RECONNECTING THE EMERALD CITY

COMPREHENSIVE DESIGN GUIDELINES FOR THE I-5 LID

University of Washington
Department of Urban Design and Planning
URBDP 507: General Urban Planning Laboratory
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Photo Credit: Freeway Park Association

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INTRODUCTION

Executive Summary

Across the country, cities are effectively creating new land use opportunities by capping and building upon existing freeway infrastructure. These "lids" provide a blank canvas, often generating a substantial amount of new land in urban areas which are otherwise already heavily developed. While freeway lids vary in overall size and usage, each has a unique opportunity to add critical economic, social, environmental, and cultural value to the urban landscape.

The precedent for such a project lies in Seattle's very own Freeway Park, which was built in 1976 in conjunction with the Washington State Convention Center and is the nation's first of its kind. Over 40 years later, there now exists significant need and increasing motivation, by both City and community stakeholders, to improve upon and expand this landscape. Housing affordability and insufficient public open space in downtown Seattle are just two of the major challenges the City faces today which may be addressed by the project.

The area of focus for the study includes the Interstate-5 corridor in downtown Seattle, from Madison Street at the southernmost end to Denny Way at the north. Over three-quarters of a mile long and averaging 275 feet wide, the trench formed in the late 1950's when the freeway was built has had a lasting, detrimental impact on the city. Neighborhoods are disconnected from each other, jobs and other downtown amenities are difficult to access, and both public and environmental health impacts are substantial. As one of the fastest-growing cities in the country, these challenges will only be exacerbated in the future if no alternatives are sought.

Through a detailed series of site analyses, case studies, and financial investigations, we have developed a vision for a lid over I-5 that addresses these challenges while providing Seattle with an inclusive, accessible, and vibrant community asset.

Drawing from robust public life analysis methodologies developed both by the Gehl Institute and the partnership between Gehl, the Seattle Department of Transportation, the City of San Francisco's Planning Department, and Copenhagen Municipality's City Data Department, our team assessed eight urban parks in Seattle located within a 15-minute walkshed of the proposed lid area. Each park was characterized by its physical morphology as well as notable conditions present at the time of the assessment. Detailed observations were made regarding how and by whom the public space was being utilized. The results of our analysis brought to light critical design challenges which detracted from the overall quality of the open space, such as unfavorable edge conditions (busy roads, poorly defined access points), and limited visibility. Alternatively, some parks were found to support a wide range of activities by a diversity of users. These findings, combined with case study analyses of other freeway lid designs, informed a suite of design guidelines for public open space in Seattle which, when applied to the lid, will aid in creating a truly vibrant, successful public space to be cherished for generations.

A project of this magnitude is no small undertaking, therefore we've provided a financial analysis with preliminary cost estimates, in addition to exploring funding options through a variety of private and public mechanisms. At roughly $30 million per acre, the cost to the City of building an I-5 lid will need to be offset by a combination of private development, philanthropy, and strategic partnerships to become a reality. Similar collaborative efforts will reduce the City's burden to operate, maintain, and program any public open space within the lid once the infrastructure is built. Ultimately, private-public partnerships, with support from Seattle's robust non-profit realm, will be key to financial success.

Our vision for an I-5 lid is grounded in best practices for public open space design in Seattle, coupled with practical funding scenarios that serve to bring the vision to life. The City of Seattle, should it lead the charge in moving the project forward, must be bold. At the same time, public involvement in each stage of the planning process will highlight the ways in which an I-5 lid can best meet the needs and desires of the city in a way that is both equitable and inclusive. Ultimately, an I-5 lid presents a unique opportunity to repair damages imposed on the urban fabric of the city, reconnecting Seattle in a way that is healthier and more livable for all.

Figure 1 - People Playing at Cal Anderson Park. Source: Futoshi Kobayashi, Seattle Parks and Recreation.

History of I-5 & Seattle's Open Space

Figure 2 - Construction of Interstate-5 looking north toward South Lake Union.

1954
Despite protest by hundreds of area residents and business owners concerned about displacement and physical separation from the heart of downtown Seattle, construction of Interstate 5 began in conjunction with the signing of the Federal Highway Act. The freeway opened in 1967.

Figure 3 - Fountain design at Freeway Park.

1976
The voter-approved, King County Forward Thrust bond designated $65 million for parks in Seattle[1] . A significant portion of these funds helped to build Freeway Park, the nation's first interstate lid, designed as a "park for all." Combining elements of both urban and natural contexts, the park was for many years considered a success, though in more recent decades has fallen victim to drug use and other deleterious activities.

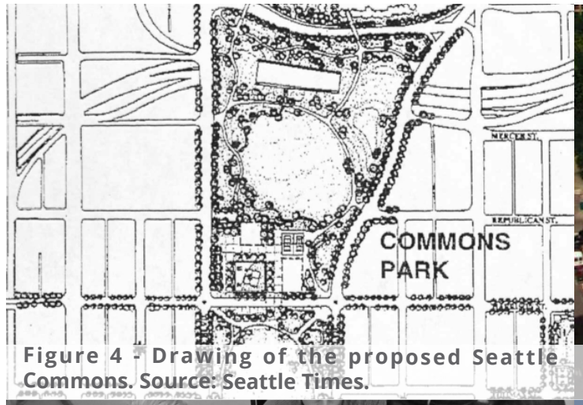


Figure 4 - Drawing of the proposed Seattle Commons. Source: Seattle Times.

Figure 5 - Conceptual rendering of a cap at Madison St. Source: Seattle Department of Transportation.

Figure 6 - Community charette held by Lid I-5 stakeholder group. Source: Lid I-5.

Figure 7 - Rendering of the Washington State Convention Center expansion. Source: LMN Architects.

1995
The 60-acre proposed Seattle Commons through present-day South Lake Union was narrowly turned down by voters. Opponents felt it would be "a place for the rich and poor, paid for by the middle class," benefiting only those involved with the growing tech industry developing rapidly in the area.

2009
The need for reconnecting the dynamic First Hill neighborhood with Seattle's downtown core is addressed in this conceptual study of lid opportunities along Madison Street. This represents the City's first official exploration of I-5 lid potential since Freeway Park and, although never realized, fueled the conversation with a vision and possibilities for a more livable environment along Seattle's I-5 urban corridor.

2016
With financial support from the Seattle Department of Neighborhoods, in partnership with the Seattle Parks Foundation, the Lid I-5 campaign gained significant momentum. A series of fundraising efforts, community meetings, workshops and design charrettes brought the possibility of an I-5 lid, filled with both private and public amenities, to the forefront with the goal of "building a stronger city, together."

2018
The Summit, a $1.7 billion, large-scale (1.4 million square foot) expansion of the Washington State Convention Center breaks ground at the site of a former Honda dealership adjacent to the I-5 lid study area. In conjunction with this project, the Convention Center set aside $1.5 million of its public benefits package to fund a year-long lid feasibility study. Overseen by the Seattle Office of Planning and Community Development, the study will reveal critical structural engineering considerations and financial feasibility, to be completed in early 2020.

Challenges and Opportunities

Seattle is a fast growing city. As it grows, so too does the need for public open space. Furthermore, with both the topography of the city and the geographical shape, I-5 causes a huge divide, splitting neighborhoods and polluting the city.

Freeway lids have been proposed as a remedy to the issues caused by I-5. Freeway Park was the first lid in the country. Since then, successful lid projects have been implemented across the nation, providing greenspace, housing, programmed activities, and other public services for the city populus. Seattle has the opportunity to use the lessons from Freeway Park and other freeway lid successes to not only address the problems posed by I-5, but also increase open space and social opportunity for all.

Goals and Objectives

The goal of this report is to provide the City of Seattle Office of Planning and Community Development with the following information and resources to inform project planning for a potential I-5 lid in Seattle:

1. Existing conditions within a 15-minute walkshed of the I-5 lid study area

- Topography
- Land Use
- Demographics
- Transportation Flow
- Social Equity Considerations
- Open Space

2. Design guidelines for public open space in Seattle to ensure that an I-5 lid best meets the needs and desires of the city's diverse range of stakeholders

3. A vision for an I-5 lid that applies each of the recommended best practices in a cohesive, well-informed design

4. Financial feasibility considerations, including various options and scenarios for funding initial construction as well as operations, maintenance, and programming of an I-5 lid

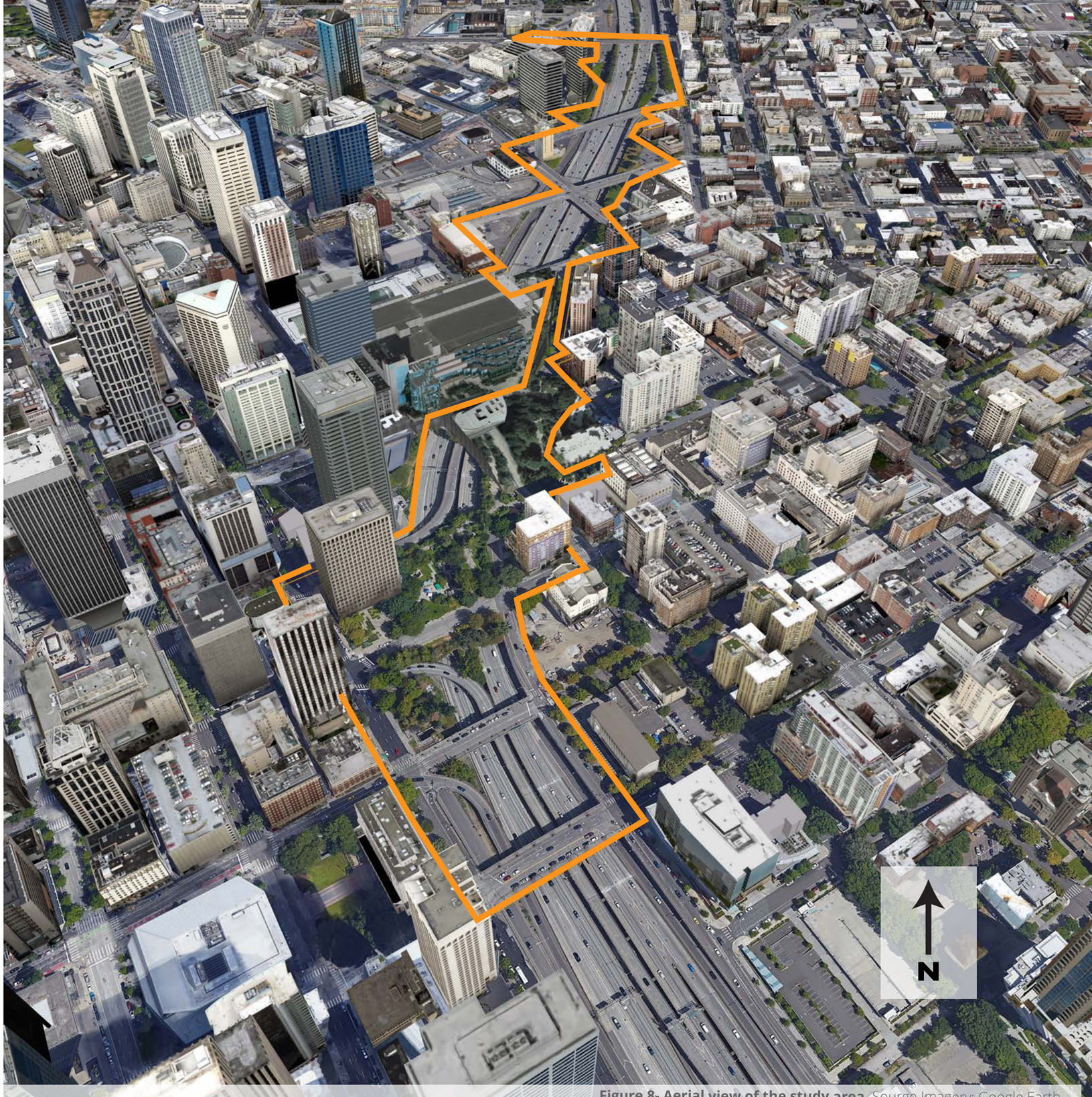


Figure 8- Aerial view of the study area. Sourge Imagery: Google Earth

STUDY AREA ANALYSIS

Defining the Study Area

The study site for this research extends the I-5 corridor from Denny Way in South Lake Union and Capitol Hill, to Madison Street in the heart of Downtown and First Hill. The area also includes the air space above the site. This study area includes approximately 18 acres of air space and adjacent land and is the principal site around which analysis and subsequent designs for a potential lid have been built.

From the site, three catchment areas were defined for analysis of existing conditions and potential lid impacts in the City of Seattle. These areas extend from the centerline along the I-5 study area to encompass five, ten, and fifteen minute walksheds. The largest coverage area, the fifteen minute walkshed, houses roughly 11% of the City of Seattle population (81,676 people). Encompassing a significant portion of Seattle's downtown, the study area boasts over 281,000 jobs drastically raising the daytime population of the area.[4] Considering that Seattle as a whole has experienced a rapid increase in population in recent decades (see Figure 9) along with economic and job growth focused around the downtown, the fifteen minute study area covers an area relevant to the past and future trajectory of Seattle's growth.

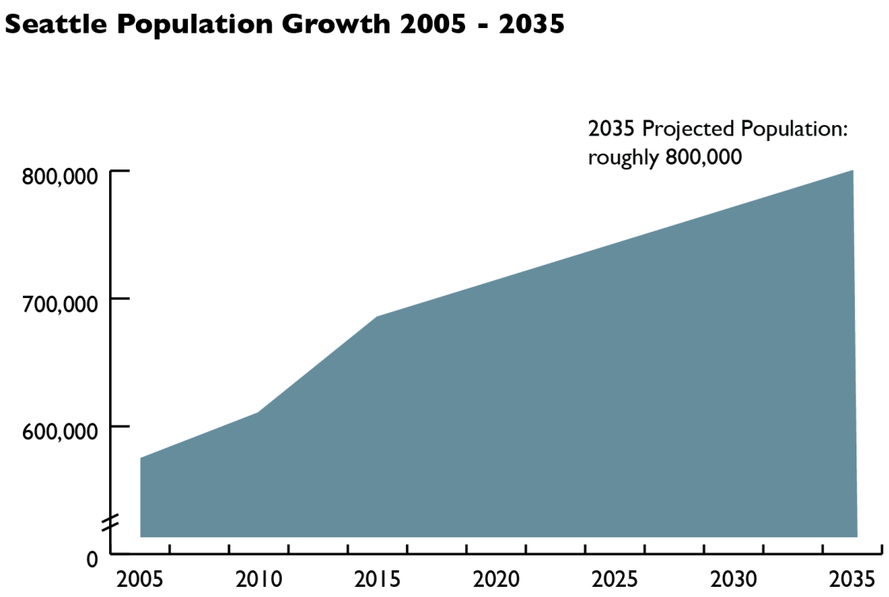
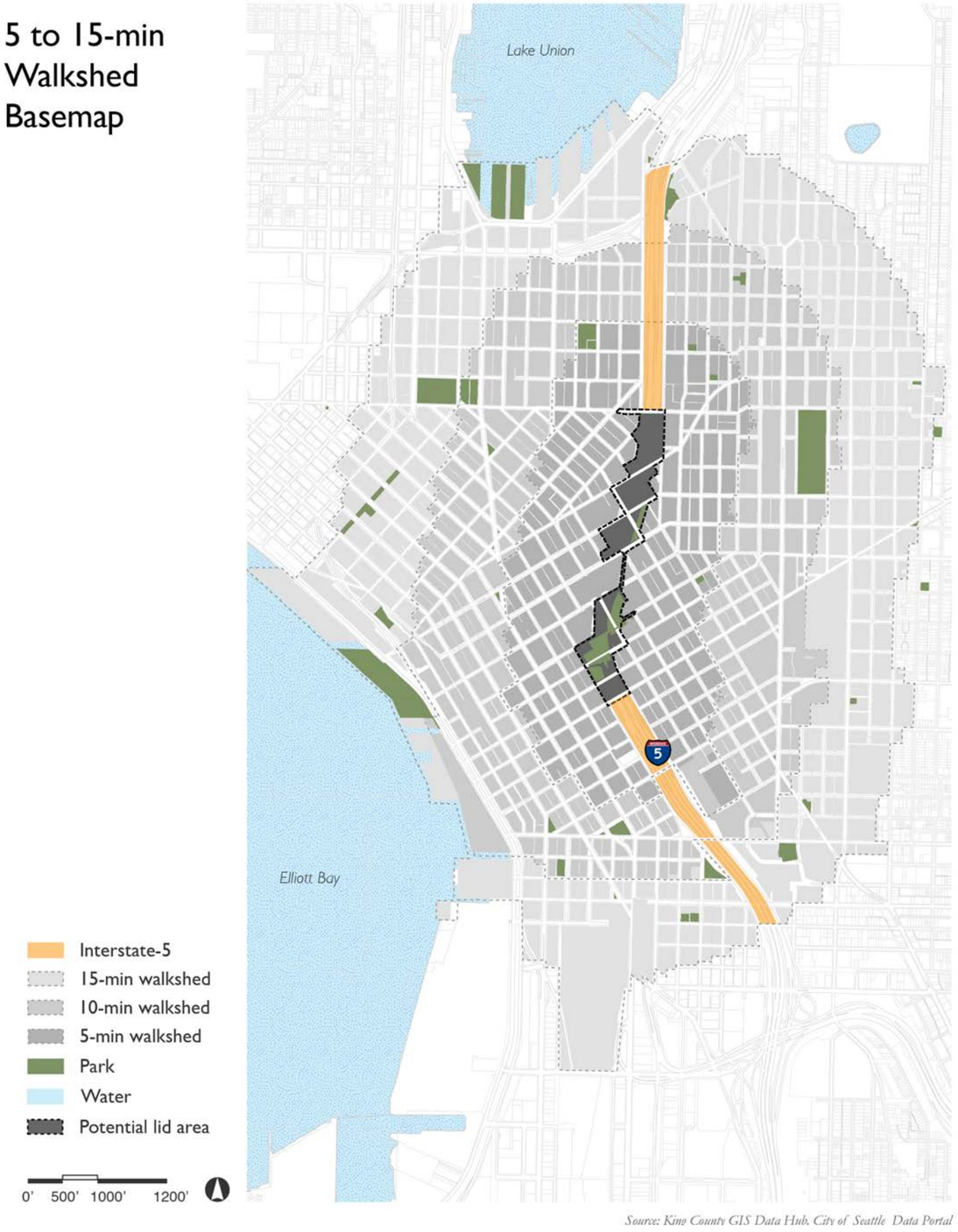


Figure 9 - Seattle Population Growth from 2005 to 2035: The growth chart shows the population of Seattle is increasing within the growth of years.[2]

5 to 15-min Walkshed Basemap



Source: King County GIS Data Hub, City of Seattle Data Portal

Figure 10 - 5 to 15-min Walkshed Map : 5-min, 10-min, and 15-min walkshed are equal to a quarter mile, half mile, and 3 quarters mile range from the study area respectively. The parcel intersected by the range is included in the walkshed.[3]

Current Challenges

Another element unique to Seattle is its topography, a characteristic of this region the City has struggled to respond to since its inception in the late 19th century.[5] A potential lid spanning the I-5 Downtown corridor would have to work with topographical constraints posed by the increase in elevation from west to east, ranges from approximately 15 feet in the south end of the site area to 25 feet or more in the north. The Topography Map (Figure 12) depicts the dramatic elevation change which extends across the study area and needs to be considered in any potential lid design.

Another challenge to the study area is open space. The 2035 Comprehensive Plan outlines another service standard for Urban Villages: One acre of open space per 1,000 households. The downtown commercial core also requires an additional acre per 10,000 jobs. Of the three Urban Villages in the study area, downtown has the largest deficit of open space. Within the three Urban Villages, only 13.3 acres are set to be added in the Downtown Neighborhood by 2035. Most of this new open space will come from the Waterfront Seattle Program which will create new and improve existing open space along Alaskan Way ("Waterfront Seattle Overview"). While South Lake Union is not lacking for open space, consideration for the number of daytime visitors in the neighborhood further emphasises the need for increased public space.

As Seattle continues to grow and development is focused within Urban Villages near the city center, increasing accessible open space within these areas will play a greater role in the city's appeal to tourist and the overall livability for residents.

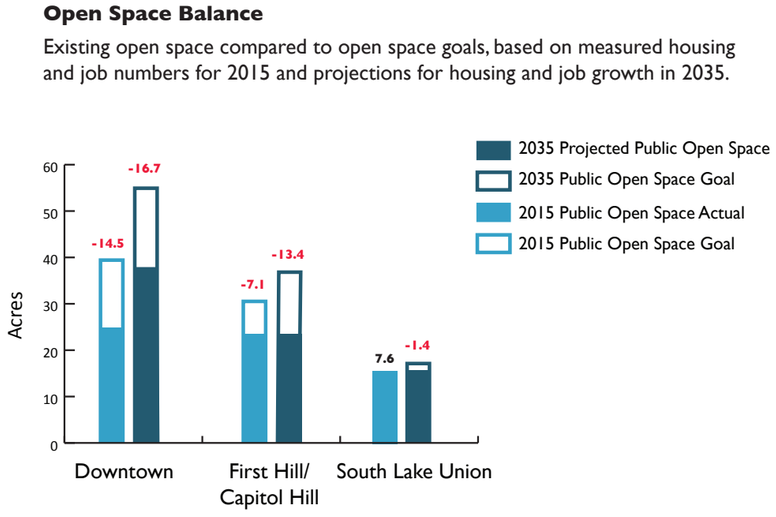


Figure 11 - Open Space Balance Chart: An analysis of the existing open space and the 2035 Open Space goals outlined by the City of Seattle Comprehensive plan demonstrate that 31.52 new acres of open space are needed to meet the goal by 2035.[6]

Seattle Topography

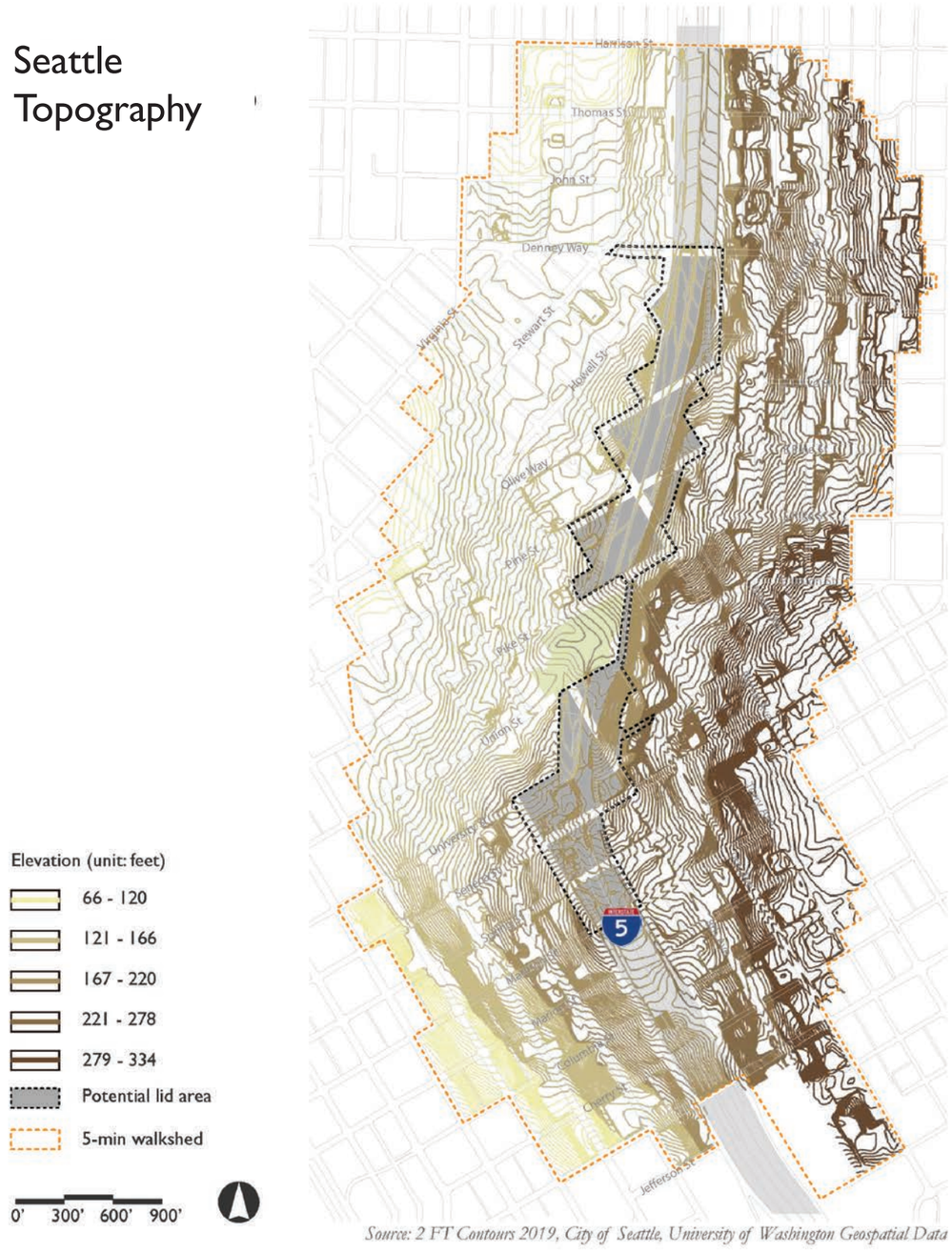


Figure 12 - Seattle Topographic Map : The map shows the topography of the study area. **(**Source: University of Washington Geospatial Data)

Open Space
Current Conditions

Access to quality open space contributes to a city's overall health and livability, as well as directly contributing to the economic success of individual neighborhoods. As Seattle's commercial core continues to absorb a significant amount of growth, ensuring that the development of open space matches the pace of residential and commercial development is a priority for the City.[7] Within the study area, there are roughly 79 acres of open space, with 50 acres coming from parks and 19 coming from privately owned public spaces. There is a definitive lack of open space in Seattle's commercial core. Within the study area, the majority of parks are less than 6 acres in size, with the two exceptions of Lake Union Park (12 acres) and Cal Anderson Park (11 acres). Much of the open space currently available to the workers, residents, and visitors of Downtown Seattle is in the form of publicaly accessible plazas or other forms of hardscaped parks, defined for our analysis as having more than fifty-percent impervious surface.

The Seattle citywide level of service standard for open space is 8 acres per 1,000 residents. With a projected population of 806,800 by 2035, Seattle will need to acquire an additional 40 acres of parkland in order to meet this standard.[8] Currently, Regional Parks represent the vast majority of Seattle's open space, with around 2,779 acres. The majority of parks in the study area are classified as Downtown Parks by the City of Seattle. The unifying features of Downtown Parks is the preponderance of hardscaped design and their small size. While many small pockets of parks provide a much needed respite in densely developed areas such as the commercial core, there is little opportunity in these spaces for recreational or leisure activities which contribute to the physical health of users. Due to the increasing scarcity and cost of land near the commercial core, the Seattle Parks Department has shifted its acquisition strategy toward promoting privately owned public spaces.[9]

Current
Open Space

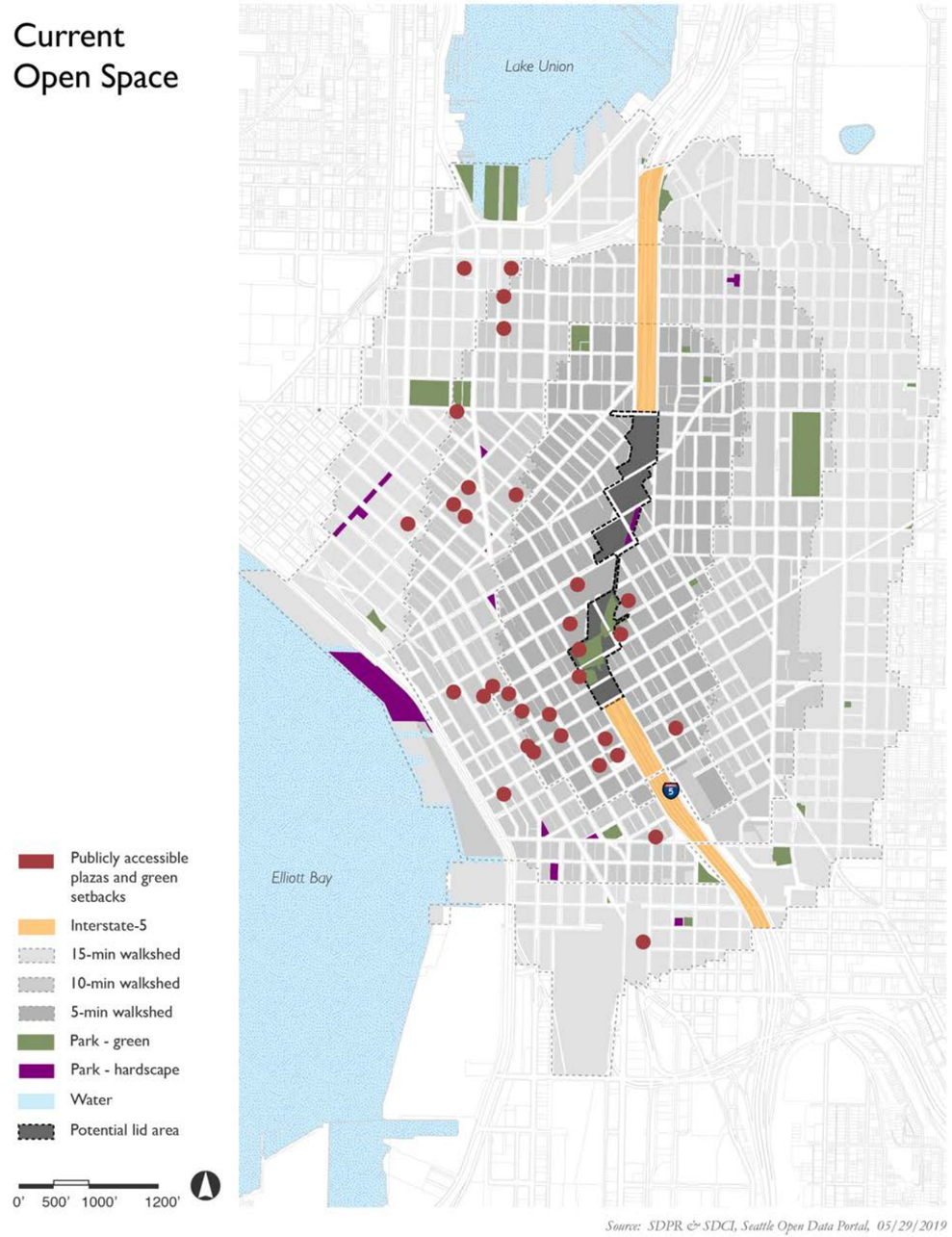


Figure 13 - Current Open Space Map : Current open space in the study area provided by parks is limited. Of the roughly 1,893 acres in the study area only about 50 acres are dedicated to public space in the form of parks. The number of privately-owned public spaces are increasingly to fill the growing need.[10]

Open Space and Hardscape Design

Within the study area, 38% of all open space downtown consists of impervious land. These spaces are often designed with hardscaping and do not contribute to the accessible green space in the city. Hardscaped design includes elements such as plazas and other man-made structures. While they are often successful in a public space when paired with green features and tree canopy, open spaces designed with hardscape alone have a smaller quality of potential use and are not able to provide the same positive environmental and health impacts as green spaces.

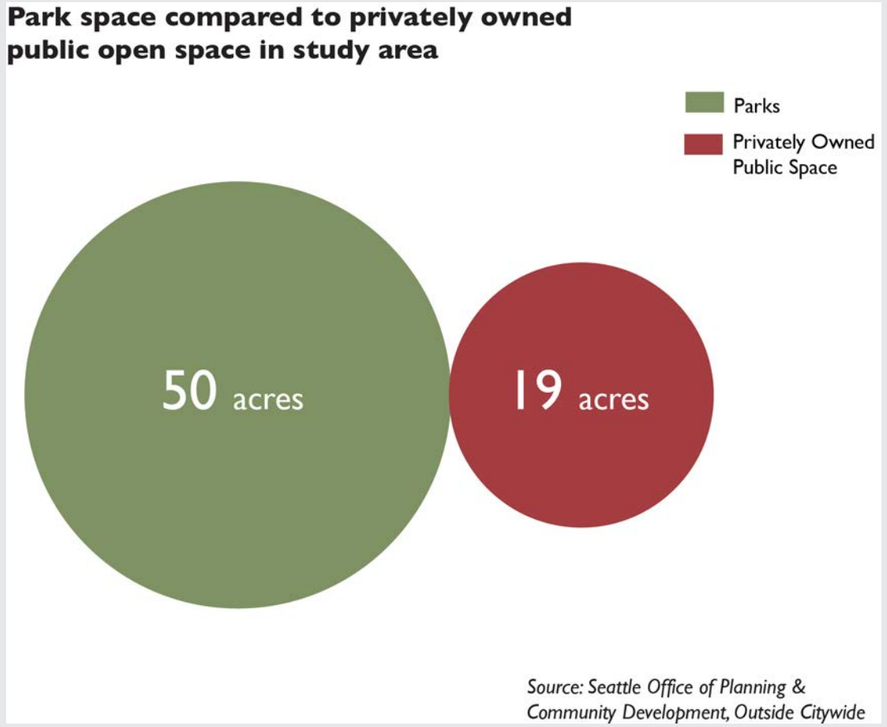


Figure 14 - Park space compared to privately owned public open space: Of the roughly 69 acres of park space and privately owned public space within the study area, 72% comes from parks and 28% is contributed by privately owned public open space.[11]

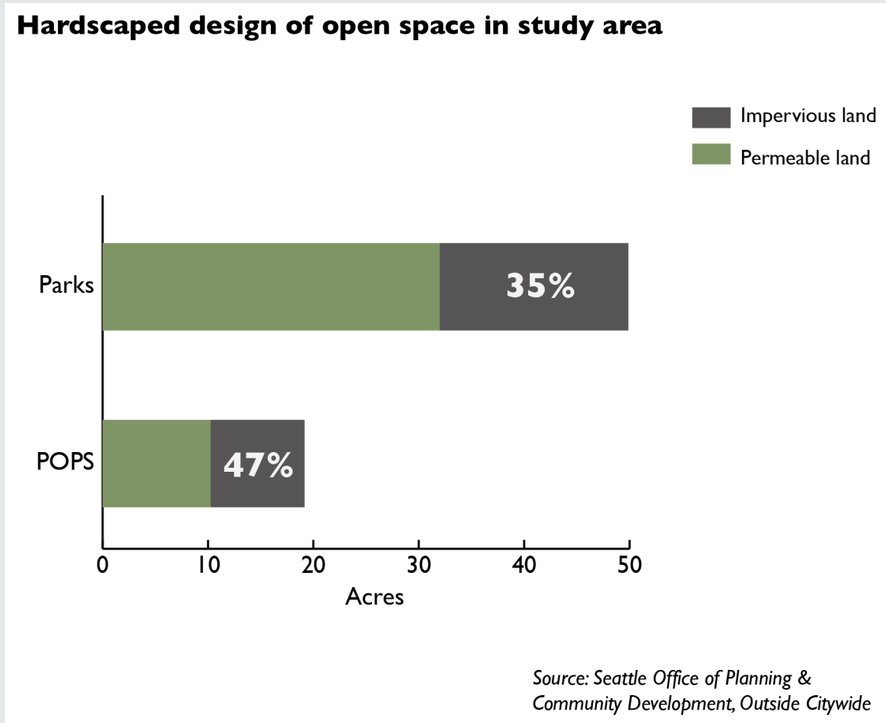


Figure 15 - Impervious Land Chart: Of the 69 acres of open space in the study area, roughly 39% of that space (27 acres) is impervious or covered by a hardscape design. Around 35% of park land in the study is impervious, and roughly 47% of all privately owned publicly accessible open space is impervious.[12]

Health Impact

Air Quality
Emissions from motor vehicle traffic are one of the largest sources of air pollution in Washington State. Vehicle emissions pollute the air with carbon monoxide (CO) and fine particulate matter (PM2.5), increasing health risk for the population that lives and plays near high traffic roadways. In 2009, the Washington State Department of Health conducted a health risk assessment in South Seattle. They found that cancer risks and other health hazards are at their greatest near major highways, and the risk drops dramatically at around 656 feet away from the center of the highway.[13] The Seattle Comprehensive Plan recommends that sensitive land uses including residences, schools, and daycares be located at least 656 ft from a highway in order to mitigate these negative health impacts. Visitors to parks and fields are sensitive to the negative health impacts of poor air quality through strenuous play and physical activity, however, residences and schools are two of the most vulnerable land uses due to the increased exposure times.[14] A highway lid may help to mitigate the negative health impacts for the some of the roughly 81,600 residents currently living within the study area.

Noise
Additionally, the ambient noise meter at Denny Way and Minor Ave, roughly 150' from the center of Interstate, has an average exterior noise reading of 78.3 dBA Ldn. This is much too high for sensitive populations in local residences and schools, unless insulation or other design elements are implemented.[15] Where it is applicable in the study area, namely adjacent to uncapped portions of the highway, housing and other types of sensitive receptors should be implemented with the mitigation consideration outlined in the 2035 Comprehensive Plan.

Measured Air Quality

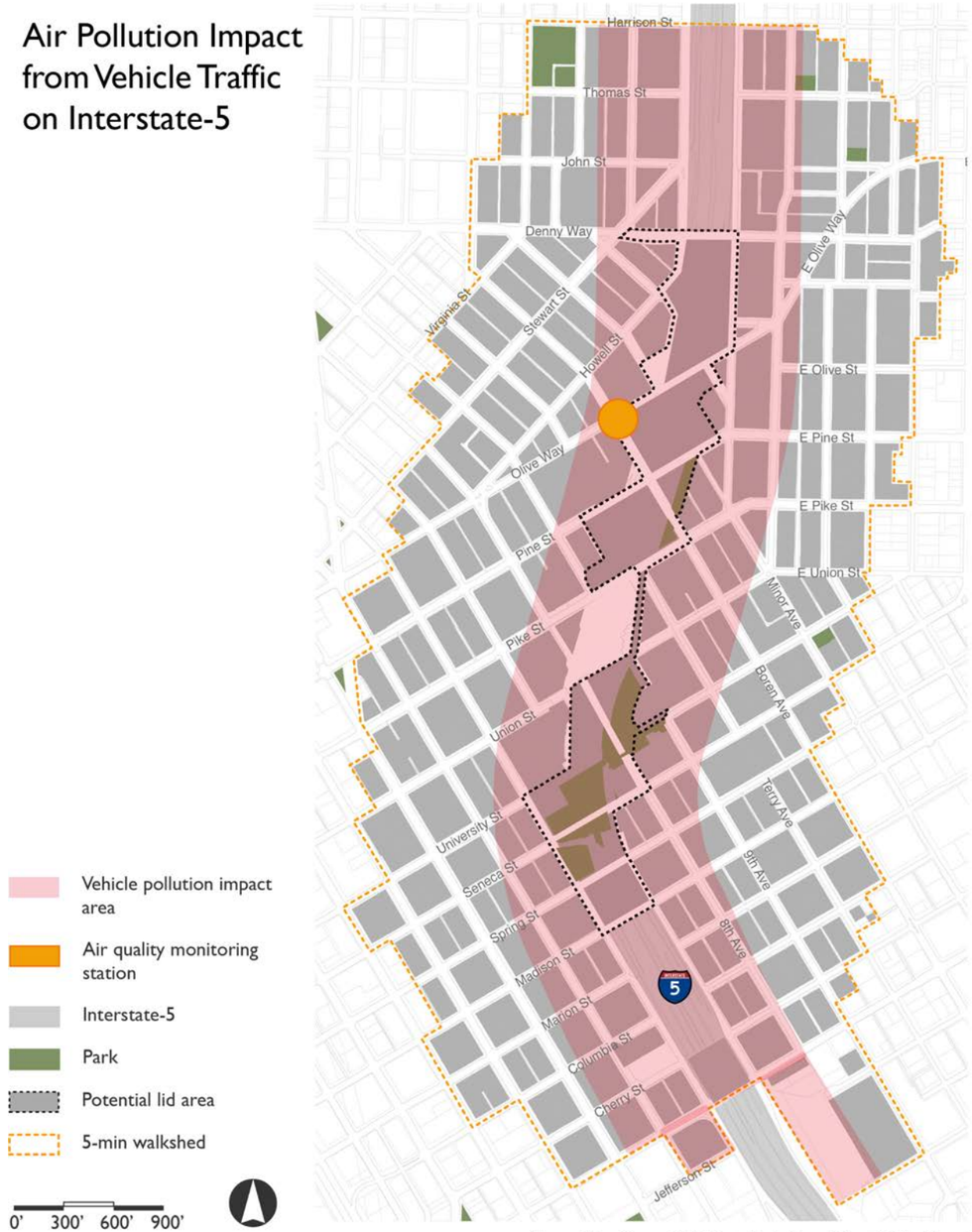
Fine Particulate Matter ($PM_{2.5}$) measurements taken from Olive & Boren measuring station

Averaging time	2009 max concentration	2010 max concentration	2011 max concentration	2012 max concentration	NAAQs standard[1]
Annual	5.7 µg/m3	5.9 µg/m3	6.4 µg/m3	6.1 µg/m3	15 µg/m3
24 hour	38 µg/m3	26.1 µg/m3	26.2µg/m3	26.6 µg/m3	35 µg/m3

[1] NAAQS = National Ambient Air Quality Standards

Figure 16 - Air Quality Table: Measurements taken from the Air Quality Measuring Station located at Olive Way and Boren Avenue, operated by the Puget Sound Clean Air Agency (PSCAA).[16] Seattle Comprehensive Plan Update Draft EIS (pp. 3.2-1-3.2-30). Seattle, WA.)

Air Pollution Impact from Vehicle Traffic on Interstate-5



Source: King County GIS Data Hub, City of Seattle Data Portal

Figure 17 - Air Quality Map: Proximity to highways and vehicle emission negatively affects individuals through prolonged exposure. At about 656 from the centerline of highway traffic, the health impact risks significantly drop. A highway lid would reduce the number of uses exposed to poor air quality and dangerous air pollutants.

Existing Road Networks

This arterial classification map depicts the streets encompassed by the five-minute walkshed study area and their respective primary functional classifications as designated by the City of Seattle. These street classifications are based upon the American Association of State Highway and Transportation Officials (AASHTO) standards (Streets Illustrated), which apply to urbanized areas with more than 50,000 people. They have, however, been adapted to to better articulate the "Traffic Classifications" relating to the City's Level of Service standards and desired balance between mobility and direct access to particular areas of the city. Principal arterials serve as thoroughfares for high volumes of cross-city traffic while minor and collector arterials convey sequentially smaller volumes of slower moving traffic. Numerous streets throughout the study area are designated as one-way thoroughfares which promote direct connections between key destinations such as residential Capitol Hill and the job center of Downtown Seattle.

A review of the distribution of arterial classifications in the study area reveals not only a diversity of desired traffic volumes and direction of travel, but also which streets should be considered for removal or other alteration in the event a lid is constructed over I-5. First, I-5 creates a dramatic pinch point for East-West mobility as all modes of travel are shunted from a diffuse road network into only a few narrow bridges. Furthermore, this narrowing creates conflicts among modes that are forced to share a relatively small area of roadway and sidewalks while passing over I-5. Thus, while any potential lid should allow for the persistence of critical east-west connections via Principal Arterials, it may be desirable to alter traffic flow along minor and collector arterials to develop alternate routes across the lid for transit and non-motorized transportation modes such that a more diffuse and balanced network of east-west and north-south connectivity is enabled. Such changes could range from conversion of a fully accessible road to one that serves only bicycle, pedestrian and transit routes to full a road closure that is utilize to create a protected bicycle and pedestrian route.
Such design alternatives are considered later in concert with review of City of Seattle traffic flow volume data and team-generated statistics of bicycle and pedestrian flow across the study area.

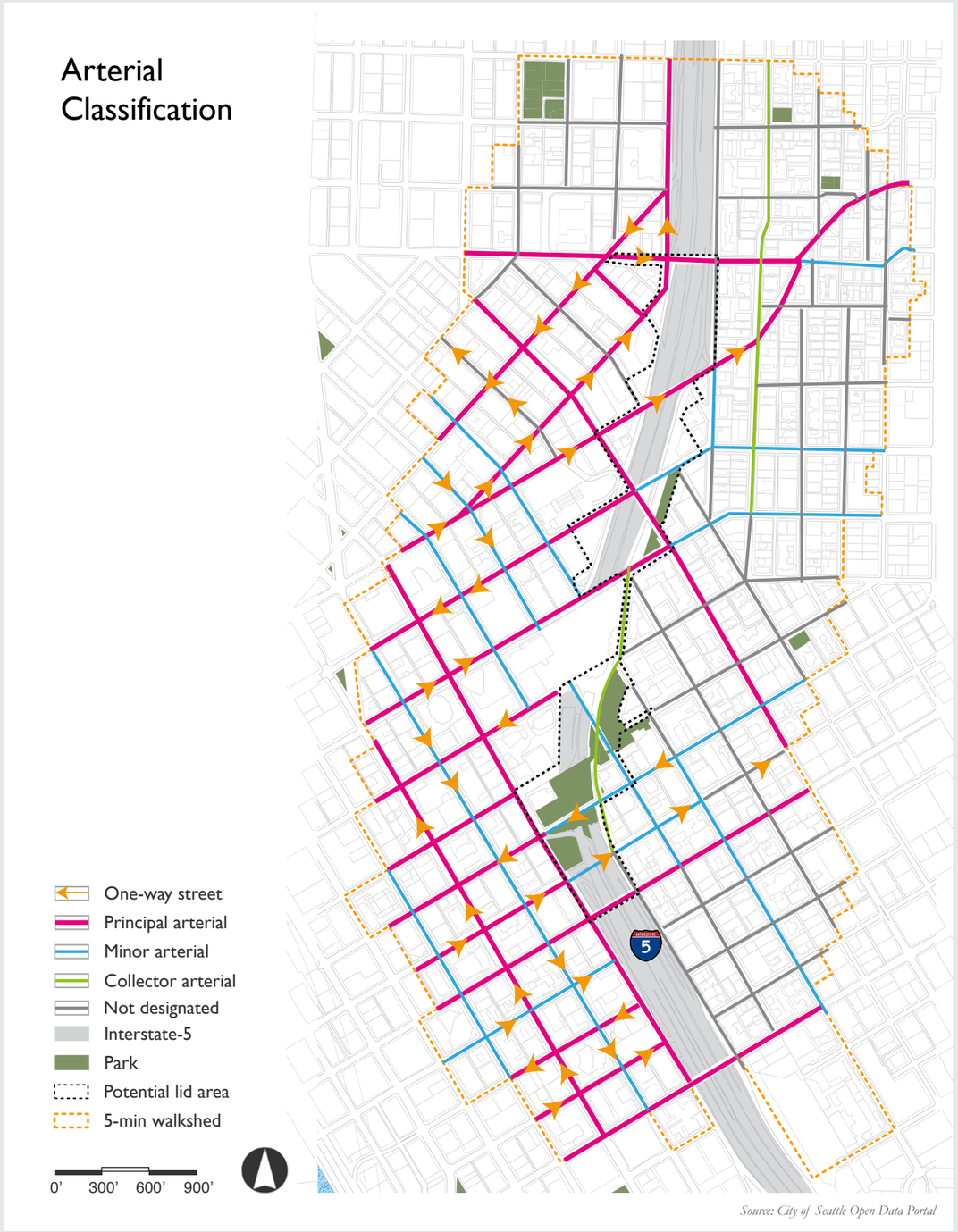


Figure 18 - Street Classification Map: The Seattle City builds upon the AASHTO functional classifications by also identifying more refined Traffic Classifications, which further define the roadway network according to different levels of emphasis on mobility versus direct access to property. Seattle's functional classifications include Interstate Freeways; Regional, Principal, Minor and Collector Arterial streets.[17]

Transportation Flow

The transportation flow maps depict usage by mode of the nine bridges crossing the study area. Vehicle data is from the Seattle Department of Transportation (SDOT), while bicycle and pedestrian counts were collected by the research team during morning commute hours.

VEHICLE FLOW
Vehicle Flow across the study area is shown here in Figure X and is based Average Annual Weekday Traffic (AAWDT) counts. This data shows the relative traffic load of the nine existing bridges across the I-5 study area. According to the data, which was also supported by visual inspection during research site visits, the crossings which support the highest traffic volume are Denny Way to the north, Boren Avenue in the center, and Madison Street to the south. Given how these arterial streets convey current traffic and also provide direct connection to key City of Seattle destinations, these roads are considered the most critical passages to maintain on a potential I-5 lid.

BIKE FLOW
Using the People Moving Count Public Life Survey methodology, the research team collected bicycle flow counts across the nine bridges that span the I-5 study area. Results from this study identified Pine Street as the most-used bicycle route across the lid, followed by Seneca Street to the south and then Denny Way to the north. This makes sense since these routes provide the most direct and protected connections to key destinations in the City as well as protected bicycle routes, such as Broadway Avenue and 2nd Ave in Downtown. Additionally, Pine Street has one of the lowest grades of all eight of the crossings. Collectively, this data suggests a potential I-5 lid design should incorporate these routes, at least the Pine Street and Seneca Street as prioritized bicycle pathways.

PEDESTRIAN FLOW
During the same People Moving Count Public Life Survey, the research team collected data on pedestrian flows for the nine existing I-5 lid crossings (Figure 21). Results from this study showed Denny Way, Pine, and Pike Street to be the most walked bridges across the lid. These corridors currently offer the most direct east-west route from residential areas into the Downtown job center. However, they also highlight the inherent conflict posed by the limited number of routes; despite being the most used by pedestrians, the crossings do not provide a pleasant experience. One goal for the potential I-5 lid would be to offer alternative pedestrian crossings where people can move east-west and north-south without having to share busy thoroughfares with motorized vehicles and transit.

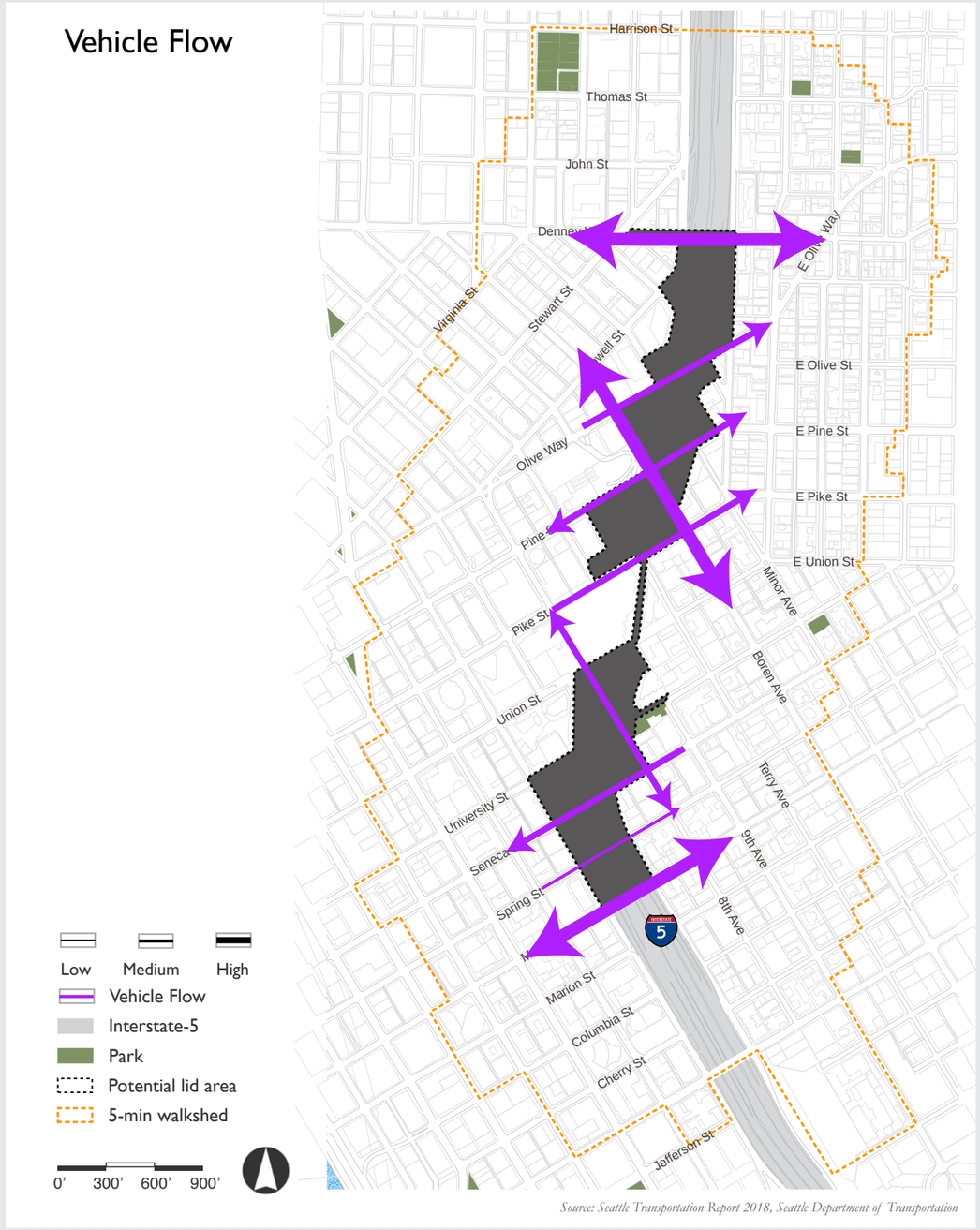


Figure 19 - Vehicle Flow Map: Vehicle Flow Map shows the current automobile flow conditions of 9 bridge crossings in our study area. The data were counted by Seattle Department of Transportation. The volumes on the map represent the Average Annual Weekday Traffic (AAWDT) (5-days, 24-hour) for that section of roadway. Three roads with the highest vehicle flow are Denny Way, Boren Aveue, and Madison Street.[18]

Bicycle Flow

Source: Seattle Transportation Report 2018, Seattle Department of Transportation

Figure 20 - Bike Flow Map: Bike Flow Map shows the current bike volumes of nine bridge corssings. The data were based on group observation. Most bicylcists were concentrated on Pine Street. (Group Observation, 4/26/2019)

Pedestrain Flow

Source: Seattle Transportation Report 2018, Seattle Department of Transportation

Figure 21 - Pedestrian Flow Map: Pedestrian Flow Map represents the current pedestrian volumes of 9 crossing bridges. The data were counted by group observation. Denny Way, Pine Street and Pike Street have the highest pedestrian flow counts. (Group Observation, 4/26/2019)

Current
Land Use

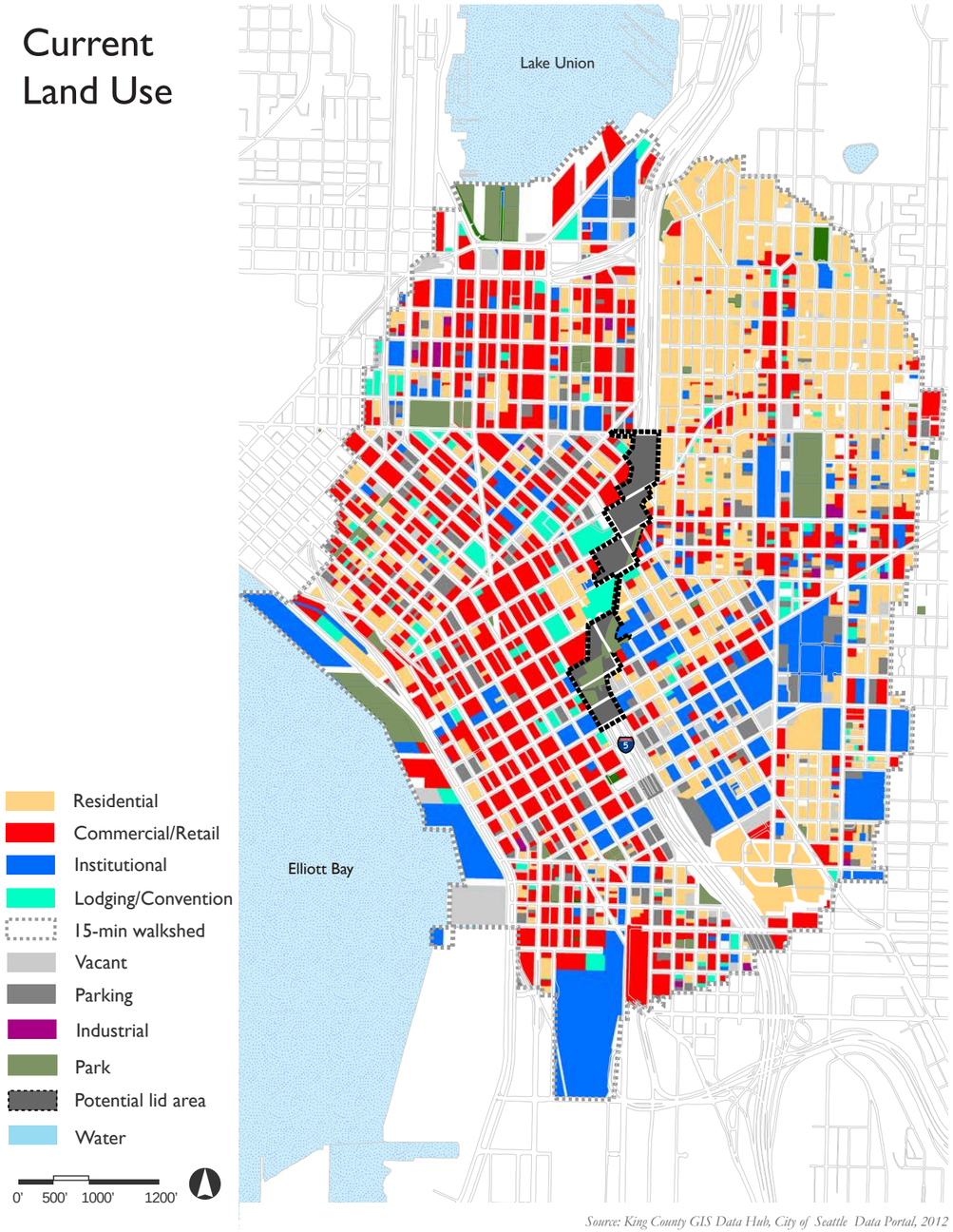


Figure 22 - Current Land Use, 15-minute Walkshed Map: The land use is classified into detailed usage of parcels, showing the different types of land use in the 15-minute walkshed.[19]

Current Land Use in the 15-minute Walkshed

15-minute walkshed
The study area primarily straddles three distinct neighborhoods in Seattle commercial core, with the east residential First Hill/Capitol Hill and the commercial Downtown to the west. An examination of the land use pattern speaks to the ability of the construction of Interstate-5 in the 1960s to split the connective tissue of the city, effectively segregate previously intact neighborhoods, and allow for two distinct land use patterns to develop in close proximity to one another. Within the fifteen-minute walkshed, the current land use remains divided along Interstate-5 -- the west is characterized by commcerical space, lodging, and public institutions while the east is dominated by multi-family residential buildings and healthcare facilities. A lid over Interstate-5 would contribute roughly 18 new acres of land to some of the most densely developed neighborhoods of Seattle and allow for a stronger connection between the residential east to the commercial west.

5-minute walkshed
Within the 5-minute walkshed, 26.9% of the land is dedicated to multi-family residential buildings and 21.9% is dedicated to office space. Although a significant portion of the land use is residential, there are relatively few single-family homes in the area compared to the city of Seattle as a whole. The density of multi-family residential buildings is high for the city -- on the east side of I-5 that includes parts of Capitol Hill and First Hill, 50% of the land is used for multifamily homes, 10% is occupied by healthcare facilities primarily in the First Hill neighborhood, and 9% is currently used as parking, often for those very same healthcare facilities. On the western side of I-5 that includes Downtown Seattle, 35.9% of parcels are dedicated to office space and 12.7% is given to public institutions such as Seattle City Hall, the Seattle Public Central Library, and most notably, the Washington State Convention Center.

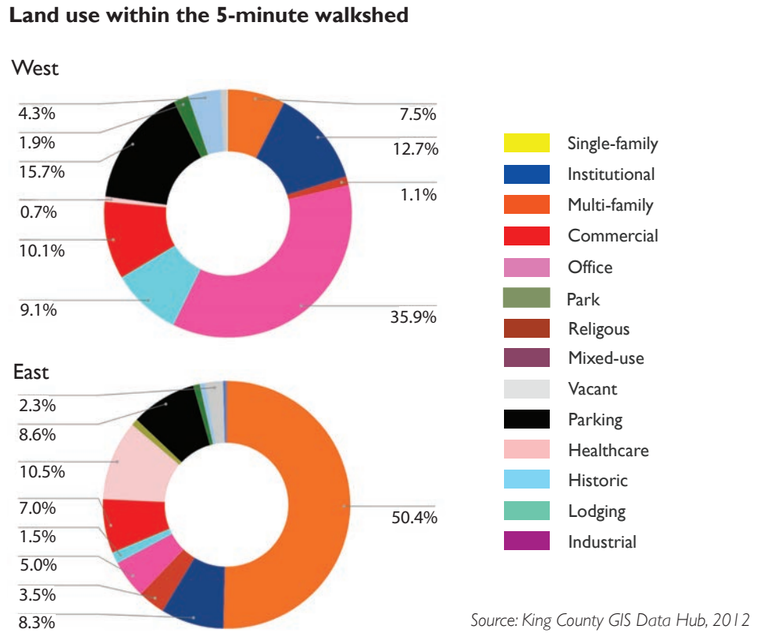


Figure 23 - Current Land Use 5-minute Pie Chart: Comparing the West side and East side of I-5 within the 5-minute walkshed.[20]

Current Zoning
15-minute Walkshed

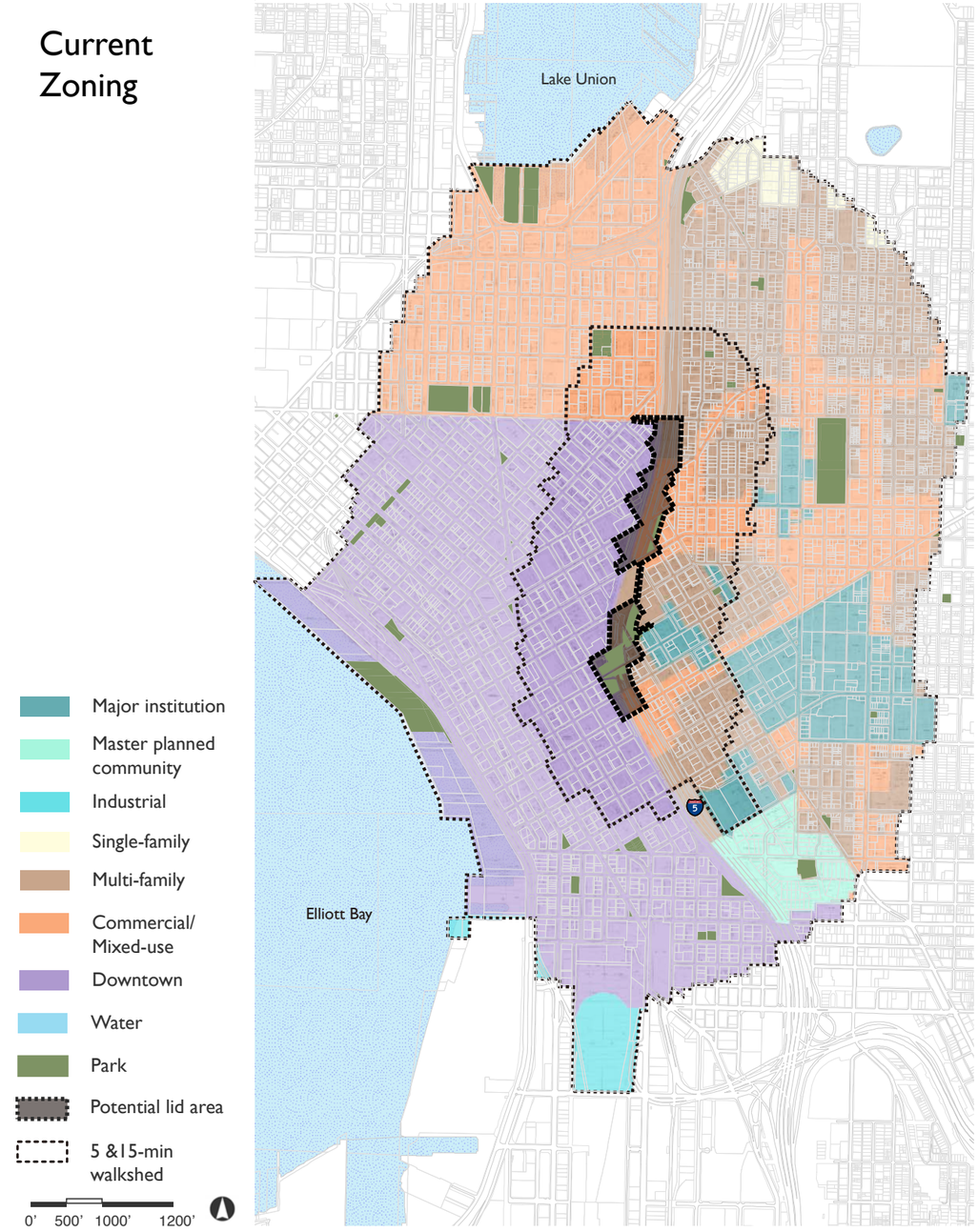
The Seattle zoning ordinance defines the desired distribution of land use and extent of development across the city. This zoning map (Figure 24) illustrates the existing zoning land use classifications which apply to the study area and their respective distribution across the fifteen-minute walkshed. The predominant land uses in this part of Seattle include commercial/ retail mixed use, residential, institutional and lodging/ convention uses with varying degrees of development capacity. Within this area, there is a clear preponderance of commercial/retail use to the west in the Downtown core which includes Downtown Office Core, Downtown Mixed-Use, and Downtown Retail, and Mid-rise residential use in the neighborhoods to the east.

Implementation of the Mandatory Housing Affordability agenda in 2019 has resulted in substantial increases to the development capacity of the City of Seattle, and the whole study area. Figure X illustrates how MHA zoning applies to this part of the city and potentially direct growth and inclusion of affordable housing across the study area.

Given that the proposed I-5 lid study area straddles the dividing line between high commercial development capacity in Downtown and a lower, and core diverse land use and development capacity in the east, lid designs and programming will need to accommodate and respond to this gradient of uses and heights.

In order to provide consistent analysis and craft coherent design guidelines and a vision for the potential I-5 lid, an intermediate zoning was applied to the proposed lid area. This zoning is similar in character to that of the Downtown core, but is restricted to lower heights and FAR to provide a smooth transition from high rise towers to lower structures in eastern neighborhoods where Mid-rise zoning only allows for structures of approximately 6 stories and NC3-75 allows for a max height of 75. The "Vision" or lid proposal which is debuted later in this report reflects this approach to lid zoning.

Current Zoning



Source: King County GIS Data Hub, City of Seattle Data Portal

Figure 24 - Current Zoning Map: The colors were directly sourced from the Seattle GIS Data, showing the current zoning among the 15-minute walkshed, especially inside the possible lid area.[21]

Demographics

With limited land available in the city center for developing new public spaces, the potential lid will need to provide for the needs of the residents in the immediate study area as well as the city of Seattle as a whole.

15-minute walkshed

The population within the 15-minute walkshed boundary of the study area are primarily young, single adults. Close to 48% of the population is between the ages of 20 and 35 and the median household income ranges from $21,868 - $98,324 at the census tract level. Of the roughly 81,700 individuals living within the 15-minute walkshed, the American Community Survey estimates a workforce over the age of 16 of 54,224 workers.[22]

Population occupation within the 15-minute walkshed

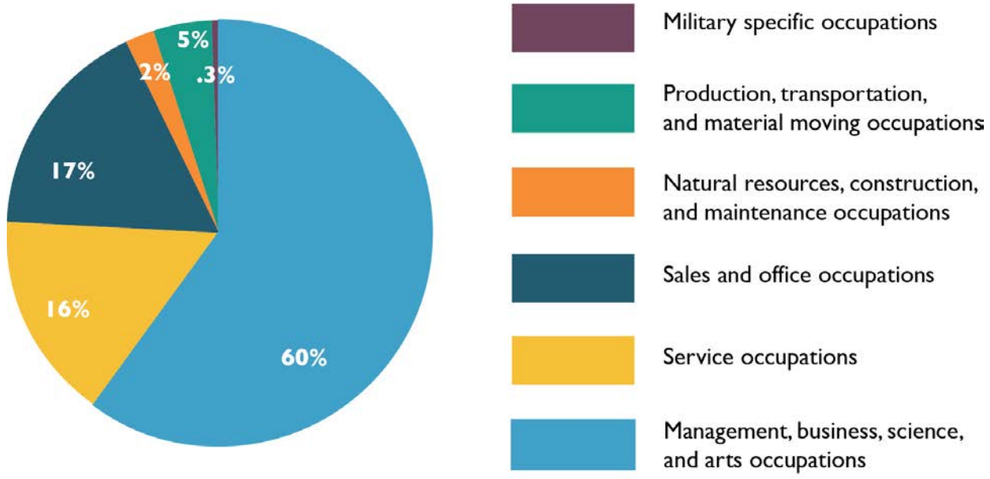
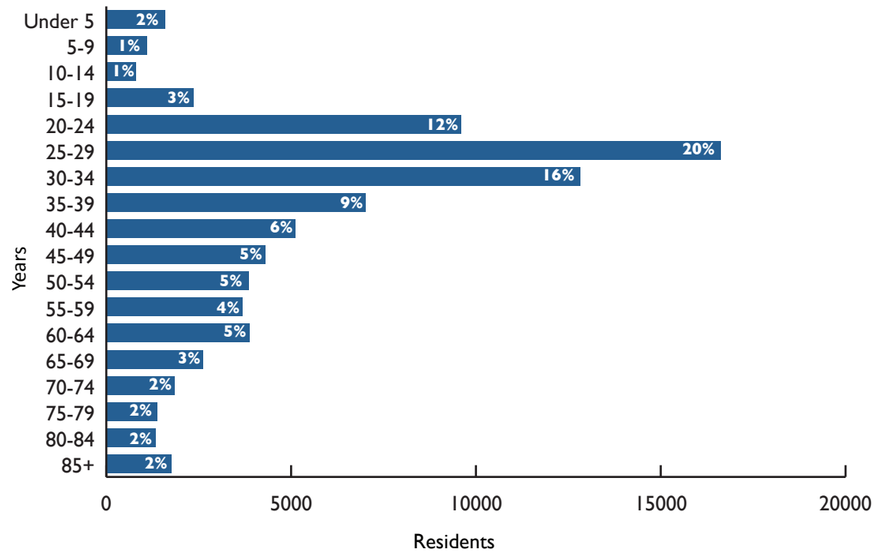


Figure 25 - Population occupation within 15-minute walkshed: Within the 15-minute walkshed, the majority of the 54,224 resident workforce are employed in management, business, science and arts.[25]

Age demographics within the 15-minute walkshed

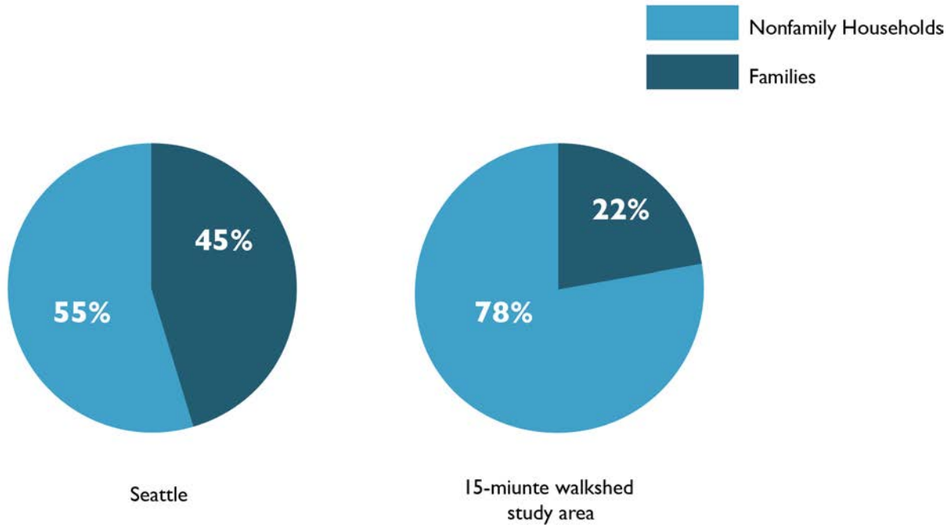


Source: ACS 2017 5-Year Estimates

Figure 26 - Age demographics for the 15-minute walkshed[23]

Household type

15-minute walkshed compared to Seattle



Source: ACS 2015 5-Year Estimates

Figure 27 - Household type compared to city of Seattle[24]

Demographics

5-minute walkshed
With consideration for Interstate-5 as a physical barrier between two neighborhoods, a socioeconomic distinction between the neighborhoods east and west of the highway is evident at the census tract level. Looking at the 5-minute walkshed area, the neighborhoods to the east of I-5 have a per capita income of $55,654 while the neighborhoods to the west have a median household income of $70,132 -- significantly higher than the median household income for the city of Seattle. The median household income also declines as one moves south from the northern end of the study are in South Lake Union towards the First Hill, Central, and International District neighborhoods in the south. According to the 2017 ACS 5-Year Estimates, the First Hill neighborhood located in the south-east sector of the study has the highest percent of the population (24%) living at or below 200% of the Federal Poverty Level. However, there is little difference in the race, ethnicity, or gender composition of the between the two sectors of the study area, nor is there any notable distinction made when compared to the composition for the city of Seattle as a whole. The study area is primarily white, with roughly 37% of the population belonging to a minority race or ethnicity.

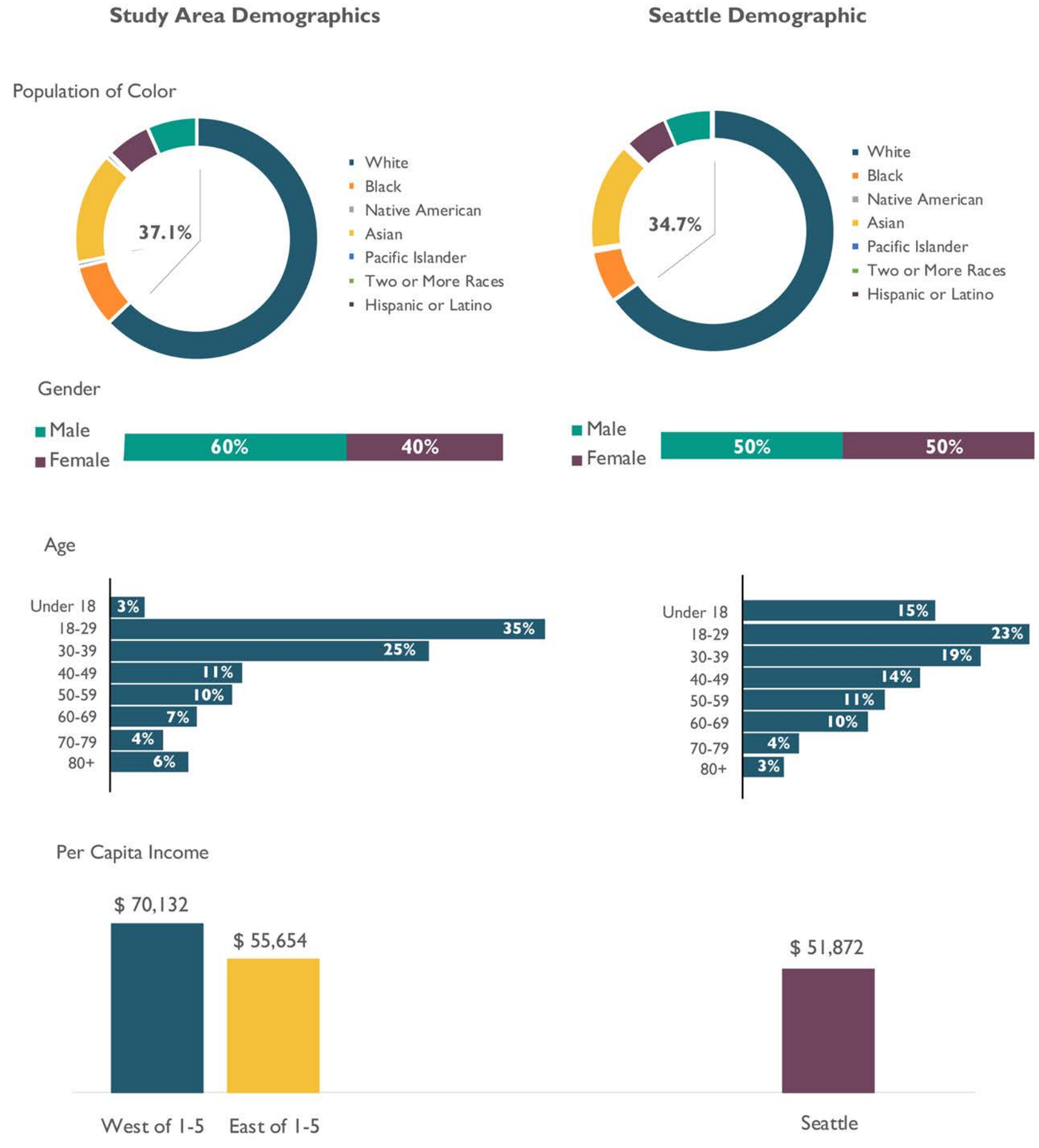


Figure 28 - Study area compared to Seattle as a whole[26]

Access to Opportunities

In the 2035 Equity Analysis, the City of Seattle created an Access to Opportunity index based on economic, demographic, and civic indicators. The index includes living in close proximity to transit and other services, opportunities for employment, and other determinants of well-being such as proximity to health care facilities and public parks.[27]

Within the study area, Downtown on the west side of I-5 has scored higher in the index than the First Hill and Capitol Hill areas to the east. Proximity to transit options and employment opportunities are the two main indicators that promote opportunity in Downtown Seattle. For the First Hill/Capitol Hill neighborhood, the land immediately surrounding the existing Capitol Hill Link light rail station provides increased opportunity.

A lid over Interstate-5 has the potential to develop opportunities for individuals who live in close proximity to the study area, as well as to increase identified indicators of access proximity to park space, property appreciation, and proximity to services such as a community center. Building stronger connections across Interstate-5 through successful development of a lid has the potential to increase access to the economic success of downtown Seattle and provide positive health impacts for those currently living on the residential eastside.

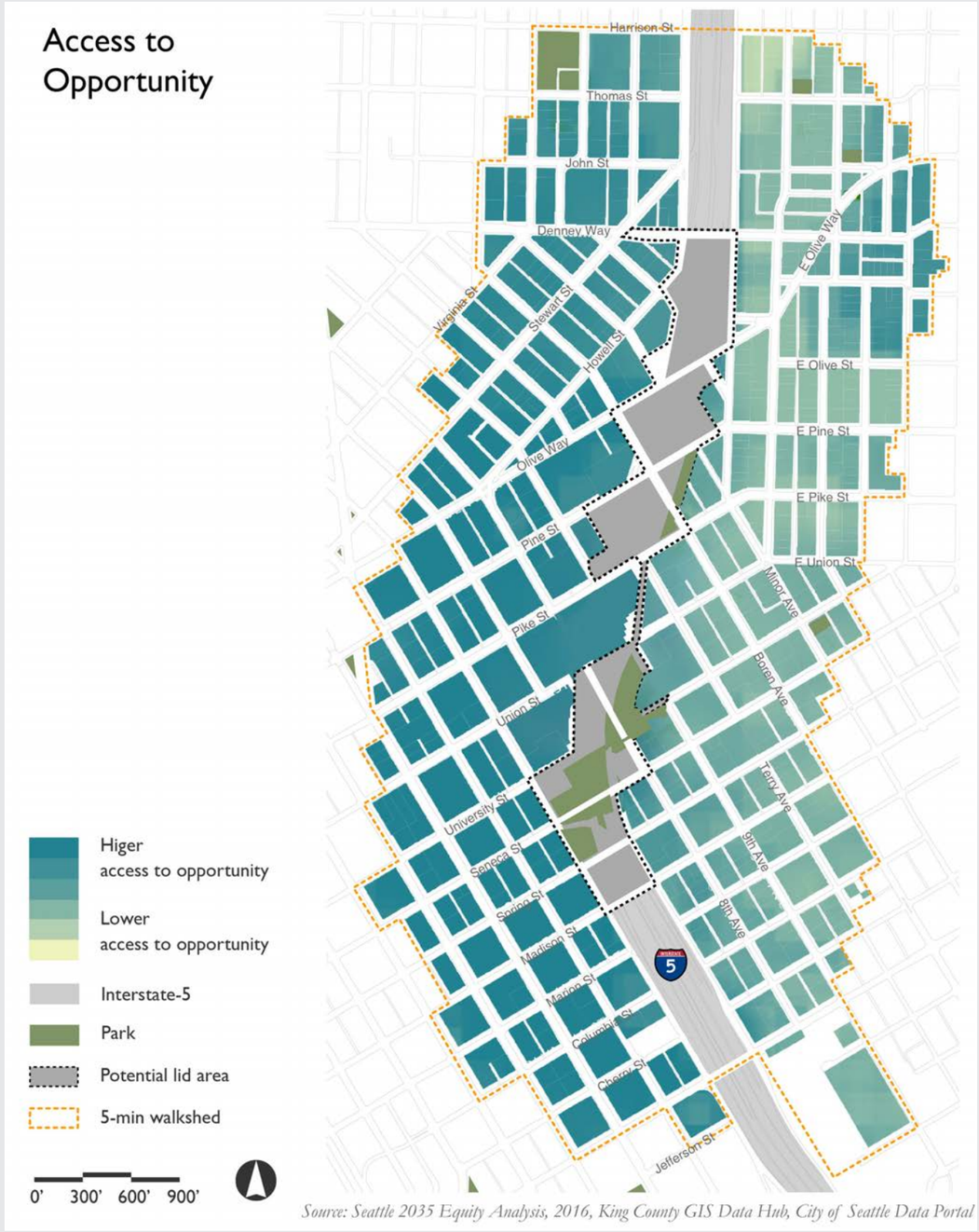


Figure 29 - Access to Opportunity: The Access to Opportunity Index built by the City of Seattle Office of Planning and Community Development based on a collection of economic, demographic, and built environment indicators.[28]

Risk of Displacement

The Displacement Risk index was created by the City of Seattle of as an additional layer to supplement the Access to Opportunity Index to ultimately perform an equity analysis of the entire city. The index is aimed at examining both physical and economic displacement and has consideration for demographic and cultural elements which are impacted by the sudden economic development of an area. The indicators include the percent of the population of color, housing precarity measures, and development capacity.[29]

Within the study area, there is not currently a significant risk for displacement in the area in immediate proximity to Interstate-5. However, the construction of a lid will likely significantly increase the potential for displacement in the study area. For one, the development capacity and land value will increase due to the creation of new land and public amenities. Additionally, a lid over the highway will mitigate the negative health impacts of vehicle pollution and create stronger connections to transit, advancing the economic potential of the adjacent land and thereby increasing the risk of displacement.

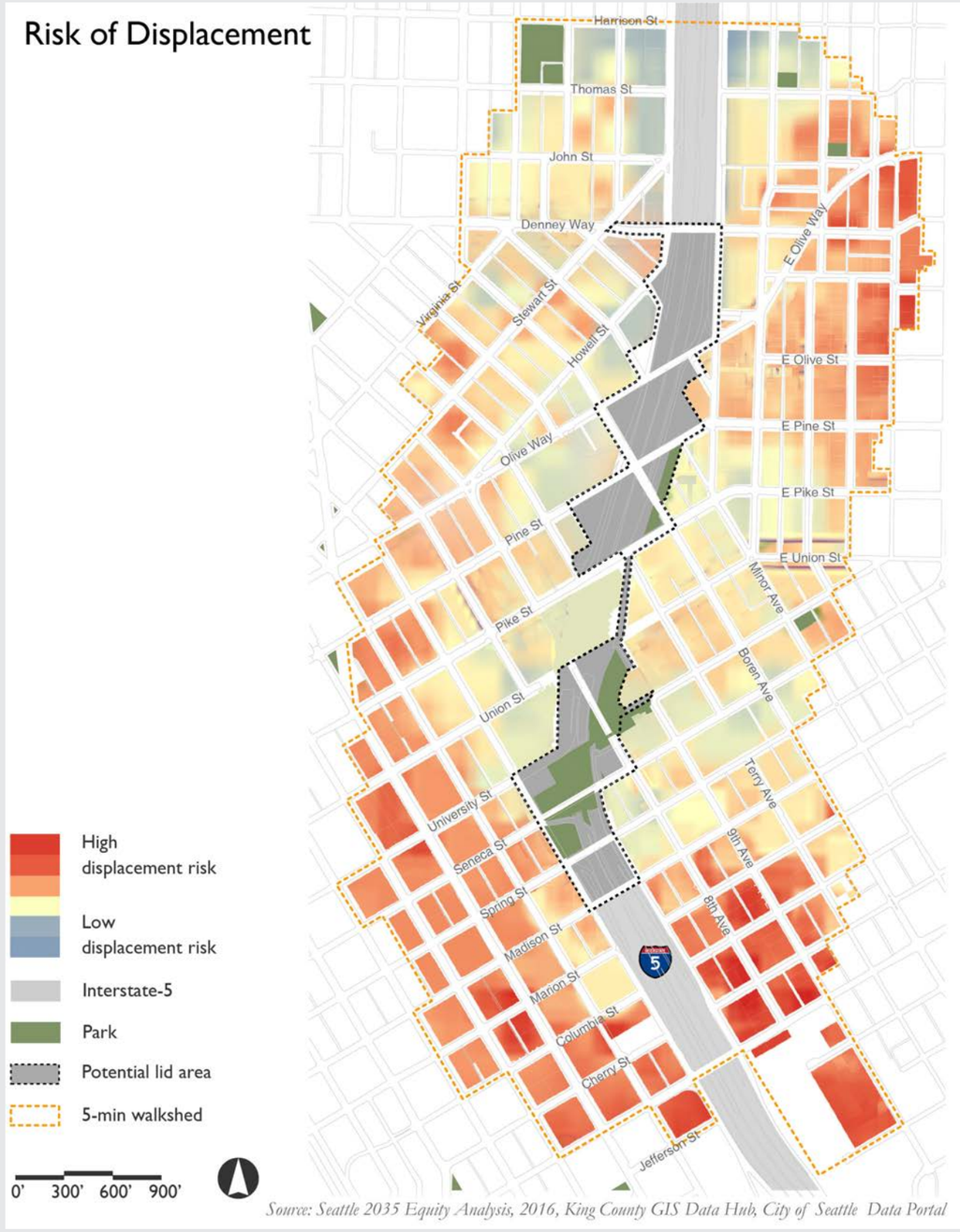


Figure 30 - Risk of Displacement[30]

DESIGN PRECEDENT & RESEARCH

Previous Recommendations

While the potential for a Seattle I-5 lid has gained significant momentum over the last several years, the concept has been explored extensively by various parties since the freeway's opening in 1967. Site recommendations and design proposals have come from a relatively broad range of stakeholders, from local residents to professional urban designers. Even in its earliest inception, Freeway Park was at one point meant to extend as far north as Thomas St. before being reduced to the current 5.2 acres.[31] On average, approximately 14 acres of lid was considered of which 5% was allocated to private uses, prioritizing the remaining acreage for public open space.

Most recently, the Central Hills Triangle Collaborative, together with Lid I-5 and the Pike/Pine Urban Neighborhood Council, hosted a months-long design challenge culminating in a public engagement event in October of 2018. The event brought together dozens of architects and urban design professionals to imagine what an I-5 lid could look like, and as a result gained tremendous traction in terms of community awareness and support for the Lid I-5 campaign. This series of events was funded by a $48,000 Seattle Department of Neighborhoods grant, fiscally sponsored by the Seattle Parks Foundation and matched by hundreds of volunteer hours and private donations.[32]

Priority Lid Recommendations, 2009 - 2018

- Inter-neighborhood pedestrian connectivity
- Affordable housing
- Perimeter retail, particularly cafes and restaurants
- Off-leash dog area
- Trees, water features, and other natural elements
- Arts and performance space
- Focus on Pike-Pine block
- On average, participants looked at 14 acres of "lid" and allocated 5% to private uses.

Figure 31 - CHTC Design: A compelling mix of private and public space as designed in partnership with the Central Hills Triangle Collaborative and rendered by Studio 216.[36] (Source: Central Hills Triangle Collaborative)

Figure 32 - Lid I-5 Charette: A design team workshops ideas as part of the 2018 Central Hills Triangle Collaborative I-5 lid envisioning activities.[35]

Figure 33 - Wordcloud: All previous design concepts and recommendations have been aggregated and captured here. Larger fonts represent greater frequency of occurrence.[33]

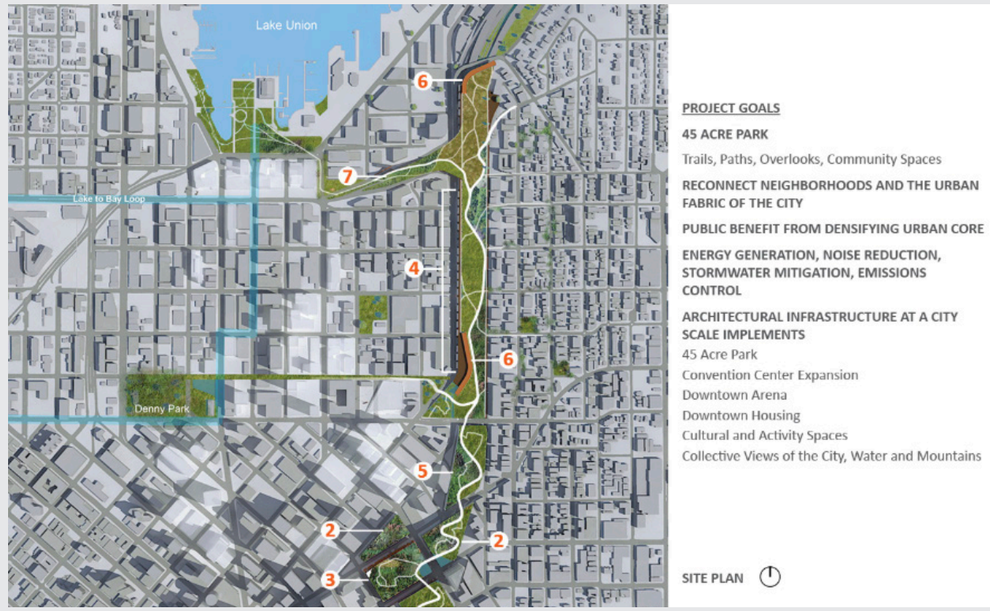


Figure 34 - Patano Lid proposal: A vision for an I-5 lid developed by Patano Studio Architects extends from Freeway Park all the way to Lake Union[34]

Other Relevant Projects

In addition to previous recommendations for the lid area specifically, several other projects in various stages of development exist within the 15-minute walkshed and should be taken into consideration. The range of objectives represented aligns well with the goals of this study, such as increased east-west connectivity between Capitol Hill/First Hill and Downtown and enhanced public open space. In order to achieve a cohesive series of urban infrastructure improvements, final designs for an I-5 lid must be developed such that the following projects are able to be integrated:

Pike/Pine Renaissance[37]

Partnership:
Downtown Seattle Association, City of Seattle Office of the Waterfront

Goals:
To improve the pedestrian experience between Capitol Hill, Westlake, and the waterfront, creating a cohesive neighborhood character and opportunities for open space activation.

Funding:
$20 million from the Waterfront Local Improvement District and a potential $10 million from the WA State Convention Center Public Benefits Package.

Timeline:
Design 2016-2019, construction to begin 2020

Melrose Promenade[38]

Partnership:
SDOT

Goals:
Improve safety and mobility along Melrose Ave between E Roy St. and E Pike St. with traffic calming and enhanced bike and pedestrian infrastructure.

Funding:
$20 million from Department of Neighborhoods for design, $3 million from the Puget Sound Regional Council for construction. An additional $1.7 million is required for construction which is anticipated from the Move Seattle levy.

Timeline:
Community engagement and early designs 2018-2019, construction complete by end of 2020

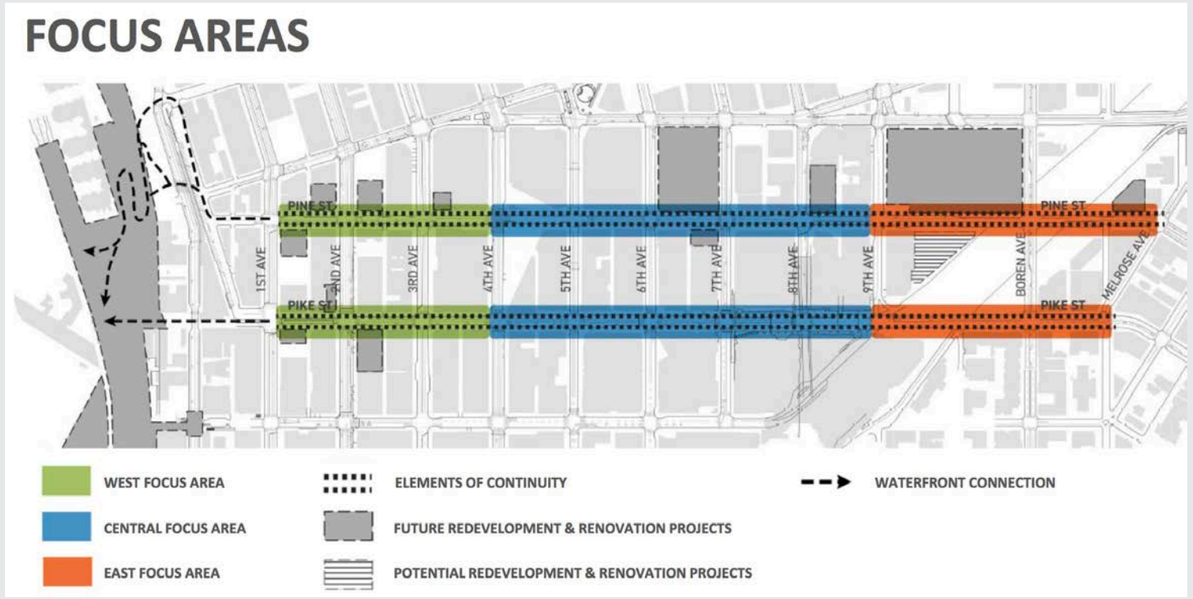


Figure 35 - Pike Pine Renaissance Focus Areas. [39]

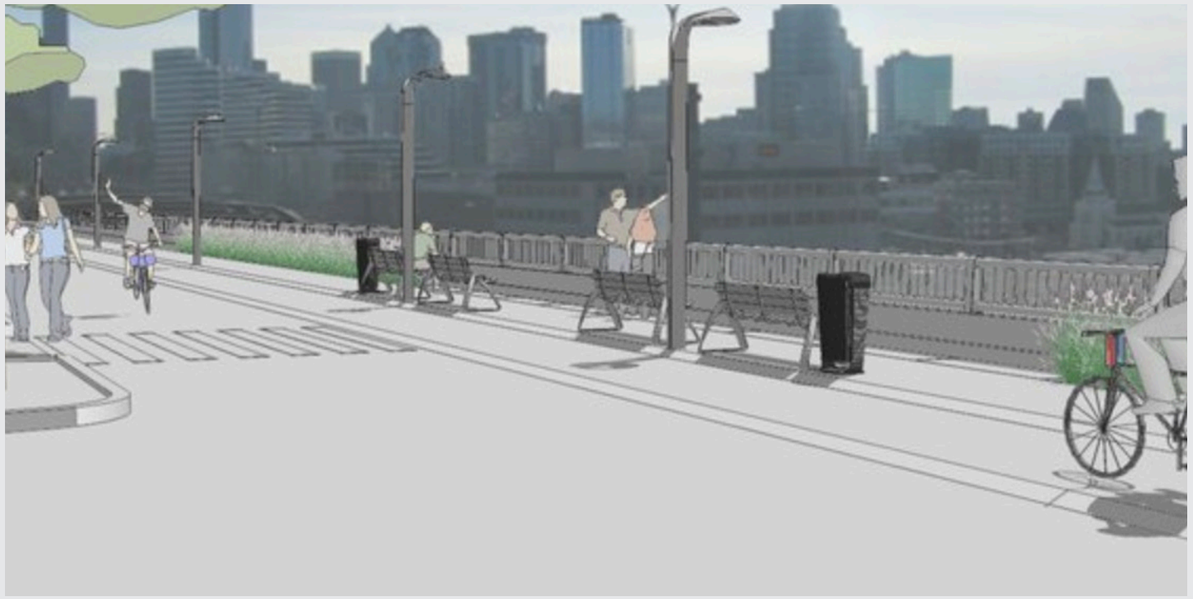


Figure 36 - Melrose Promenade Early Design Concept.[40]

Comparative Analysis - Gehl Methodology

The design of a future I-5 lid should be informed by best practices and learn from current challenges in Seattle area parks and public spaces.

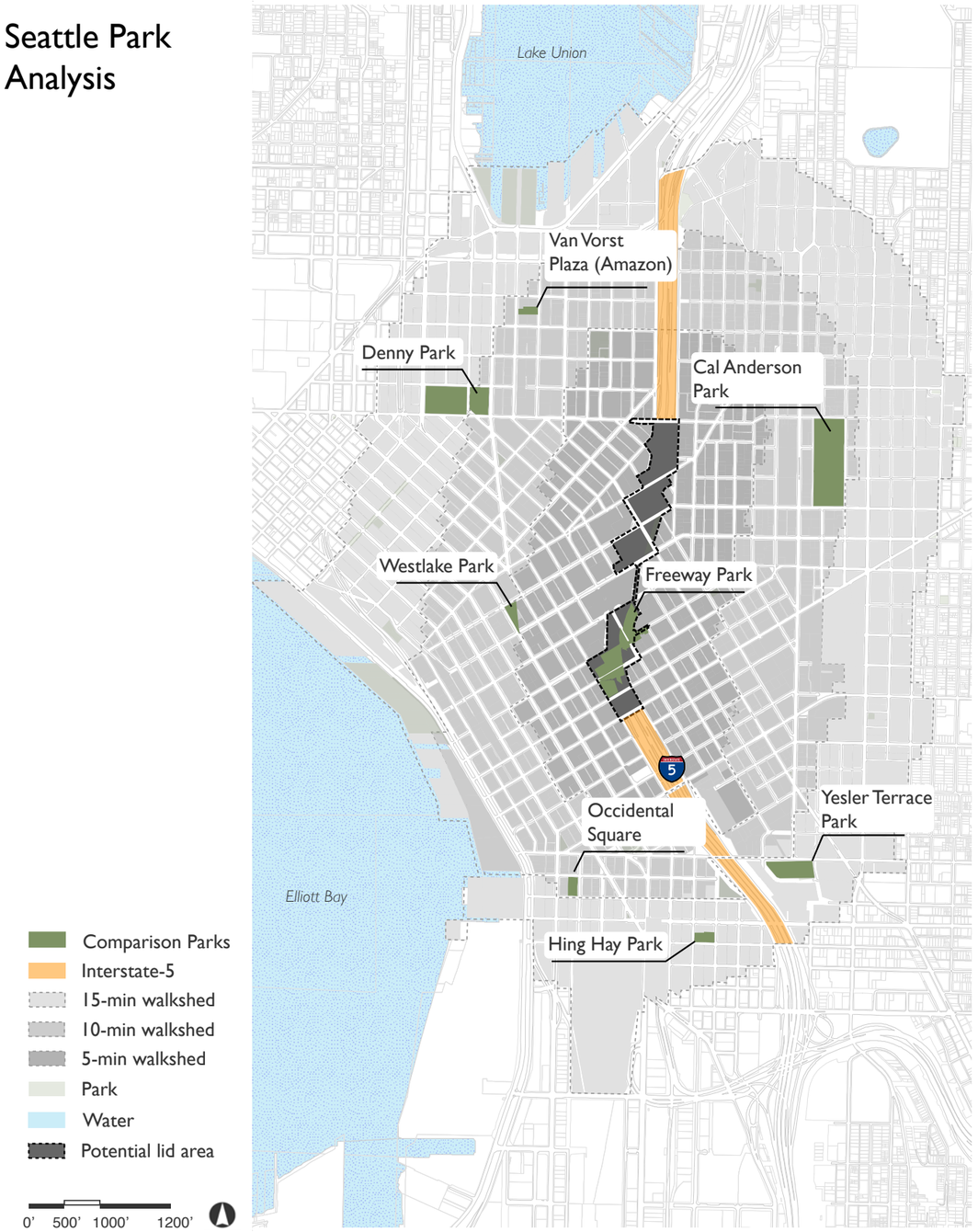
Using prominent public life observational research methodologies from the Copenhagen-based Gehl Institute, including approaches co-created with the Seattle Department of Transportation for use in their 2018 Public Life Study, we studied eight urban Seattle parks and public spaces ranging in size from 0.1 to 11 acres, including one privately-owned public space (POPS).[41]

Our aim was to better understand what specific design elements contribute to or detract from a successful park or public space. Success was defined as a space that was connected, activated, programmed, and enabled use by a diverse public.

Each park or public space was visited three times on different days and at different times of day. We utilized four standardized observational research tools for our investigation.

- Current conditions assessment to document site conditions including weather, notable events, and seating and provide an indication of programming;[42]
- People moving count to record people moving through the site and provide an indication of connectivity and activation;[43]
- People staying still count to record to what degree people use the space as a public place, including perceived demographics of users, as well as what types of activities take place there; and[44]
- Social space survey to observe how public space design and programming catalyze or hinder social interaction and inclusivity to provide indications of connectivity, public, activation, and programming.

Seattle Park Analysis



Source: King County GIS Data Hub, City of Seattle Data Portal

Figure 37 - Eight parks selected for the Seattle Parks and Open Space Analysis: Van Vorst Plaza, Denny Park, Westlake Park, Cal Anderson Park, Freway Park, Occidental Square, Yesler Terrace, and Hing Hay Park.

Gehl Analysis Results

We then consolidated and analyzed the observational data collected using the aforementioned research tools. We present our findings in relation to four main goals for successful parks and public spaces - connected, activated, programmed, and public - which were determined in parallel with our observational research and are discussed in detail in the subsequent Design Guidelines section. Results are presented and briefly discussed in line with this framing.

Connected

Connectivity is analyzed through design elements that bridge the gap between people and places and serve to foster social interaction. Our findings from the people moving count (see Figure 41) and social space survey results highlighted both parks and specific design elements that supported connectivity, as well as those that created separation.

Connectivity-enhancing designs observed in the eight Seattle parks included: gateways/well-defined entrances, playgrounds/ kid-friendly spaces, multipurpose lawns/fields, multipurpose plazas, and a variety of active ground floor businesses. Gateways and well-defined entrances create legibility and allow users to commonly refer back to the park. This was observed effectively in Hing Hay Park, Occidental Square, Cal Anderson Park, and Van Vorst Plaza. Adjacent ground-floor retail spans the usage of the park beyond its boundaries and breaks the barriers to what can be accessible and who can use the space. Occidental Square, Westlake Park, and Hing Hay Park all fulfilled this element as a way to include the surrounding neighborhood in the open space. Elements observed that posed barriers to connectivity included: unnecessary fences/ barriers, off-limits areas, and expensive food or shopping options.

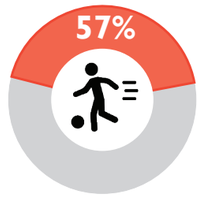
Activated

An activated public space is one that promotes continuous use through a variety of activities edged with vibrant (often retail) frontages that spill out into the public space. Weather, lighting, and formalized spaces for group activities were also seen to contribute to activation. Our findings from the current conditions assessment, social space survey, and people staying still count (see Figures 39-41) provide an indication activation level and design features of each observed park.

All of the parks except Freeway Park and Denny Park had adjacent retail space and/or active adjacent uses. Occidental Square had the most commercial seating available and Westlake had the most adjacent retail and food trucks, which directly relate to activation. Yesler Terrace and Cal Anderson also had dedicated areas for team sports, which promotes use at various times of the day. All of the parks except for Freeway Park had decent lighting at night, with Cal Anderson, Occidental Square, Denny Park, and Hing Hay having effective and creative lighting. A well-lit public space encourages use at night and feels safer to a wider audience. Overall, most of the parks offered a variety of activities within the space, with the exception of Freeway Park and Van Vorst Plaza.

Another aspect of a well-activated and used park is one where there is a fairly even distribution in terms of the types of postures people take such as standing, leaning, sitting, or lying down. Cal Anderson had the most types of postures throughout the park. All of the other parks were well-distributed in terms of posture except for Freeway Park (most people were standing) and Van Vorst (most people were sitting), which indicates a limited range of activity.

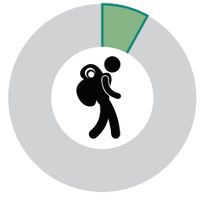
In terms of the types of people's activity, Cal Anderson had by far the most amount of active and passive recreation, followed by Denny, Occidental, Westlake, and Yesler Terrace, which all had fairly even numbers. Active and passive recreation is another direct indicator of the variety of activities available in the public space.



Cal Anderson Park had the highest percentage of engaged in active and passive recreation combined.

Yesler Terrace Park had the greatest diversity of age representation (based on perceived age).

Westlake Park was perceived to be the location with the **most activation** from adjacent retail, office and transit amenities.



Freeway Park had the highest percentage of people - **8%** - perceived to be living in public.

Figure 38 - Select results from Gehl Analysis.

Gehl Analysis Results

	Commercial: Selling	*Commercial: Buying*	*Commercial: Observing*	*Eating/ drinking*	*Talking to others*	*Cultural activity*	*Using electronics*	*Active recreation*	*Passive recreation*	*Waiting for transport*	*Civic work*	*Smoking*	*Disruptive*	*Soliciting*
Cal Anderson Park	1%			6%	29%	1%	7%	38%	19%		0%			
Denny Park				11%	26%		9%	26%	26%		1%	1%		
Freeway Park					5%	67%	18%	1%	5%		3%	1%	1%	
Hing Hay Park				15%	22%	33%	4%	8%	12%		6%			
Occidental Square				1%	21%	36%		23%	7%	6%		2%	1%	2%
Van Vorst Plaza (POP)	2%	5%		64%	20%		5%		2%			2%		
Westlake Park	4%	9%		22%	22%		12%	2%	10%	16%	4%			
Yesler Terrace Park				23%	19%		5%	45%	8%					

Figure 39 - People staying still activities: Results from Gehl Analysis showing percentage of people engaging in a certain activity per park.

	Perceived Gender		**Perceived Race** *For races with >5 observations*				**Perceived Age**						**Perceived Users Living in Public**
	Male	*Female*	*White*	*Black*	*Asian*	*Latino*	*0-4 years*	*5-14 years*	*15-24 years*	*25-44 years*	*45-64 years*	*65+ years*	
Cal Anderson Park	57%	28%	74%	12%	12%	1%	6%	4%	12%	66%	12%	0%	4%
Denny Park	47%	53%	56%	10%	11%	5%	4%	3%	23%	55%	11%	4%	1%
Freeway Park	46%	42%	58%	4%	9%	7%	0%	0%	28%	62%	10%	0%	8%
Hing Hay Park	53%	46%	28%	7%	59%	0%	5%	13%	13%	34%	24%	11%	5%
Occidental Square	63%	38%	60%	14%	22%	2%	2%	7%	11%	67%	13%	0%	1%
Van Vorst Plaza (POP)	63%	37%	55%	2%	31%	0%	0%	0%	2%	81%	14%	2%	0%
Westlake Park	51%	48%	41%	10%	41%	5%	4%	4%	12%	56%	20%	3%	3%
Yesler Terrace Park	62%	38%	49%	29%	9%	6%	17%	20%	12%	46%	4%	0%	1%

Figure 40 - Demographics from people staying still activities: Results from Gehl Analysis showing perceived demographics of people surveyed by percentage by park.

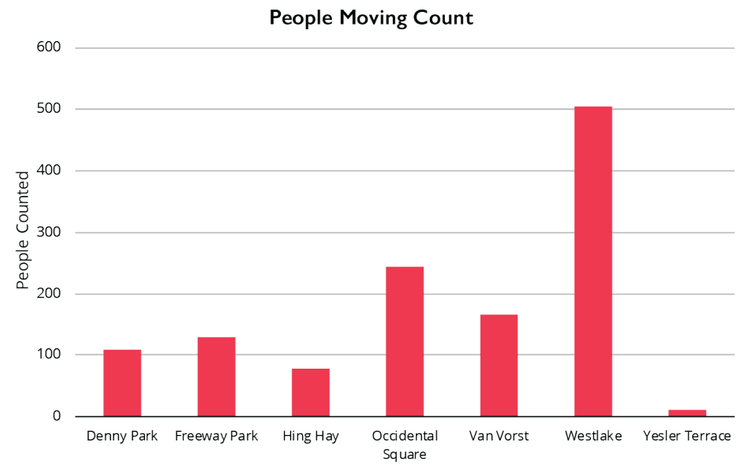


Figure 41 - People moving through: Results from Gehl Analysis showing people moving through the open space.

Other Lid Analysis

Since the debut of Freeway Park in 1976, other cities across the United States have built their own lids or cap parks of various sizes and forms. Today, there are numerous lid parks across the United States with a slate of proposed projects suggesting the trend in developling lids as parks is only growing.

In order to inform design guidelines for the potential I-5 lid with details from successful precedent lids, research was conducted on the core components of 27 United States lid projects. Then, from among those 27, six were identified as 'successful' projects that represented a diversity of origins, typologies, sizes and urban contexts:

- Capitol Crossing, Washington, D.C.
- Klyde Warren Park, Dallas, Texas
- Park Over the Highway, St. Louis, Missouri
- Park Over the Highway, Denver, Colorado
- Penn's Landing, Philadelphia, Pennsylvania
- Presidio Tunnel Tops, San Francisco, California

Findings from the US lid analysis and case studies are described in the following pages; lid characteristics and finances, as well as discrete case study elements, are produced in greater detail in the appendix.

A literature review and cumulative analysis of United States lid characteristics highlighted important themes for Seattle to consider in designing a potential I-5 lid.

First, lids can be categorized into typologies. In their recent publication "Put a park on it: How freeway caps are reconnecting and greening divided cities", researchers Houston and Zuñiga applied a methodology whereby they categorized lid parks into "four types based on their function, size, and features: Downtown Connectors, Neighborhood Connectors, Mobility Bridges, and Waterfront and Civic Connectors"[45].

Mobility Bridges are essentially enhanced freeway bridges. Neighborhood Connectors seek to improve connectivity between adjacent neighborhoods. Waterfront and Civic Connectors aim to provide green space and enhance pedestrian connectivity "between major civic uses and/or adjacent waterfront or civic features"[46]. Lastly, Downtown Connectors primary serve to stitch together urban centers; this is most similar to the desired lid for I-5.

It is notable that across typologies, lid projects come in a wide variety of shapes and sizes, ranging from slightly more than a half acre to 90 acres – in the case of Mercer Island's Aubrey Davis Park project.

Nearly all lid projects emphasize the importance of applying lid space to enhancing pedestrian and bicycle network connections. This makes sense considering one of the greatest impacts from freeways is the division of neighborhoods and severing of pedestrian connections through literal severing of pathways and creation of uncomfortable pedestrian spaces.

Most lid projects incorporate substantial amounts of vegetation or landscaped public open space into their designs, citing these as elements that enhance the pedestrian experience and mitigate some negative environmental impacts from freeways. Furthermore, this can serve as space that is both activated and flexible in its programming which potentially welcomes people from different backgrounds and communities.

Per acre project capital costs, even when adjusted to 2019, varied substantially. This seemed attributable to two factors. First, lids bearing tall structures (such as Capitol Crossing) had larger capital costs associated with the physical requirements of building a deck capable of bear that greater load. Second, the capital cost of lids constructed as part of a major transportation infrastructure were mostly indistinguishable from total project costs; thus they reflect the effort of delivering the lid as a public benefit of a larger project.

Lastly, lid projects generally rely upon a strong vision attached to attainable, place-specific objectives for what the lid should accomplish. This generally served two purposes. First, lid visions and goals helped garner long-term government and public support for the projects. Second, lid visions were reflective of, or spoke to, the funding sources required or available for these projects.

As the case studies will detail, there is no "cookie cutter" character for a successful lid project beyond the importance of vision. While other successful lids provide valuable design and project delivery precedents, it is important remember the importance of context-specific design. Recent successes internalized this consideration and were driven by visions facilitated through local buy-in and design reflective of local needs. Their success was tied to prioritization of community input and support.

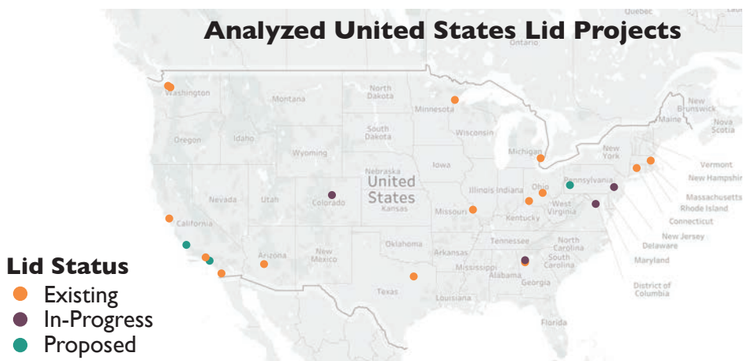


Figure 42 - Analysis focused on 27 lid projects from accross the united states. Some cities such as Seattle, Los Angeles and Atlanta, not only have existing lids but are the site of new proposed lids as well.

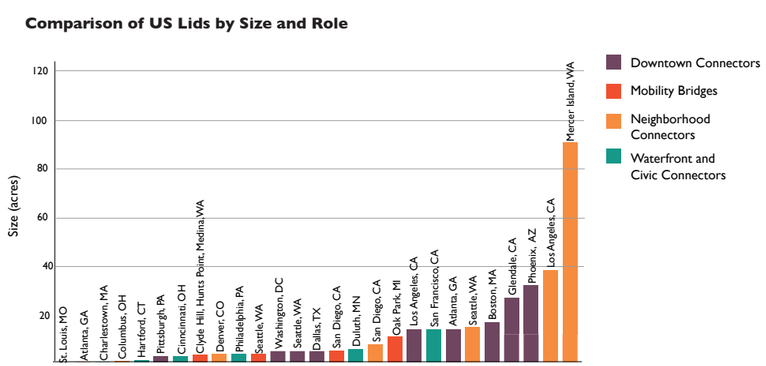


Figure 43 - Lids compared by size and functional role. Per Houston and Zuñiga's methodology, "[lids] within one mile of each other along the same corridor were treated as a single [lid] park"[47] . (Source: see Appendix.)

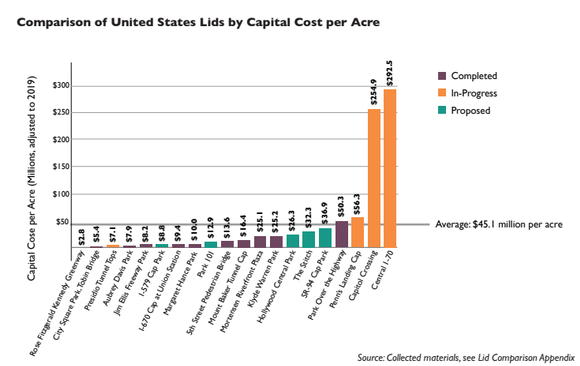


Figure 44 - Lids compared by cost per acre. The average capital cost for these lids is approximately $34 million per acre. This reflects a range of projects and data limitations; total project costs may be reported as "lid costs."

Park Over the Highway - St. Louis, Missouri

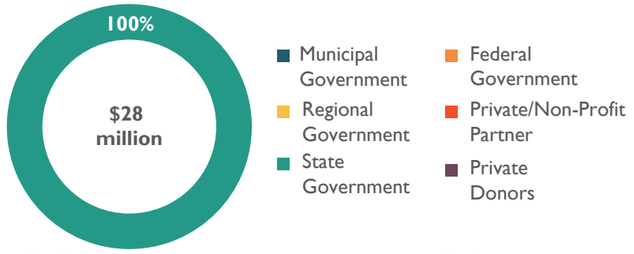


Figure 45 - Capital cost and funding sources for St. Louis lid project.

This 0.6 acre park, completed in 2015, was constructed as part of a 90 acre project to enhance the Gateway Arch National Park and connect it to Downtown St. Louis. CMT constructed the lid on behalf of the Missouri Department of Transportation who retained ownership of the lidded land (and air rights)[48].

The $380 million venture ($28 million of which was for lid construction) represents a partnership between local, state, federal government agencies and the private sector. In 2009 the CityArchRiver Foundation, which included the National Park Service, Great Rivers Greenway District, City of St. Louis, Bi-State Development Agency, Jefferson National Parks Association, Gateway Arch Park Foundation and other agencies was formed to spearhead the "Framing a Modern Masterpiece International Design Competition." This visioning exercise launched the park re-design, garnered pubic support and enticed industry experts to bid for the once-in-a-lifetime project to "finish the park in the spirit in which it was intended"[49].

Upon completion of the park, the Gateway Arch Park Foundation was incorporated as a 501(c)(3) non-profit conservancy to orchestrate operation and maintenance of the park.

Source: Michael Van Valkenburgh Associates.

Klyde Warren Park - Dallas, Texas

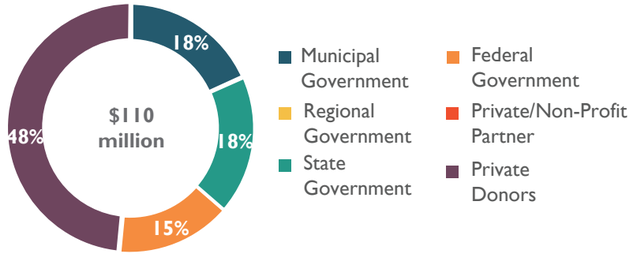


Figure 46 - Capital cost and funding sources for Dallas lid project.

The 5.2 acre Klyde Warren Park in Dallas, Texas spans the eight-lane Woodall Rodgers Freeway. Completed in 2012, the park represents a community effort to generate a "natural landscape that heals the urban fabric of the city"[50].

The park concept originated in the Dallas real estate community (focused on economic revitalization) and acquired $1 million from The Real Estate Council for the feasibility study in 2004[51]. Private $1 million donations from Texas Capital Bank and its founder subsequently kicked-off the philanthropy campaign for the park[52] .

In 2004 the Woodall Rodgers Park Foundation, a 501(c)(3) was created to partner with the city both in sourcing funding and later operating and maintaining the park. The campaign was focused around a clear design and goal of creating an amenity of fundamental import to the city. Philanthropists' and investors flocked to donate their money and names to the project, contributing 48% of the funding for tangible park elements such as "a playground, dog park, water features, gardens, walking paths, ... concert stage and restaurant"[53].

The park benefits from a transit access, multimodal pathways, and programming, much of which is free to the public.

Source: Texan by Nature.

Park Over the Highway - Denver, CO

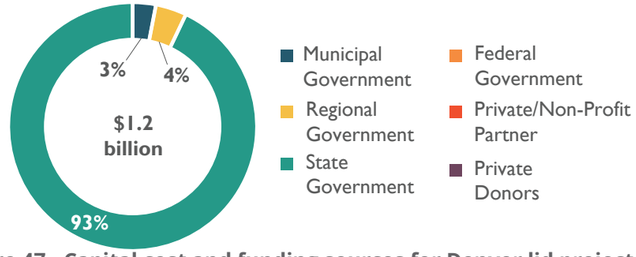


Figure 47 - Capital cost and funding sources for Denver lid project.

This 4-acre park is currently under construction as part of a larger infrastructure project (hence the high cost) to improve I-70.

The project is managed by the Colorado Department of Transportation (CDOT), with Kewit Meridiam Partners LLC (KMP) serving as the concessionare and project developer (see "Delivery Models")[54].

When Environmental Impact Statement (EIS) efforts failed to garner public support (due to freeway expansion concerns) CDOT, FHWA created a model in which Preferred Alternative Collaborative Team (PACT) members (industry partners) workshopped designs. Unable to reach consensus, they gathered community work groups with to gain input from over 90 participants[55].

This resulted in a publicaly supported lid design with community-identified features tied to 300 community commitments CDOT is responsible for implementing over the life of the project[56].

Source: CDOT.

Penn's Landing - Philadelphia, PA

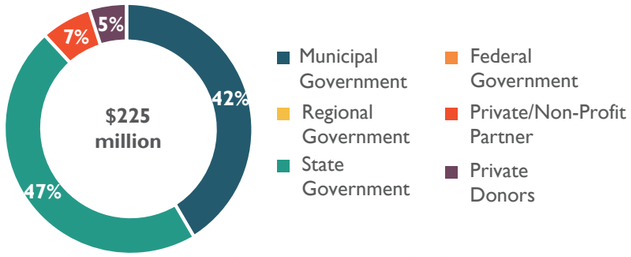


Figure 48 - Capital cost and funding sources for Philadelphia lid project.

This 4-acre park, currently under construction, is designed to connect Philadelphia's center city to a much maligned waterfront. Appropriately, this project is spearheaded by the Delaware River Waterfront Corporation (DRWC), a 501(c)(3) non-profit with the mission to activate that landscape.

DWRC's efforts have been met with government, private and public enthusiasm for the project and state of Pennsylvania, City of Philadelphia, and the William Penn Foundation have partnered to identify and source funds.

DRWC is also responsible for a parcel of land adjacent to Penn's Landing Park that has been earmarked for development. Current plans call for the construction of 1,500 new housing units, 500 hotel rooms, and more than 100,000 square feet of retail, restaurants, and entertainment. Land leases for these properties will contribute toward the park's long term operations and management costs[61].

The park's main lawn steps down to the water and will host infomal gatherings as well as public concerts and movie events. The park will also include an ice-skating rink, spray pools, cafe, and memorials. DRWC has been activating the adjacent park to drum up enthusiasm for the lid.

Source: Hargreaves Associates.

Capitol Crossing - Washington, D.C.

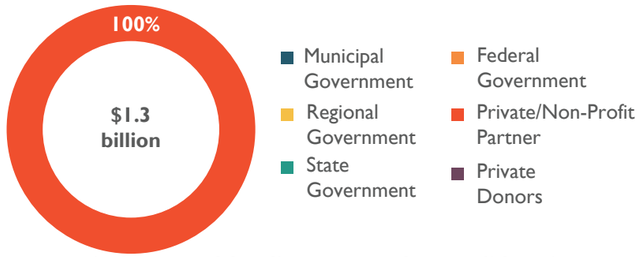


Figure 49 - Capital cost and funding sources for D.C. lid project.

This 7-acre lid, currently under construction in D.C.'s central business district, is a fully private development project manged by Property Group Partners (PGP).

The lid is slated to host 5 buildings with 2.2 million square-feet of mixed-use development. According to the City of Washington, D.C., this $1.3 billion project is projected to generate $40M in annual property tax revenue[57].

The overall perception of the lid's benefit to the wider community is still under debate.

The lid provides some benefits by covering an active freeway with development containing LEED-certified buildings, some landscaped public space, cisterns to capture and treat more than 90 percent of stormwater runoff, centralized recycling, and cogeneration power EcoChimneys to clean car exhaust emitted from the below-grade parking and freeway. The project will also provide enhanced bicycle and pedestrian connectivity accross the lid.

It temporarily displaced and partially demolished two religious facilities which the PGP will rebuild.

There are lingering questions about how public the 'public' landscaped spaces will feel once tenants are settled.

Source: Property Group Partners.

Presidio Table Tops - San Francisco, CA

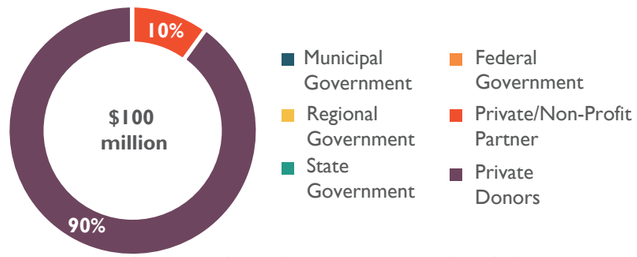


Figure 50 - Capital cost and funding sources for S.F. lid project.

This 14 acre lid, currently under construction, is a public-oriented waterfront project intended to better connect natural resources and cultural amenities to the San Francisco Bay. This enhancement is part of a larger $1.1 billion roadway seismic retrofit and road widening project[58].

The Presidio - a national park site near the Golden Gate Bridge - is managed in partnership by the Presidio Trust, National Park Service and Golden Gate National Parks Conservancy (GGNPC).

The Presidio Trust is project lead while the GGNPC operates as the "philanthropic and community engagement partner and supports park restoration and enhancement, education, and visitor service projects and programs"[59].

One component of this development was predicated on an exchange of land whereby Caltrans (the California Department of Transportation) appropriated 75 acres of Presidio land to accommodate roadway widening; in exchange the Presidio was granted 40 acres of storage and staging areas near sensative wetlands and $54 million to develop it.

The park will include recreational space, a science lab, visitor center, environmental education area and connections to inland commercial, cultural and arts facilities[60].

Source: Land 8.

Finances and Delivery Models

Seattle's proposed I-5 lid will need to be supported by a partnership model that allows for it to be expertly constructed, operated and maintained.

Traditional infrastructure-based lid projects have relied upon Bid-Build and Design-Build models in which a local or state government managing the project develops a concept which private firms bid to build "as is", or design and then build for a given budget. More recently, however, lid projects have relied upon ever-increasingly creative public-private partnership models (see figure at right).

Public-Private Partnerships have been employed in various ways to provide financing, operation and maintenance support to the local or state governments with jurisdiction over the projects. These have mostly followed the models similar to the "Design-Build-Finance-Operate-Maintain (DBFOM)" structure in which a private firm or non-profit foundation is compensated for performing the core aspects of construction and maintenance.

For example, the air rights and 'land' beneath Klyde Warren Park is owned by the City of Dallas, but the Woodall Rodgers Park Foundation spearheaded the development project, is charged with sourcing funding for its maintenance and operation, and leases the land from the city[62]. Similar mechanisms have been used in St. Louis and Philadelphia.

In the case of Denver, Colorado's "Central 70 Project" lid, again the lid 'land' is owned by the City of Denver, however, Kiewit Meridiam Partners LLC

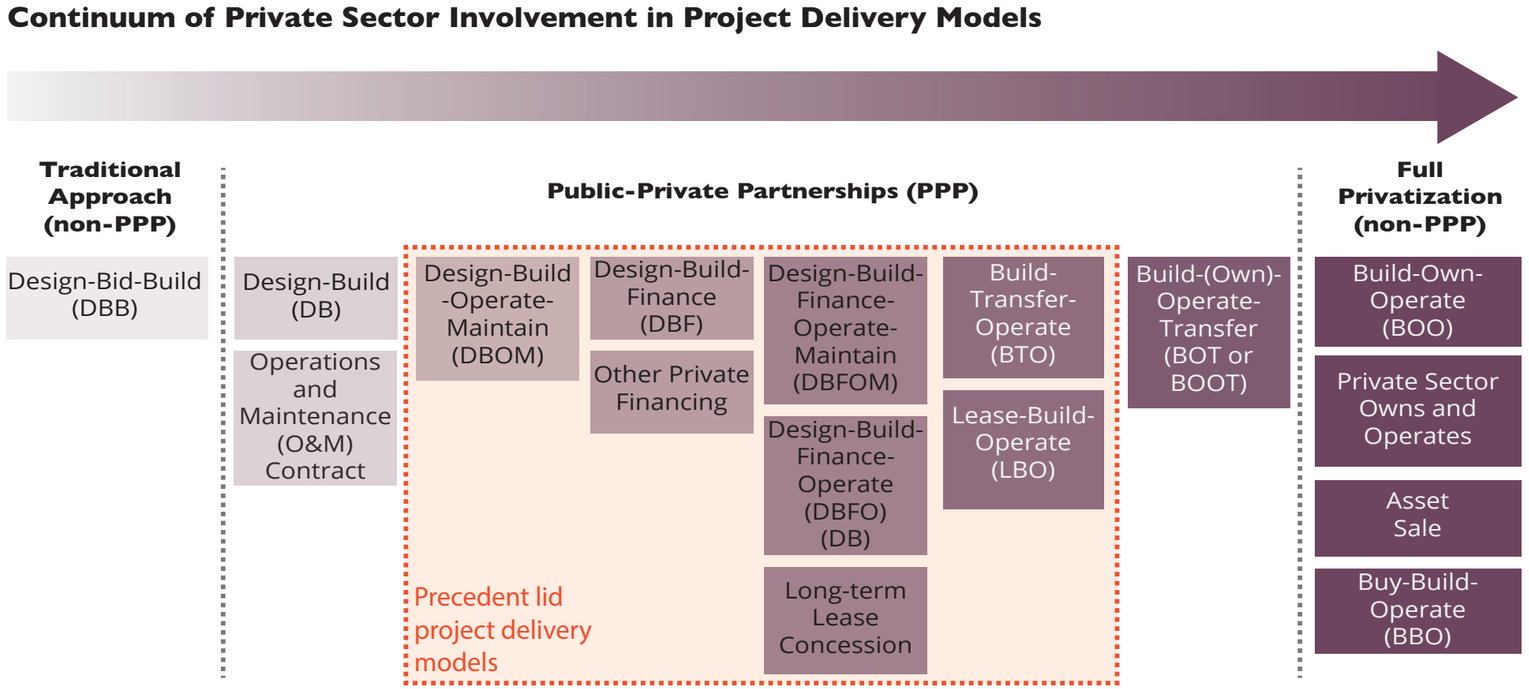


Figure 51- Public-private partnership models. (Model vizualization precedent: National Conference of State Legislatures)

(an entity formed by two private firms expressly for this purpose) is charged with developing and maintaining the lid park via a design-build-finance-operate-maintain model. In exchange, the firm will be compensated for the initial capital cost of construction and ongoing maintenance and operation of the lid park, paid in annual installments over 30 years from CDOT's High-Performance Transportation Enterprise's (HPTE)[63]. HPTE is a government-owned business charged with pursuing innovative means of financing transportation infrastructure projects. In this instance, much of the state funding comes from transportation user fees[64].

Lastly, as previously mentioned, In San Francisco, three agencies work together to garner funding for and manage the Presidio Tunnel Tops project, having collaborated with the state department of transportation to attain such rights[65].

These examples represent only a few partnership mechanisms available to cities to distributing the burden of developing and operating these lids - large public assets that are costly and complicated to manage.

DESIGN GUIDELINES

Proposed I-5 Lid Design Guidelines

A future lid park and public space over I-5 represents a huge opportunity for the City of Seattle, in particular its downtown residents, workers, and visitors. With a dearth of open and green space in the center city, a diverse set of prospective users stand to benefit from a lid. The design that informs future lid development can play a key role in advancing the Office of Planning and Community Development's (OPCD) vision for Seattle as ***"a city that is inclusive, affordable, vibrant, interconnected and innovative."***

To translate this vision into actionable design elements for an exemplary lid park and public space, we first looked to best practices and lessons learned both locally and in other U.S. cities. We reviewed the Seattle Design Guidelines, Seattle Parks Legacy Plan, outcomes of Lid I-5 design workshops, and examined 5 existing or planned lid parks in other U.S. cities. We also conducted primary observational research using Gehl and Seattle Department of Transportation (SDOT) Public Life methodologies in eight Seattle area parks.

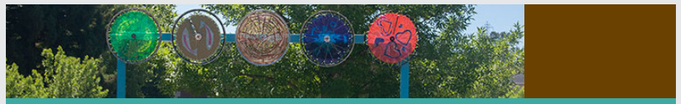
From this investigation, we framed our design guidelines under **four overarching goals** for parks and public spaces - **connected, activated, programmed and public** - that we believe will advance OPCD's vision. Each goal is further detailed through a set of **actionable design elements** that advance that particular objective. While taken alone these goals and associated design elements may represent effective open space design, yet **an exemplary lid is one that incorporates elements of all four goals** to serve the needs of this multifaceted community.

Connected

Connected spaces creates a bridge between people and place. They foster opportunities for social interaction through physical features like seating or gathering spaces, as well as activities or programming that bring people together. It also enables connection between destinations. A connected space draws characteristics from its surroundings and facilitates entrance into and movement through, providing seamless integration into the broader spatial context. Clear sightlines and purposeful paths decrease isolation and vulnerability and increase the quantity and type of users.

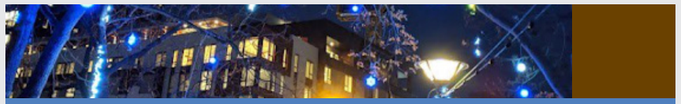
Activated

Activated spaces are in continuous use - on different days, at different times, ideally, 24/7. Activation stems from a variety of uses and activities within and around a space. This may include design features, such as sports courts or playgrounds that attract users, seating or multipurpose lawns that provide opportunities to linger or rest, or retail frontages that facilitate entrance into the space. Nighttime activation requires appropriate lighting that invites use and supports safe navigation after dark.



Programmed

Programming supports activation by providing purposeful, time-bound features or activities that attract users to a space. It can introduce users to a new city amenity and encourage exploration of the surrounding neighborhood. Programming may take the form of public art installations, events, games, markets and performances that provide an additional or novel reason to be present. These elements can be designed to appeal directly to the interests of the neighboring community, engendering long-term users, or draw outsiders to the space.



Public

A truly public space is one that serves all segments of the city's population and is welcoming and inviting to all appropriate uses. Design considerations should accommodate the needs of Seattle's population which is diverse in age, gender identity, race/ethnicity, and socio-economic background. Public space includes elements that encourage informal gatherings of friends and families, a wide breadth of programming, physical features that cater to the interests of young and old alike, and elements that display a recognition of local cultural heritage.

Connected: Best Design Practices

Design Elements

1. **Lighting features** expand the use of space beyond daylight hours, enhancing safety and feelings of invitation and comfort.

2. **Well-defined gateways or entrances** help pedestrians easily identify entrances and exits from inside and outside the park.

3. **Adjacent, active ground floor businesses** integrate the open space with neighborhood characteristics.

4. **A variety of paths and routes** unite the space with the broader spatial context, providing clear sightlines through the space and outlets to public transit connections or local landmarks.

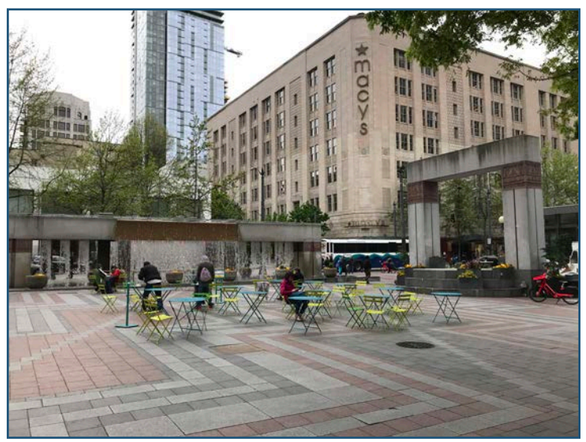
5. **A multipurpose lawn or plaza** increases opportunities for public activity and social interaction among users of different types and quantities.

1 - These stairs act as creative lighting features in **Hing Hay Park** that clearly demarcate and illuminate entrances/exits making them safe and easy to navigate.

2 - The unique and highly visible gateway to **Hing Hay Park** clearly demarcates a point of entry and exit, serving as a landmark for current and prospective users.

3 - Ground floor retail along the perimeter of **Westlake Park** integrates the space directly into the surrounding urban fabric.

4 - Multiple routes weave though the tiers of **Yesler Terrace Park**, with both expedited stairs to move people through and meandering paths accessible for all types of mobility.

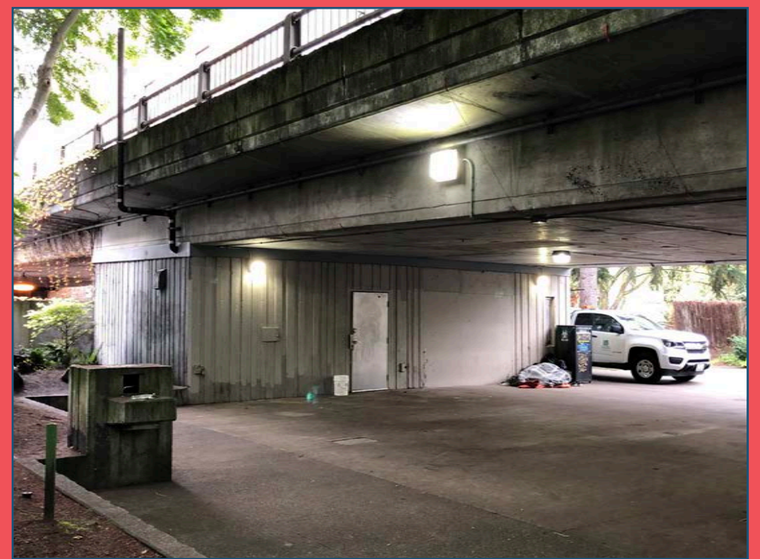


5 - The multipurpose plaza at **Westlake Park** creates opportunities for paths to cross annd spark interaction.

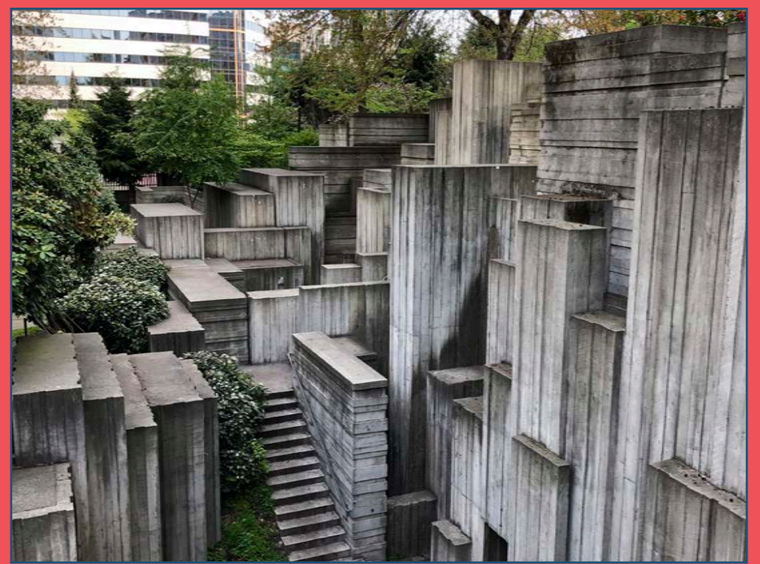
Connected: Design Challenges

"Entrances [in Freeway Park] are very limited and hard to find and make the park feel closed-in, confusing, and uncomfortable. Prevalence of large concrete walls and nooks are interesting but greatly limit visibility creating a safety concern and lots of creepy, shadowy corners. The underpass also serves as a homeless camp, which feels disruptive for both parties (those walking through and those sleeping there)." Observation from Gehl Analysis.

Confined, Secluded Spaces with Low Visibility and Multiple Dead Ends

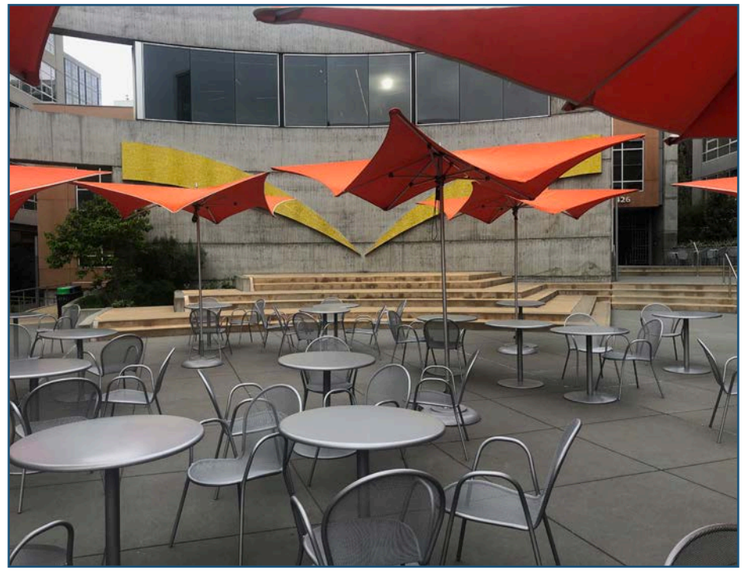


The underpass at **Freeway Park** is secluded and is not integrated with neighborhood characterisitcs. This creates feelings of isolation and vulnerability.



While providing visual interest, **Freeway Park's** canyon is not easily navigable with dead ends and numerous secluded spaces that detract from feelings of comfort and safety.

Poorly Defined Entrance



Entrance is only highly visible from one side of Van Vorst Plaza such that passerby on the street may not be aware of the plaza nor feel invited in.

Activated: Best Design Practices

Design Elements

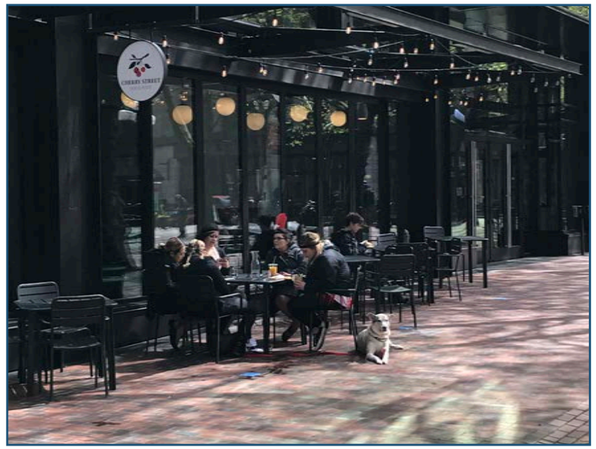
1. **Adjacent active ground floor businesses** provide services to those already using the respective space and attract new patrons, introducing them to the area.

2. **Spaces for group activities,** such as athletic courts and plazas with barbeque stands, provide a ready-made space for use by different people at different times of day.

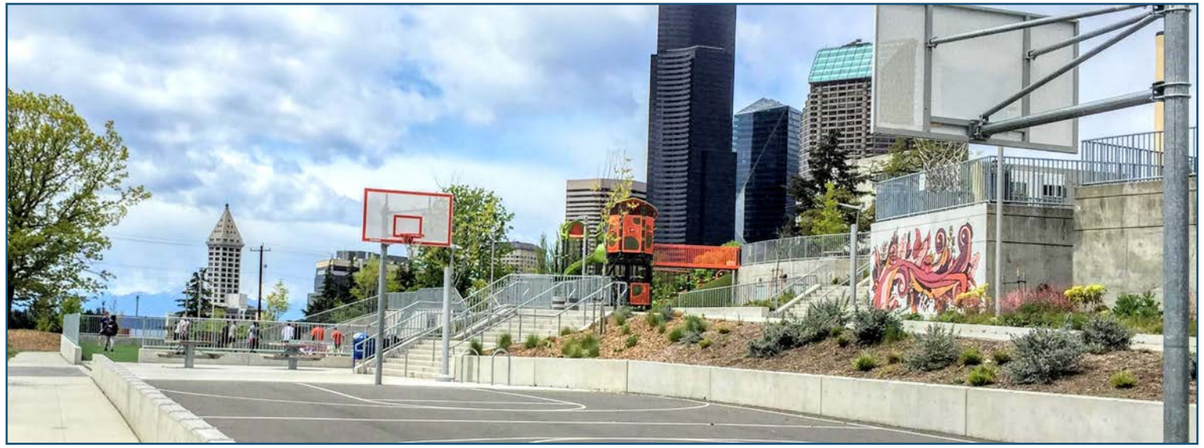
3. **Kid-friendly areas** encourage both parents/guardians and children to feel welcome and supported in their use of a space.

4. **A variety of seating** provides users flexibility in how they interact with and gather in a given space.

5. **A multipurpose lawn or plaza** promotes lingering and play through a variety of informal activities.

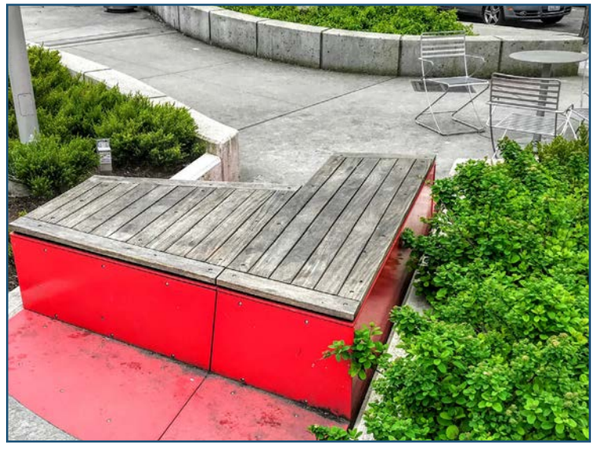


1 - Restaurants expand directly into **Occidental Square**, providing expanded space and an amenity for businesses while fixing a presence of users within the park itself.



2 - Team sports courts at **Yesler Terrace Park** serve as both a destination and impromptu gathering space for groups.

3 - In dense urban residential neighborhoods, kid-friendly play areas in **Yesler Terrace Park** can serve as one's backyard with routine daytime use.



4 - Comfortable and creative seating in **Hing Hay Park** enables users to linger, rather than pass through.

5 - Opportunities for gathering and play are provided by **Cal Anderson Park's** multipurpose lawn with permeable edges connecting the residential area at 11th Avenue to commercial district along Pike and Pine Streets.

Activated: Design Challenges

Proximate Wide, Congested Streets Limit Potential Users

Even when games and seating are made available, **Denny Park's** edge is dominated by loud vehicular traffic which detracts from the quality of pedestrian spaces and may stall activation.

Poor Edge Conditions Hinder Pedestrian Access and Limit Activities

While fenced boundaries at **Yesler Terrace Park** may be temporary, the adjacent street devoid of any buildings or destinations reduces foot traffic and detracts from activation.

"The life of a public square forms naturally around its edge. If the edge fails, then the space never becomes lively." - Christopher Alexander, A Pattern Language.[66]

Programmed: Best Design Practices

Design Elements

1. **A permanent performance structure** provides a space for concerts and theatrical events that can be enjoyed by the broader community.

2. **Temporary service providers, such as food trucks**, provide opportunities for both small businesses and users to come to and enjoy the space.

3. **Temporary design structures, such as art installations**, draw both creators and recreaters to the space.

4. **Multipurpose spaces that hold organized events** create opportunities for community-driven functions and foster affordable and accessible recreation

1 - The outdoor amphitheater in **Volunteer Park** provides a space for both formal and informal events, ranging from performances of Shakespeare in the Park to Earth Day educational programming to Cinco de Mayo celebrations. A surrounding multipurpose lawn is flexible to differing event sizes.

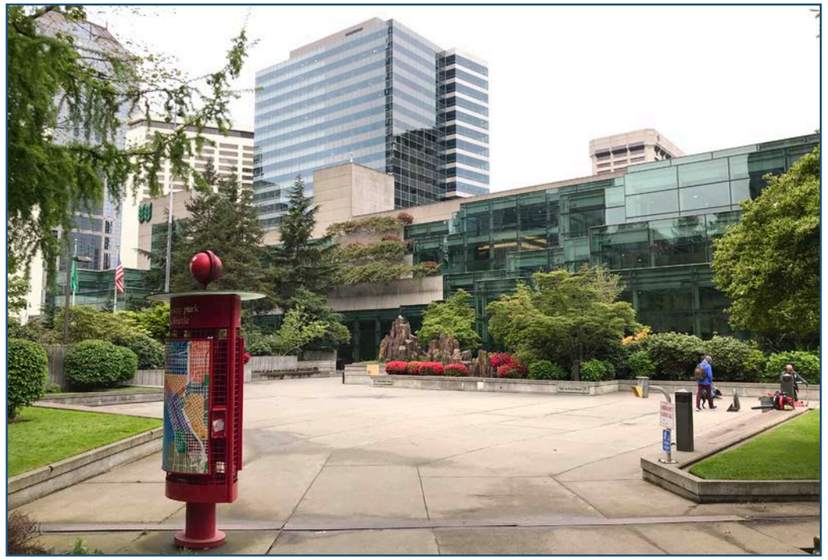
2 - Open plaza space welcomes food trucks who entice neighboring office workers into **Westlake Park** during midday, complementing programming with physical design features like tables and seating that further activate the space.

3 - Visible and creative art installations, such as this one at **Rainier Beach Playfield**, can serve to promote the space, drawing attention and inviting users during the lifespan of the installation.

4 - A large public plaza and restroom facilities mean that Dallas' **Klyde Warren Park** can accommodate the large events, such as the Festival of Joy, a celebration of the city's Indian heritage.

Programmed: Design Challenges

Public Spaces Work Best When Programming Supplements Good Design



Programming cannot act as the sole driver of the use of the park. It works best as a supplement an already activated space. During Sakura Con, **Freeway Park** was 27% males; however, on a day to day basis, it is 88% males.

A Preponderance of Niche or Exclusionary Programming

A Halloween dog fashion show in **Van Vorst Plaza** claims the space, temporarily, for one subset of the community, creating an atmosphere that may serve to preclude non-dog owners. While periodic events that cater to a particular user base can serve to enhance activation, programming should prioritize opportunities that engage a broad and dynamic group representative of the diverse needs of the community.

"Programming and events can attract more people to a public space, supporting participation in public life and enhancing civic trust."
- Assembly: Civic Design Guidelines[67]

Public: Best Design Practices

Design Elements

1. **Permeable space** ensures safe and inviting places by excluding unnecessary barriers or enclosed, narrow pathways in design.

2. **Landmarks or cultural heritage features** connect a space to the diverse character and history of Seattle's population.

3. **Universal design principles** enable use of space by people of all ages and abilities. This may manifest as wayfinding that accommodates a range of literacy and language skills or physical design elements where any seated or standing user can reach all components comfortably.

4. **Lighting features** identify a space as open for safe use and passage throughout the day and night.

5. **A multipurpose lawn or plaza** to invite all to participate in an appropriate manner.

1 - **Cal Anderson Park's** wide open, permeable boundaries mean there are few barriers to entry for members of the public.

2 - The Native American Memorial at **Yesler Terrace Park** demonstrates a link to the indigenous people and their history.

3 - **Yesler Terrace Park's** gently sloping paths enable equitable use by varying types of mobility and low physical effort.

4 - Bright, inviting string lights hung in the trees of **Occidental Park** create an ambiance of safety and comfort necessary to equalize the space to all users at night time.

5 - **Hing Hay Park's** central plaza doubles as a neighborhood living room, available to all community members.

Universal design means designing a space so it can be **"accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability**." The Centre for Excellence in Universal Design asserts **7 principles** of universal design, each with associated guidelines. These include equitable, flexible, simple and intuitive, perceptible information, tolerance for error, low physical effort, and size and space. Implementation of these principles is fundamental to good design that benefits everyone.[68]

Public: Design Challenges

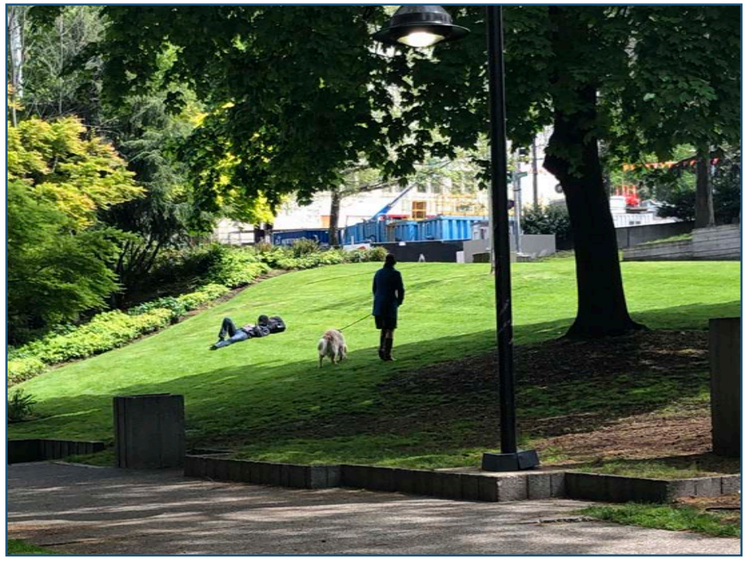
"A public space refers to an area or place that is open and accessible to all peoples, regardless of gender, race, ethnicity, age or socio-economic level."

- UNESCO definition[69]

Confined Space Can Limit Users to Adjacent Buliding Occupants

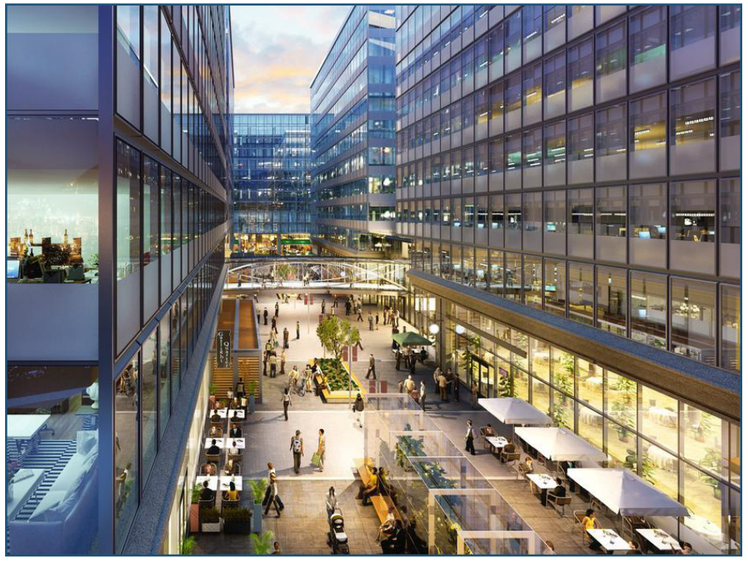
The Public Life Study showed that Privately-owned **Van Vorst Plaza's** observed users were over 60% male and over 80% ages 25-44, suggesting that POPs may reflect the demographics of the building owner/occupant, in this case Amazon, rather than the public.

Unintended Use of Multipurpose Lawn May Deter Other Users



The Public Life Study showed that **Freeway Park** had the highest percentage of people perceived to be living in public at 8% of observed users.

Expensive Retail Excludes Some Users



Capitol Crossing in Washington D.C. has retail options that are not necessarily affordable to the broader public, making the park seem like a space for the wealthy.

THE VISION

Master Plan

The I-5 lid stretches through and across Seattle's urban core, a continuous expanse of green and open space permeated with private and public buildings and recreational, civic, and cultural amenities. An extensive network of pedestrian paths linked to adjacent bike corridors and accompanied by select street vacations serves to enable connectivity east-west and north-south through the entire lid area. Unique attractions and features are spread out across the lid, encouraging users to explore the full breadth of this nearly 27 acre space. This master plan reflects one potential application of the design guidelines, which can also be used to inform the development of alternative visions.

Figure 52 - Master Plan for an I-5 lid based on the design guidelines.

Enhanced Connectivity

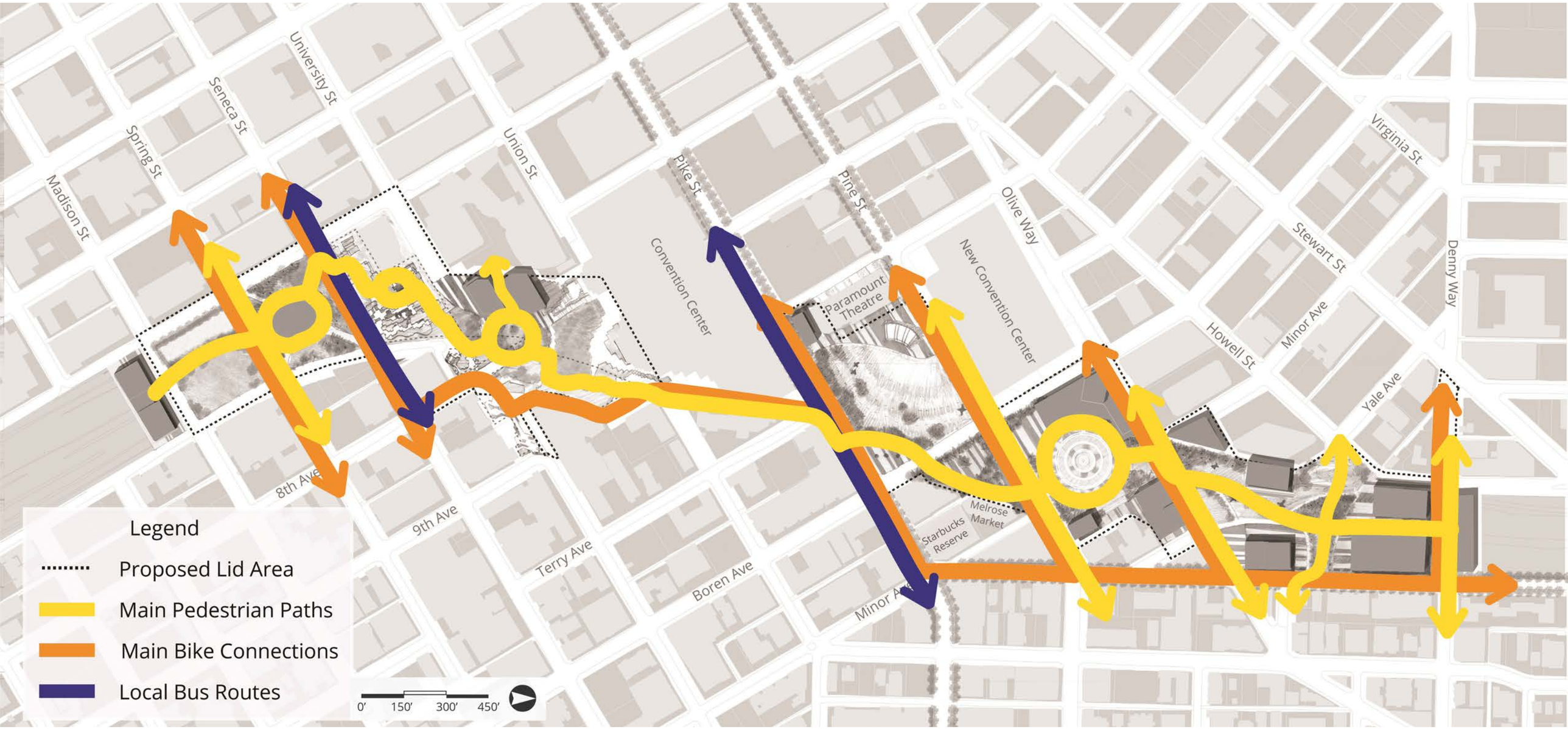


Figure 53 - Enhanced Connectivity map portraying modal paths and routes.

Street Vacations

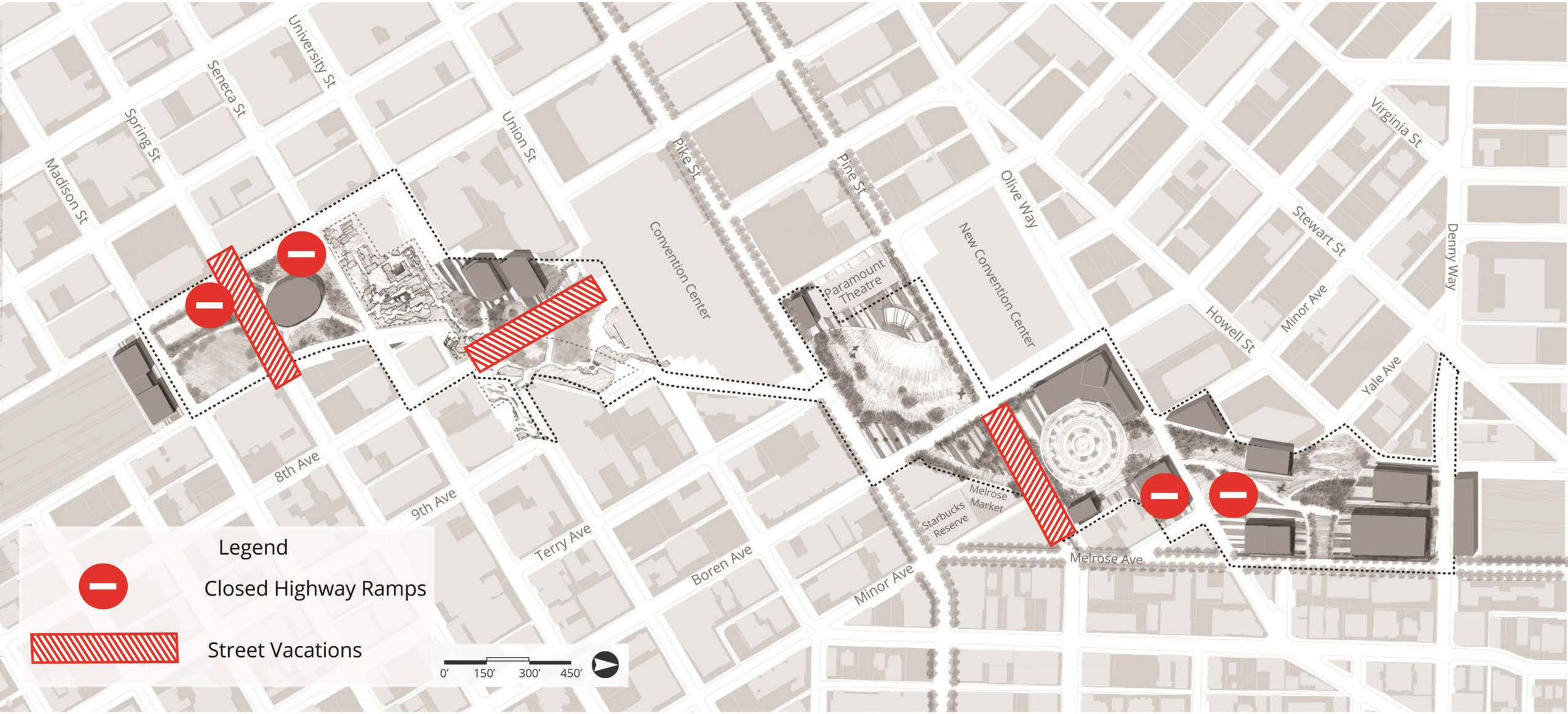


Figure 54 - Street Vacations: Portrays street closures for enhanced pedestrian acces**s.**

Proposed Open Space

Figure 55 - Proposed open space: this map portrays the proposed open space the lid design would add.

Increased Gathering Spaces

Figure 56 - Increased gathering space: This diagram portrays the gathering nodes created by the intersection of paths and design features.

Lid Sections

In addition to envisioning the lid as a cohesive whole, specific attention was paid to the key characteristics, and consequently design features, of the north, central and south sections of the study area. The central section is the nexus of the lid, a key crossing point host to small and large multi-purpose gathering spaces and adjacent retail encouraging users to 'Stay' all day. On its north end, the lid is primarily designed around facilitating pleasant and efficient movement through the space, which is already a key crossing between Downtown and Capitol Hill, entitled 'Move.' The lid's southern segment, which abuts both residential and office populations, is seen as a recreative 'Play'-themed hub in the inner city.

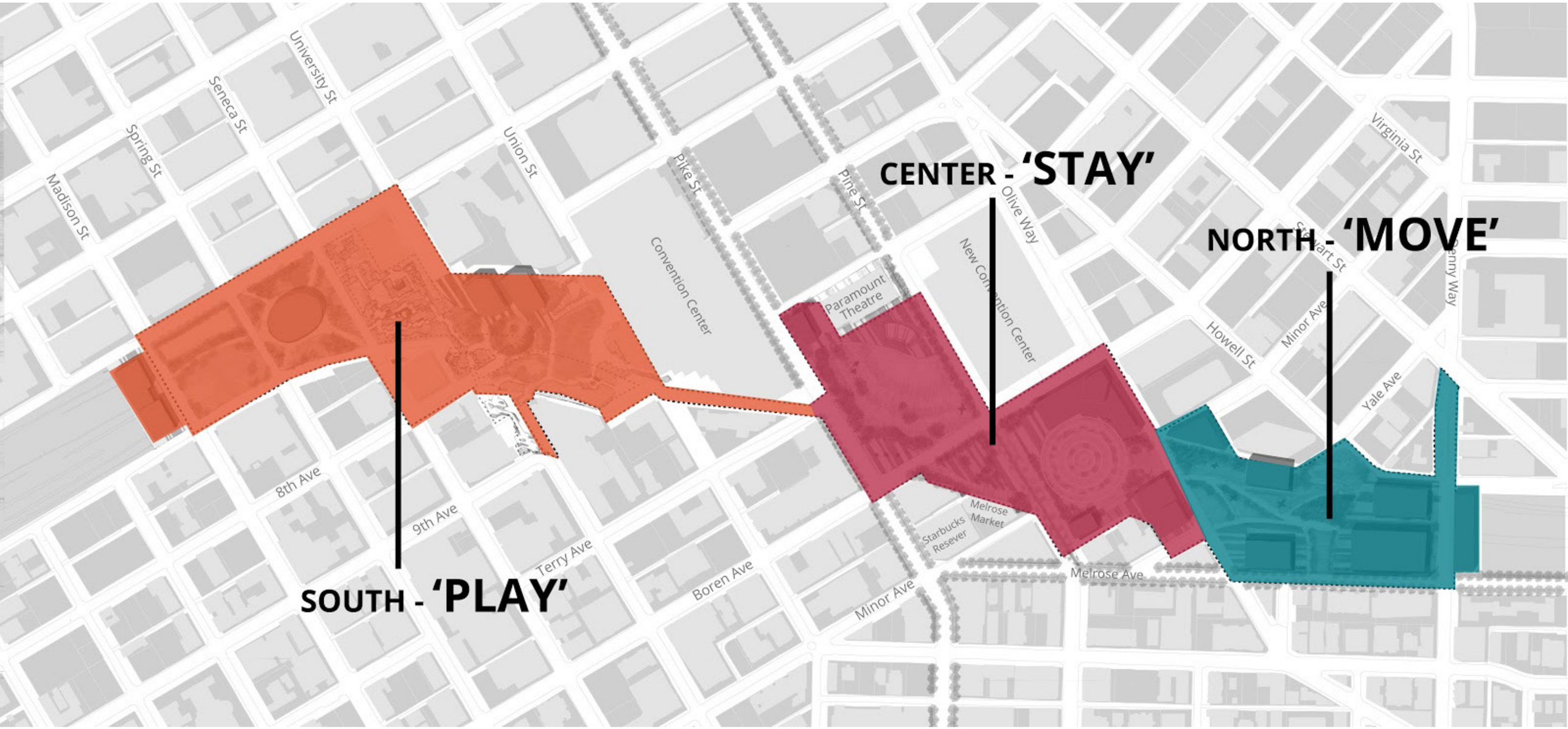


Figure 57 - Lid sections with applied concepts.

Stay

Central area of lid between Olive Way and Pike Street

A centerpiece of civic and cultural space is the heart of Seattle's new lid, attracting residents, visitors, and conventioneers alike with a flexible public plaza where programming ranges from large gatherings to weekday farmers' markets, an outdoor amphitheater that extends the music beyond the neighboring Paramount Theatre, and a playground, dog park and multi-use lawn that provide opportunities to stay all day.

Connected

- A new **north-south path** connects from Freeway Park in the south to Olive Way in the north.
- Currently under-utilized Plymouth Pillars turned into a **gateway** at the top of the 'green lawn' section.
- **Pine Street is vacated** to vehicular traffic between Minor and Boren, enhancing safe connectivity for pedestrians and bicyclists heading east-west and north-south.

Activated

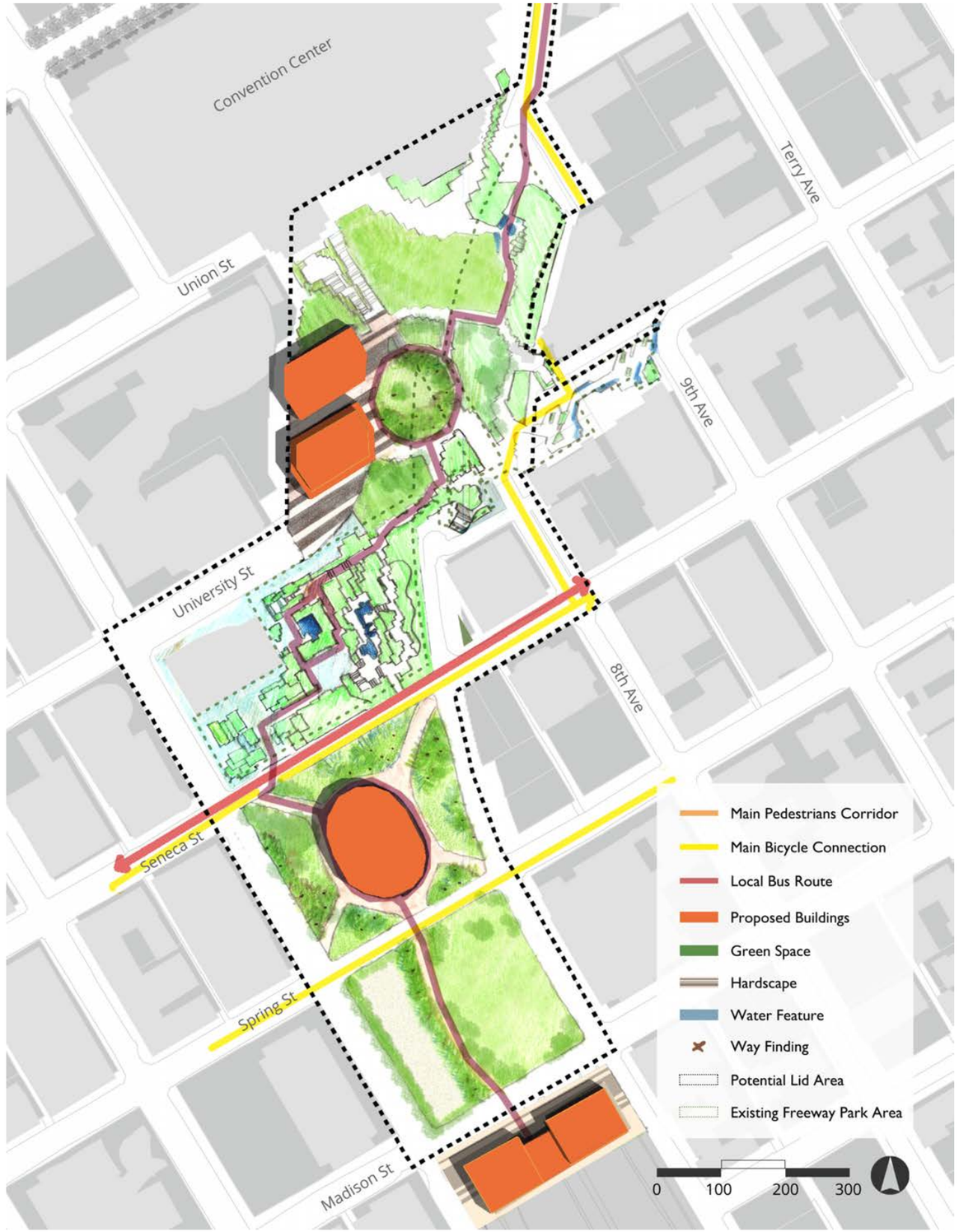
- New mall with **six stories of retail** surrounding a plaza provides a draw to the area, an amenity for those in the plaza, and helps promote 'eyes-on-the-street' safety.
- **Waterfall** and **wading pool** provide memorable destination and attracts a variety of visitors.
- **'Green lawn'** area provides pleasant place to linger.
- New **playground** attracts children and families.

Programmed

- **Amphitheater** at base of hill provides space for free performances. Potential to partner with the adjacent Paramount Theater or other groups to host concerts, plays, movies, etc.
- **Plaza** designed for temporary use by food trucks, markets, art shows, and so forth. Flexible space for a veriety of uses.

Public

- **Playground** and **waterfall** attract children and families.
- **Dog park** attracts dog-owners.
- Both plaza and green lawn offer **permeable open space** suitable for gathering.
- Plentiful open space engenders feelings of public - users don't feel obligated to purchase anything to enjoy lingering.



Stay

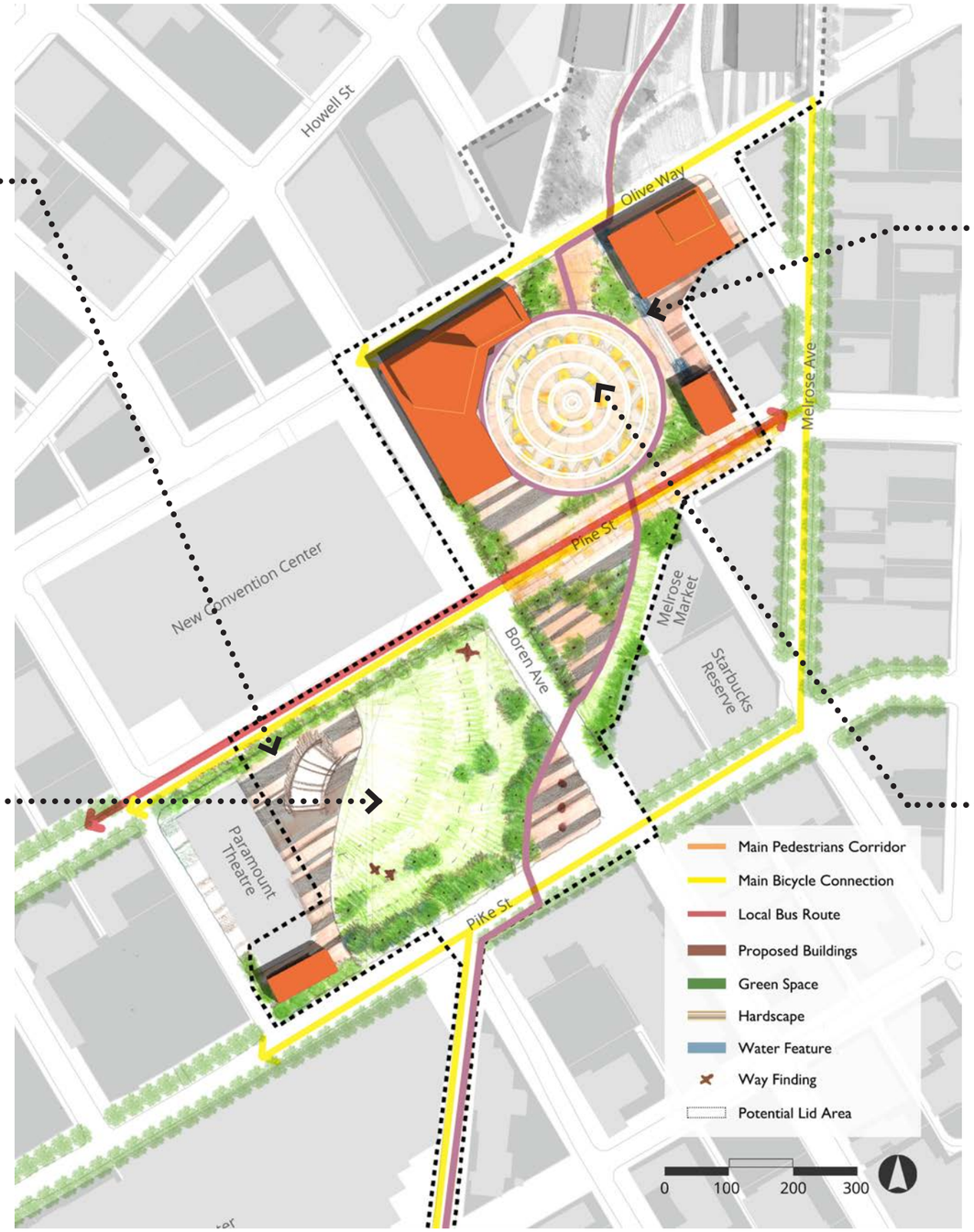
Central area of lid between Olive Way and Pike Street

Source: Stitch Design Shop

Amphitheater at base of hill provides space for free performances. Potential to partner with the adjacent Paramount Theatre or other groups to host concerts, plays, movies, etc. Pictured above is Bailey Park, an outdoor amphitheatre with a sloping grassy hill in downtown Winston-Salem, NC.

Source: Seattle Parks and Recreation

As seen here in Cal Anderson Park, a **'Green lawn'** area provides a pleasant place to linger and offers **permeable open space** suitable for gathering.



Source: Charles Birnbaum via tclf.com

Waterfall and **wading pool** provide memorable destination and attracts a variety of visitors, especially children and families. Keller Fountain in Portland, OR (pictured above) is a successful precedent.

Source: thesquarepdx.org

A **Plaza** designed for temporary use by food trucks, markets, art shows, etc. Flexible space for a variety of uses. The picture above is of a farmer's market in Pioneer Courthouse Square in Portland, OR.

Stay

Central area of lid between Olive Way and Pike Street

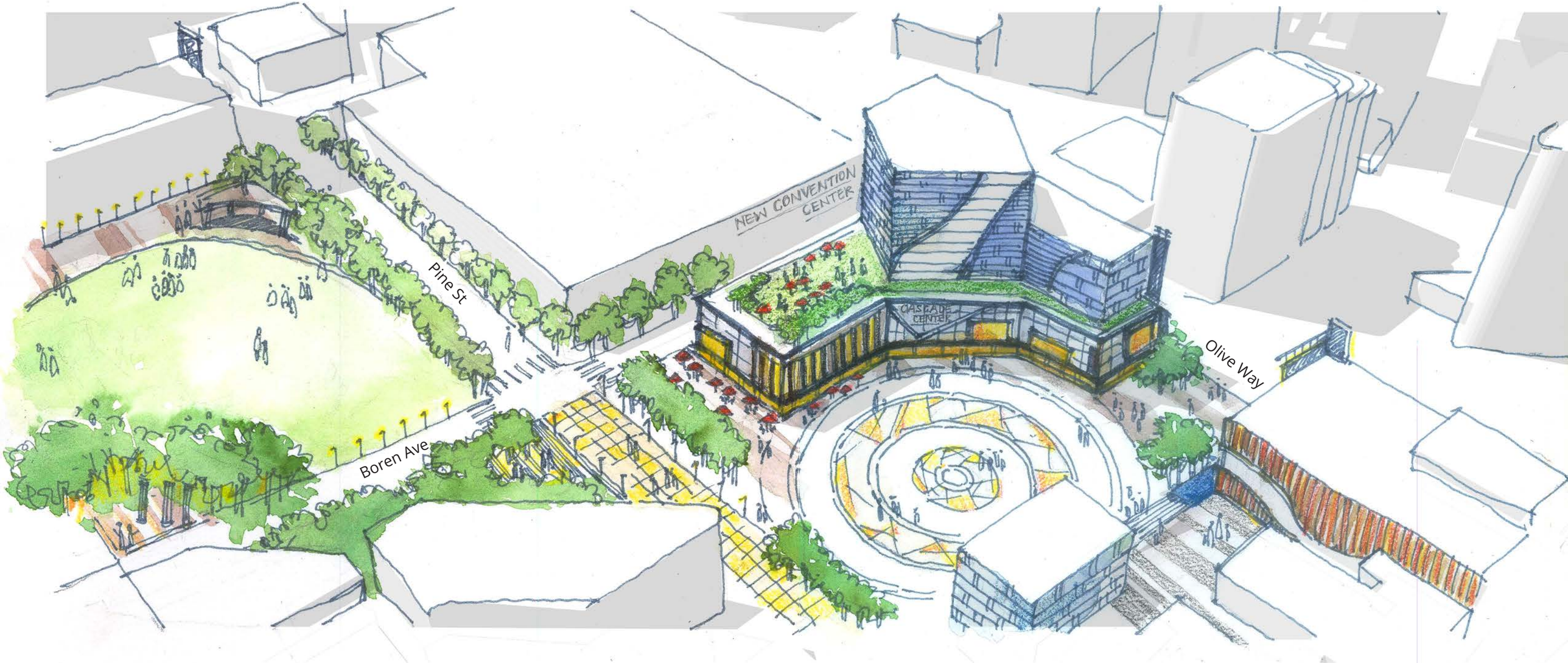


Figure 58 - Conceptual aerial rendering of the Stay lid section.

Figure 59 - Conceptual rendering of the plaza in the Stay lid section.

Stay

Central area of lid between Olive Way and Pike Street

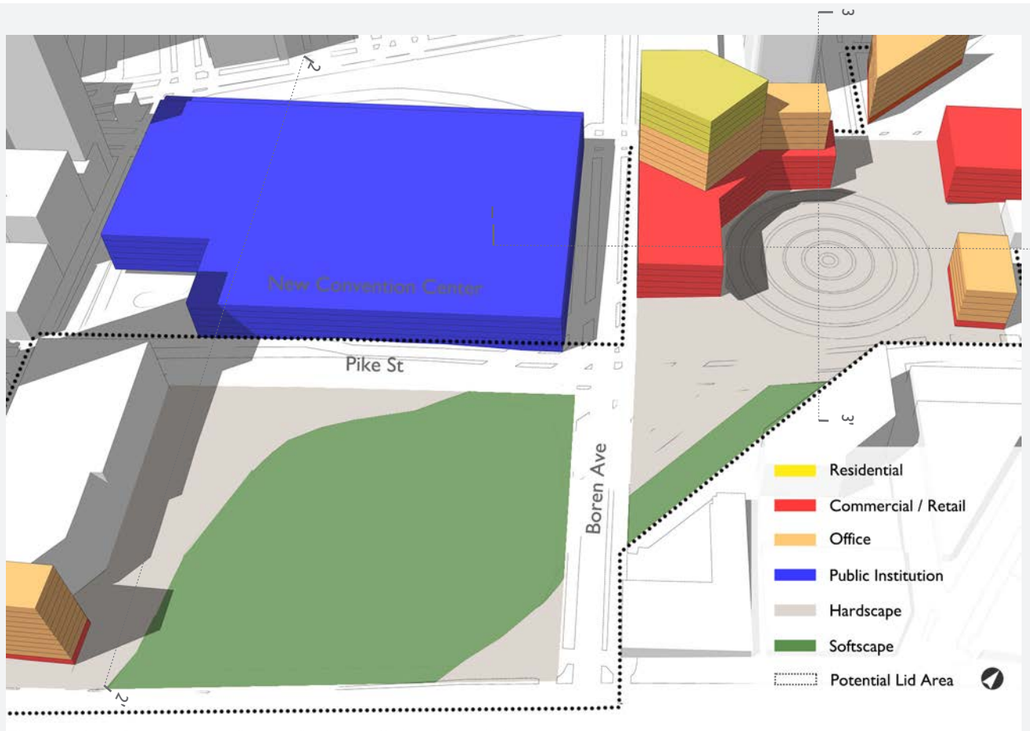
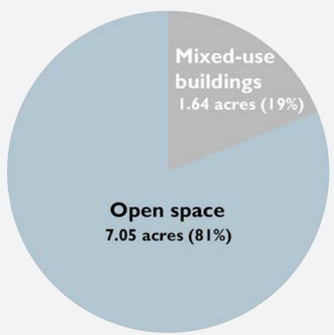
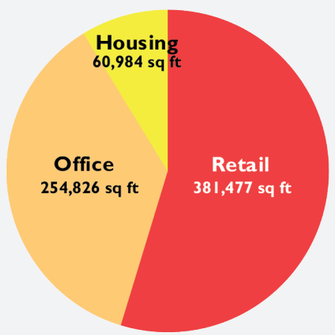


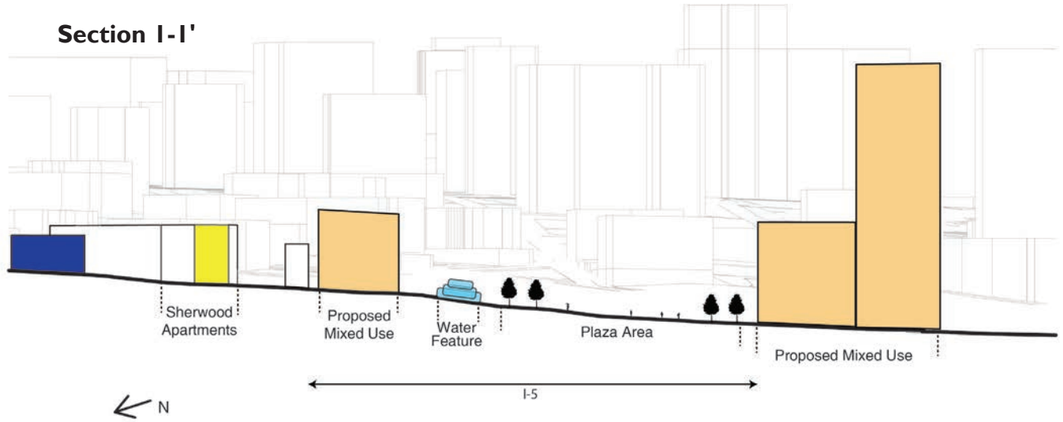
Figure 60 - Axonometric depiction of the Stay lid area design.

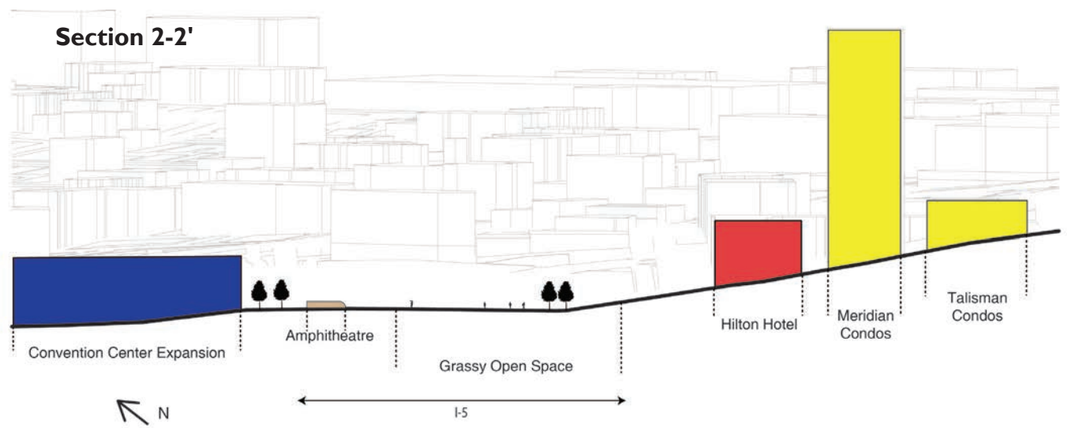
Developable Area:
8.69 acres



Gross Floor Area:
697,287 sq ft







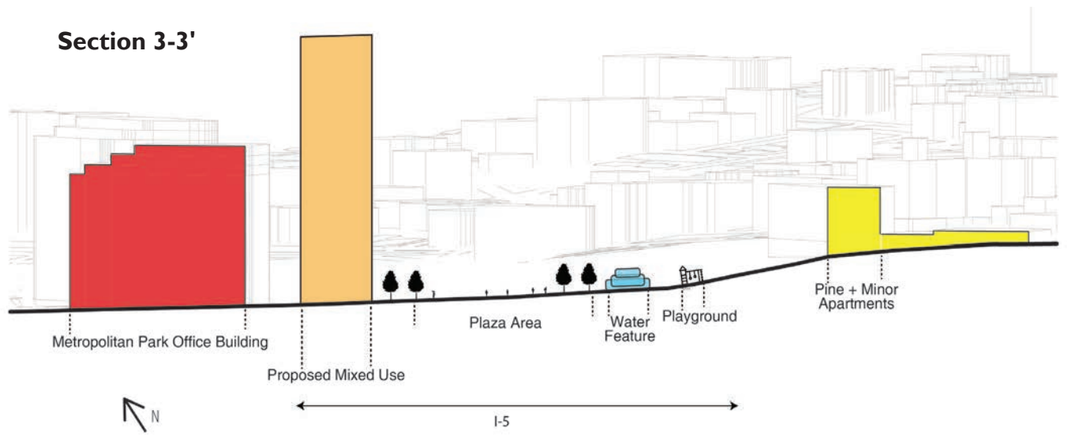


Figure 61 - Section cuts for the Stay lid area design.

Move

North end of lid between Denny and Olive Way

Pleasurable and efficient movement of pedestrians and bicyclists connecting Capitol Hill's bustling residential and commercial neighborhood with Downtown Seattle's job center, including opportunities to linger for stunning mountain views, enticing new retail, or recreation.

Connected

- Pedestrians and people riding bicycles can enter through **two main gateways** - Olive Way or the Melrose Avenue Promenade - each connected to **well-defined paths** enabling efficient and pleasurable movement through the space.
- **Well-defined, paved paths** snake through the green space and connect pedestrians to side streets and new development, enhancing East-West connections.

Activated

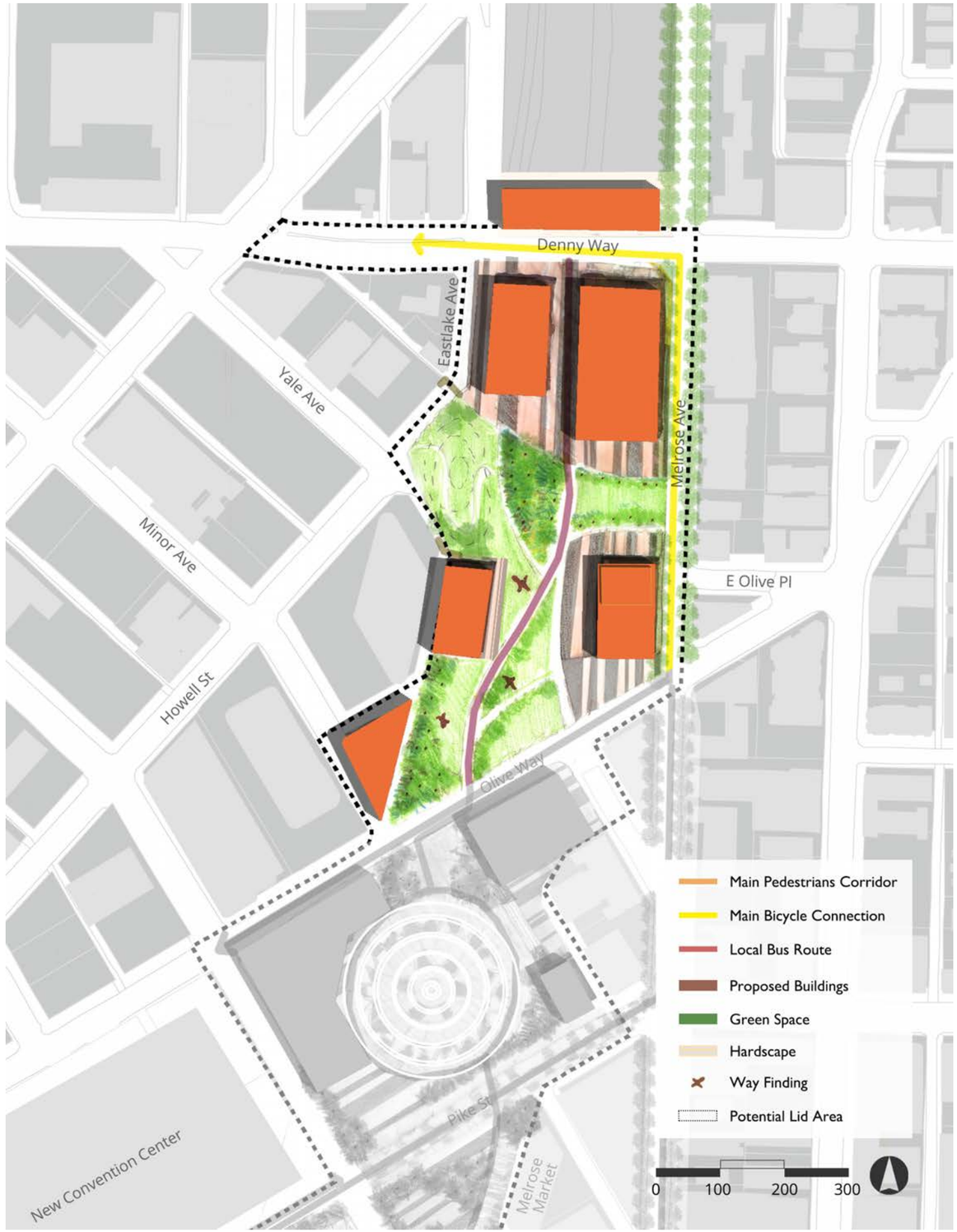
- All the paths are lined with **lighting**
- All new developments on the North section have **ground floor retail** that will draw users to the site.
- A **small hill** invites users to sit, enjoy the view, and people-watch.

Programmed

- A large **public plaza** along the southeast edge can host informal gatherings and provide a space for programming as well as temporary design structures.

Public

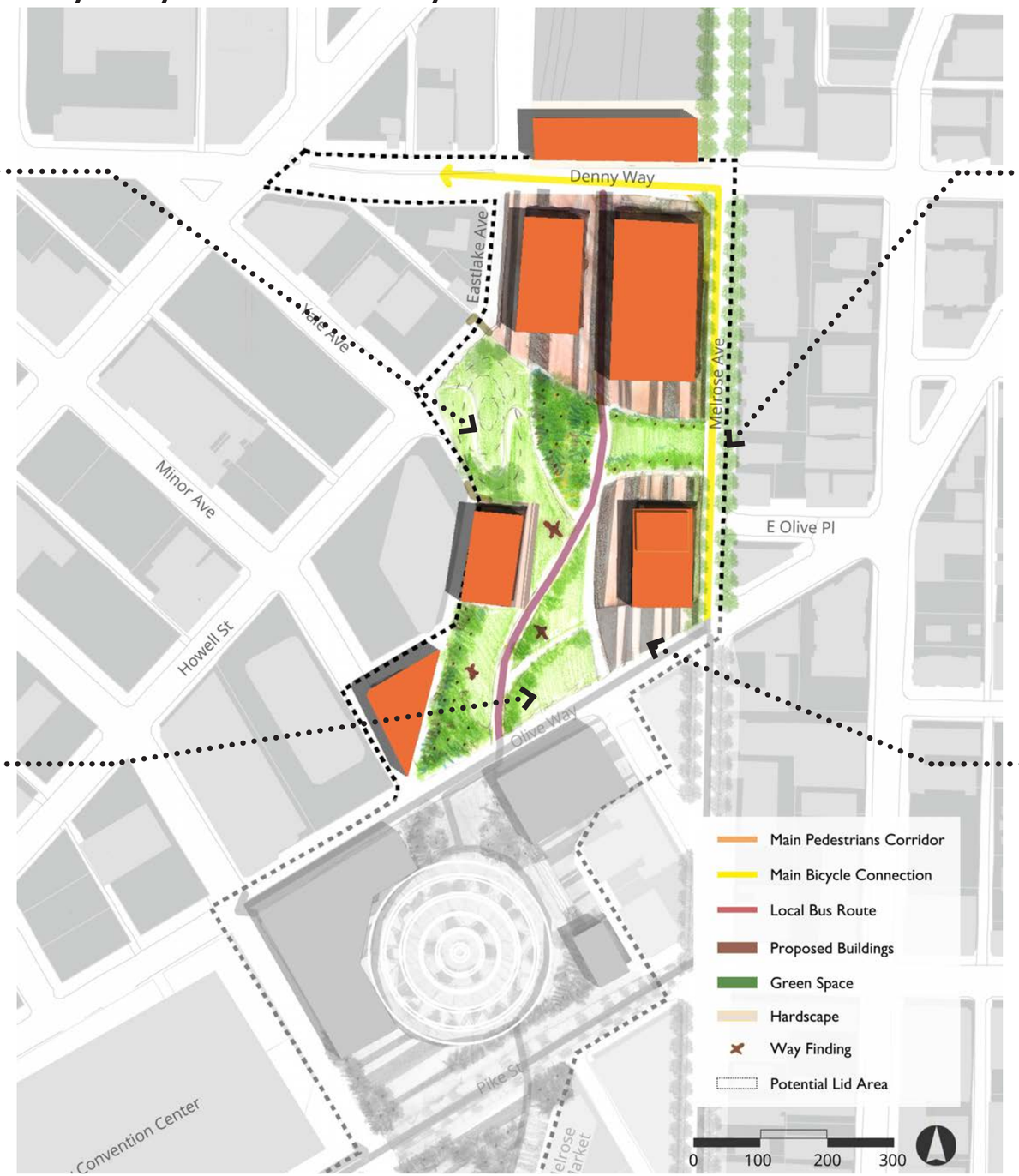
- **Seating** along the paths, informal seating options on the plaza.
- **Sculptures** and **public art** features serve as memorable landmarks
- Users can access the park at any point along Olive, as well a keeping the park feeling **open and permeable**.
- **Lighting** along pathways and new adjacent retail enables a sense of security.



Move

North end of lid between Denny Way and Olive Way

A **small hill with winding paths**, as seen in Gas Works Park above, invites users to sit, enjoy the view, and people-watch.



Source: Melrose Promenade Facebook Page GGLO

Pedestrians and people riding bicycles can enter through **two main gateways** - Olive Way or the Melrose Avenue Promenade (pictured above) - each connected to **well-defined paths** enabling efficient and pleasurable movement through the space.

As seen here in Cal Anderson Park, all the paths are lined with **lighting**.
Well-defined, paved paths snake through the green space and connect pedestrians to side streets and new development, enhancing East-West connections.

Source: Discover SLU

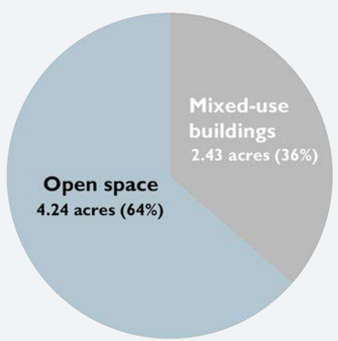
All new developments on the North section have **ground floor retail** that will draw users to the site. **Seating** along the paths, informal seating options on the plaza. Van Vorst Plaza has a variety of seating options and is activated by ground floor retail.

Move

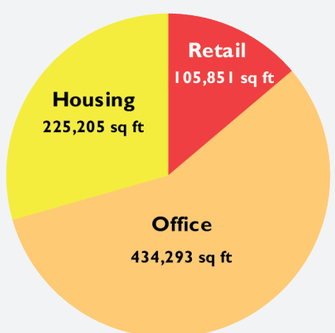
North end of lid between Denny Way and Olive Way

Figure 62 - Axonometric depiction of the Move lid area design.

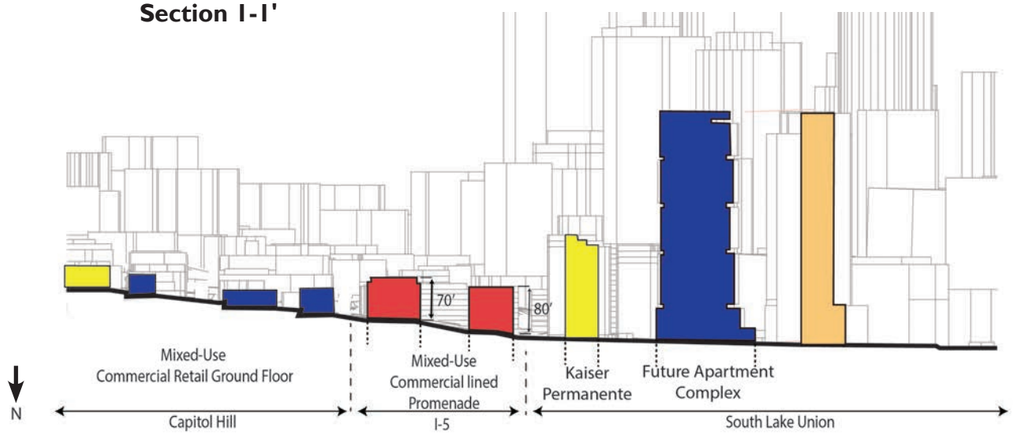
Developable Area:
6.67 acres



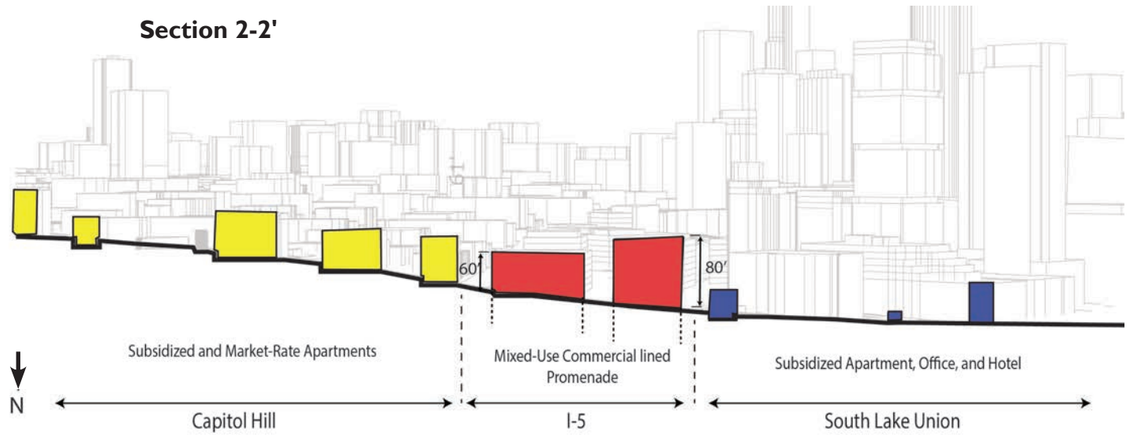
Gross Floor Area:
765,349 sq ft



Section 1-1'



Section 2-2'



Section 3-3'

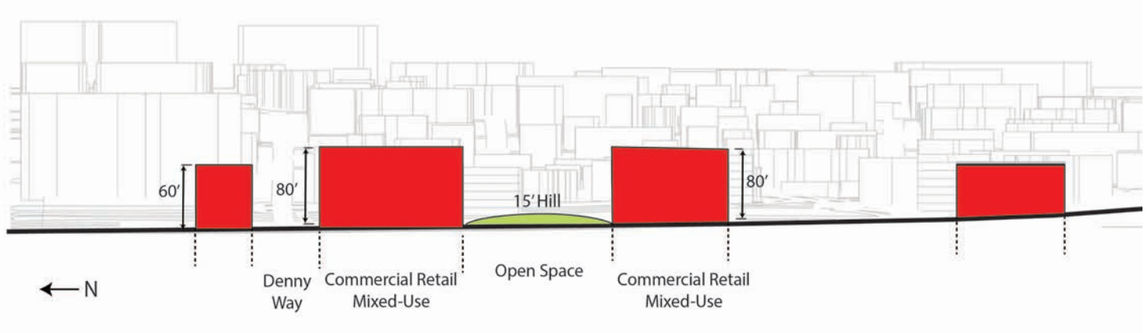


Figure 63 - Section cuts for the Move lid area design.

Play

South end of lid between Pike and Madison Streets

Recreational opportunities bring together Downtown and First Hill's working and residential populace around a network of play fields and a Community Center. Freeway Park integrates into new neighboring privately-owned public plazas activated by area office workers and is reimagined as a feature of North-South connection with expanded pedestrian and bike access to other parts of the lid.

Connected

- A network of **curved pathways** that facilitate pleasurable, convenient, and safe movement of pedestrians and bicycles North-South, as well over East-West ped/bike only bridges.
- Major **entrances** and **outlets** aligned with **public transportation corridors** (University Street Link Station and bus routes as well as East-West over new street at Spring and Seneca Streets) and routes to other area parks (Waterfront Park)
- Enhanced **wayfinding** in the north to better facilitate movement through the existing Freeway Park **pedestrian bridge**, linking south with new central lid.

Activated

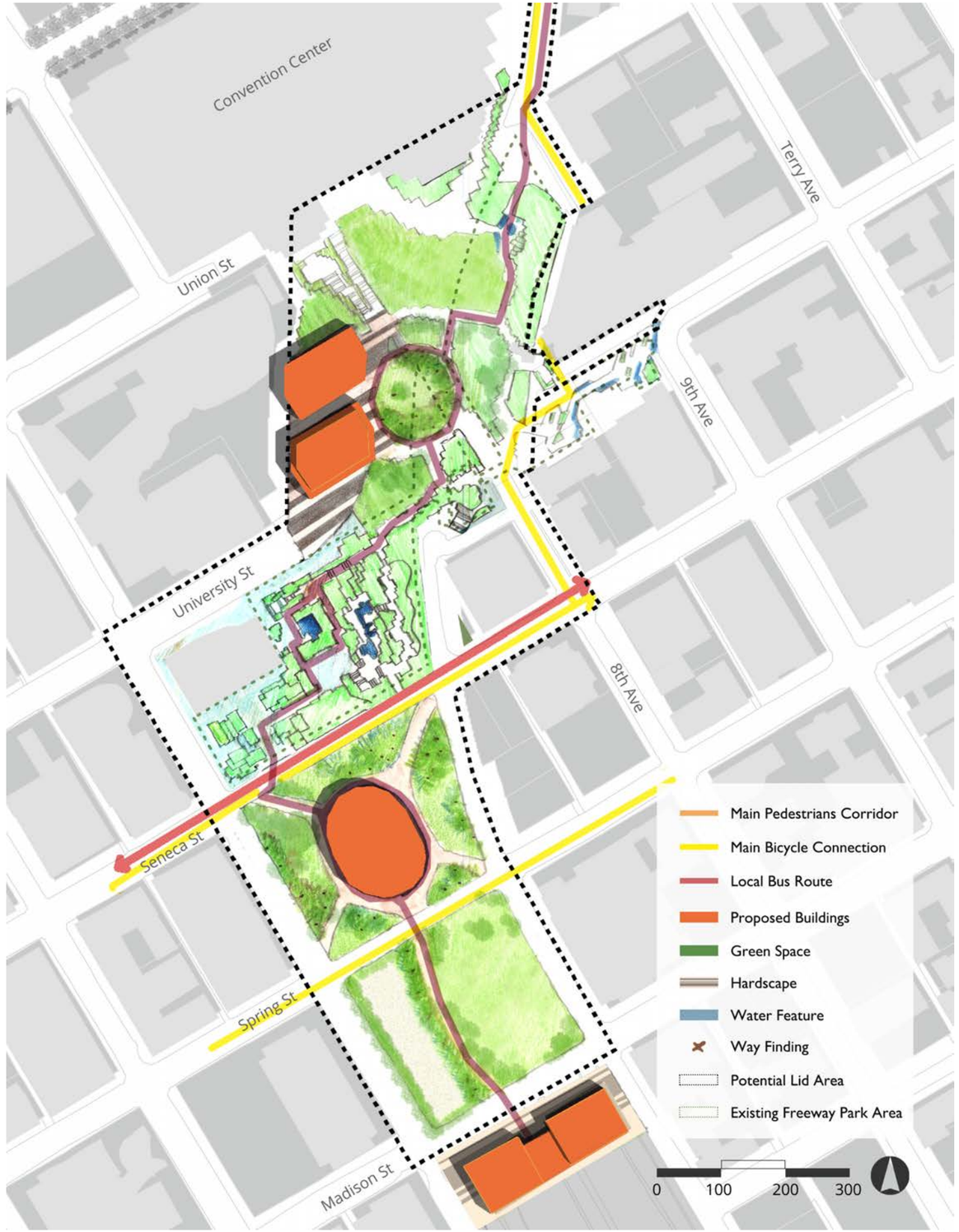
- **Community and recreation center** surrounded by smaller park features for multigenerational users, including a kids **playground**, tables with chess sets, gardens, and Bocce courts.
- Variety of **sports fields** with striping to accommodate different uses and users, including: softball/kickball field (inward-facing), rugby/small turf sport field, basketball courts, and volleyball court.
- **Ground-floor retail** at either end of the lid to bring patrons' 24/7 activity to the lid.

Programmed

- **Multipurpose lawn** can accommodate larger crowds/events, such as outdoor movies.
- **Community and recreation center** enables physical place to play host to programming targeted to the area's residential, working, and visiting populations, which may include childcare, before/after school programs, lifelong recreation, office retreat/team building, etc.
- **Food truck parking** on the lid's permeable western edge draws office workers out for lunch and into the space.

Public

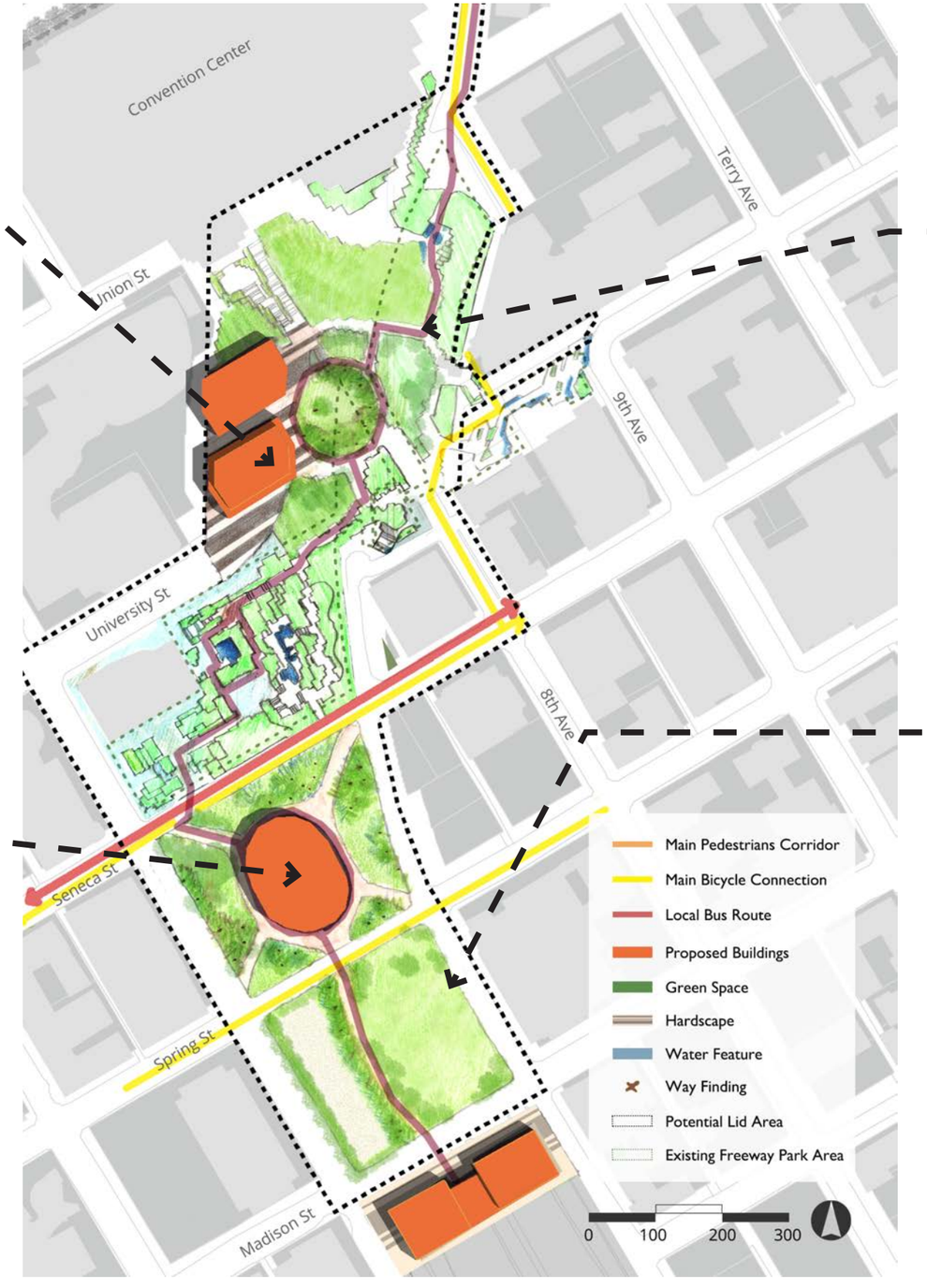
- Community and recreation center is built to incorporate **universal design principles** and activities/programming and surrounding physical design features cater to multigenerational users.
- Artistic landmarks framing the clear sightlines of the eternity of the south lid incorporate references to cultural heritage of the area's users.

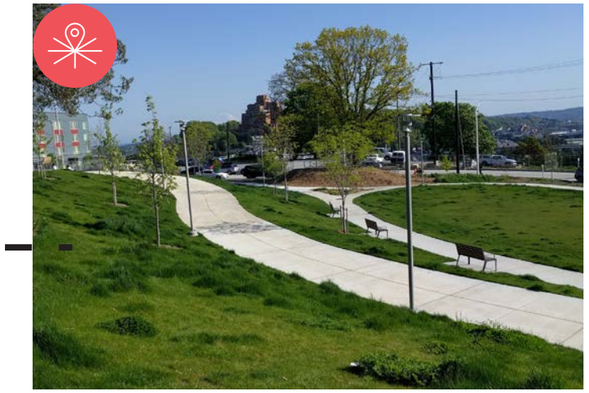


Play

South end of lid between Pike and Madison Streets

Ground-floor retail at either end of the lid to bring patrons' 24/7 activity to the lid.





A network of **curved pathways**, as shown above in Yesler Terrace Park, that facilitate pleasurable, convenient, and safe movement of pedestrians and bicycles North-South, as well over East-West ped/bike only bridges.

Community and recreation center, as seen above at Yesler Terrace Park, enables physical space host to programming targeted to the area's residential, working, and visiting populations, which may include childcare, before/after school programs, lifelong recreation, office retreat/team building, etc.

Variety of **sports fields** with striping to accommodate different uses and users, including: softball/kickball field (inward-facing), rugby/small turf sport field, basketball courts, and volleyball court. Pictured above is a small turf soccer field being used by children in Yesler Terrace Park.

Play

South end of lid between Pike and Madison Streets

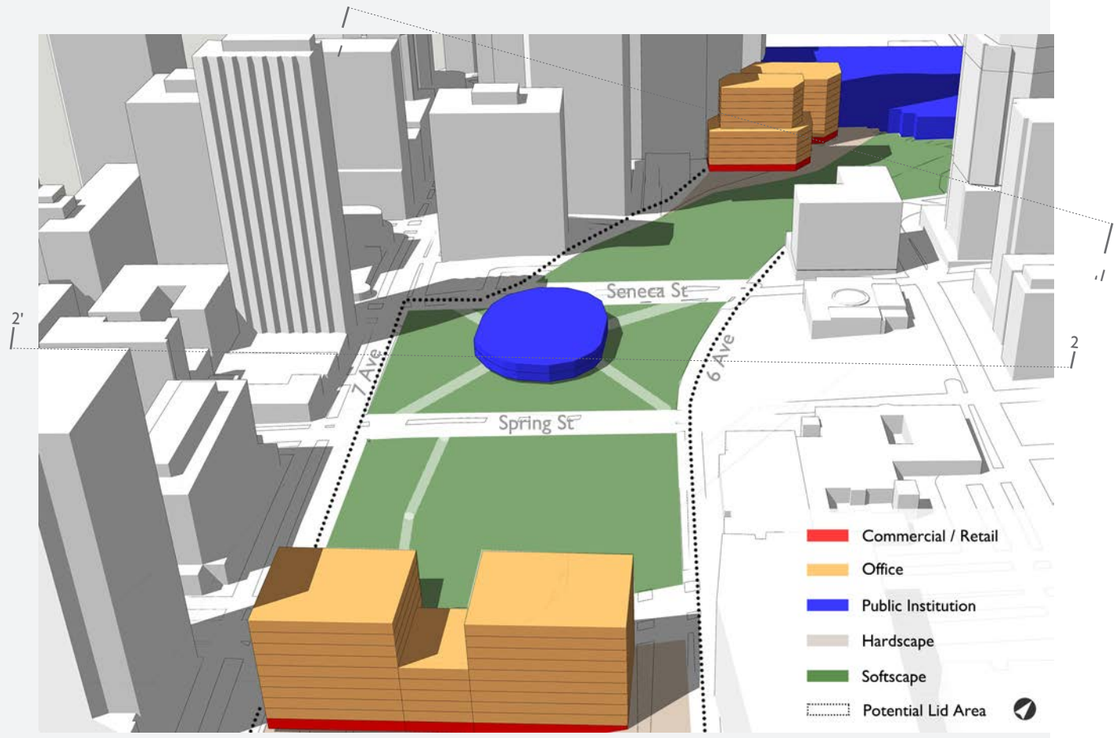
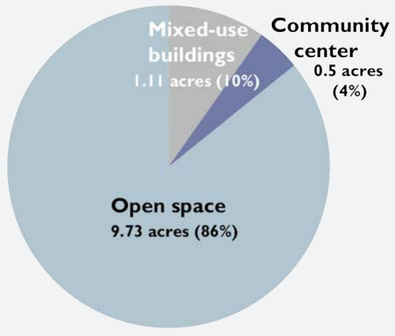
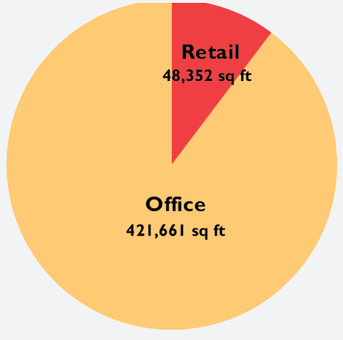


Figure 64 - Axonometric depiction of the Play lid area design.

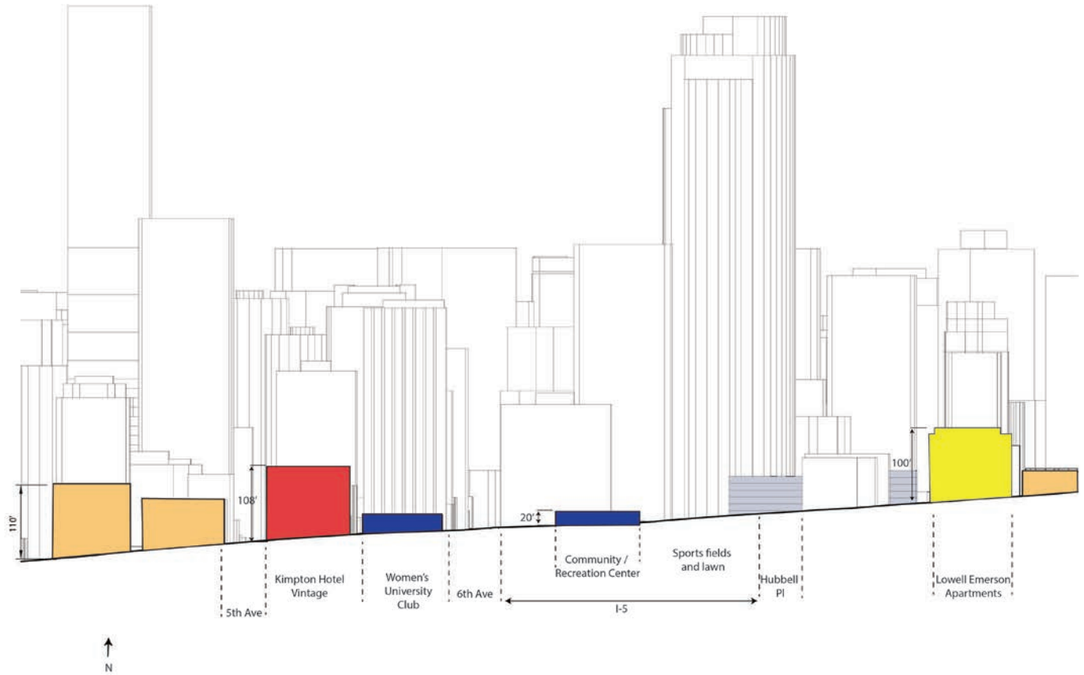
Developable Area:
11.34 acres



Gross Floor Area:
470,013 sq ft



Section 1-1'



Section 2-2'

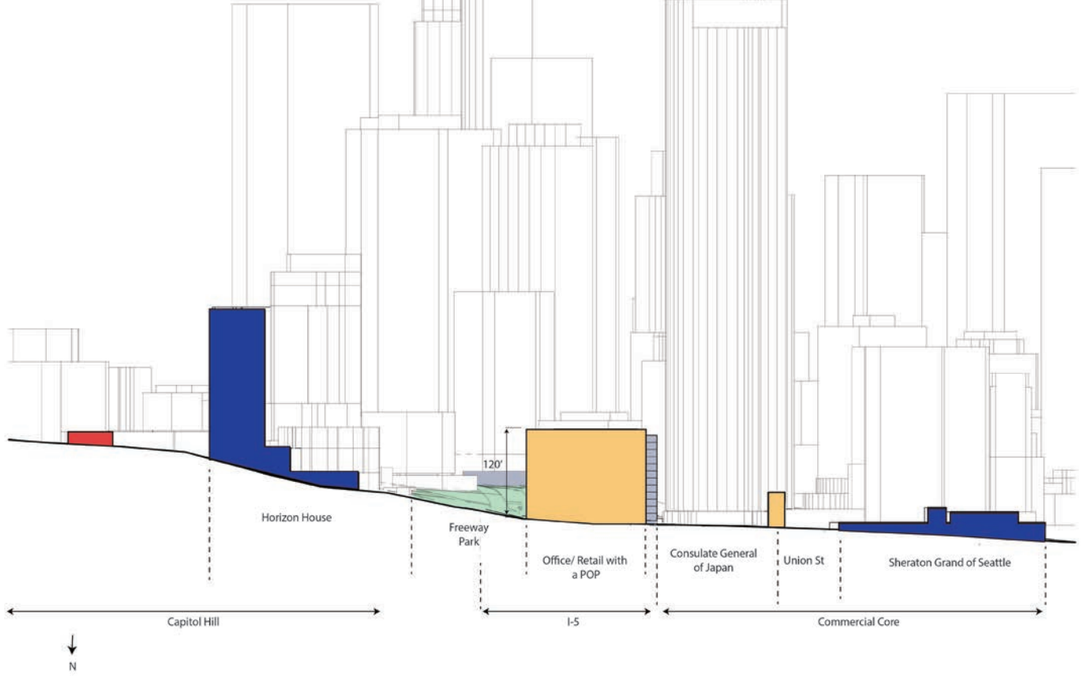


Figure 65 - Section cuts for the Play lid area design.

DELIVERING THE VISION

Funding the Lid

The I-5 lid cannot become a reality without a funding strategy. This section presents our estimated project costs and proposes funding mechanisms, considers two alternative scenarios with a higher private component to reduce public costs, and explores the various funding sources for both capital and operating in more depth.

Our recommended model is a Public Private Partnership with the City of Seattle as the project developer. This means that the City will develop the entire 17.9-acre lid and surrounding land, and then sell or lease some of that area to the private sector for development of retail, offices, and housing.

Including the private sector in this project accomplishes several goals:

- It reduces the needed public investment.
- It will stimulate economic activity in the area.
- It will create new tax base, helping fund the operating and maintenance of the new public space and providing additional revenue to the rest of the city and county.
- It will help activate the public space component of the project. Including private development on the site area is not just about financial considerations; retail adjacent to the new park will draw users to the area all day long and keep eyes on the street to improve safety.

Key Financial Findings

Lid construction cost: **$30 million / acre**
Land value in study area: **$26.8 million / acre**
Annual operating cost of downtown parks: **$114,000 / acre**

"Will the public be subsidizing private development?"

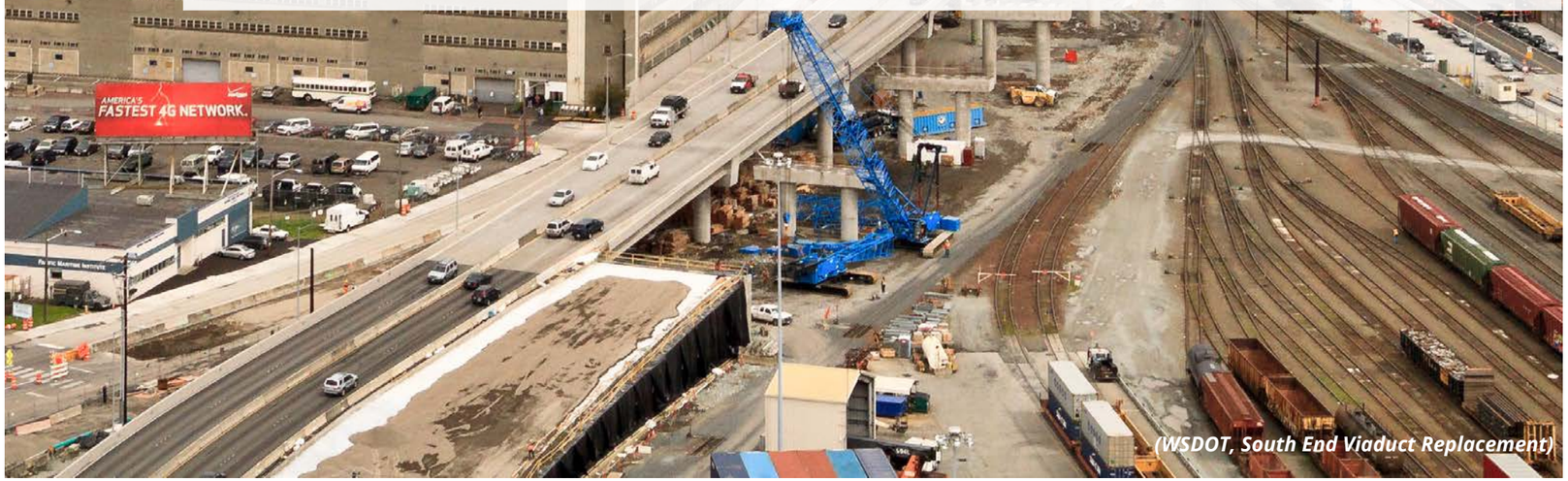
There is a $3.2 million deficit per acre of the lid sold to the private sector. This could be framed as a subsidy however; covering I-5 and reconnecting the city advances the public good, regardless of what is on top of the lid. While the City could build a smaller, 100% public lid for less money than a larger lid that includes private development, it would result in less of I-5 being lidded. The public also benefits from the activation provided by ground floor retail, and through increased property tax revenue to the City.

Capital Costs

Our proposed lid covers approximately 17.9 acres of I-5, with an estimated cost of $538 million. The total site area is nearly 27 acres, which includes the current Freeway Park and some land on either side of I-5. Our recommended design includes 5.9 acres of land to be sold to the private sector, generating $158 million, nearly one third of the total cost. The $381 million deficit will be paid by a combination of public dollars and private philanthropy.

We recommend a fairly even split between philanthropy, a Local Improvement District (LID), and a general obligation bond, or $120 to $140 million each to fund the remainder of the lid construction. These numbers are all in line with other precedent projects in Seattle. The Waterfront project, which is of similar scale and impact received $110 million in philanthropy[70] , and a $160 million LID was approved earlier this year.[71] The $73 million 2008 Pike Place Market levy and the $290 million 2012 Seawall levy both represent citywide levies approved for a single downtown project.[72]

Figure 66 - Capital cost breakdown for the proposed lid design.



(WSDOT, South End Viaduct Replacement)

Operating Costs

Beyond the initial investment in constructing the I-5 lid, we must also consider the continued costs to maintain the added park space. Downtown parks take the most money to maintain of all types of city parks, largely due to extensive cleaning requirements and other factors related to the large volume of visitors they receive. We expect the I-5 lid to be heavily-trafficked and we therefore use the $114,000 per acre figure from Seattle's 2014 Parks Legacy Plan for annual maintenance.

Our proposal includes 13.6 acres of new park space, at a total annual maintenance cost of $1.55 million. Approximately $328,000, or one fifth of the total can come from new property tax revenue from the private development on the site. While total new property taxes will be much higher - around $7.05 million annually - only a small portion goes towards parks. We encourage the City to seek partnerships for a significant portion of the remaining maintenance costs, a common practice for parks in Seattle.
The Downtown Seattle Association spends roughly $20,000 per acre on downtown parks each year, and a "Friends of the Lid" group could bring in roughly $10,000 per acre based on other "Friends of" groups in Seattle. Additionally, we think there is potential for the four major league sports teams (Sounders FC, Seahawks, Mariners, and future NHL team) to partner to fund the maintenance of the southernmost block of the lid that has public sports fields. The remaining $644,000 per year could come from the Seattle Park District, a permanent taxing authority for Seattle parks.

Figure 67 - Operating cost breakdown for the proposed lid design.

(Photo by Seattle Parks, 2017)

Alternative Financial Scenarios

In addition to our recommended proposal, we developed financial models for two alternative scenarios in which a greater portion of the lid is sold to the private sector, and therefore present a lower cost to the public.

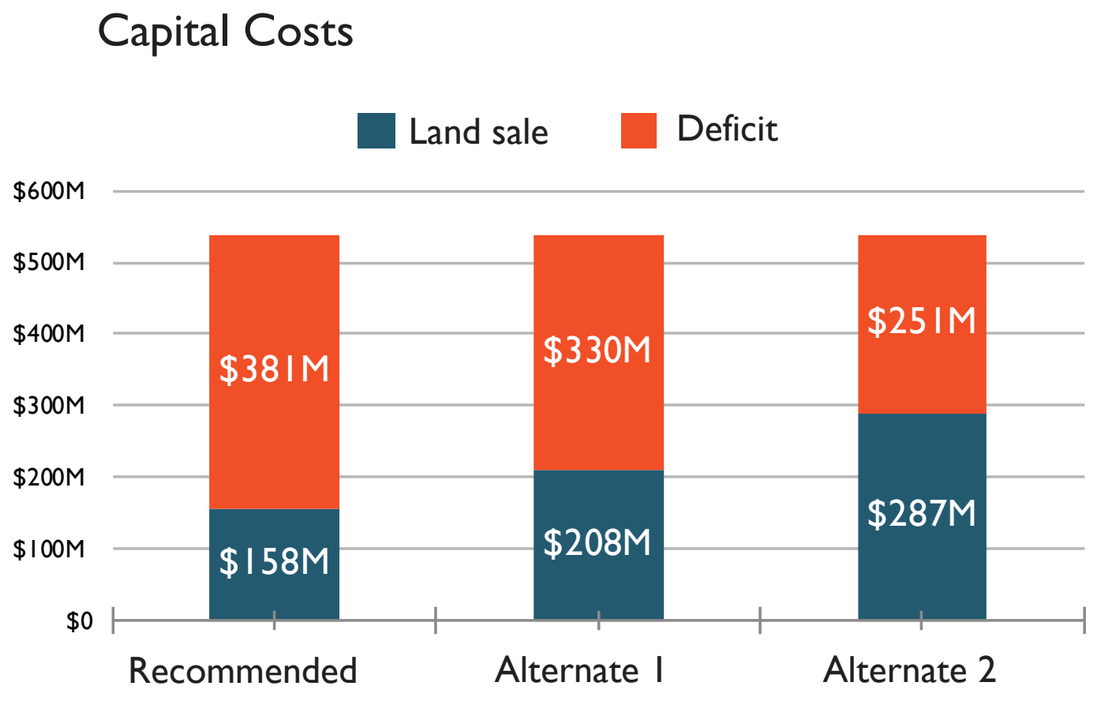
The trade-offs are fairly straightforward:

- Total capital costs for the lid will be roughly similar regardless of how much of the lid is sold, though more of that cost will be borne by private investors as private development increases.

- Required operating costs will decrease as more of the lid is sold to the private sector, while new property tax revenue will increase at the same time. This is because as the private portion of the lid increases, the remaining (public) area that needs maintenance decreases.

Our first alternative scenario involves moderately increasing development across all three sections of the lid. The second alternative keeps this increase in the south ('Play') and central ('Stay') portions, but involves selling all public space in the north ('Move') section to the private sector.

The first alternative would reduce the remaining capital expenditures after sale of land to $330 million, and the remaining operating expenses to $905,000 annually after accounting for the new property tax revenue. Private development would pay for more than half of the capital costs in the second alternative, leaving only a $251 million deficit, and new property tax revenue would also cover more than half of the maintenance costs, leaving $473,000 for other sources.



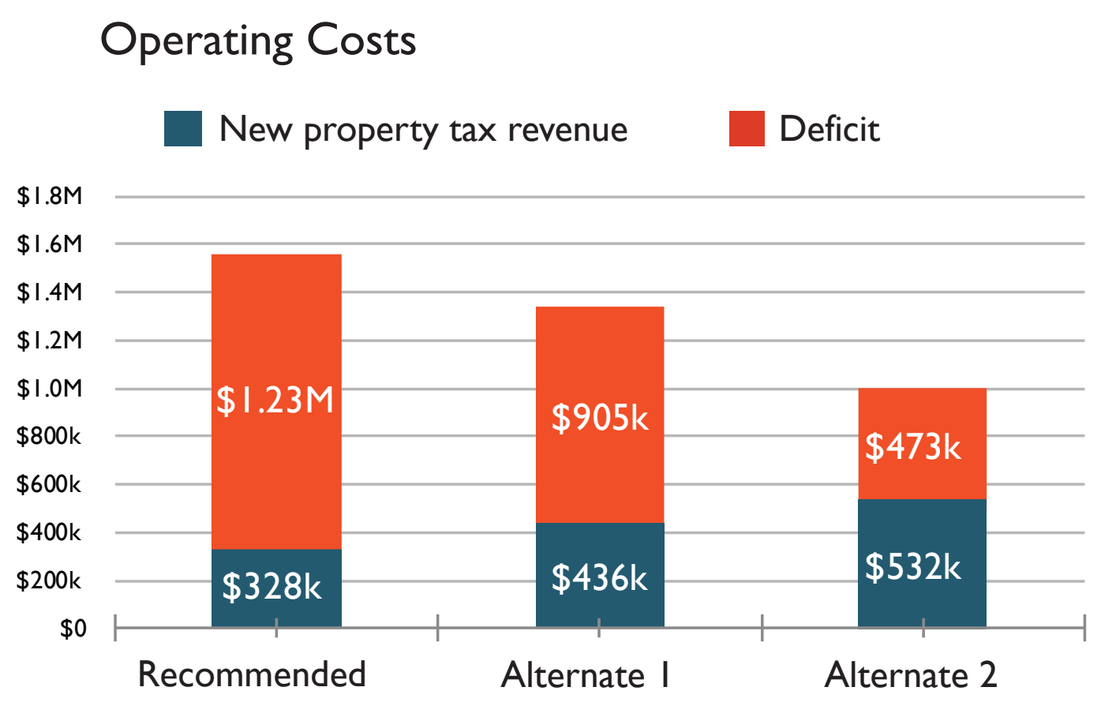


Figure 68 - Alternative scenarios: Financial breakdown.

Local Funding Sources

Local capital funding from the City of Seattle will likely come from a bond, which can be paid off in a variety of ways such as a citywide property tax levy to fund a general obligation bond or with a Local Improvement District. The City of Seattle has the highest bond rating from all three bond ratings agencies, giving access to very low interest bonds, sometimes even lower rates than the local rate of inflation.[73]

General Obligation Bonds:
There are two types of general obligation bonds that could be used to fund the I-5 lid: unlimited tax general obligation (UTGO) bonds and limited tax general obligation (LTGO) bonds.

UTGO bonds must secure at least 60% support in a vote of the people, and they can raise the total property tax levy by more than the otherwise allowed maximum of 1% per year. LTGO bonds can be issued without a vote, but cannot raise property taxes to pay off the bonds.
Both types of bonds have limits on total outstanding debt, though Seattle is currently well below these limits. The City has $292 million in outstanding UTGO bonds and a $12.9 billion limit, and $762 million in outstanding LTGO bonds with a $3.2 billion limit.[74]

A UTGO bond would be able to provide more funding, since it can raise taxes. Although the City is well below its LTGO limit, current revenue and expenses are roughly equal making it difficult to pay for any major LTGO bonds. The City is only issuing $53.2 million total in LTGO bonds in 2019 across 12 bonds, most under $5 million.[75] Property tax levies have historically found support in Seattle, though some worry that voters are feeling "tax fatigue".[7677] Property owners are currently still paying for several recent levies including the 7-year $600 million Families, Education, Preschool and Promise levy passed in 2018, the 2016 7-year $290 million Housing levy, the 2015 9-year $930 million Levy to Move Seattle, and the 2012 30-year $290 million Seawall levy, which is being used to pay off bonds. Limiting the voter-approved bond and levy portion of the funding to $136 million, significantly lower than these other recently approved measures, increases the chance of voter support.

The Seawall Project was funded through a $290M bond measure that passed with 77% voter approval (Top photo by Rhoades Clark; Bottom by SDOT, 2016).

Local Funding Sources

Local Improvement District

Forming a Local Improvement District (LID) presents another good opportunity to secure capital funding for the lid project. An LID also results in the sale of bonds, in this case paid for by properties that stand to gain value from the project in question.

The expected rise in property values due to the project, called the "special benefit", is assessed for all properties in the LID boundaries, and a uniform percentage of this special benefit is collected from all properties as a one-time fee. Property owners also have the option to pay this fee over 20 years. LIDs can be formed in two ways: one involves more than 50% of property owners signing a petition to form the LID, and the other requires a protest percentage, or the percentage of assessed value represented by property owners who submit formal protests, of less than 60% after City Council proposes forming the LID.

LIDs are in many ways a more equitable funding source than citywide bonds, since they raise money from the property owners who stand to benefit the most from a public investment. Within the district, they also raise money proportionally to the expected impact, since the assessment is a uniform percentage of the special benefit, not the total property value. Thus, a property right next to the future lid park would likely pay much more than one at the edge of the district, since its value would increase much more.

An LID was approved earlier this year for the Waterfront project, providing $160 million in funding. This shows that there is potential for LIDs in Seattle, however, as with new levies, some property owners may be hesitant about increased taxes. In particular, the Waterfront LID extends all the way east to I-5, meaning that many properties in an LID for the I-5 lid would have also been in the Waterfront LID, and would likely still be paying that assessment with the 20-year payment option. Limiting the value of the LID to $125 million, and carefully communicating the fact that the expected benefit from the I-5 lid is directly proportional to and greater than the LID assessment should increase the likelihood of support from property owners.

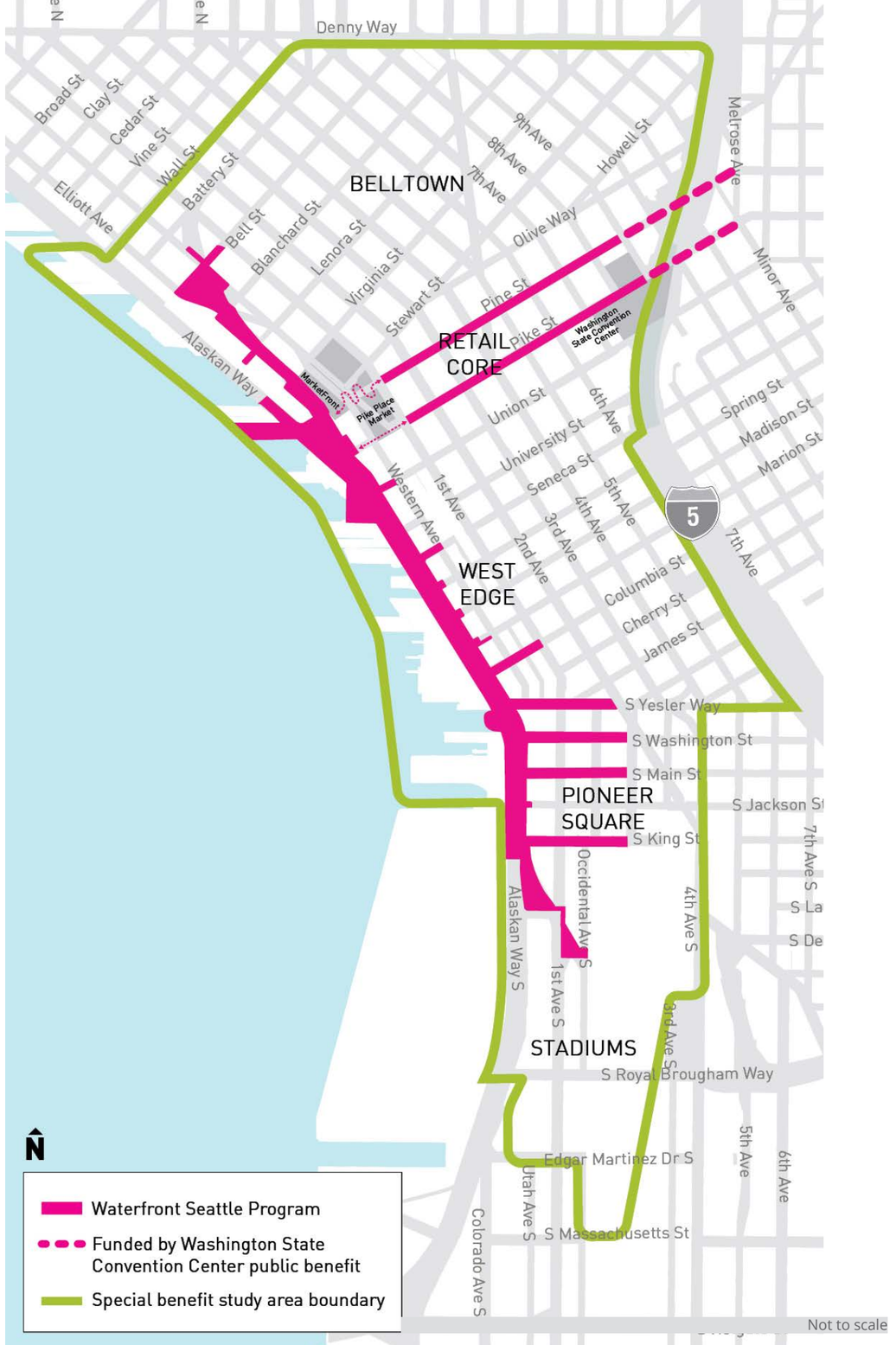


Figure 69 - Waterfront Seattle project site and it's respective LID area. (Source: Watterfront Seattle)

Other Capital Funding

Public Funding

Outside of the City of Seattle, capital funding could come from the State (through WSDOT) or from federal sources. State and federal money has been used for several other lid projects around the country, including in Washington for the planned Montlake and Roanoke lids as part of the Highway 520 rebuild. The Central 70 project in Denver is almost 90% funded by the Colorado Department of Transportation, and Atlanta's proposed 'The Stitch' project will likely receive federal money.

However, lid projects receiving state or federal funds typically get those funds by being bundled with major highway work or other projects. The Denver project is mainly a rebuild of I-70 with a smaller lid component, as with the Highway 520 project here in Seattle. Atlanta's project is likely to receive funding from the Department of Housing and Urban Development to support affordable housing construction. It is rarer to see significant state or federal support for projects that only involve lid construction.

We certainly recommend seeking state and federal support for the I-5 lid, though our recommended funding plan does not include these sources to show how the project could be feasible even without state or federal money. There may also be an opportunity to link the project with a highway rebuild, based on the draft Call to Action report released in April by the I-5 System Partnership, a group of stakeholders including municipalities, transit agencies, business associations, and others along the I-5 corridor from Tumwater to Marysville. The report details the poor condition of I-5 and the urgent need to make a change.

Regardless of potentially linking the I-5 lid project to highway work, our models already make an assumption about support from WSDOT. Since the air rights above I-5 are owned by WSDOT, the City of Seattle would need to acquire them in order to build the lid. We assume state support in the form of a free transfer of those air rights to the City.

Private Funding

Many lid projects also receive private funding for capital construction. This can be divided into private investment - where money is raised from private developers building on the site - and philanthropy.

In terms of private investment, our proposal includes nearly 2 million gross square feet of retail, office, and housing on 5.9 acres of land. The sale of this land should generate $158 million, using an average land cost of $26.8 million per acre based on properties in the 5-minute walkshed.

Philanthropy also makes up an important component of our recommended funding strategy. There is precedent for this in other lid projects, such as Klyde Warren Park which received approximately $50 million of its $110 million total construction cost from philanthropy. There is also precedent for successful fundraising for public projects in Seattle, with philanthropy making up $110 million of the $724 million Waterfront project. There is potential for corporate philanthropy, with many successful technology companies located just northwest of the lid site in South Lake Union, though these types of projects tend to be funded by individual giving. Klyde Warren Park, for example, was named after the son of billionaire Kelcy Warren, who got naming rights for an estimated $10 million. With 13 billionaires in Washington State, and more than 1,600 people with a net worth of more than $30 million in the Seattle area, a fundraising goal of $120 million, similar to that of the Waterfront project, could be feasible.

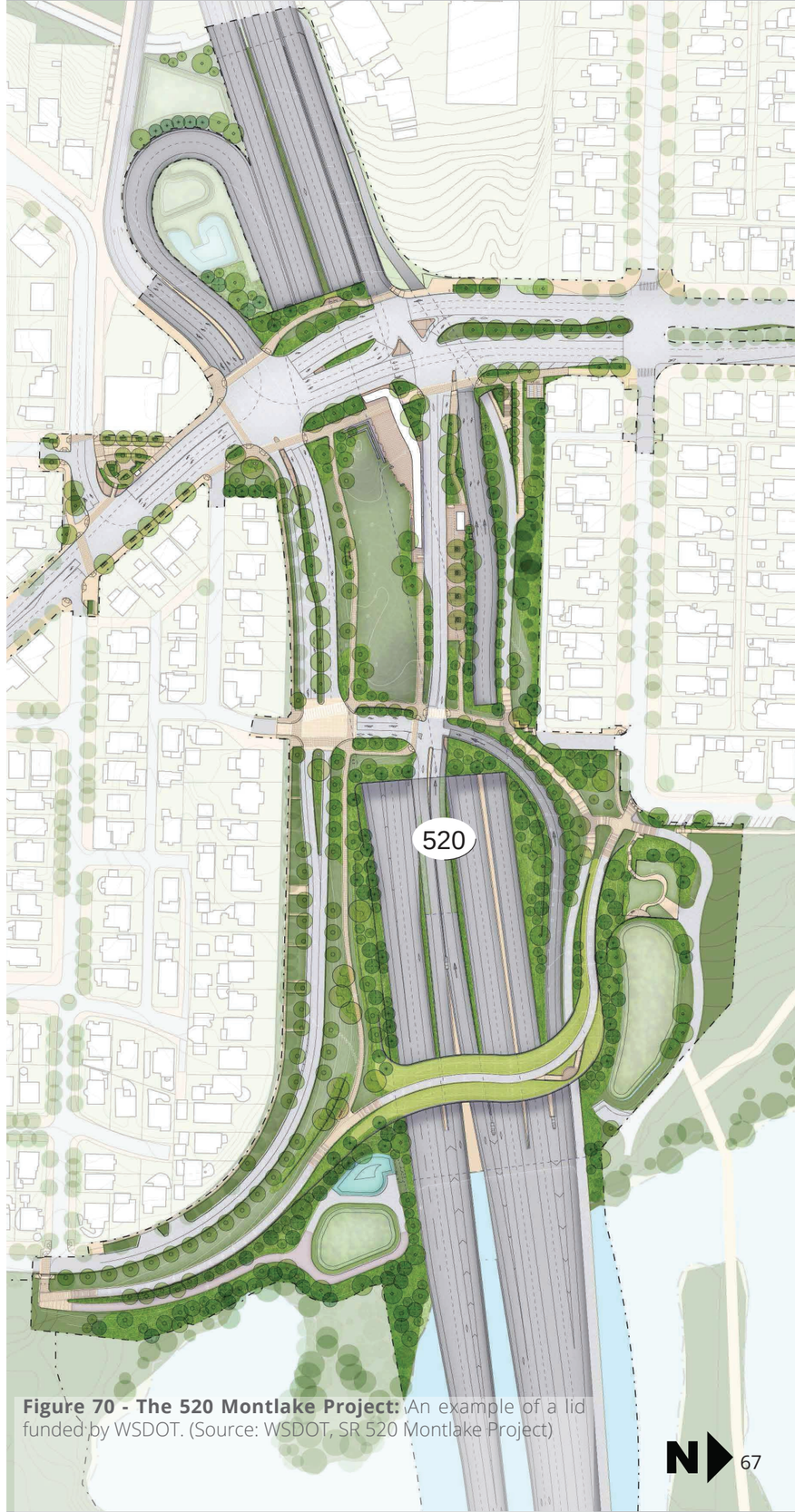


Figure 70 - The 520 Montlake Project: An example of a lid funded by WSDOT. (Source: WSDOT, SR 520 Montlake Project)

Operating Funding Sources

Sources for operating funding differ significantly from those for capital funding. The dollar amounts needed are much lower - estimated maintenance costs for our proposed park are $1.55 million per year - but the funding must be recurring. This makes public debt an unsuitable funding source, along with state or federal grants and the sale of property.
Instead, funding for maintenance of the newly created public space comes from a combination of tax dollars and partnerships. Funding from taxes can be divided into new tax revenue generated by the development on the lid along with general citywide park funding.

Seattle has a permanent funding source for parks through the Seattle Park District, a taxing authority that currently levies a property tax of around 21 cents per $1,000 of assessed value. In addition, about $100 million of the City's $1.3 billion annual general fund expenditures, funded from the City's portion of the total property tax, are spent on parks.[78]
Using the previously mentioned average land cost of $26.8 million per acre in the study area, and an average building value of $359 per gross square foot based on values of 18 properties constructed in the study area since 2010, these current levy rates mean the proposed private development in the project area will generate 24 cents per square foot of land and 14 cents per gross building square foot in tax revenue for parks. Altogether, this contributes $328,000 annually in our recommended scenario.

We suggest funding a significant portion of the remaining costs through partnerships with three organizations - the Downtown Seattle Association, which already helps operate parks downtown, a "Friends of the Lid" type organization, similar to other "Friends of" groups that currently raise money for and help fund operation and maintenance of other city parks, and a partnership with the four major league sports teams to fund maintenance of the block of the lid between Madison and Spring Streets. Partnerships are discussed in more detail on the following page.
The remaining funding ($644,000 annually) comes from citywide Seattle Park District revenue. The Seattle Park District currently collects just over $50 million annually and is used for both operating and capital expenses. The remaining funding could come within this amount, depending on future operating and capital needs, or annual revenue could be expanded, as Seattle Park District taxing authority allows an assessment of up to 75 cents per $1,000 of assessed value.[79]

Source: Friends of Waterford Park

Operations and Maintenance

Averaging $114,000 per acre to maintain and operate annually, Seattle's downtown parks represent a substantial share of the City's overall Parks and Recreation budget. Of this amount, over 50% is allocated toward trash removal alone, while trails and hard surfaces (23%), landscaped vegetation (12%), and turf maintenance (7%) comprise other priority maintenance activities. Playgrounds, natural areas, comfort stations, and picnic infrastructure make up the remainder of the annual operating budget at a combined 8%.[80] At 13.6 acres, the public open space proposed in this study will require approximately $1.55 million annually to operate and maintain.

The Downtown Seattle Association (DSA) is a critical partner in the maintenance and operations of the city's downtown parks. With a budget of over $40 million, the DSA provides a wide range of services including trash removal, public health and safety oversight, and concierge services. Funding comes from membership fees, private donations and otherwise draws primarily from the Metropolitan Improvement District (MID), representing a geographic area which also includes the proposed lid area. In 2016 there were over 1,200 MID rate-payers comprising area business owners and residents, generating $9.85 million in total assessments .[81]

Local community groups, non-profit organizations, and tens of thousands of dedicated individuals are vital to the success of Seattle's parks and public open spaces and can help to offset these costs. In 2018, Seattle ranked eighth in the nation in for volunteerism, where the estimated dollar value equivalent for the range of services provided is currently at $28.99 per volunteer hour and rising steadily. Approximately 32% of the Seattle population engages in volunteer activities, contributing to 122 million hours of service and nearly $1.7 billion annually.[82]

Volunteers are relied upon heavily to supplement the City's maintenance and operations efforts in downtown parks. Initiated in 2017, the Park Inspection Program trains participants who regularly monitor downtown parks, reporting critical information to City staff regarding the safety and overall park conditions .[83] Seattle Public Utilities oversees an Adopt-a-Street program where volunteers help clean up graffiti.[84]

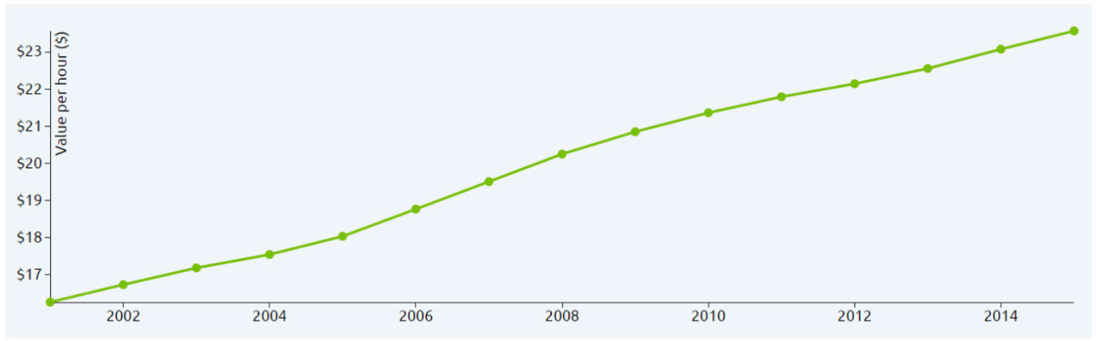


Figure 71 - Average Value of a Volunteer Hour 2001-2015.
Source: Corporation for National and Community Service

Litter removal demands 50% of maintenance resources for downtown parks in Seattle. (Source: Downtown Seattle Association)

Volunteers remove trash and maintain the landscape at Seattle's Washington Park Arboretum (Source: Student conservation Association)

Partnerships: Programming

As with maintenance and operations, the City of Seattle is fortunate to host an impressive number of non-profit organizations and community groups which offer a broad range of public space programming services, often at little-to-no cost to the City. Arts organizations such as 4Culture and Urban Artworks provide both permanent and “pop-up” installations, art classes for all ages, theater and musical performances, and dancing in Seattle parks. Environmental programming connects people with nature, even in the most urbanized settings, through activities hosted by groups like Seattle Audubon and the Seattle Aquarium. These partnerships are critical toward diversifying the services offered within Seattle’s park system and engaging communities throughout the city. In creating a vision for an I-5 lid, it will be important to include the appropriate public space elements that support these activities, such as multi-use open space, hardscaped plazas, natural vegetation, and performance areas. As described in our design guidelines, these elements will enable the public open space on the lid to be connected, activated, programmed, and Public throughout the year.

Source: Freeway Park Association.

Pop-up programming provides versatility within a single park, with opportunities to engage a wide variety of users. In the Summer months, the Freeway Park Association hosts a weekly Book Cart, which brings nearby residents together to share and discuss their favorite books.


Source: Three Dollar Bill Cinema.

In partnership with the Seattle Parks District Recreation for All Initiative, with additional fiscal sponsorship by BECU and Vulcan, Inc., the Movies in the Park series produced by Three Dollar Bill Cinema draws hundreds of visitors to Cal Anderson Park, providing family-friendly night-time activation on summer evenings.


Source: Trust for Public Land.

As part of its mission toward ensuring all city residents live within a 10-minute walk from a park or public open space, the Trust for Public Land’s Parks for People program began installing Fitness Zones in several Seattle Parks in 2015. Designed for teenagers and adults, the exercise equipment provides free, high-quality, fun ways for community members to stay healthy.

Outreach Strategy

"When people are allowed to have input into decisions that affect their lives, they are more committed and empowered to get involved in the hard work of making their community better after the planning process ends"

- Futurewise in partnership with Interim CDA, El Centro De La Raza, and OneAmerica[85]

1. Begin the process as early as possible with iterations through all phases of project or program development.
2. Designate the appropriate amount of time and resources necessary to implement a thorough, high-quality engagement plan.
3. Conduct a stakeholder analysis to establish the following:
   - Who will benefit most from an I-5 lid and in what ways?
   - Who will be most burdened?
4. Refer to site analysis to identify priority businesses, community groups, public institutions, faith organizations, and resident demographics.
5. Establish relationships with leaders of targeted community groups.
6. Provide clarity on the following:
   - What information is being gathered and why?
   - How will opinions and ideas provided by stakeholders be incorporated into final designs?
   - What are the next steps?
7. Assign a small number of planning team liaisons for ongoing engagement with community leaders.
8. Create time and space for leaders to engage their own communities using methods that work best for them; plan ahead regarding how these findings will be captured and disseminated to the planning team.
9. Employ a multi-pronged engagement approach for sharing information and gathering general public input.
10. Make in-person meetings and workshops accessible; reduce barriers to participation by providing food, childcare, and language interpretation as needed.
11. Work with community leaders to learn the best approach for disseminating information to their respective constituents; door-to-door efforts work in some communities but not others.
12. Utilize social media to increase awareness and engagement by enabling stakeholders who are unable/unwilling to attend in-person events to contribute.
13. Overall, transparency is critical to the success of this process. Being upfront about known challenges or constraints is just as important as cultivating an inspiring shared vision for a better, brighter future.

Resources: City of Seattle

Department of Neighborhoods Community Liaisons assist all City departments in engaging marginalized and historically underrepresented community groups by enhancing outreach materials, leading focus groups, conducting surveys, providing language services, and more. As of 2018 there were over 80 liaisons[86]

Department of Neighborhoods Community Engagement Coordinators facilitate connections and collaboration between Seattle residents on a wide range of projects and initiatives. Working with the Central Seattle Community Engagement Coordinator will help community-based I-5 lid planning teams conduct inclusive and equitable outreach work. (City of Seattle 2019 - Community Engagement Coordinators)

The Office of Civil Rights Inclusive Outreach and Public Engagement Guide is offered as part of the City's Race and Social Justice Initiative, and provides a detailed framework for developing inclusive, socially equitable public outreach and engagement strategies.[87]

Community-based Resources

ECOSS - Specializes in outreach to multicultural communities and businesses toward environmentally sustainable and socially equitable program and project planning

Capitol Hill Housing - Collaborates between community members and the City of Seattle to prioritize sustainable development and affordable housing in the Capitol Hill neighborhood

Puget Sound Sage - Centers racial justice and social equity in community-based participatory research that results in policies, programs, and projects toward affordable housing, transit accessibility, environmental sustainability, and community development.

Inclusive Community Engagement in Seattle

CONCLUSION

Next Steps

In summary, our report provided comprehensive analyses of existing conditions within the I-5 feasibility study area and design of public and private open space in Seattle. We derived additional recommendations based on other successful lid projects around the country, and developed financial and implementation considerations for a potential I-5 lid. Based on the findings, we have synthesized the relevant components into a set of explicit design guidelines for successful open space, as well as a model application in the form of a complete Seattle lid design.

A key lesson from the analysis of other freeway lids illustrates that there is no single, universal solution for funding, designing, and programming such a project. Instead, a successful lid is dependent upon clearly established leadership which can leverage both private and public resources while garnering substantial community support. Public input must be sought and considered through each phase of the planning process to ensure that an I-5 lid truly meets Seattle's needs. Our project provides a suite of recommendations based on the findings of our analysis. While our vision will not be the last, the design guidelines provide tools and best practices that can inform further iterations of an I-5 lid vision.

For an I-5 lid to become a reality in Seattle, further analysis and design iteration is needed to build a complete framework for implementation. Concurrent feasibility work will bring forward additional considerations regarding potential limitations of the freeway infrastructure, helping to further refine design and financial scenarios. Ultimately, while an I-5 lid in Seattle will require a tremendous effort across multiple stakeholders to build and maintain, it poses an incredible opportunity to reclaim what was lost when the freeway divided and disrupted the city's flow. Residents, visitors, and business owners will enjoy a healthier, more vibrant, and sustainable Seattle for many generations to come.

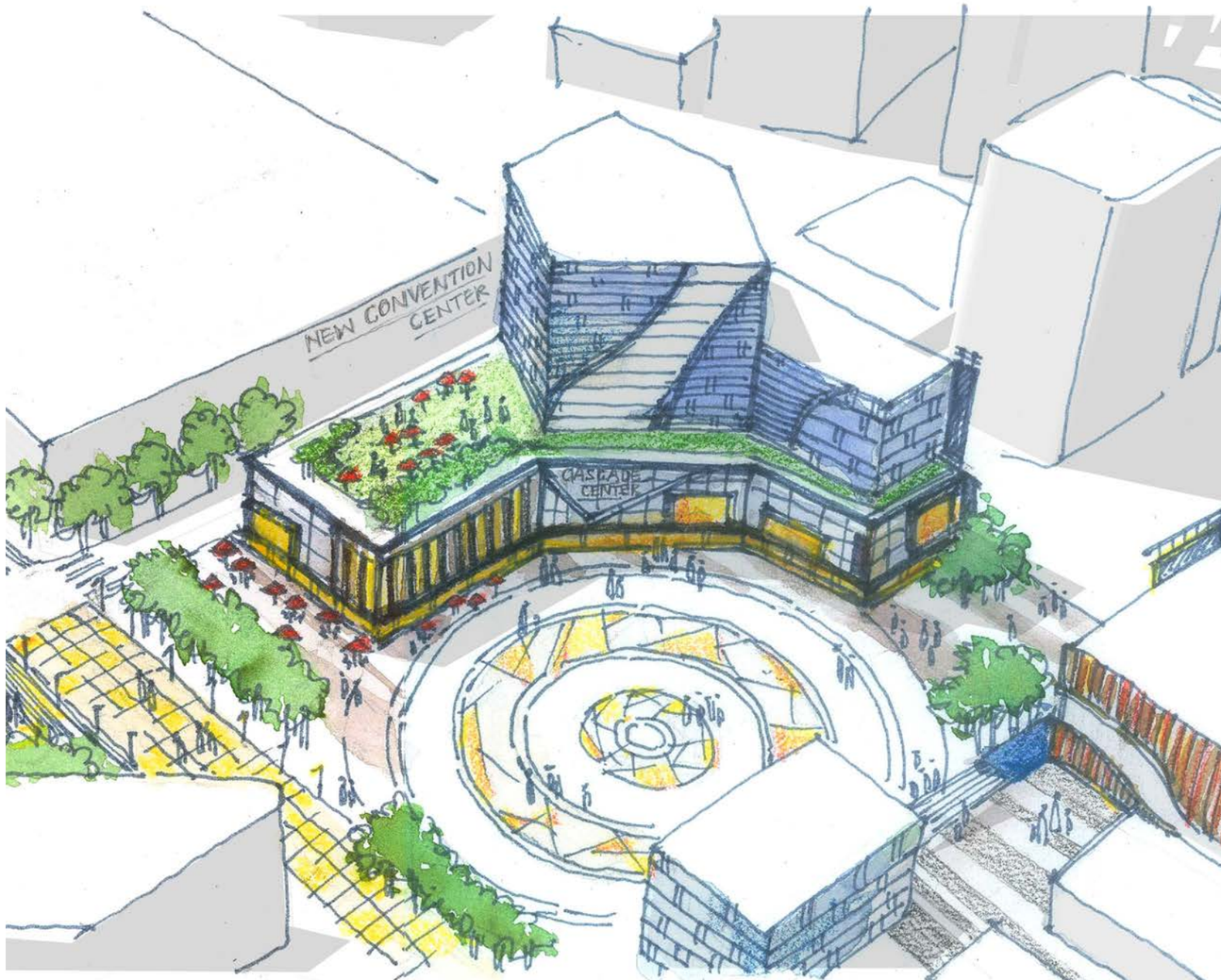
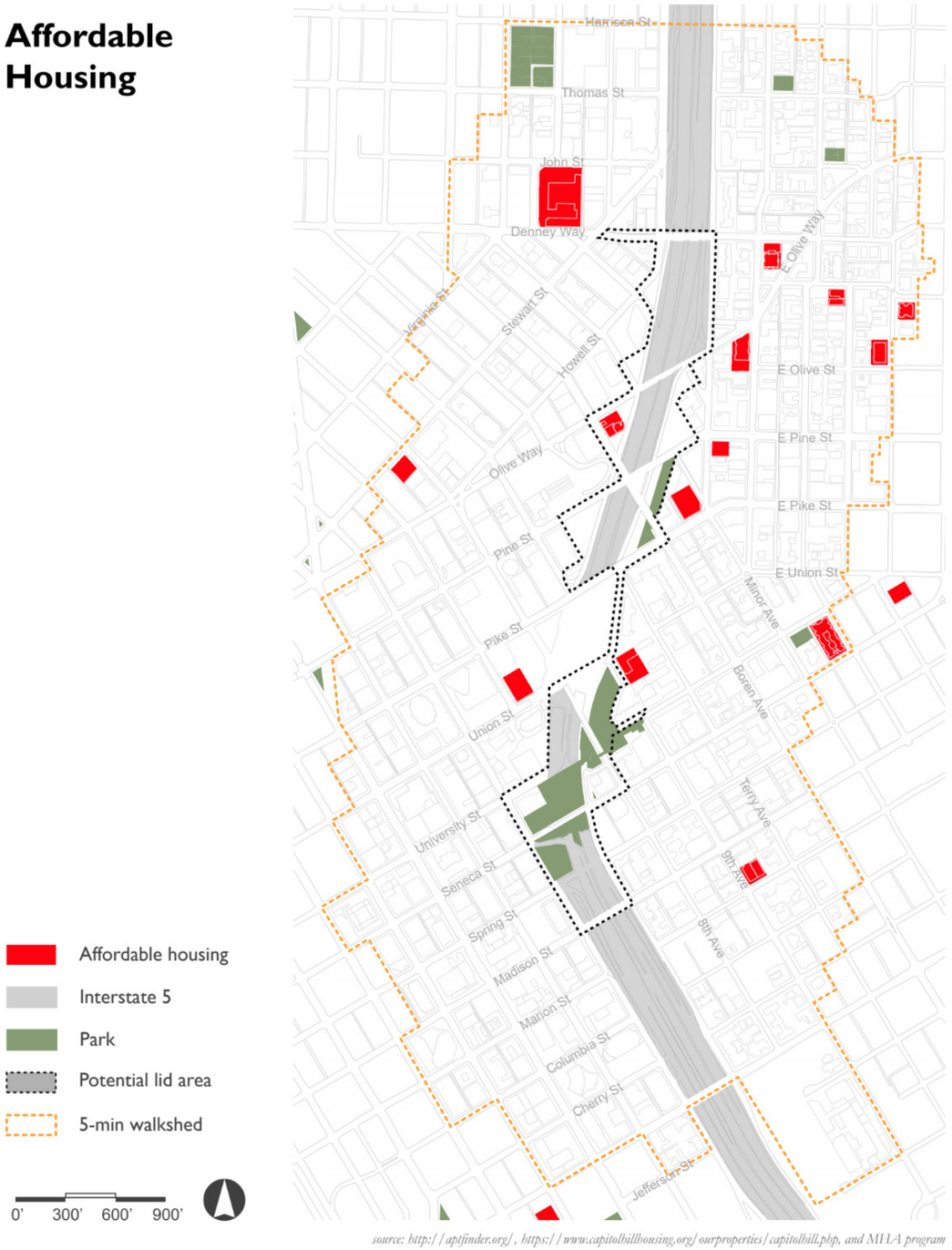


Figure 72 - Aerial rendering of the Stay lid design.

APPENDIX

Affordable Housing

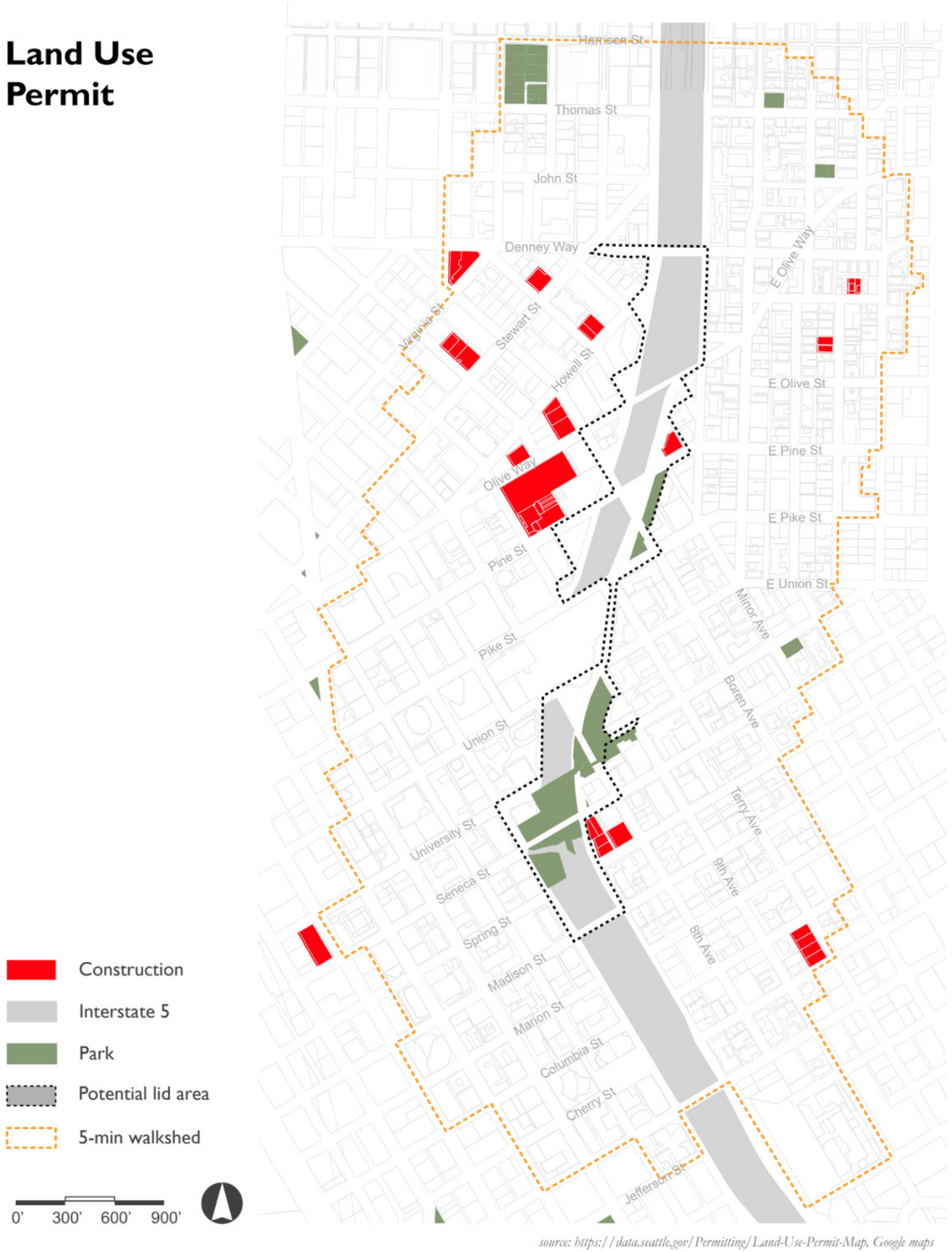


source: http://aptfinder.org/, https://www.capitolhillhousing.org/ourproperties/capitolhill.php, and MVA program

Figure 73 - Affordable housing map with property details.

Name	Detail
Stewart Court	30-80%AMI, 65 Units. Washington State Tax Credit program.
Seneca	Income limits 50% and 60% median. 32 Units
Olive Tower	50% and 80% AMI (Area Median Income)86 Units, through the Office of Housing.
Eagles Apartments	Washington State Housing Tax Credit limits 45%AMI, 44 Units,Washington State Tax Credit program.
Chancery Place Apartments	30% AMI,50% AMI 84 Units. Senior housing 62 years of age and/or older and in certain cases of person with disabilities.
Cascade Court	Washington State Housing Finance Tax credit property serving families qualifying at or below 45% and 60% of median income. 100 Units
Cambridge Apartments Seattle	Affordable with income qualifications between $31,650 and $43,380. Some units are at 50% ami and 60% ami.152 Units. Washington State Tax Credit program.
Boylston Howell Apartments	Household income must be below 40%, 50% of median income. 30 Units
Bellevue Olive Apartments	Below WSHFC Tax Credit Income Limits. Serving households earning below 50% to 60% of area median income.48 Units. Washington State Tax Credit program.
Brewster, Capitol Hill Housing	40%, 50% AMI 35 units
Centennial, Capitol Hill Housing	30%, 50% AMI, 30 units
Oleta, Capitol Hill Housing	30%, 50% AMI, 34 units,Fulltime student restrictions
Belmont, Pioneer Human Services,	30%, 50%, 60% AMI,89 homes,Low Income Individuals–Re-entry
Melrose, Capitol Hill Housing	30%, 50% AMI,30 units,Fulltime student restrictions
Villa Apartments, Capitol Hill Housing	30%, 50% AMI, 62 units, Fulltime student restrictions
Morrison Hotel	30% AMI,190 homes, Chronically Mentally Ill & Homeless Individuals

Land Use Permit



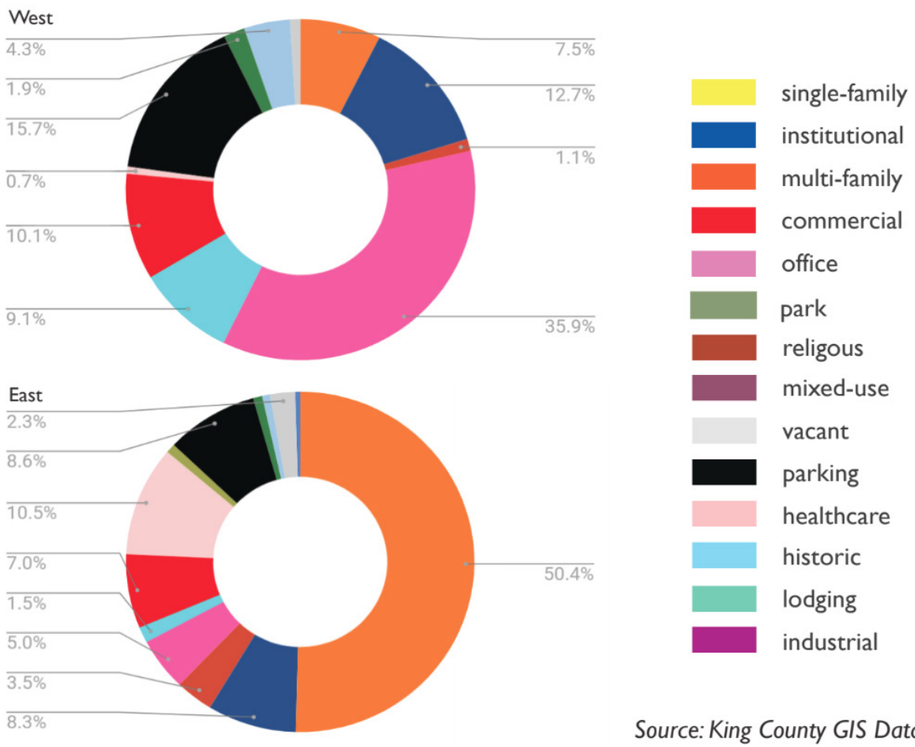
source: https://data.seattle.gov/Permitting/Land-Use-Permit-Map, Google maps

Figure 74 - Permitted construction map with property details.

Address/West	Detail
2014 FAIRVIEW AVE	Land Use Application to allow two, 35-story towers above a 5-story podium, containing 340 residential units, 229,781 square feet hotel, 79,934 square foot indoor participant sports, 12,903 square feet child care center, 28,738 square feet private club, 26,738 retail, and 5,104 square feet of restaurant use. Parking for 940 vehicles will be provided below grade.
1808 MINOR AVE	Land Use Application to allow a 42-story structure containing 437 apartment units and 9,325 sq. ft. of retail space located at ground level. Parking for 272 vehicles to be provided below grade. Existing structure to be demolished. An Addendum to Downtown Height and Density Changes EIS has been prepared.
2014 FAIRVIEW AVE	Land Use Application to construct a 41-story structure containing 403 apartment units above ground level retail. Project includes an upper level restaurant. Parking for 321 vehicles to be provided.
1920 TERRY AVE	Land Use Application to allow a 13-story, 409,105 sq. ft. research building . Parking for 296 vehicles to be provided below grade. Review includes demolition of existing structure.
1711 BOREN AVE	Land Use Application to allow a 16-story office building with retail. 11,000 sq. ft. All existing buildings to be demolished. Project includes street and alley vacations..
920 OLIVE WAY	Land Use Application to allow a 29-story, 404-unit apartment building with retail. All existing buildings to be demolished. Project includes street and alley vacations.
906 PINE ST	Land Use Application to allow construction of a ramp to provide a connection between the Metro Bus Tunnel and 9th Avenue. The project includes partial demolition of the existing transit station. Passenger facilities will be relocated to surface streets.

Address/East	Detail
600 E HOWELL ST	Land Use Application to allow a 7-story, 76-unit apartment building with 68 small efficiency dwelling units, 8 apartments and restaurant. Existing structures to be demolished.
1717 BELMONT AVE	Land Use Application to allow a 7-story apartment building with 84 small efficiency dwelling units and 6 apartments. No parking proposed. Existing building to be demolished.
1208 PINE ST	Land Use Application to allow an 8-story, 71-unit apartment building with office and retail. Parking for 18 vehicles proposed. Existing parking lot and billboard to be demolished.
1114 HUBBELL PL	Land Use Application to allow two, 32-story structures containing a total of 548 apartment units above 1095 sq. ft of retail, 4000 sq. ft of restaurant and 2545 sq. ft of office. Parking for 436 vehicles to be provided in a shared, below grade garage. Project includes proposed alley vacation between Seneca St. and Spring St.

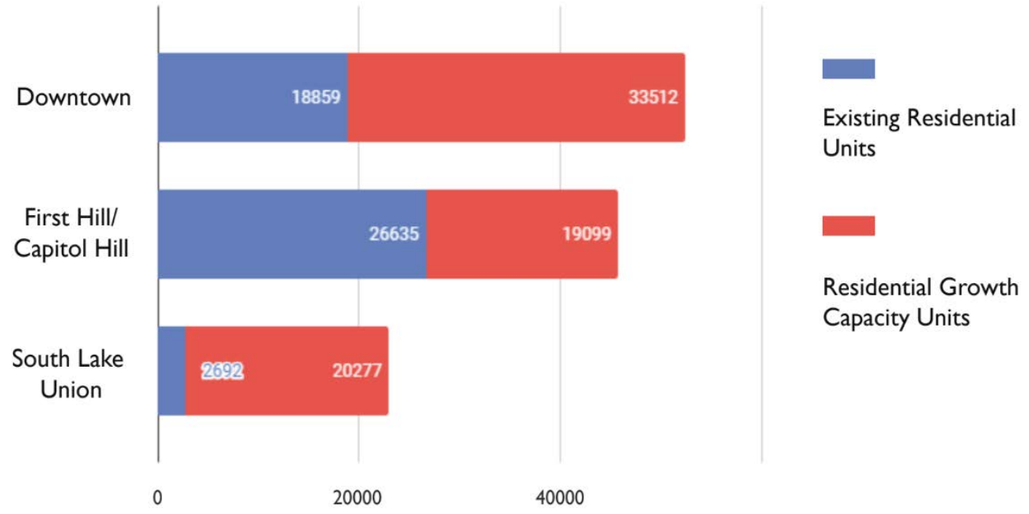
5-min walkshed land use



Source: King County GIS Data Hub, 2012

Figure 75 - Land use percentages in the 5-minute walkshed.

Residential Growth Capacity



Source: Development Capacity, City of Seattle Department of Planning and Development, 2014

Figure 76 - Residential growth capacity chart.

Other Lid Parks - Design & Programming Elements

One objective of this project was to identify and understand the built and programmatic elements that either hinder or foster active, vibrant, and inclusive US lids. In line with this agenda, this team researched select lid projects from around the United Steates and identified the built forms, programming aspects and short- and long-term financing mechanisms that contributed to their respective success or failure as public amenities. What follows is a synopsis of the design-related restults of this work; the financial analysis is included in a separate appendix.

Location	Name	Size (Acreage)	Lead Organization				Use of Space					Shared Goals with a Potential Seattle I-5 Lid			
			Government	Private Developer	Non-Profit	Public-Private Partnership (PPP)	Public Park	Public Plaza	Privately-Owned Public Space (POP)	Commercial	Residential / Hotel	Activated	Programmed	Public	Connected
St Louis, MO	Park Over the Highway	0.6	✓				✓							✓	✓
Denver, CO	Central 70 Project	4				✓	✓	✓				✓	✓	✓	✓
Philadelphia, PA	Penn's Landing Park	4			✓		✓					✓	✓	✓	✓
Dallas, TX	Klyde Warren Park	5				✓	✓			✓		✓	✓	✓	✓
Washington, DC	Capitol Crossing	7		✓					✓	✓	✓	✓			✓

Figure 77 - Comparative lid chart.

Source: Hargreaves Associates & Redsquare

Penn's Landing[89]
Philadelphia, Pennsylvania

Status: In-Progress

Size: 4 acres

Role: Waterfront & Civic Connector

Lead Organization: Government

Ownership: City of Philadelphia

Management: Delaware River Waterfront Corporation (DWRC)

Connection: Enhanced bicycle & pedestrian pathways extending across the lid, down to the waterfront.

Activation: Giant terraced lawn facing the Delaware River, ice-skating rink, spray pools, and cafe, and Irish and Scottish memorials.

Programming (proposed): Future programming may include recurring classes and outdoor events such as concerts or movie nights on the lawn and public access to games and sports equipment.

Public: Free and open access 24/7.

Lid Lesson:

DRWC has been activating the existing Spruce Street Park with "hammocks, floating gardens, a popular beer barge, and food from Philly restaurants" in order to **garner excitment for the impending park**.
- The Urbanist

Source: OJB Landscape Architecture

Klyde Warren Park[88]
Dallas, Texas

Status: Complete (2009)

Size: 5.2 acres

Role: Downtown Connector

Lead Organization: Non-Profit

Ownership: City of Dallas

Management: Woodall Rodgers Park Foundation

Connection: Integrated into Dallas' transit system with local stops; park includes bicycle & pedestrian paths.

Activation: Playground, dog park, water features, gardens, walking paths, concert stage, restaurant.

Programming: The Woodall Rodgers Park Foundation supports a variety of events and activities for all ages including times for food trucks, yoga, and playground activities.

Public: The park open space is accessible 24/7; many park activities (such as yoga and zumba classes) are free to attend.

Lid Lesson:

The objectives and material features of the park were clear and deliverable. Having a **concrete vision** facilitated the solicitation of private donations for this project since donors knew what design features and programming their money would support.

Source: Colorado Department of Transportation

Park Over the Highway[90]
Denver, Colorado

Status: In-Progress

Size: 4 acres

Role: Neighborhood Connector

Lead Organization: Government

Ownership: Colorado Department of Transportation (CDOT)

Management: Kewit Meridiam Partners LLC

Connection: Enhanced bicycle & pedestrian pathways.

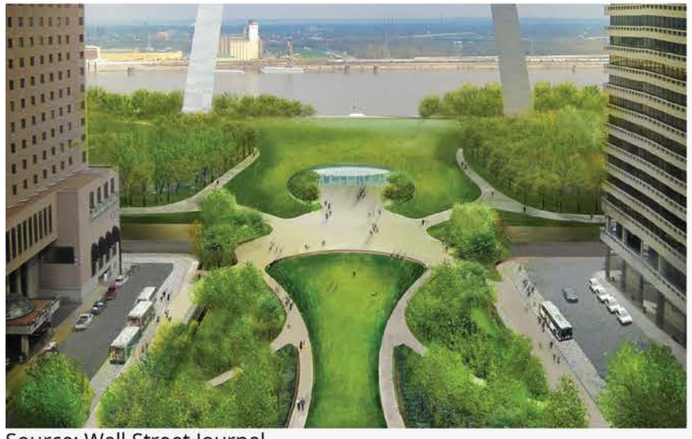
Activation: Amphitheater, splash park, sports field, play areas, gathering area for farmers markets, community gatherings, concerts, and space for food trucks. More than 100 trees .

Programming (proposed): This area will be programmed to "[serve] as an active, vibrant community asset with opportunities for sporting events, outdoor movies, concerts and farmers markets, among other events." - CDOT

Public: The park is generally considered public; sporting fields are open for general use during non-school hours.

Lid Lesson:

The project team conducted intensive public outreach to inform lid designs. This work also generated a series of **community commitments** to be delivered by CDOT and its partners over the life of the project; this garnered local public support.



Source: Wall Street Journal

Park Over the Highway[91]
St. Louis, Missouri

Status: Completed (2015)

Size: 0.6 acres

Role: Waterfront & Civic Connector

Lead Organization: Government

Ownership: Missouri Department of Transportation (MoDOT)

Management: Gateway Arch Park Foundation

Connection: Enhanced bicycle & pedestrian pathways which connect to a new waterfront boulevard; new interstate ramp connections, two bridge new designs, changes to adjacent downtown street network.

Activation: Small lawns, landscaped pathways, serves as passage from the city into more than 90 acres of the Gateway Arch National Park.

Programming: None except what may spillover from the national park.

Public: Free and open access 24/7.

Lid Lesson:

CMT, the lid construction firm for this project, conducted the first ever **Value Engineering Workshop** which was used to hone construction phasing, reduce traffic impacts, and minimize project costs and shorten the timeline. CMT won an industry award of excellence.

Source: Property Group Partners

Capital Crossing[92]
Washington, D.C.

Status: In-Progress

Size: 5.1 acres

Role: Downtown Connector

Lead Organization: Private Developer

Ownership: Unknown

Management: Property Group Partners (PGP)

Connection: Opens new streets to through-traffic, creates pedestrian promenades and new bike lanes, creates 1,100 new car parking spaces and 400 new bicycle parking spaces.

Activation: Landscaped public space, 5 buildings containing 2.2 million gross square feet (GSF) of mixed-use development (Office: 1,995,000 GSF, Retail: 70,000 GSF, Residential: 180,000 GSF), environmentally sustainable stormwater and energy production systems. - DC.gov

Programming: Ground-floor retail.

Public: Landscaped spaces and pathways are public.

Lid Lesson:

"Once completed, annual new **property tax revenue** of $40 million is expected.

The project is expected to produce thousands of new permanent office jobs with 51% filled by District residents.
- DC.gov

Comparison of Lid Parks Across the United States

								Capital Cost & Funding Sources ($ millions)							
Location	Name	Year Completed	Size (acres)	Lead Organization	Ownership	Management	Design-to-Build Duration (years)	Total Capital Cost (Millions, adjusted to 2019)	Capital Cost per Acre (Millions, adjusted to 2019)	Local Government	Regional Government Body	State Government	Federal Government Agency	Non-Profit / Foundation	Private Developer and/or Donor
Altanta, GA	5th Street Pedestrian Bridge [93]	2006	1	Government	GDOT	N/A	Unk	$ 13.6	$ 13.60	39%	Unk	Unk	Unk	Unk	Unk
Atlanta, GA	The Stitch [94]	TBD	14	Government	City of Atlanta (will lease air rights form GDOT/FHWA)	Pending; will likely be a 501c3.	N/A	$ 452.0	$ 32.29						
Boston, MA	Rose Fitzgerald Kennedy Greenway [95]	2008	17	Government	Massachusettes Turnpike Authority	Rose Fitzgerald Kennedy Greenway Conservancy	Unk	$ 47.5	$ 2.79						
Charlestown, MA	City Square Park, Tobin Bridge [96]	1997	1	Non-Profit	MassDOT	Friends of City Square Park	4	$ 5.4	$ 5.40	0%	0%	100%	0%	0%	0%
Clyde Hill, Hunts Point, Medina, WA	SR-520 Eastside Corridor [97]	2004	3.6	Government	WSDOT	WSDOT	Unk		$ -						
Cinncinnati, OH	Lytle Park Historic District [98]	1970	3	Government	ODOT		Unk								
Columbus, OH	I-670 Cap at Union Station [99]	2004	1.1	Private Developer	Continental Real Estate Companies	N/A	2	$ 10.5	$ 9.38						
Dallas, TX	Klyde Warren Park[100]	2009	5.2	Public-Private Partnership	City of Dallas, TxDOT, Klyde Warren Foundation	Woodall Rodgers Park Foundation	8	$ 131.0	$ 25.19	18%	0%	18%	15%	0%	48%
Denver, CO	Central I-70[101]	2022	4	Public-Private Partnership	CDOT	Kiewit Meridiam Partners	5	$ 1,170.0	$ 292.50	3%	4%	88%	0%	0%	0%
Duluth, MN	Lief Erikson Park[102]	1989	6	Government	MnDOT/FHWA	Duluth Parks and Recreation	Unk		$ -						
Glendale, CA	Space 134[103]	TBD	27	Government	Southern California Association of Governments (SCAG), City of Glendale	City of Glendale	N/A		$ -						

Comparison of Lid Parks Across the United States

								Capital Cost & Funding Sources ($ millions)							
Location	Name	Year Completed	Size (acres)	Lead Organization	Ownership	Management	Design-to-Build Duration (years)	Total Capital Cost (Millions, adjusted to 2019)	Capital Cost per Acre (Millions, adjusted to 2019)	Local Government	Regional Government Body	State Government	Federal Government Agency	Non-Profit / Foundation	Private Developer and/or Donor
Hartford, CT	Mortensen Riverfront Plaza[104]	1999	1.5	N/A	N/A	N/A	Unk	$ 37.7	$ 25.13	0%	0%	22%	74%	3%	0%
Los Angeles, CA	Park 101[105]	TBD	14	Government	City of Los Angeles	Pending; will likely be Friends of PARK 101 District.	N/A	$ 180.0	$ 12.86						
Los Angeles, CA	Hollywood Central Park[106]	TBD	38	Government	Pending: likley City of Los Angeles (leasing FHWA/ Caltrans air rights)	Pending; will likley be Friends of Hollywood Central Park	N/A	$ 1,000.0	$ 26.32						
Mercer Island, WA	Aubrey Davis Park[107]	1985	90	Government	WSDOT	City of Mercer Island	Unk	$ 712.5	$ 7.92						
Oak Park, MI	I-696 Cap Parks[108]	1989	11	Government	MDOT	MDOT	Unk		$ -						
Philadelphia, PA	Penn's Landing Cap[109]	2023	4	Non-Profit	Unk	Delaware River Waterfront Corporation (DRWC)	5	$ 225.0	$ 56.25	40%	0%	49%	0%	11%	0%
Phoenix, AZ	Margaret Hance Park[110]	1992	32	Government	City rents air rights from the state	City of Phoenix	Unk	$ 318.8	$ 9.96						
Pittsburg, CA	I-579 Cap Park[111]	TBD	3	Government	City of Pittsburg (leaseing FHWA/ PennDOT air	City of Pittsburg	N/A	$ 26.4	$ 8.80	0%	0%	13%	72%	0%	0%
San Diego, CA	Teralta Park[112]	2001	5.4	Government	City of San Diego (lease FHWA/ Caltrans air rights)	City of San Diego	Unk		$ -						
San Diego, CA	SR-94 Cap Park[113]	TBD	8	Government	Caltrans, SANDAG	City of San Diego	N/A	$ 295.0	$ 36.88						
San Francisco, CA	Presidio Tunnel Tops[114]	2021	14	Non-Profit		The Presidio Trust	5	$ 100.0	$ 7.14	0%	0%	0%	0%	10%	90%
Seattle, WA	Jim Ellis Freeway Park[115]	1976	5.2	Government	WSDOT (Air rights)	Freeway Park Association	Unk	$ 42.7	$ 8.21	0%	29%	6%	65%	0%	0%

Comparison of Lid Parks Across the United States

								Capital Cost & Funding Sources ($ millions)							
Location	Name	Year Completed	Size (acres)	Lead Organization	Ownership	Management	Design-to-Build Duration (years)	Total Capital Cost (Millions, adjusted to 2019)	Capital Cost per Acre (Millions, adjusted to 2019)	Local Government	Regional Government Body	State Government	Federal Government Agency	Non-Profit / Foundation	Private Developer and/or Donor
Seattle, WA	Mount Baker Tunnel Cap[116]	1993	15	Government	WSDOT	City of Mercer	Unk	$ 245.8	$ 16.39						
Seattle, WA	SR 520 "Rest of the West"[117]	TBD	4	Government	WSDOT		N/A		$ -						
St. Louis, MO	Park Over the Highway[118]	2015	0.6	Government	MoDOT	Gateway Arch Park Foundation	5	$ 30.2	$ 50.33	0%	0%	100%	0%	0%	0%
Washington, DC	Capitol Crossing[119]	2021	5.1	Private Developer	Unk	Property Group Partners (PGP)	9	$ 1,300.0	$ 254.90	0%	0%	0%	0%	0%	100%

Comparison of Lid Park Delivery Timelines

						LID TIMELINES			
Location	**Name**	**Year Completed**	**Size (acres)**	**Role**	**Design-to-Build Duration (years, approximate)**	**Concept Debut**	**Pre-Construction Studies and Permitting**	**Construction Begins**	**Date of Project Completion**
Dallas, TX	Klyde Warren Park[120]	2009	5	Downtown Connectors	8	1960s - Concept first discussed; 2002 - project revived.	2004	2009	2012
Denver, CO	Central I-70[121]	2022	4	Neighborhood Connectors	5	Unk	2003-2017 - Environmental Impact Statement process; 2015 - lid project Request for Proposals issued; 2017 - lid project contract awarded to KMP.	2018	2022
Philadelphia, PA	Penn's Landing Cap[122]	2023	4	Waterfront and Civic Connections	5	2012	2012 - Request for Qualifications issued; 2017 - Project funding identified.	2019	2022 - Construction is projected to take 3 years.
St. Louis, MO	Park Over the Highway[123]	2015	1	Waterfront and Civic Connections	5	2007 - 2010 - Designs for the lid and Gateway Arch Park complete.	2011-early 2013 - Funding secured.	2013	2015 - Lid park complete; 2018 - Gateway Arch Park complete.
Washington, DC	Capitol Crossing[124]	2021	5	Downtown Connectors	9	Unk	2011-2012 - 1st and 2nd stage Planned Unit Development permit applications submitted.	2015	2016 - Deck comlete; 2018-2019 - First two buildings complete; 2021 - remaining structures complete.

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