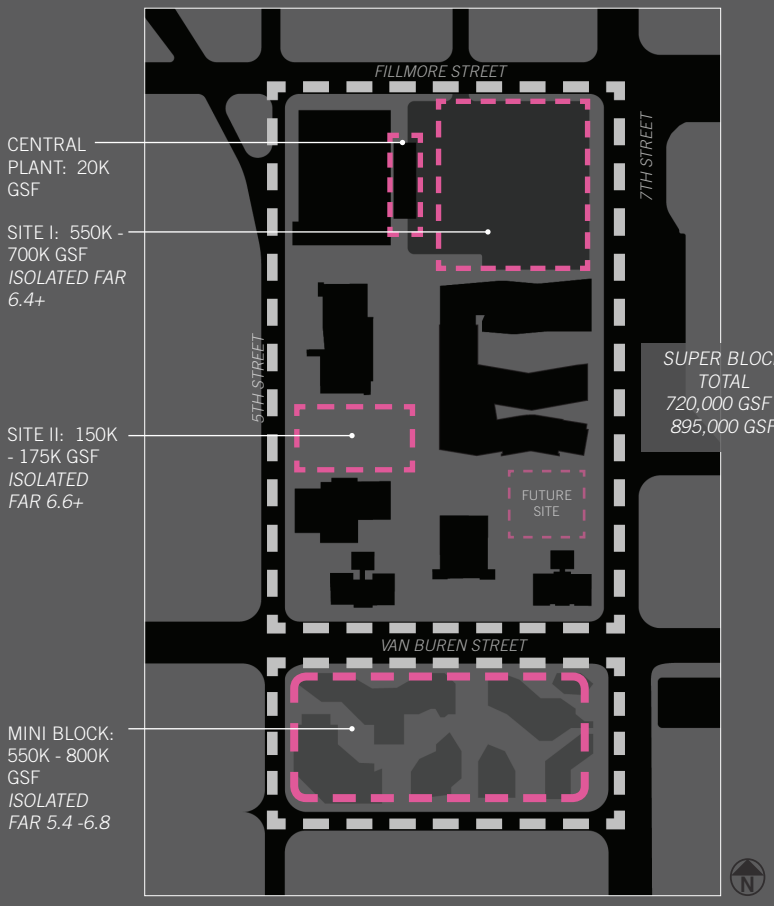
This permanent, low-density condition means that the future sites will have to bear a higher FAR, of closer to 6.0, to bring the campus total closer to its target.

The total future development for the remaining super block is approximately 895,000 GSF over the two remaining sites. This results in an 3.3 FAR for the super block.

Again, since the super block FAR is inherently lower than the target, the mini block will have to develop over 1M GSF and achieve a 6.8 FAR, bringing the campus total up to a FAR of 4.2.



EXISTING DEVELOPMENT



FUTURE DEVELOPMENT

SUPER BLOCK

EXISTING DEVELOPMENT
1,430,000
+
FUTURE YIELD
720,000 GSF - 895,000 GSF
=
2,000,000 GSF - 2,175,000 GSF *

FUTURE FAR - 3.1 - 3.3

** subtracted 150K for surface parking*

MINI BLOCK

FUTURE YIELD
550,000 GSF - 800,000 GSF
+ 400,000 GSF (PARKING)
=
950,000 GSF - 1,200,000 GSF

FUTURE FAR - 5.4 - 6.8

PBC TOTAL DEVELOPMENT SUMMARY:

SUPER BLOCK FUTURE YIELD
(895,000 GSF)

MINI BLOCK FUTURE YIELD
(950,000 GSF - 1,200,000 GSF)

PBC TOTAL FUTURE YIELD
1,670,000 GSF - 2,095,000 GSF

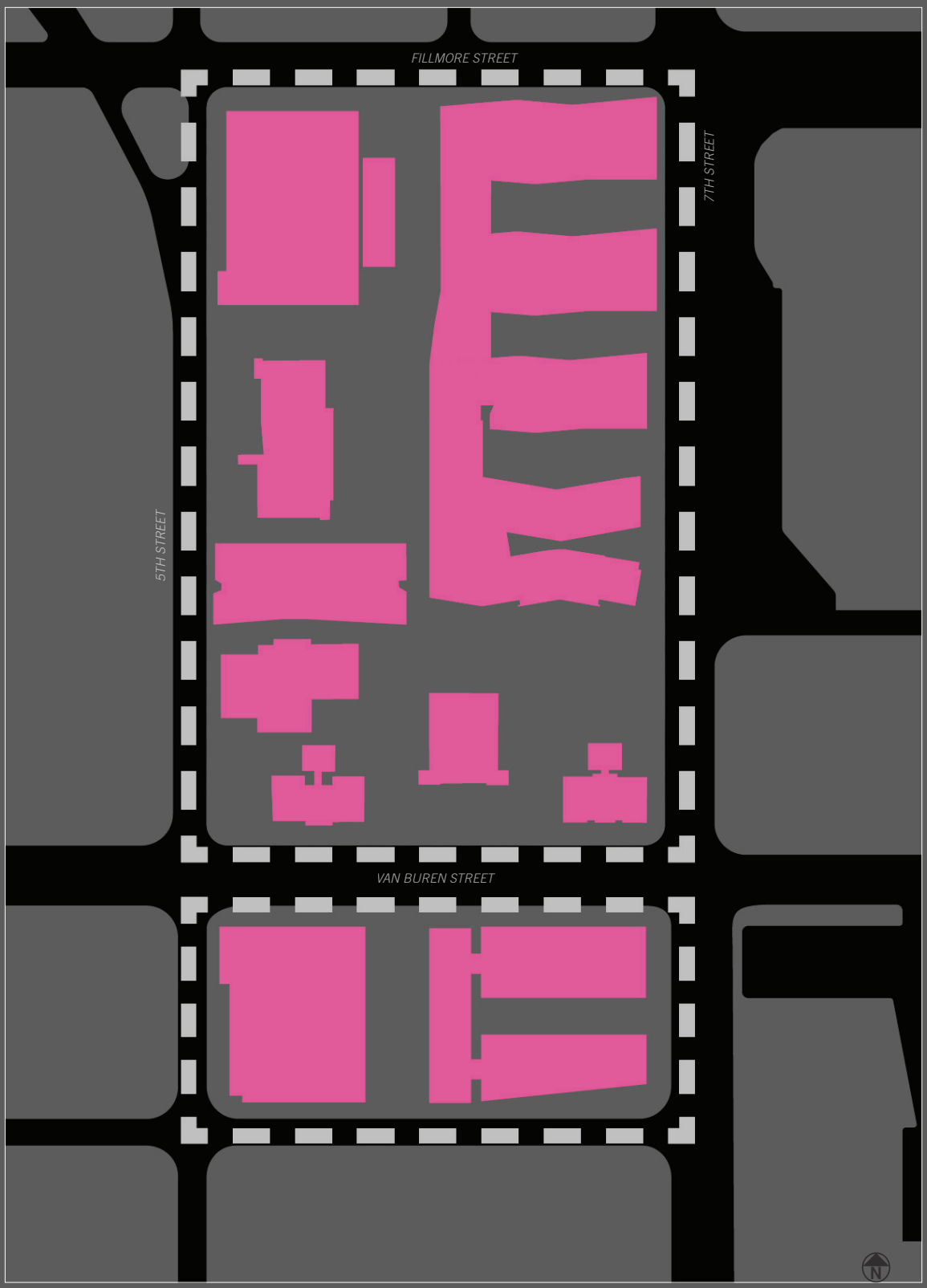
+

SUPER BLOCK EXISTING DEVELOPMENT
1,430,000 GSF

=

PBC TOTAL DEVELOPMENT
3,100,000 GSF - 3,525,000 GSF

PBC TOTAL FUTURE FAR 4.2

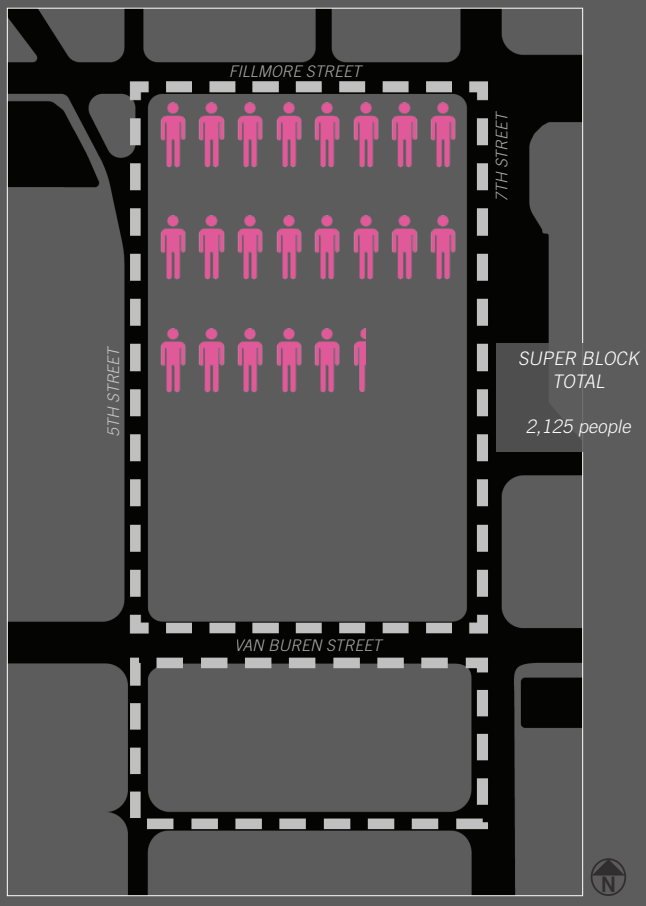

FILLMORE STREET
7TH STREET
5TH STREET
VAN BUREN STREET
N

POPULATION PROFILE

POPULATION PROJECTIONS

Overall population projections for the campus can vary depending on the use type for each parcel and its development density. The projections below reflect these varying profiles. Specific research uses vary greatly in their need for space. Some are compact while others require large spaces, bringing population per GSF and overall building area down. In addition, many of the future clinical uses may have 24-hour utilization, further skewing the projections. These projections do not include visitors or clinical facility patients.

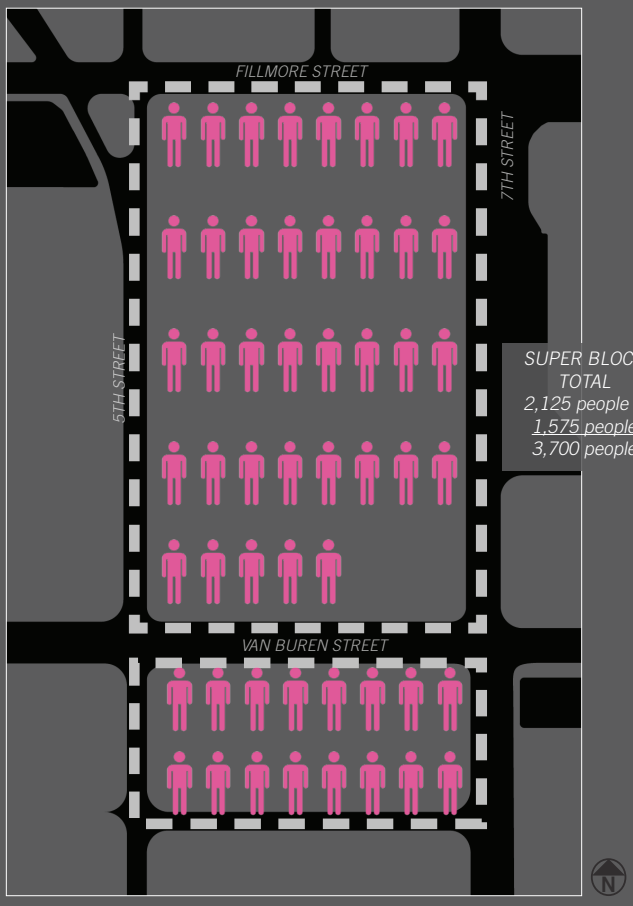
Academic	250 GSF/person
Research	600 GSF/person
Clinical	500 GSF/person
Mixed Use	400 GSF/person
Medical Office	350 GSF/person



= 100 people

EXISTING POPULATION

BSPB	400 people
HSEB	1,070 people
COM 1	70 people
COM II	75 people
COM III	70 people
ABC I	200 people
TGEN	240 people
TOTAL EXISTING	2,125 people



FUTURE POPULATION

FUTURE (Super Block)

SITE I	1,160 people
SITE II	415 people
	1,575 people

FUTURE (Mini Block)

Mini Block	1,600 people *

PBC TOTAL FUTURE POPULATION

Existing (Super Block)	2,125 people
Future (Super Block)	1,575 people
Future (Mini Block)	1,600 people
PBC TOTAL	5,300 people

** Future Mini Block population projection based on 500 GSF/person ratio - used as an average between multiple use types to accommodate the flex space designation.*

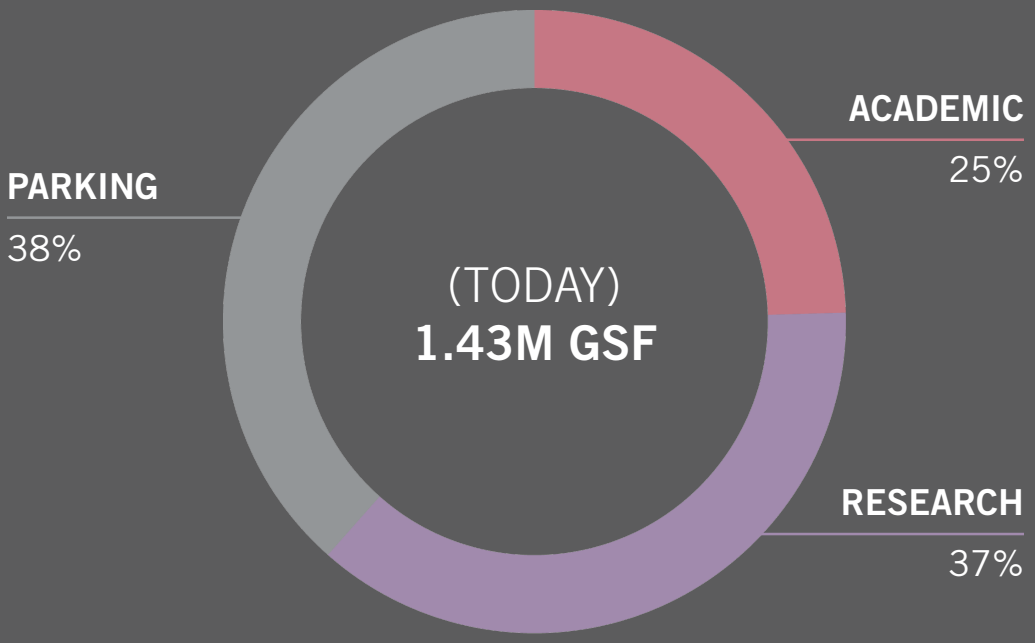
PBC PROGRAM DISTRIBUTION
EXISTING AND PLANNED

Within the 2016 Update, the future PBC programs are meant to be flexible. From the capacities presented in this document, PBC partner institutions will be able to develop appropriate programs based on their short-term and long-term goals.

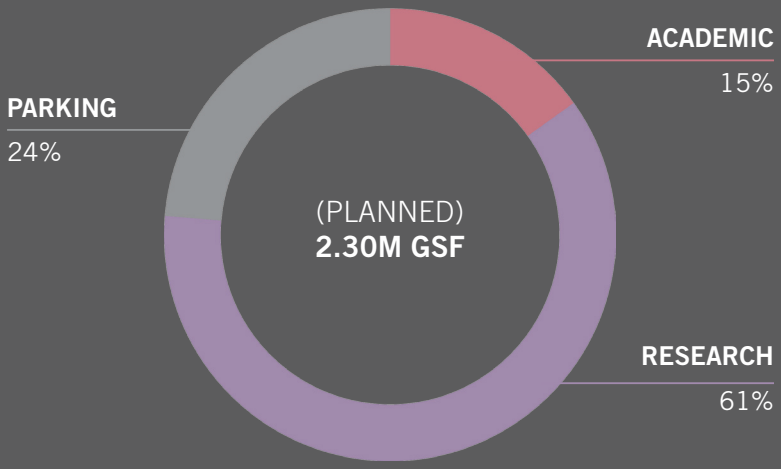
The Mini Block is being designated as “flex space” which has been identified as potentially academic or research. The capacity of the block will allow up to 800,000 GSF of program space.

The anticipated amount of academic and research uses shown in this Program Distribution section represents the PBC partner institution’s anticipated use, however, the PBC site infrastructure and utility systems are also being planned to accommodate changes in use distribution that may be needed to take advantage of future growth opportunities.

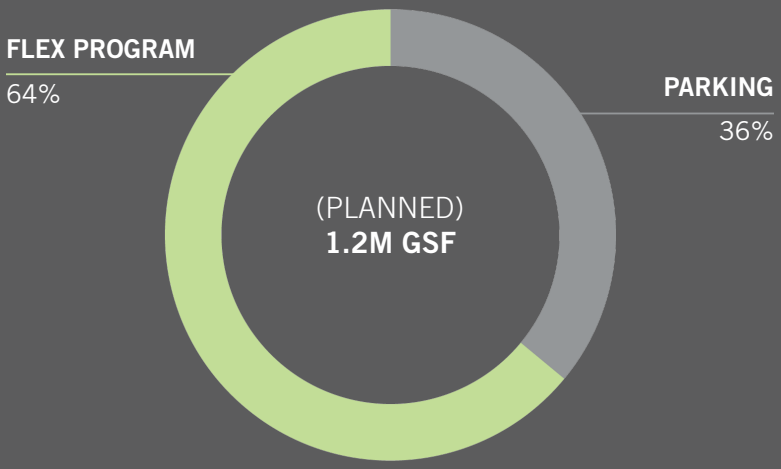
EXISTING (SUPER BLOCK)



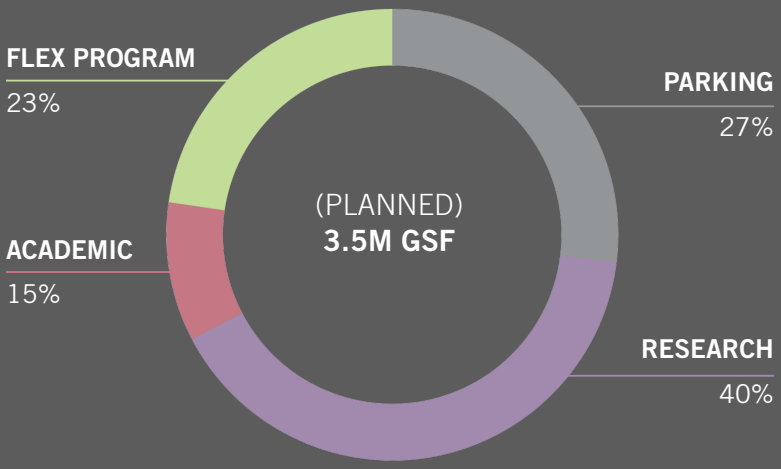
PLANNED (SUPER BLOCK)



PLANNED (MINI BLOCK)



PLANNED (PBC TOTAL)



CAMPUS & COMMUNITY CONNECTIONS

An essential component of the campus is to provide high quality exterior spaces that interconnect key functions of the campus and the surrounding neighborhoods. The Campus Master Plan defines and develops this as a Green Space Network.

The historic buildings established the first phases of this network with the significant green spaces between buildings, the Horseshoe, and the perimeter lawns along Van Buren Street. Using these elements as the basis, the Campus Master Plan developed a comprehensive structured network with urban strategies for future green spaces and their inherent connections. The Green Space Network as originally intended provides a primary north to south spine with secondary east to west connections.

Feedback by users confirms the viability and strength of the north to south spine, but notes the east to west conditions do not effectively function as proposed. This is due to the ongoing construction and the practicality of security issues associated with biomedical teaching and research. Future buildings and their related service functions should seek to enhance connectivity where building uses and security considerations allow.

In terms of mobility, the expansion of transit and bicycle routes around the campus, will improve the connectivity to the campus. The existing bicycle parking and Grid Bikes located on the campus is seen as an asset and are well utilized.

With the significant amount of development occurring on and around the Phoenix Biomedical Campus, there has been an expansion in retail, restaurants, cafes, housing and entertainment venues in the area. These businesses support both the surrounding neighborhoods as well as campus users.

With the continuing development of the campus, the planned growth of academic programs and the increase of evening-time classes, these amenities will continue to grow. This will result in increasing options for users and activating the greater surrounding area both during the day and after hours.

OPEN SPACE IN THE URBAN ENVIRONMENT

GREEN SPACE AND SITE PERMEABILITY

With a critical mass of population now on campus and future programs reasonably predicted, the recommendation is to provide hierarchy to the east to west connections that are appropriate for the adjacent building uses. This hierarchy will provide some permeability to the campus, while also addressing the security considerations.

The opportunity is to designate:

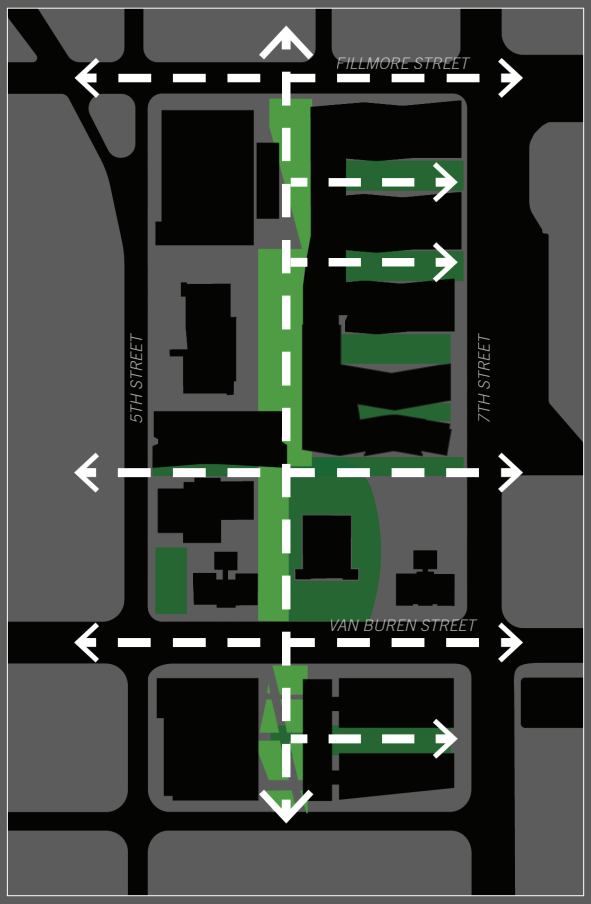
- East to west connections within the campus which remain open to pedestrians that connect to, or align with, active programs located on the ground floor.

  AND/OR

- Enclosed courtyards between buildings that require high levels of security and thus that do not allow access in from the public.

The community members valued spaces such as the Horseshoe and the small green space on 5th street because of the small scaled, intimate, pedestrian focused amenities such as structured seating, shade and landscape. The future planned development should offer additional green spaces at the north end of the super block and a central green space on the mini block.

2008 OPEN SPACE DIAGRAM AS CONCEPTUALIZED



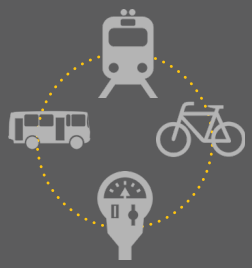
2016 OPEN SPACE AND ACCESS DIAGRAM

CENTRAL SPINE

THE HORSESHOE

5TH STREET AND VAN BUREN STREET

EXISTING GREEN SPACES



MOBILITY, CIRCULATION AND PARKING

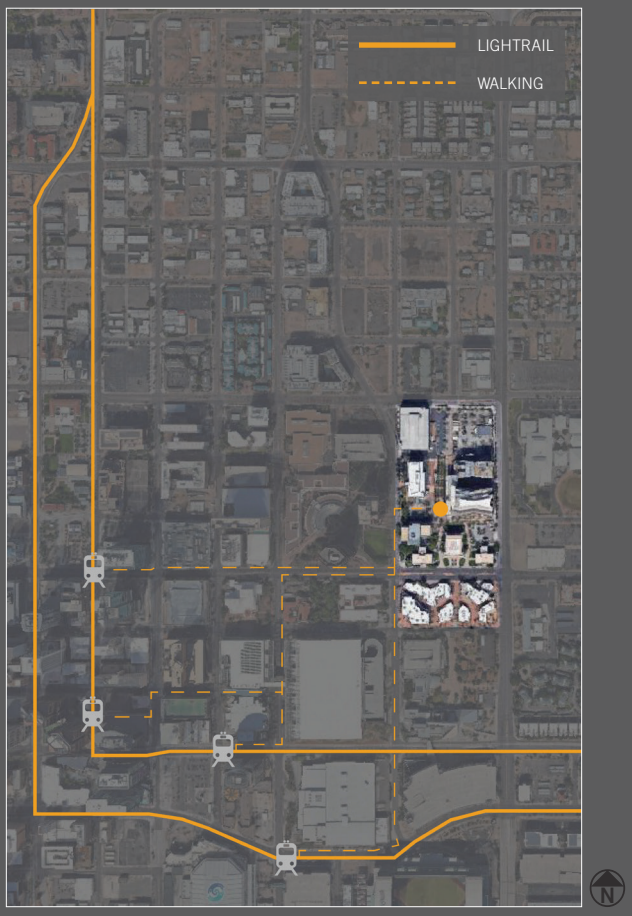
MOBILITY AND CIRCULATION LINKAGES

With expanded transit and bicycle routes around the campus, connectivity to and from the campus will be improved.

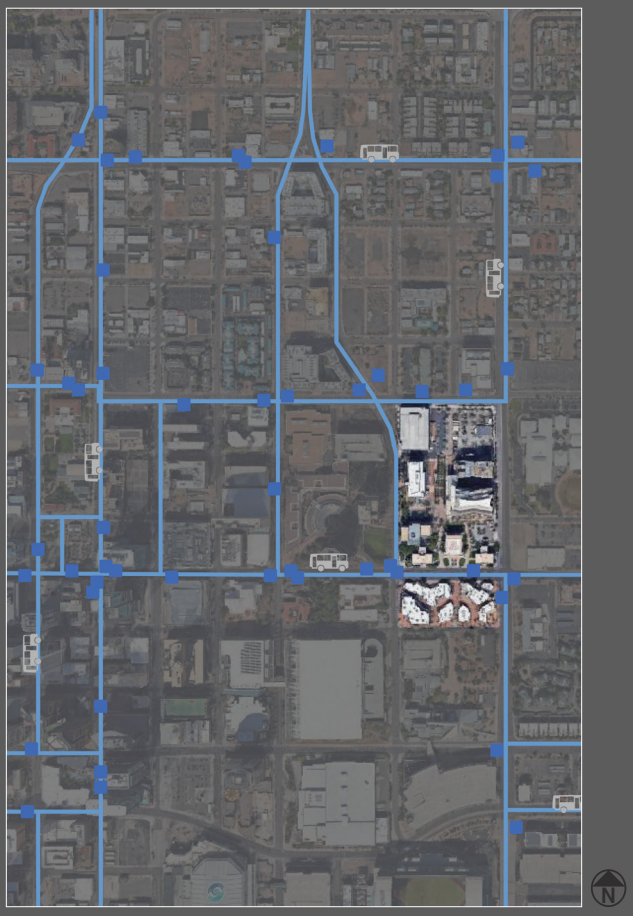
The creation of a downtown circulator will also help to provide access and increase the utilization of the light rail for campus users.

The bus transit is highly utilized by staff working at the PBC, and the adjacent stops offer seating and shade.

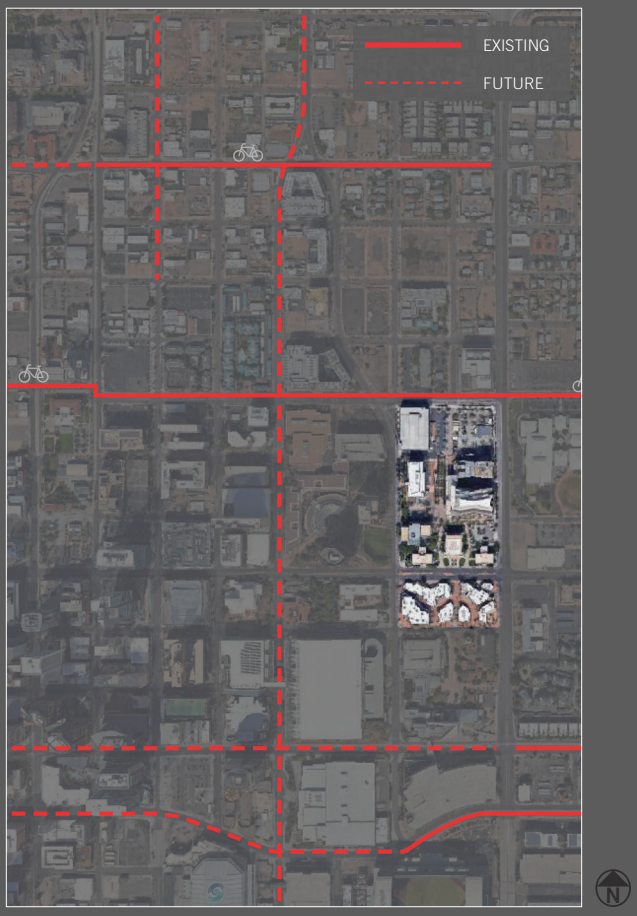
The existing bicycle parking located on the campus is seen as an asset. As development occurs, additional bike parking and amenities should be integrated. (ie. shower facilities, bike lockers repair stations, etc.) The Grid Bikes located on the campus are well utilized.



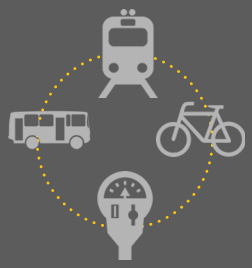
LIGHT RAIL ROUTES AND STOPS



TRANSIT (BUS) ROUTES AND STOPS



BICYCLE ROUTES



MOBILITY, CIRCULATION AND PARKING

PARKING PROFILES

Parking Based on GSF

EXISTING (TODAY)
1,100,000 GSF (includes Cancer Center)
1,620 spaces
680 GSF/parking space

PLANNED (FUTURE)
2,555,000 GSF (includes Cancer Center)
2,440 spaces
1,047 GSF/parking space

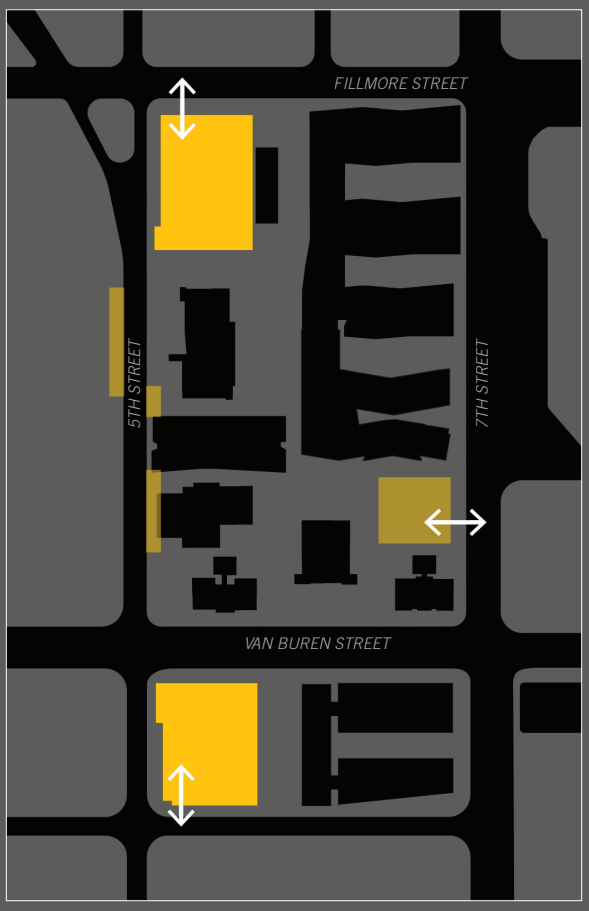
Parking Based on Population

EXISTING (TODAY)
2,125 people
1,620 spaces
.77 spaces/person

PLANNED (FUTURE)
4,800 people
2,440 spaces
.50 spaces/person

EXISTING PARKING

On-Street Parking	20
Surface Lots	400
Parking Structure	1,200
Total Spaces	**1,620**



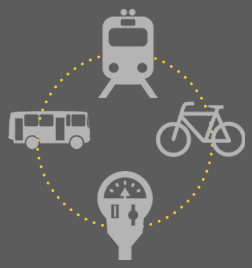
EXISTING PARKING STRUCTURE


EXISTING PARKING STRUCTURE


ON STREET PARKING (5TH STREET)

PLANNED PARKING

On-Street Parking (remains)	20
Surface Lots (reduced)	20
Parking Structures (increase)	2,400
Total Spaces	**2,440**



MOBILITY, CIRCULATION AND PARKING

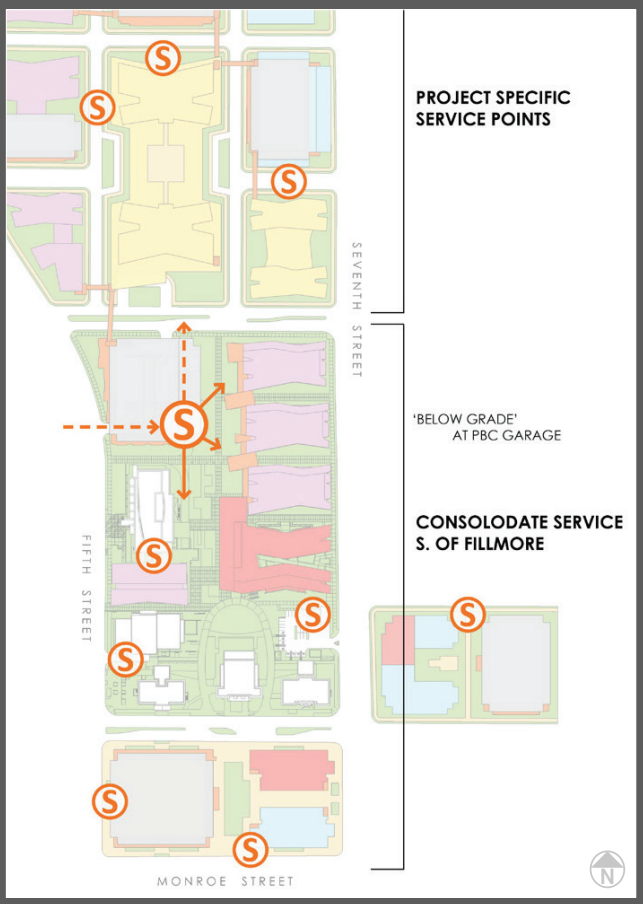
SERVICE ACCESS

As the campus has developed over time, the concept for how to handle service access has evolved.

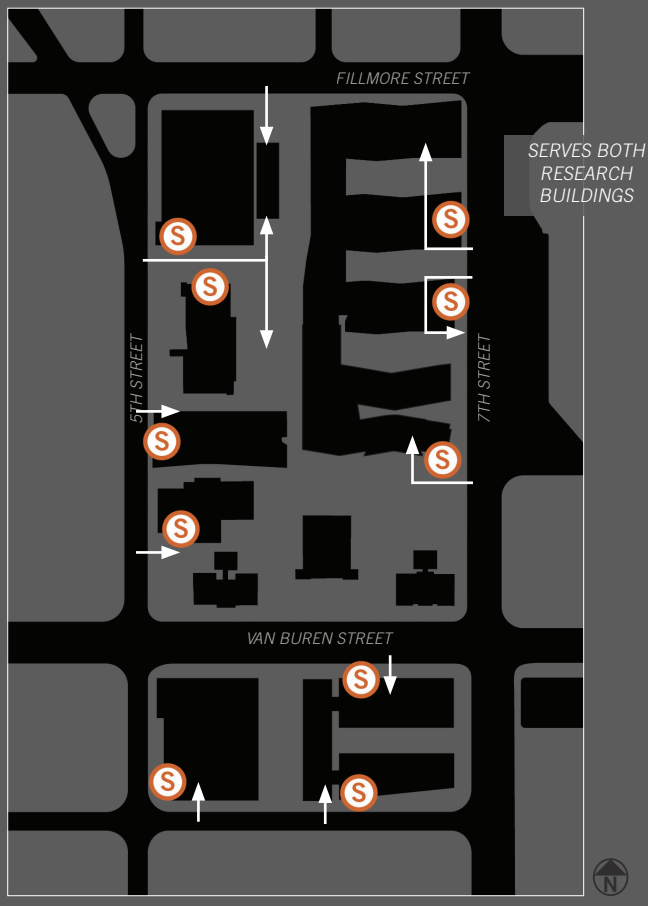
The solution at the Biomedical Sciences Partnership Building places the service access along 7th street, within the building footprint. The service needs for the buildings along 7th Street are highly scheduled and managed with limited food delivery. Core research deliveries will continue to be serviced off of 5th Street.

The service access points along 5th Street will have to be studied on a building by building basis. The addition of the Research Building south of TGen will interfere with the existing TGen service area. Therefore, this function will have to be relocated to the north side of the building. Small trucks will be able to access the area in a similar fashion to the existing layout. The new Research Building will have its service access on 5th Street, similar to ABC I. The drive to access it should be on the north side of the building to allow the south side to remain open for pedestrian access.

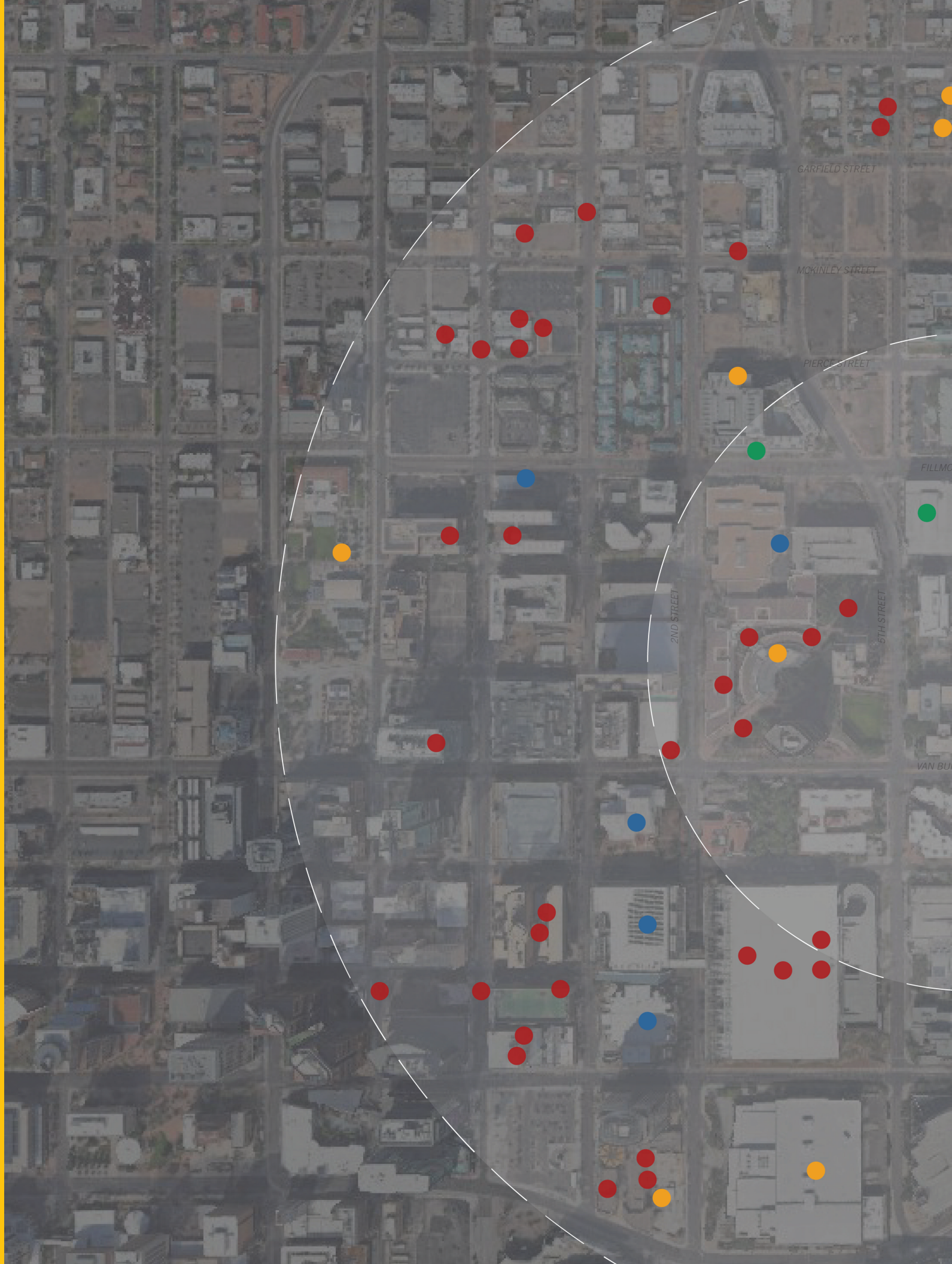
On the Mini Block, service should be positioned along Van Buren Street and Monroe Street to serve the new structures.



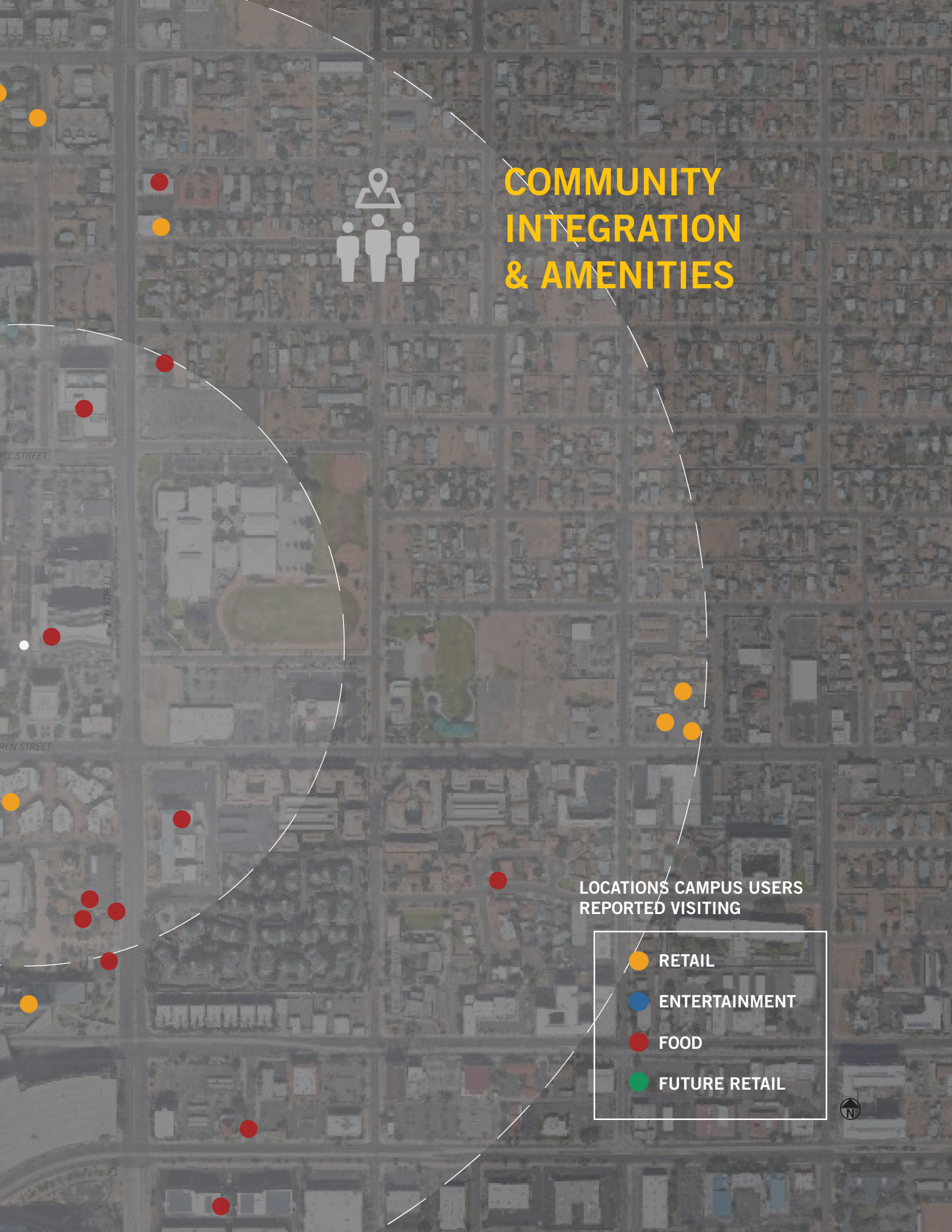
2010 SERVICE DIAGRAM AS CONCEPTUALIZED



2016 SERVICE DIAGRAM


GARFIELD STREET
MCKINLEY STREET
PIERCE STREET
2ND STREET
6TH STREET

COMMUNITY INTEGRATION & AMENITIES

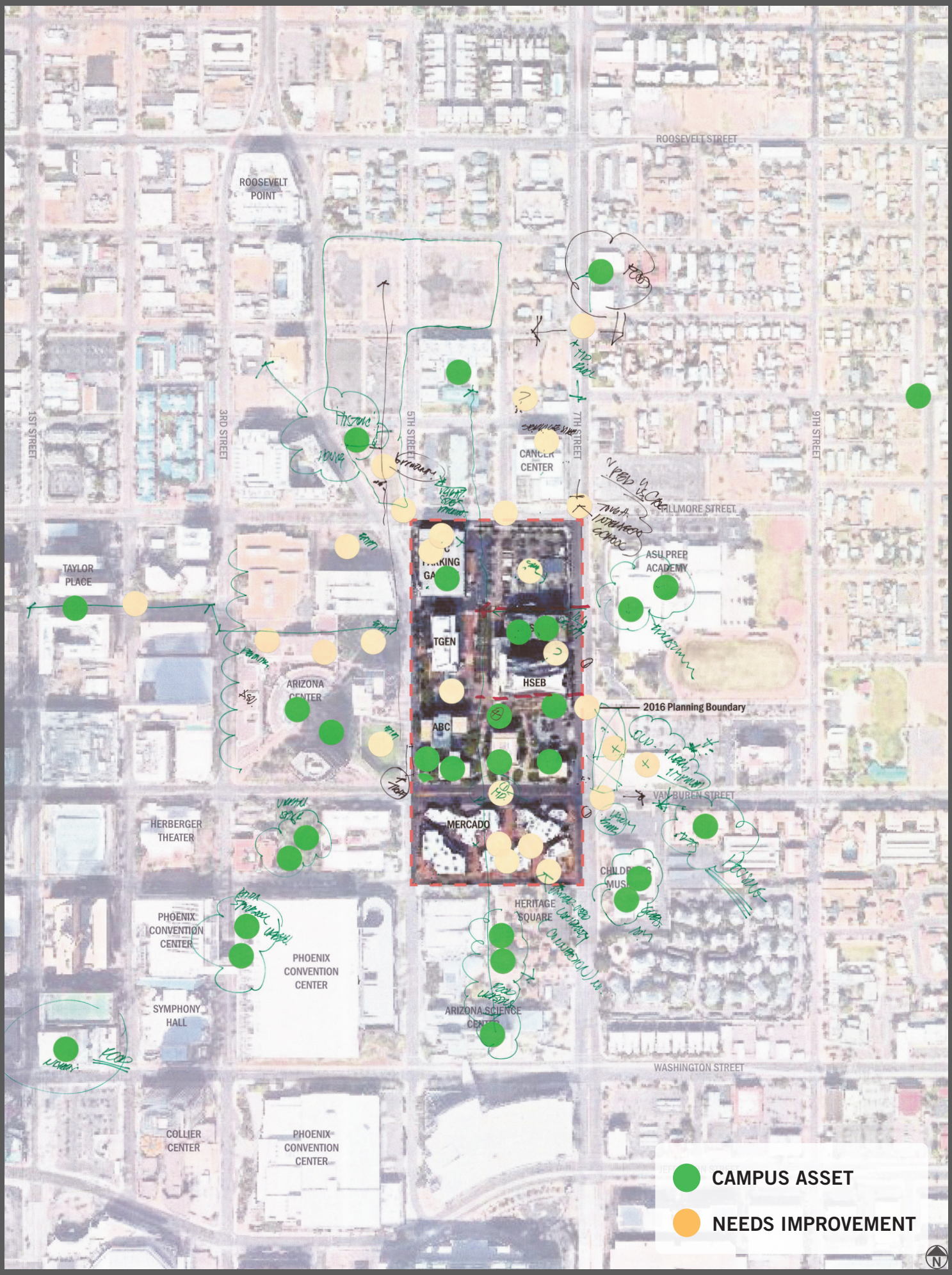


COMMUNITY FORUM

A series of workshops were held as the primary method for gathering data, reviewing topics, and addressing potential solutions. All of the workshops and support sessions focused on a specific set of integrated planning issues and their corresponding implications.

Input was also generated through a community forum. This event was held on campus and was attended by institutional representatives and community members. The open forum generated positive input from daily users and informed the update with specific tactics aimed at better integrating the campus into the downtown community. Campus users and community members offered insightful and supportive perspectives of the campus and its intent. The key topics of feedback are:

- Creating greater and easier access to the neighboring community, through improved connectivity -- specifically east-west through the site.
- Diversifying the character and types of exterior spaces on the campus -- emphasizing people focused outdoor places.


ROOSEVELT STREET
ROOSEVELT POINT
1ST STREET
3RD STREET
5TH STREET
7TH STREET
9TH STREET
CANCER CENTER
FILLMORE STREET
TAYLOR PLACE
ASU PREP ACADEMY
TGEN
HSEB
ARIZONA CENTER
ABC
2016 Planning Boundary
VAN BUREN STREET
MERCADO
HERBERGER THEATER
PHOENIX CONVENTION CENTER
HERITAGE SQUARE
SYMPHONY HALL
ARIZONA SCIENCE CENTER
WASHINGTON STREET
COLLIER CENTER
CAMPUS ASSET
NEEDS IMPROVEMENT
N

OPEN SPACE IN THE URBAN ENVIRONMENT

- Central Spine
- Open Green Space
- Pedestrian Circulation and Access
- Character and Quality of the Environment

COMMUNITY COMMENTS:

Preserve Green Space that is permeable through the site while addressing security issues with high-level research.

Maintain pedestrian access through the site that reinforces the existing grid.

Activate the ground floor of each building to enhance the pedestrian environment, especially on 7th Street, which is seen as car centric.

The Horseshoe is very well utilized and seen as an asset to the campus -- makes the campus feel collegiate.

The Green Space at the corner of Van Buren Street and 5th Street is well utilized and seen as a campus asset.

The north side of the Cancer Center is the service entrance and seems to turn its back to the community which it faces. Concern should be paid to how service entrances interact with adjacent buildings.

Rethink the tree species along perimeter of the Campus. Desert trees may not be the best choice, smaller deciduous trees instead.

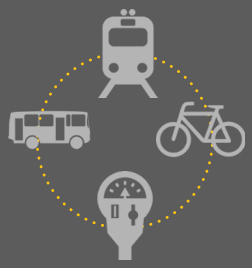
Ensure that Central Spine connects into the Mini Block and future development North of Fillmore Street.

7th Street is the boundary to the downtown core, and the Campus sits at the boundary.

Many students live at Camden Apartments; lots of foot traffic across 7th Street at Van Buren Street.

The intersection of 7th Street and Fillmore Street is very car-centric, but dangerous for bicycles and pedestrians

There is currently no connection from Super Block to Mini Block - crossing mid-block doesn't work well; Ensure that Central Spine connects into the Mini Block and future development North of Fillmore Street.



MOBILITY, CIRCULATION AND PARKING:

- Light Rail Stop Locations
- Transit Routes and Stops
- Bicycle Routes
- Parking

COMMUNITY COMMENTS:

Light Rail is too distant from the campus to be well utilized by Faculty, Staff and Students of the PBC; a downtown connector would help.

Bus transit is highly utilized by staff working at the PBC.

Bike parking is seen as an asset, and Grid Bikes are well utilized.

Arizona Center isn't permeable for bicycles, breaking the connection to and from the PBC.

Create a connection from PBC to ASU Downtown Campus to reinforce Downtown Education District.

Plan to right-size parking on and around campus as growth happens in the area.

COMMUNITY INTEGRATION & AMENITIES

- Active Uses/Retail
- Amenities and Shared Resources
- Urban Design Guidelines and Density
- Evening and Community Programming

COMMUNITY COMMENTS:

To activate the Phoenix Biomedical Campus, it involves planning, programming and philosophy.

Food along perimeter of the campus is an asset.

Small food vendors within PBC Campus buildings are well-utilized, but more options desired.

Campus users visit the Green Space at the Catholic Diocese (Virginia G. Piper Plaza) frequently.

Heritage Square is well-utilized - for green space, food.

Expanded convenience and retail in the area would serve campus users.

Campus perimeter is dark at night, since there is little to no activity after 5pm; Unless you work or use the campus, there is very little that is community connected and encourage outside users to use the space; it is a single use space.

Start-Ups in need of lab space should be able to use the PBC. Provide space for incubators or innovation of non-University entities. This type of program keeps the city and institutions competitive.
Original intent of the campus was to be public and private, but the implementation has been only public institutions.

The three empty lots on 5th Street are planned for mixed-use development and will increase density and amenities in the area.

ASU will be developing 7 acres north of Fillmore Street, planned for 1.5M GSF of development over the next 10 years.

As development of the Campus occurs, housing will be developed along the perimeter of the PBC as privately developed mixed use buildings.

Maintain density of the campus and keep the building heights to 10 storiess +.

The existing Mercado is low density and not urban in nature.

Proximity to ASU Downtown, Arizona Science Center, Bioscience High School helps create an Educational District; Public Programming on the campus creates an Educational Pipeline for the Institutions.


COLLEGE OF MEDICINE
PHOENIX

TECHNICAL IMPLICATIONS & CAMPUS GUIDELINES

The current configurations and built capacity of the PBC very effectively leverage the pre-existing public infrastructure and all related utilities located at the perimeter of the Super Block. Additionally, within the campus, each new building has advanced the various systems while providing specific capacities and connections.

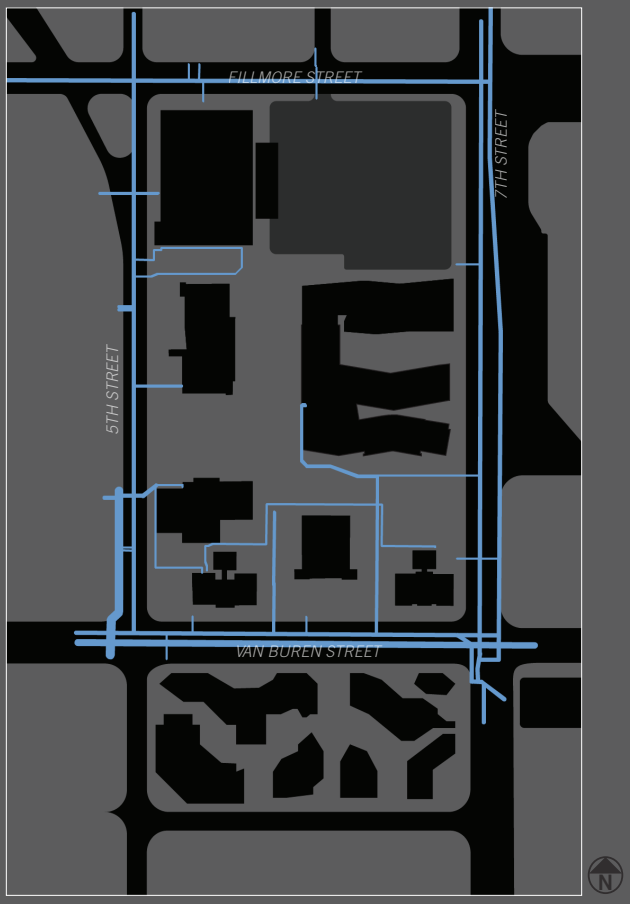
The result is a high magnitude of infrastructure with thoughtful location of services. Future development will have only minor additions or adjustments to complete any proposed projects. No significant elements are missing nor are any major reroutes required to support the projected programs.

An overview of each utility and function is included. The items of note are:

- At the northeast side of the campus along 7th Street., a section of sewer lines will likely be built to support the addition of the two new research buildings.

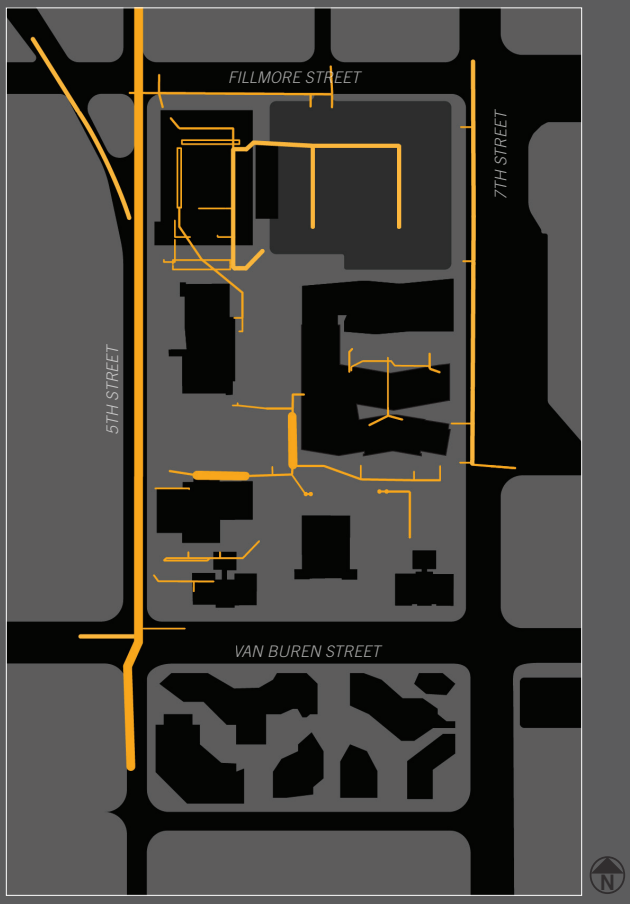
- The existing APS transformer yard at the garage has a specific capacity. This capacity is significant but requires management over time relative to new programs and potential chilled water central plant options.

UTILITY LOCATIONS & PLACEMENTS



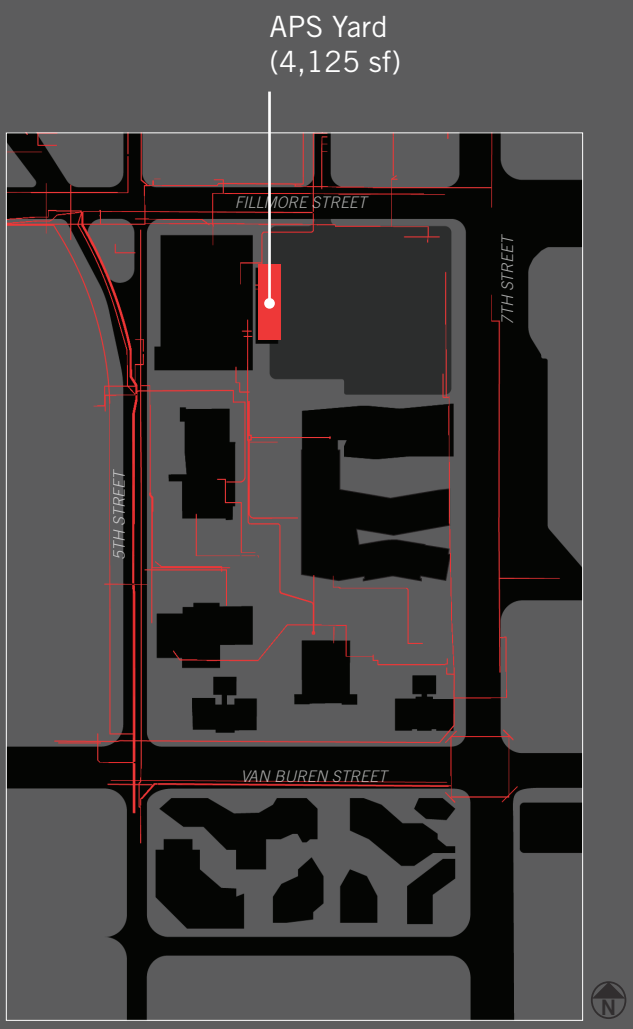
POTABLE WATER

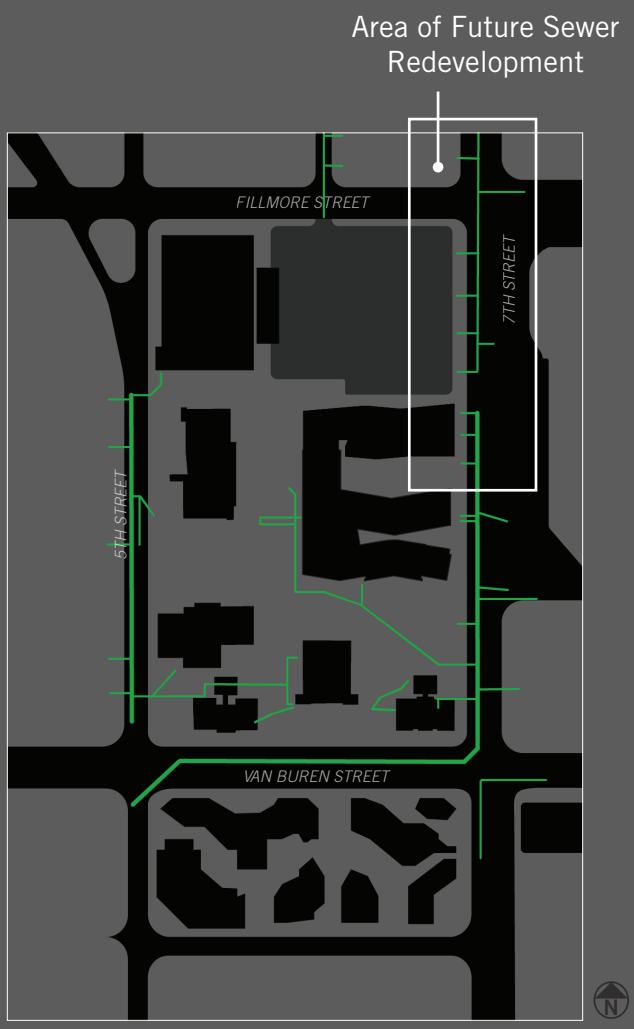
- 12" Water Main Loop around the site is constructed
- No additional water main improvements anticipated
- No foreseen issues in developing the remaining of planning boundary



STORM WATER/SEWERS

- All required on-site retention is met
- Confirm long-term tank locations and capacities as future development occurs





ELECTRIC

- APS Service: separately metered secondary services with local pad mounted transformers for: ABC 1, TGen, Cancer Center; Medium Voltage Primary Service at APS Yard immediately east of Parking Structure: HSEB, BSPB, Parking Structure.
- NRG Energy provides chilled water, for space and process cooling.

SANITARY SEWERS

- This main will need to be extended north to serve additional buildings on the north side of the campus.
- This sewer line does not have sufficient capacity for any additional development.

CHILLED WATER PRODUCTIONS ON SITE

Currently the campus is a contract subscriber to the private chilled water loop in downtown, branded as NRG. This is a large scale downtown district system with multiple supply lines. The primary service line on 5th Street serves the campus.

This strategy has allowed the campus to expand its gross built area incrementally without the front end expense of a central plant. However, as the campus capacity increases, the feasibility of an owned central plant emerges as a distinct advantage for the campus.

The key reasons for an on campus central plant include:

- Long term potential for saving of use fees
- Autonomous control
- Ability to include additional users -beyond the campus- which further offsets costs

PLANNING ISSUES

The Central Plant planning has two key criteria: 1) Land Area with a viable service location, and 2) electrical capacity to operate the plant.

1) The Central Plant's land position has been identified as the east side of the garage. This is adjacent to the transformer yard. The facility is programmed to be approximately 20K GSF including office space.

2) The existing transformer configuration provides a capacity of 600 amperes at 12.47 kV for a total capacity of approximately 12 MVA. This capacity has two translations into built space:

Option I: 1.5M GSF of future built space in primarily research space programs - the highest user of electrical resources per square foot.
or
Option II: 700K GSF of future built space including an on-site central plant.

The projected profile future square footage aligns with the net electrical capacity including the central plant.

CHILLED WATER

CAPACITY STUDIES (SUPER BLOCK):

Approximately **2M GSF** of development **WITHOUT** Chilled Water Production

Existing:

HSEB	268,000 GSF
BSPB	245,000 GSF
TOTAL	513,000 GSF

FUTURE DEVELOPMENT LIMITED TO ~1.5M GSF

Approximately **1.2M GSF** of development **WITH** Chilled Water Production

Existing:

HSEB	268,000 GSF
BSPB	245,000 GSF
TOTAL	513,000 GSF

FUTURE DEVELOPMENT LIMITED TO ~700,000 GSF

SUMMARY OF PLANNING PARAMETERS AND YIELDS

	Existing Development (Super Block)	Future Development (Super Block)	TOTAL Development (Super Block)	FAR (Super Block)
Site Yield (Footprints)	210,790 sf	108,800 sf	~ 320,000 sf	
Site Yield (GSF)	1,430,000 GSF	720,000 GSF - 895,000 GSF	2,000,000 GSF - 2,175,000 GSF	3.1 - 3.3
WITH Chilled Water Production	513,000 GSF (HSEB and BSPB)	700,000 (+/-) GSF	1,200,000 GSF (Allowed)	
WITHOUT Chilled Water Production	513,000 GSF (HSEB and BSPB)	1,500,000 (+/-) GSF	2,000,000 GSF (Allowed)	
Population	2,125 people	1,575 people	3,700 people	
Parking	1,620 stalls 680 GSF/stall .77 stalls/person		1,240 stalls 1,854 GSF/stall .34 stalls/person	

Future Development (Mini Block)	FAR (Mini Block)	PBC TOTAL Yield	PBC TOTAL Development	FAR (PBC TOTAL)
160,000		480,000 sf		
950,000 GSF - 1,200,000 GSF	5.4 - 6.8	1,670,000 GSF - 2,095,000 GSF	3,100,000 GSF - 3,525,000 GSF	3.7 - 4.2
1,600 people			5,300 people	
1,200 stalls 670 GSF/stall 1.1 stalls/person			2,440 stalls 1.047 GSF/stall .50 stalls/person	

PLANNING AREAS AND TOPICS

The 2016 update maintains the fundamental planning including building positions, green space network and general yield profiles established and detailed in the previous Master Plan and Comprehensive Development Plan. The planning elements in this section are recommendations only and are meant to be flexible in order to meet future program needs as planning progresses.

The Key attributes of the campus plan are:

- The north to south "Mixing Bar" or spine as the major inter- organizing device.
- The concept of the mixing bar as a composite of active uses and animates the primary civic green space which runs parallel.
- The east to west orientation of the buildings.
- The linear courtyards between each building.
- Preserve the green space and siting format of the historic buildings.
- Building forms reinforce street edges.

The following are aspects that this plan readdresses:

- The campus will seek to develop space and organization for campus system resources, this includes an expanded central plant facility at the north garage.
- Consideration that the future buildings, on the north super block, will be primarily research with more flexible programming at the base (1st through 3rd floors).
- Future programming located on the Mini Block anticipates long term flexibility for any program type and the proposed garage has perimeter active use programming (1st through 3rd floors).
- The concept of the spine will be extended to the mini block with a minor green space between the future buildings and garage.

The following are planning aspects the 2016 update recommends:

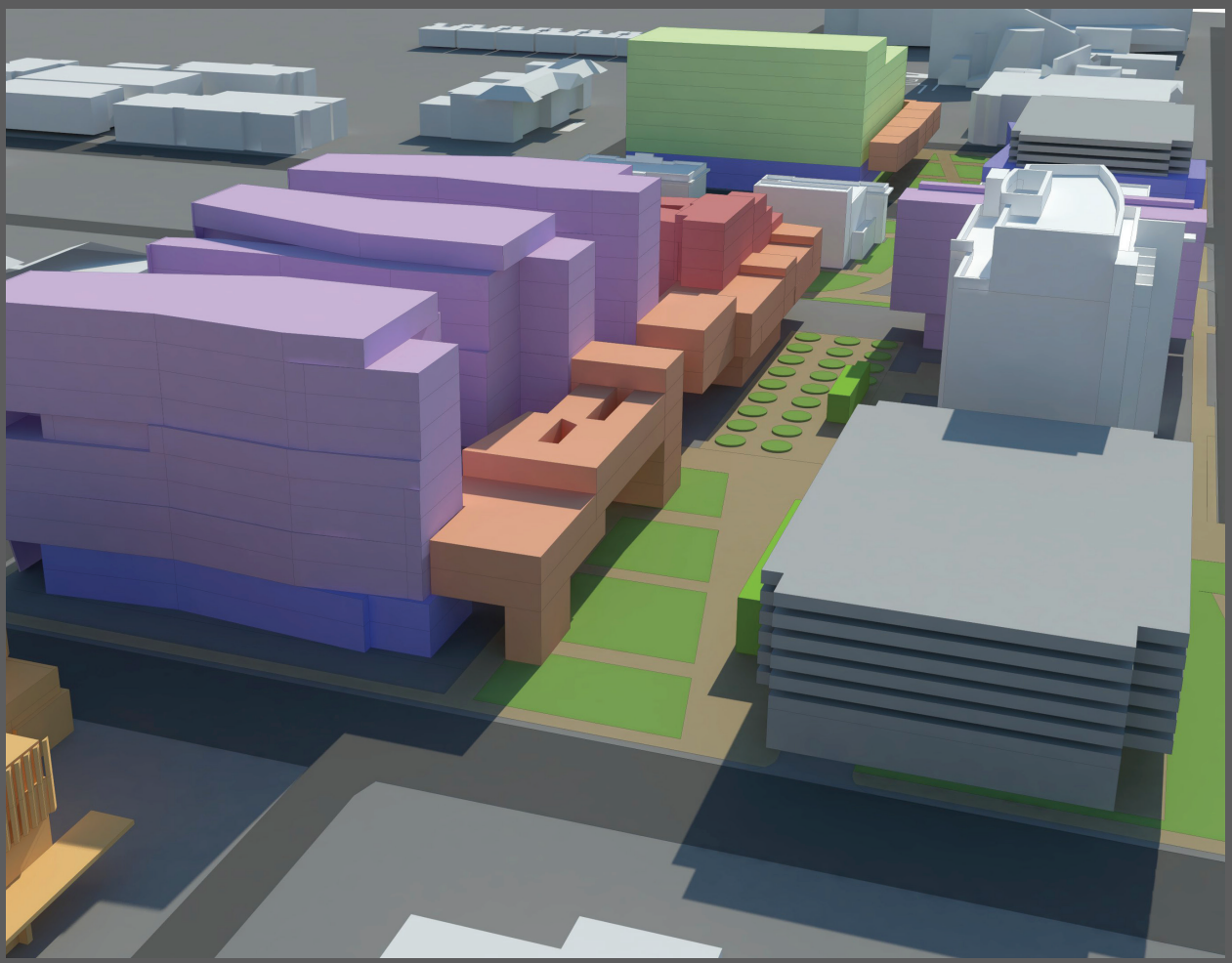
- Reinforcing stronger east to west pedestrian connections.
- Consolidating facility service access to 7th st and minimizing impact to the eastern edge of campus.
- Improving east edge pedestrian condition with more landscape or other architectural solutions.
- Create and complete any campus scaled systems. This includes locating a central plant, managing electrical resources and completing utility infrastructure at the perimeter of the campus.

As the campus is further completed and more nearby off-campus facilities are completed, a district scaled system approaches will be viable and should be considered. This is an appropriate direction to consolidate utility acquisitions and management to similar program types and institutional user groups.

2016 PLANNING AREAS AND TOPICS

2016 PLANNING AREAS AND TOPICS

After a thorough review of the existing conditions of the campus, significant changes to the civic structure and organization are not necessary. As the campus has developed, there has been a successful balance between built and open space while being organized in a clear yet flexible manner. The 2016 Update will review areas or conditions on campus that require detailed planning and refinement.



Central Spine

Extending the Central Green Space and how it resolves at Fillmore Street and the Cancer Center.

Mixing Bar

Extending the Mixing Bar to Fillmore Street and its relation to the future corner research building.

On-Site Central Plant

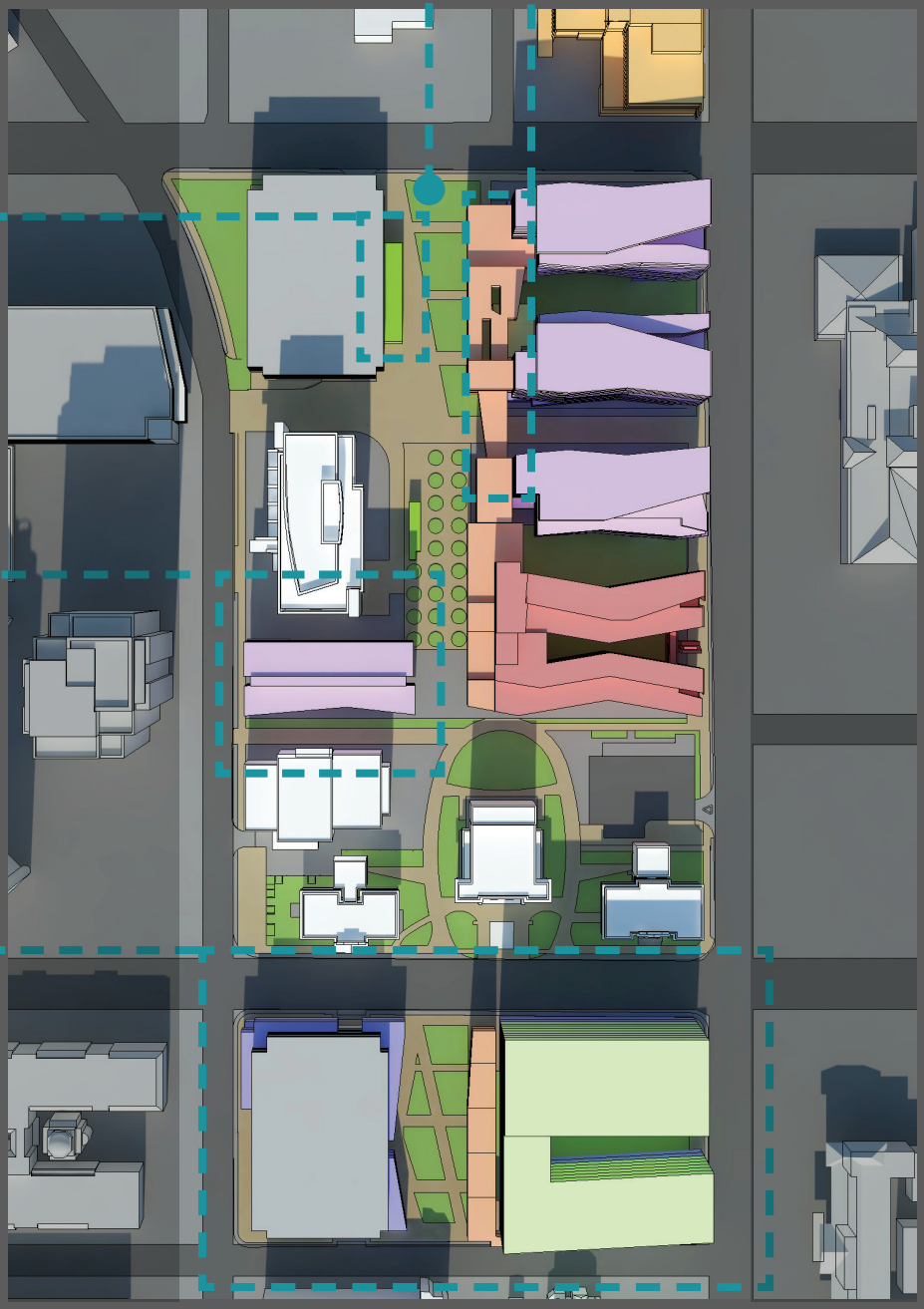
Potential site and size for a prospective Central Plant.

Research Building

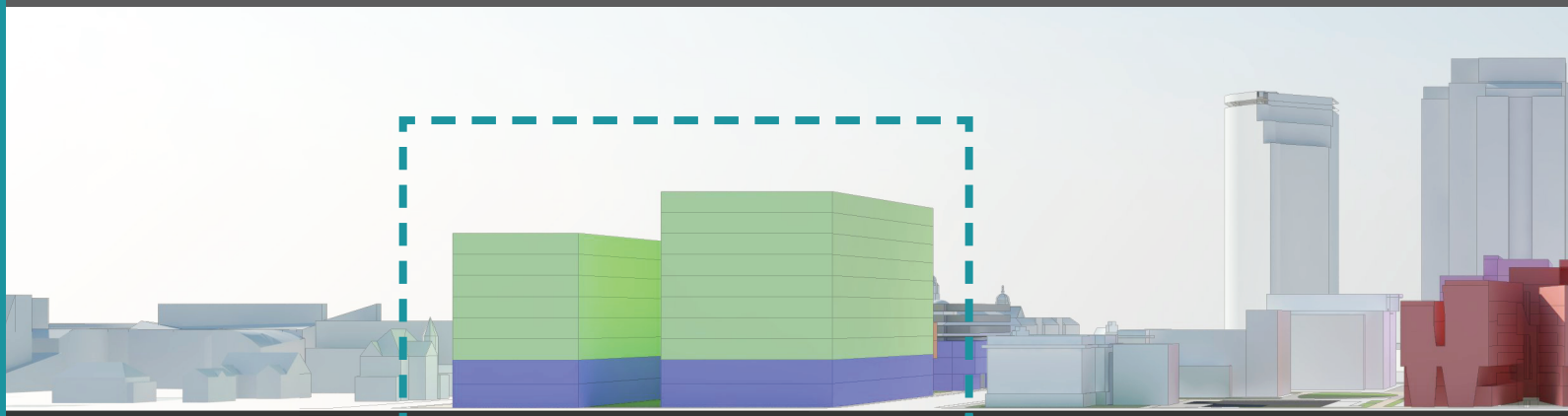
Confirmation of future site south of TGen.

Mini Block

Redevelopment of the Mini Block to maximize and increase density.

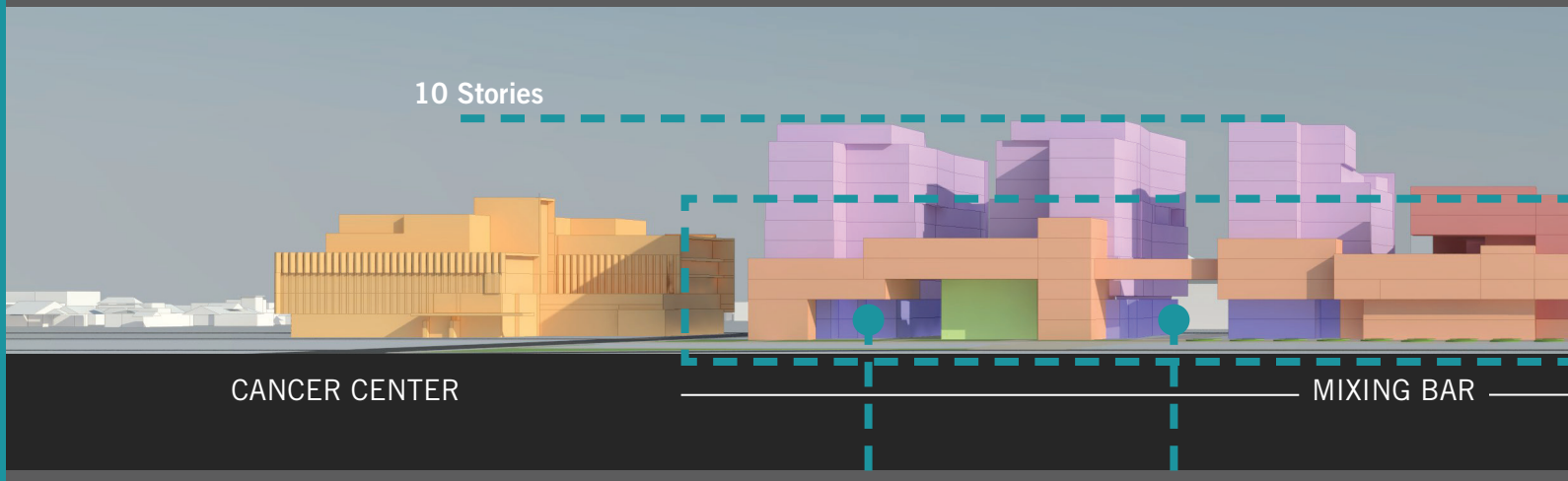


2016 PLANNING AREAS AND TOPICS



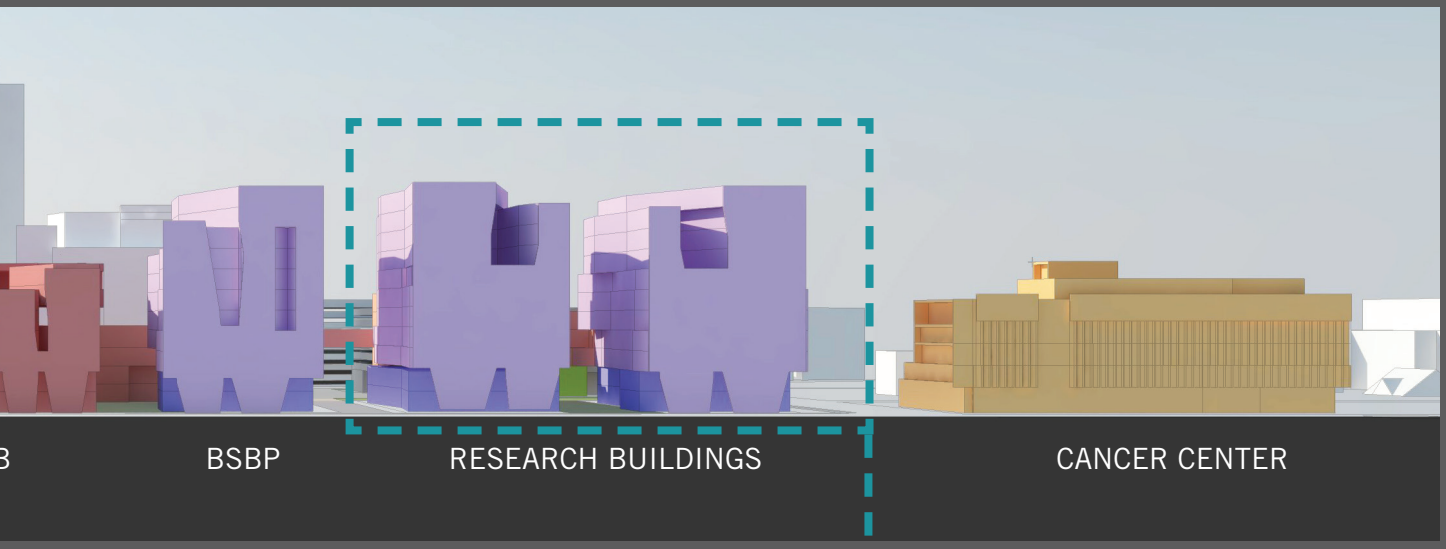
Mini Block

Mixed-use Flex-program buildings and Parking Garage located on the Mini Block, active ground level and interior courtyard/ access
Approx. 1.3M GSF Total



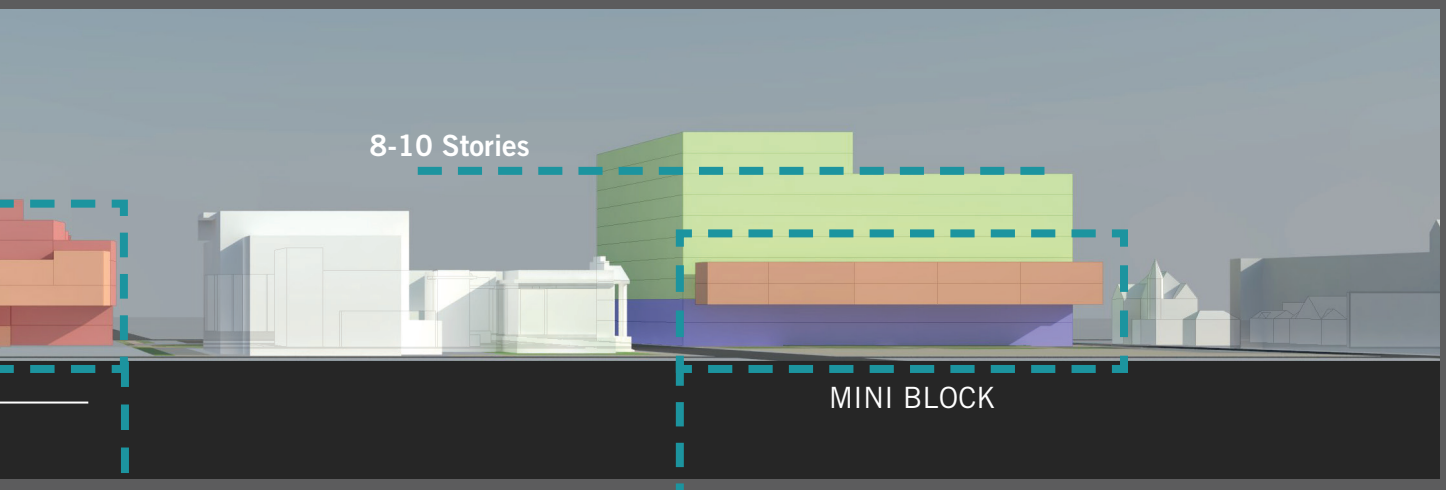
Campus Access

Pedestrian access and linkages along active program areas.



Research Buildings

Two additional Mixed-use Research Buildings complete the street edge along the Super Block development.
Up to 530K GSF Total



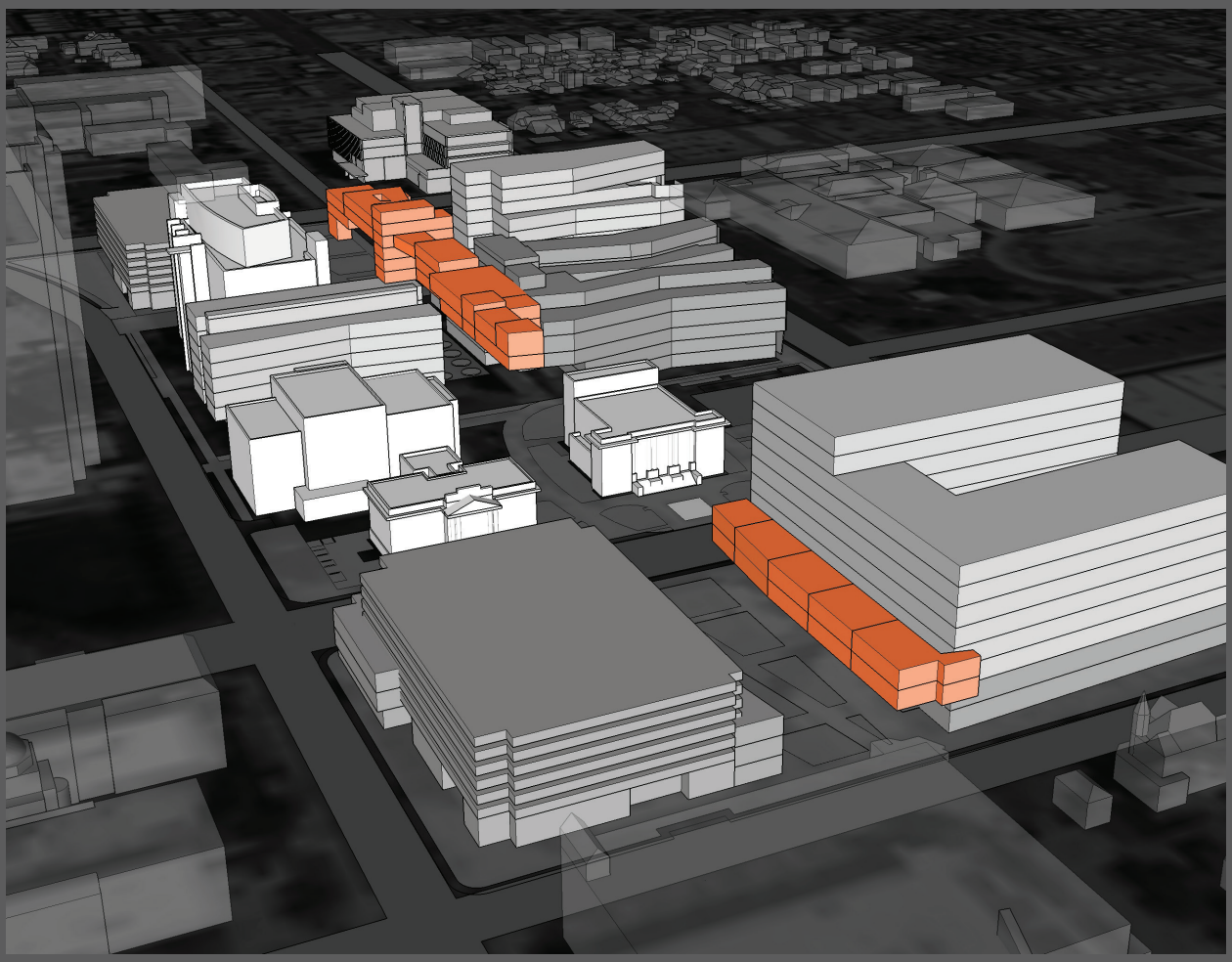
Mixing Bar

Mixing bar to provide connectivity and support spaces along the entirety of the block, leading to active interconnections between use types and indoor-outdoor space.

2016 PLANNING AREAS AND TOPICS

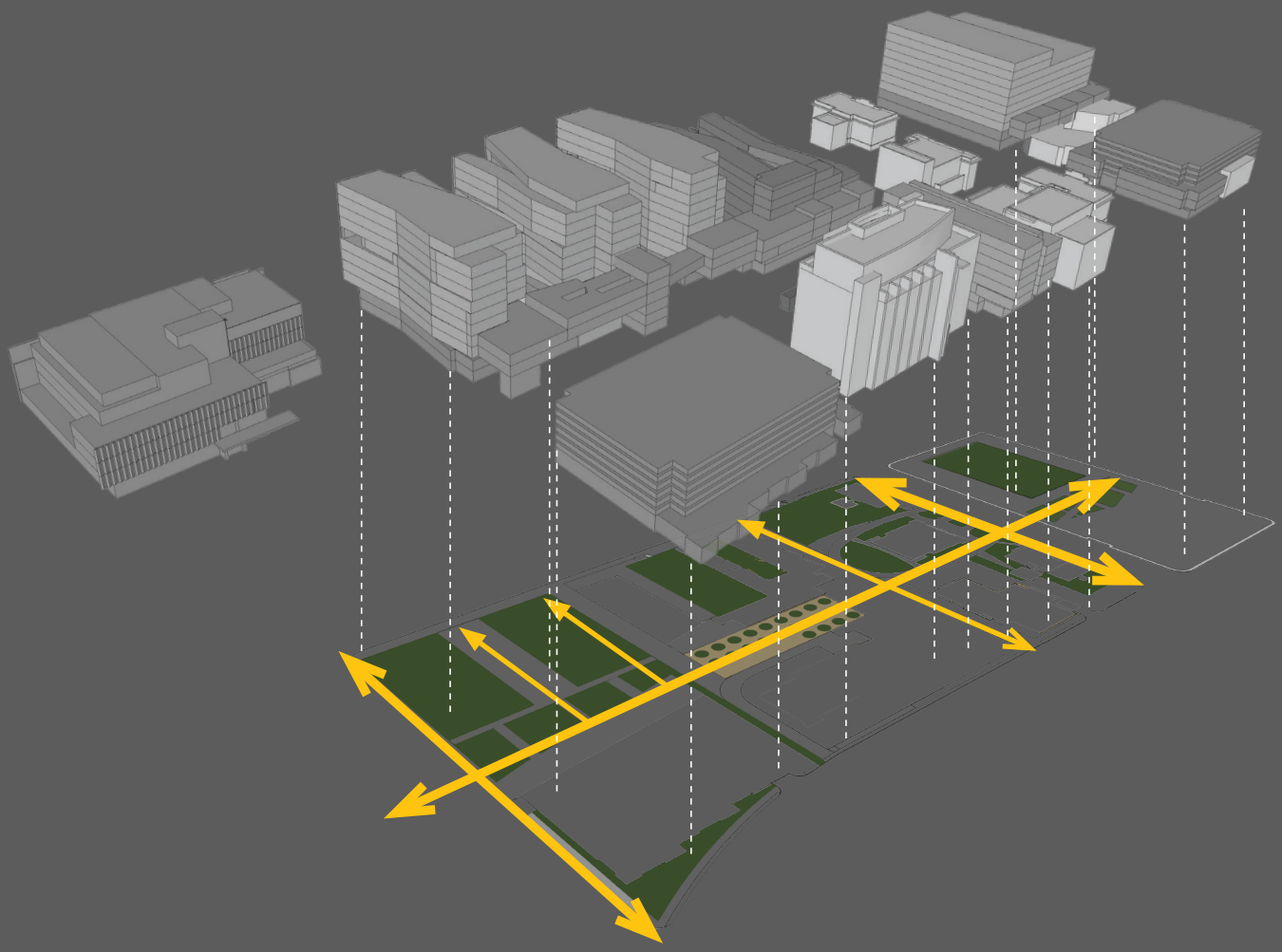
MIXING BAR

As development occurs north of the Biomedical Sciences Partnership Building, the extension of the mixing bar and its relationship to the research buildings needs to be studied. The original intention of the mixing bar is to provide connectivity and support spaces along the entirety of the block, leading to active interconnections between use types and indoor-outdoor space. The terminus of the mixing bar on the super block has an opportunity to relate to the street edge and the remainder of the campus north of Fillmore Street.



CAMPUS GREEN SPACE AND ACCESS

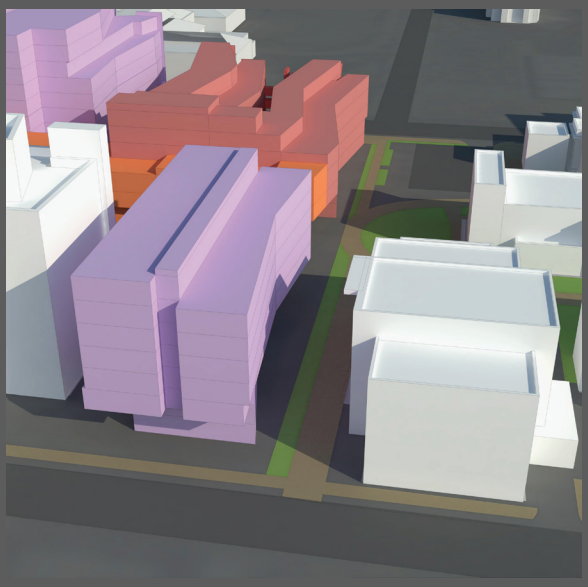
The large Central Spine organizes and connects all primary functions on the north and south ends of campus. The future planned development should offer additional green spaces at the north end of the super block and a central green space on the mini block. A series of intermediate spaces are defined by buildings and should seek to enhance connectivity where building uses and security considerations allow.

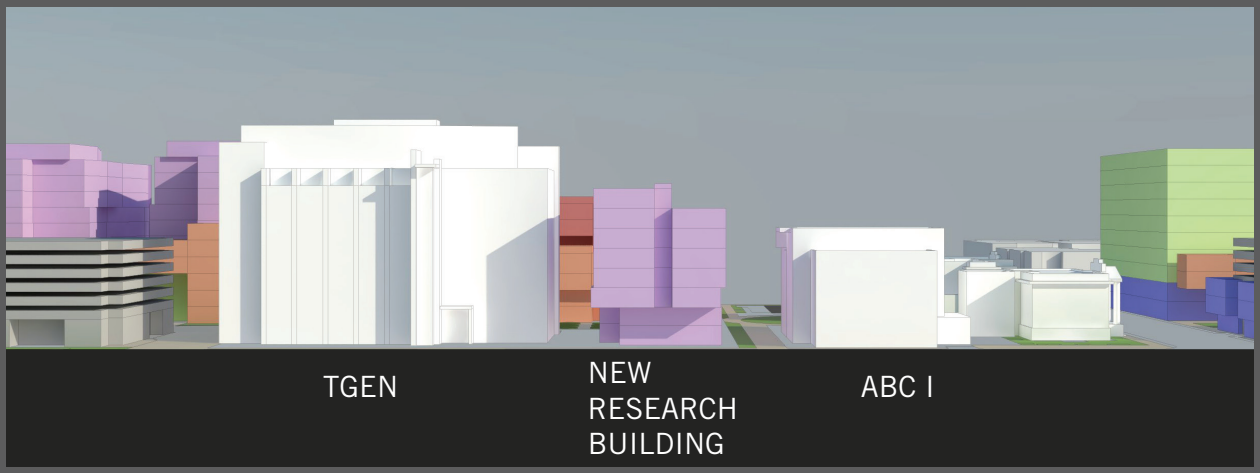


2016 PLANNING AREAS AND TOPICS

RESEARCH BUILDING SITE CONFIRMATION

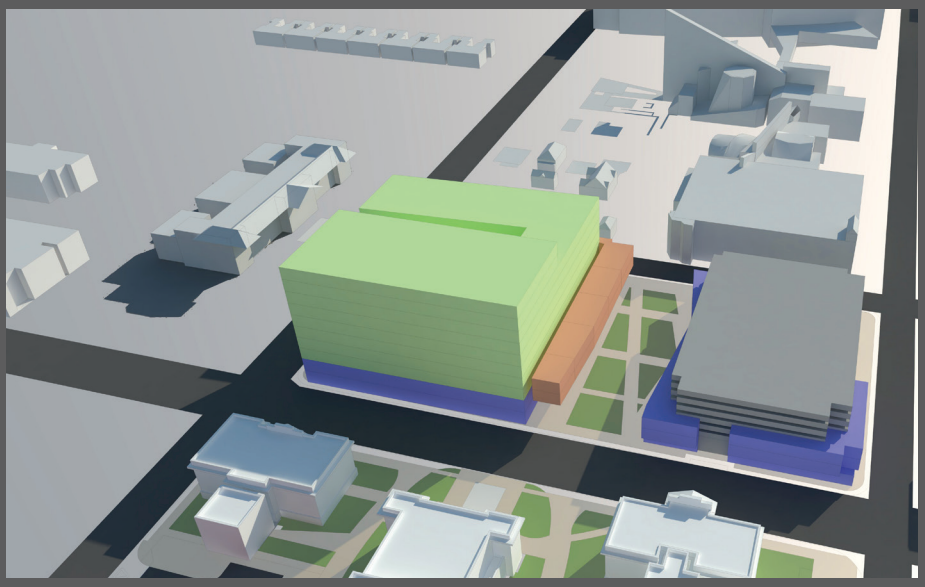
With the relocation of the TGen property line, the viability of the footprint size of the future planned research building south of TGen needed to be confirmed that the footprint size was still viable. It was confirmed that the building setbacks from each adjacent building would be approximately 20' (40' total) allowing a footprint of roughly 94' x 170'. Emergency access and TGen service areas will need to be reconfigured when this new building comes online.

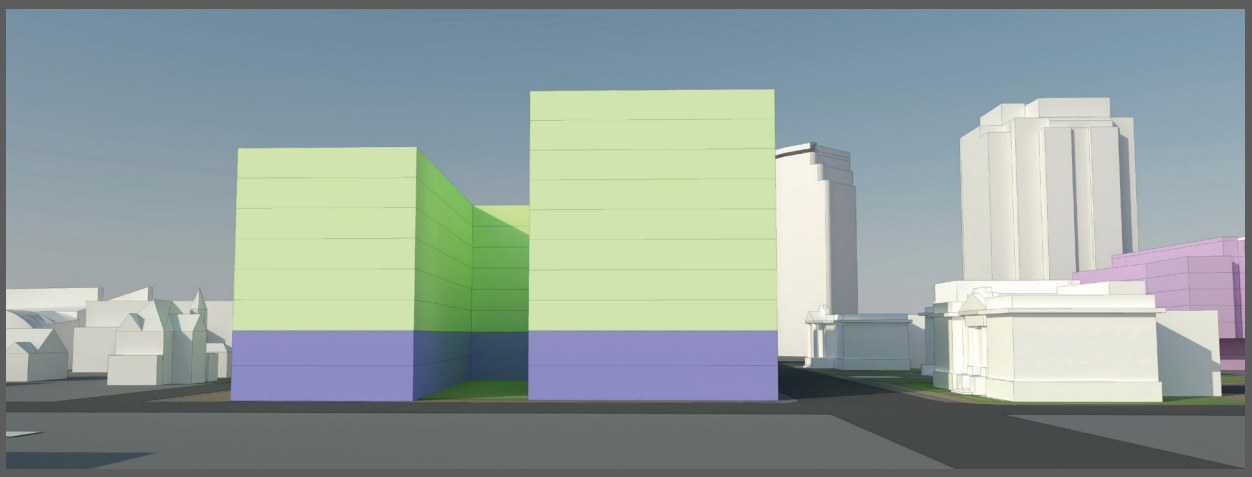


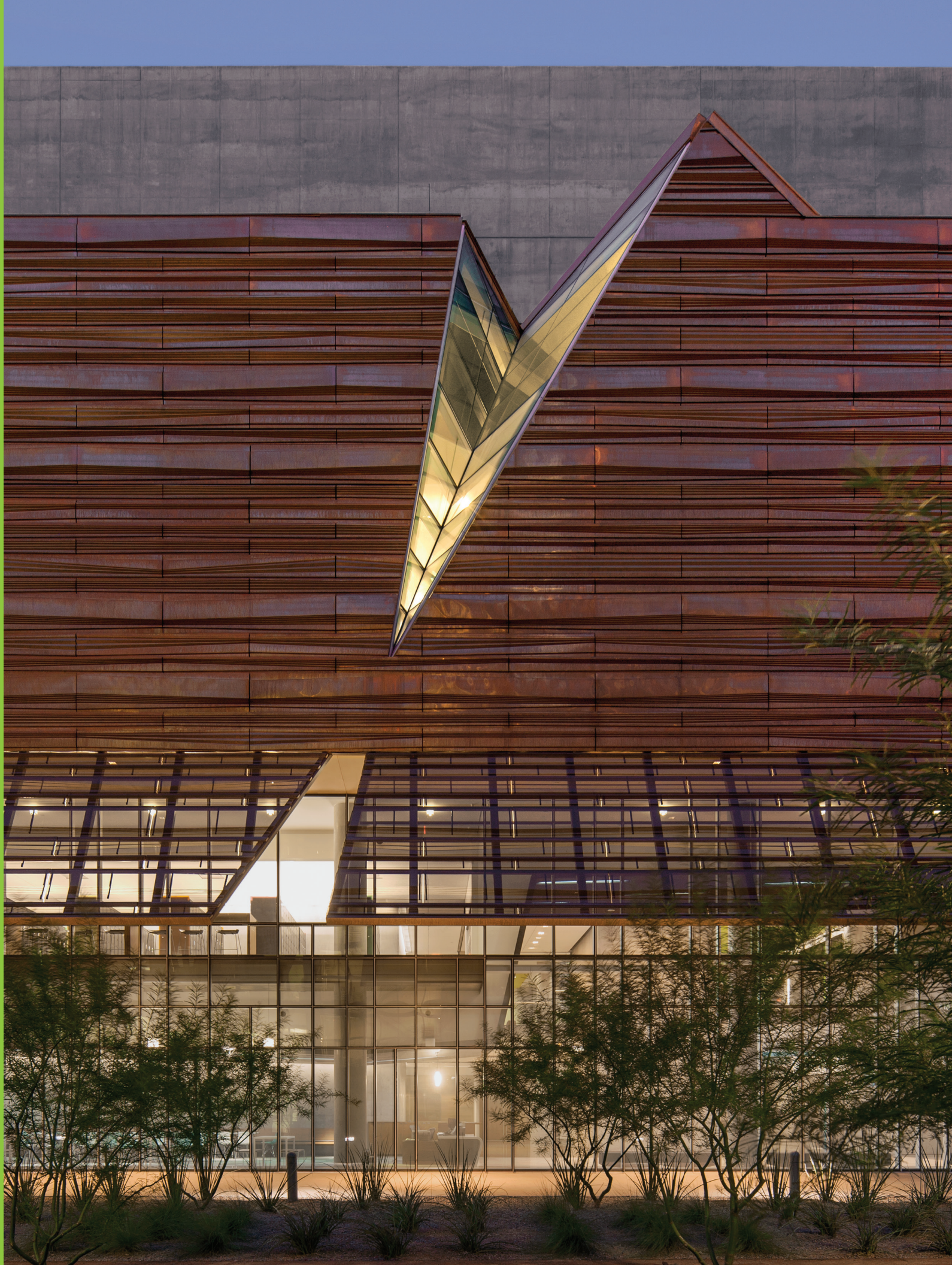


MINI BLOCK DEVELOPMENT

The existing low density buildings on the existing Mercado site will be replaced with high density flex space program for future growth. The central green spine from the super block is extended south of Van Buren Street linking the PBC campus to the Heritage Square site. The mixing bar is also extended on the new buildings, visually linking the campus together. The exterior ground floor of the parking structure is planned for active use along Van Buren Street.







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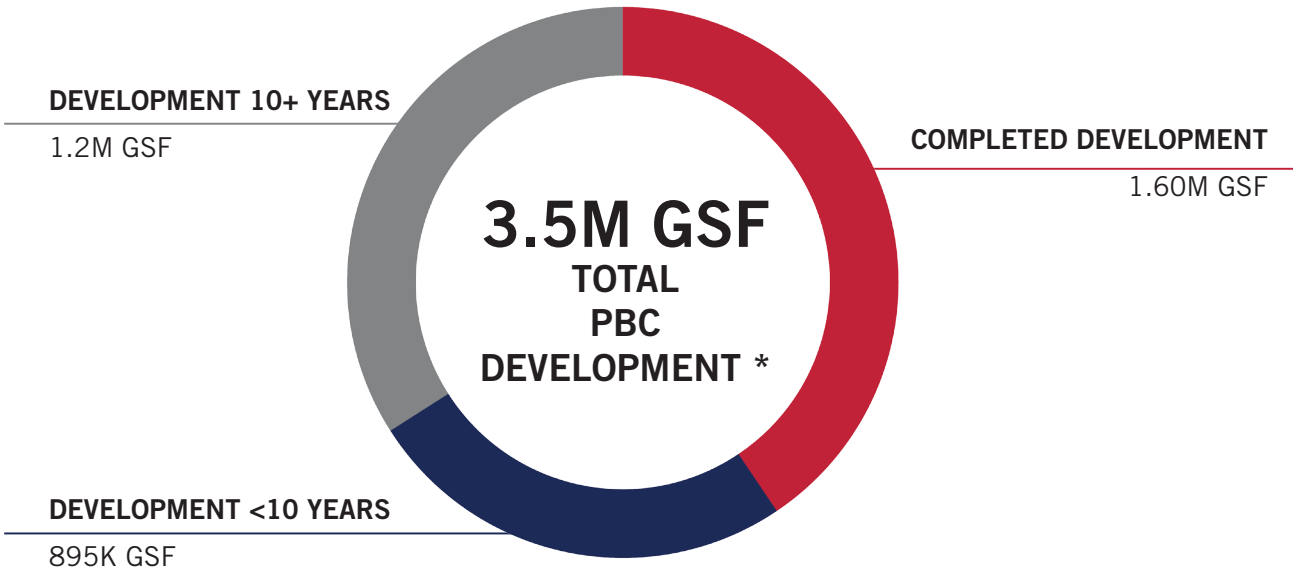
CAPITAL INVESTMENTS AND ECONOMIC IMPACT:

Over time the PBC, south of Fillmore Street and including the Cancer Center, will develop approximately 3.5M GSF of space. Today we have approximately 1.6M GSF including the Cancer Center north of Fillmore Street.

Based on these current facilities, the University of Arizona has determined the economic impact of the services and resources provided through the Phoenix Biomedical Campus.

To provide a long-term view of the economic contribution of the PBC, we can scale the current impact relative to future impact using the GSF. Using this methodology, the significant contributions of the PBC represent approximately 40% of its future full build out economic impact to the community.

A corollary to the economic results will be the additional resources and capital placed into the community to create the build out. This includes hundreds of millions of dollars in hard construction costs as well as the complementery soft costs required to accomplish the full build out.



* This includes all facilities south of Fillmore Street and the Cancer Center.

COMPLETED DEVELOPMENT (1.60M GSF) =