

Section 3.7

Light & Glare



This section discusses light and glare conditions in the study area and considers the impact of development under each of the alternatives on future conditions. The existing conditions and impacts analysis primarily use spatial data published by the City of Seattle, supplemented with King County and Federal sources.

Impacts of the alternatives on light and glare are considered significant if:

- Light and glare from new development has the potential to affect substantial numbers of residents, shoreline views, or protected scenic views (e.g., scenic routes, designated parks).

3.7.1 Affected Environment

This section discusses existing lighting and glare conditions in the study area, including major sources of exterior illumination and nearby high-sensitivity locations, such as residential areas, public open spaces, and scenic views.

Data & Methods

This section primarily uses spatial data published by the City of Seattle, supplemented with King County and Federal sources. Data sources include:

- City of Seattle Geographic Information Systems
 - City of Seattle 10-foot topographic contours (2016)
 - City of Seattle Parks and Trails inventory (2020)
 - City of Seattle Zoning (2021)
- King County Assessor
 - Existing land use property classifications (2020)
- National Aeronautics and Space Administration (NASA)
 - International Space Station nighttime light emission imagery of Seattle metropolitan area (2015)

Viewshed Calculation

To determine potential visibility areas, City-published elevation contours were processed using GIS software to create a digital elevation raster model of the city. The study area was then subdivided using a grid of 100-foot by 100-foot cells. The centroids of these equal-area cells were designated as “observer” points in the viewshed calculation. This created approximately 4,900 observer locations, equally distributed throughout the study area. To account for the visibility of buildings above ground level, each observer point was assigned an above-ground height offset based on the maximum structure height allowed in the applicable zoning district.

Lines of sight were calculated for each observer point and combined to generate a consolidated viewshed image that indicates relative visibility. Areas of the map highlighted as having high

visibility are visible from a greater number of observer points; lower visibility areas are visible from fewer observer points.

Nighttime Light Emission Mapping

Maps of nighttime lighting conditions used NASA orbital imagery captured by the International Space Station in 2015, the most recent year for which a nighttime image of Seattle was available. The image was reoriented and cropped using photo editing software and then georeferenced using GIS software. Due to image resolution limitations, the resulting maps are likely to contain a minor amount of spatial positioning error and are intended to illustrate relative brightness of nighttime light emissions across the city.

Current Policy & Regulatory Frameworks

Comprehensive Plan Goals & Policies

Seattle 2035, Seattle's comprehensive plan, establishes goals and policies related to urban design and aesthetics, including light and glare.

- **Land Use Element Policy LU 5.14:** Establish controls on the placement, direction, and maximum height of lighting and on the glare from reflective materials used on the exterior of structures in order to limit impacts on surrounding uses, enhance the character of the city, and encourage energy conservation.
- **Eastlake Community Design Policy EL-P3:** Anticipate and minimize, through zoning regulations and/or design review guidelines, to be prepared for the Eastlake area, the potential for impacts on residential uses from the close proximity, orientation, or incongruent scale of commercial development, including the loss of privacy, sunlight, or air, or increased noise, artificial light, or glare.

Seattle Municipal Code

SEPA Policies

The City of Seattle Municipal Code Chapter 25.05 codifies environmental policies and procedures. Section 25.05.675.K contains provisions related to light and glare.

K. Light and glare

1. Policy background

a. Development projects sometimes include lighting and/or reflective surface materials which can adversely affect motorists, pedestrians, and the surrounding area. Such adverse impacts may be mitigated by alternative lighting techniques and surface materials.

b. The City's Land Use Code specifically addresses the issue of light and glare control associated with commercial and industrial projects.

2. Policies.

- a. *It is the City's policy to minimize or prevent hazards and other adverse impacts created by light and glare.*
- b. *If a proposed project may create adverse impacts due to light and glare, the decisionmaker shall assess the impacts and the need for mitigation.*
- c. *Subject to the overview policy set forth in Section 25.05.665, the decisionmaker may condition or deny a proposed project to mitigate its adverse impacts due to light and glare.*
- d. *Mitigating measures may include, but are not limited to:*
 - 1) *Limiting the reflective qualities of surface materials that can be used in the development;*
 - 2) *Limiting the area and intensity of illumination;*
 - 3) *Limiting the location or angle of illumination;*
 - 4) *Limiting the hours of illumination; and*
 - 5) *Providing landscaping.*

Seattle Municipal Code Section 25.05.675.P contains provisions related to public view protection.

P. Public view protection

1. Policy background

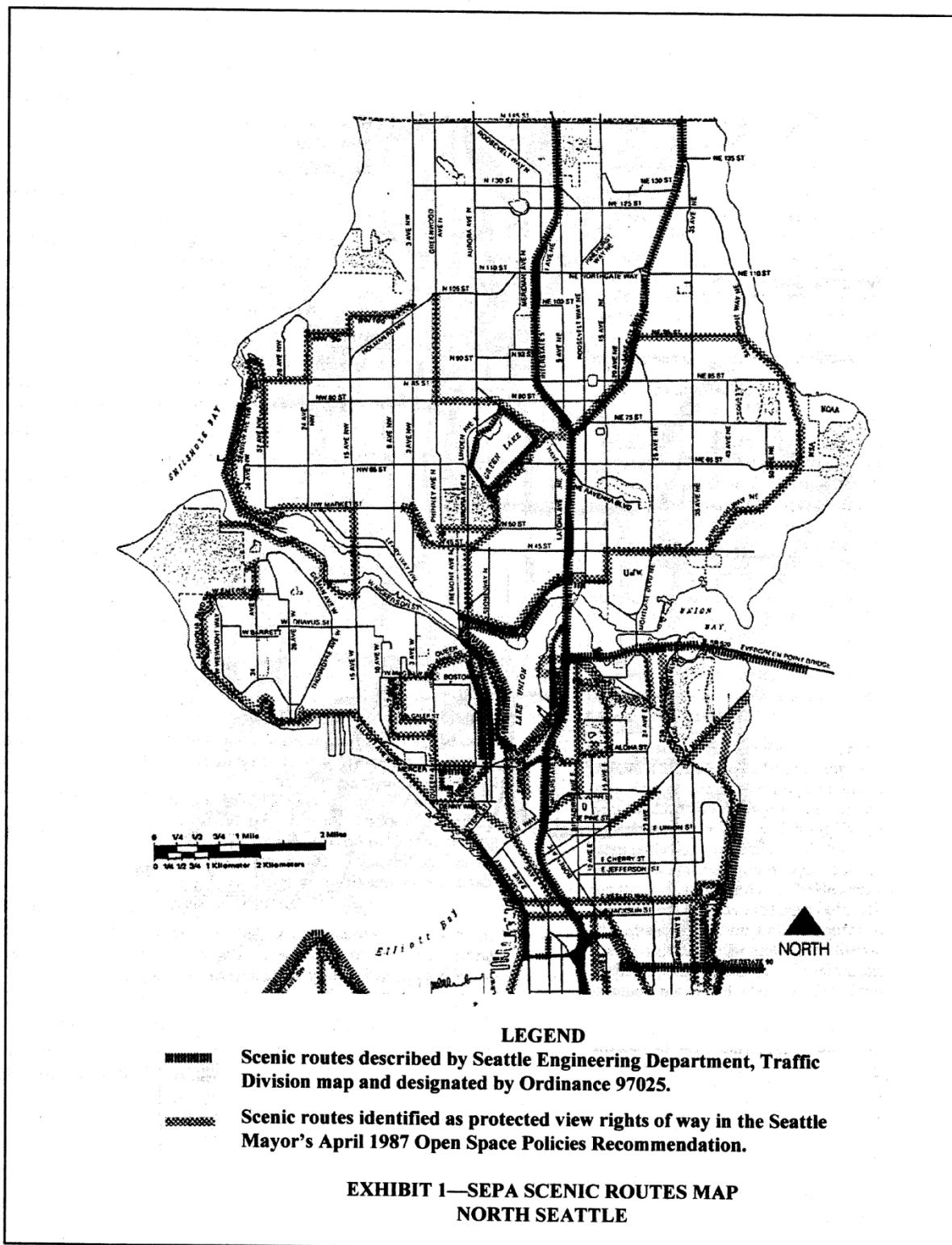
- a. *Seattle has a magnificent natural setting of greenery, mountains, and water; visual amenities and opportunities are an integral part of the City's environmental quality.*
- b. *The City has developed particular sites for the public's enjoyment of views of mountains, water, and skyline and has many scenic routes and other public places where such views enhance one's experience.*
- c. *Obstruction of public views may occur when a proposed structure is located in close proximity to the street property line, when development occurs on lots situated at the foot of a street that terminates or changes direction because of a shift in the street grid pattern, or when development along a street creates a continuous wall separating the street from the view.*
- d. *Authority provided through Chapter 25.12 is intended to preserve sites and structures which reflect significant elements of the City's historic heritage and to designate and regulate such sites and structures as historic landmarks.*
- e. *The Land Use Code provides for the preservation of specified view corridors through setback requirements.*
- f. *The Land Use Code attempts to protect private views through height and bulk controls and other zoning regulations but it is impractical to protect private views through project-specific review.*

2. Policies

- a. 1) It is the City's policy to protect public views of significant natural and human-made features: Mount Rainier, the Olympic and Cascade Mountains, the downtown skyline, and major bodies of water including Puget Sound, Lake Washington, Lake Union and the Ship Canal, from public places consisting of the specified viewpoints, parks, scenic routes, and view corridors, identified in Attachment 1. (Attachment 1 is located at the end of this Section 25.05.675.) This subsection 25.05.675.P.2.a.i does not apply to the Space Needle, which is governed by subsection 25.05.675.P.2.c.
- 2) The decisionmaker may condition or deny a proposal to eliminate or reduce its adverse impacts on designated public views, whether or not the project meets the criteria of the overview policy set forth in Section 25.05.665; provided that downtown projects may be conditioned or denied only when public views from outside of downtown would be blocked as a result of a change in the street grid pattern.
- b. 1) It is the City's policy to protect public views of historic landmarks designated by the Landmarks Preservation Board that, because of their prominence of location or contrasts of siting, age, or scale, are easily identifiable visual features of their neighborhood or the City and contribute to the distinctive quality or identity of their neighborhood or the City. This subsection does not apply to the Space Needle, which is governed by subsection 25.05.675.P.2.c.
- 2) A proposed project may be conditioned or denied to mitigate view impacts on historic landmarks, whether or not the project meets the criteria of the overview policy set forth in Section 25.05.665.
- c. It is the City's policy to protect public views of the Space Needle from the following public places. A proposed project may be conditioned or denied to protect such views, whether or not the project meets the criteria of the overview policy set forth in Section 25.05.665.
- 1) Alki Beach Park (Duwamish Head)
 - 2) Bhy Kracke Park
 - 3) Gasworks Park
 - 4) Hamilton View Point
 - 5) Kerry Park
 - 6) Myrtle Edwards Park
 - 7) Olympic Sculpture Park
 - 8) Seacrest Park
 - 9) Seattle Center
 - 10) Volunteer Park

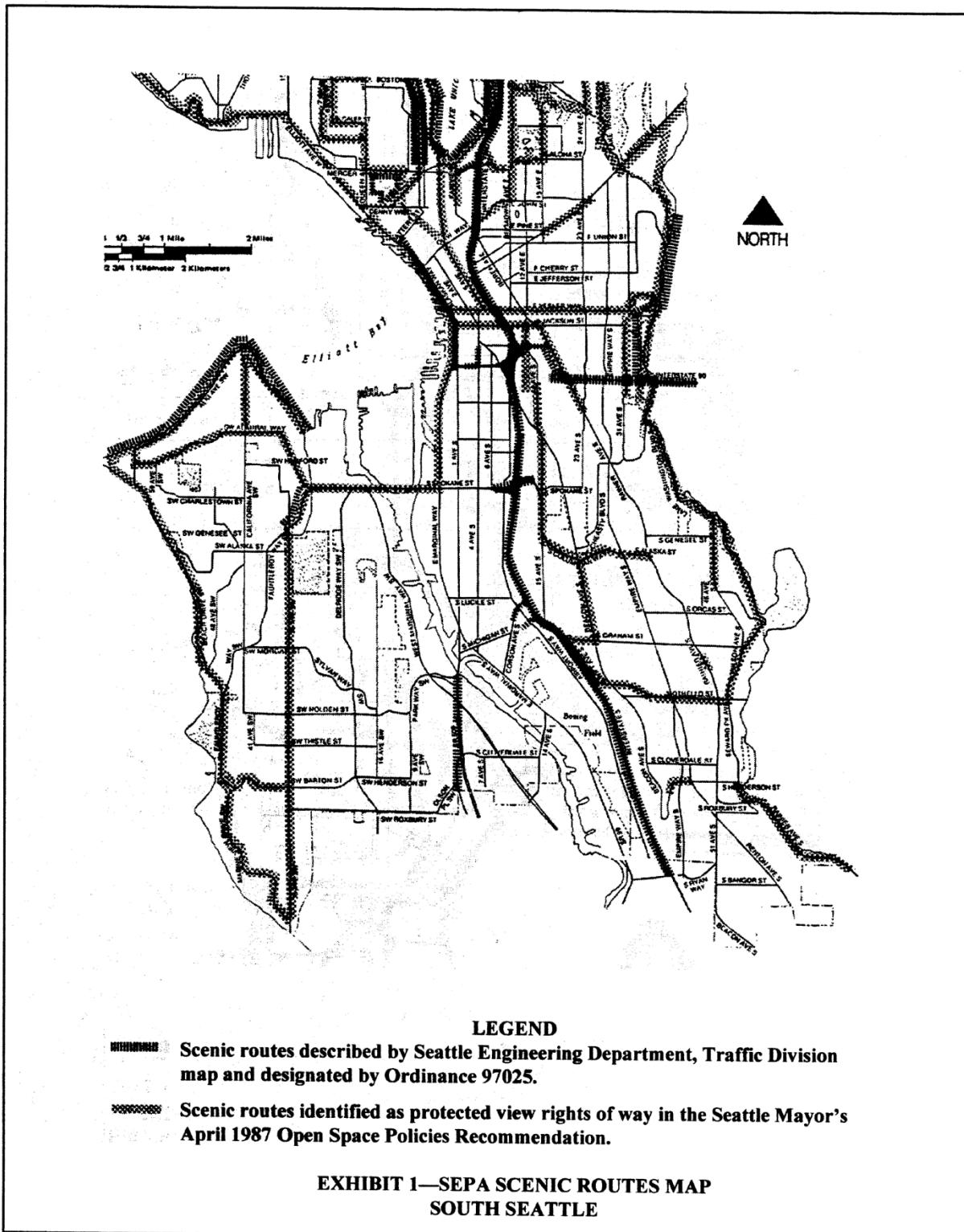
Designated scenic routes identified in SMC 25.05.675.P.2.a.1 are shown in **Exhibit 3.7-1** and **Exhibit 3.7-2**.

Exhibit 3.7-1 Seattle SEPA Scenic Routes Map—North



Source: Seattle Municipal Code Chapter 25.05 Subchapter VII—Attachment 1, 1987.

Exhibit 3.7-2 Seattle SEPA Scenic Routes Map—South



Source: Seattle Municipal Code Chapter 25.05 Subchapter VII—Attachment 1, 1987.

Development Standards

The Seattle Land Use Code (Seattle Municipal Code Title 23) contains development regulations for each of Seattle's zoning districts. These regulations establish light and glare standards for residential, commercial, and industrial zones that govern the design and placement of exterior site and building illumination, including effects on surrounding properties. As described in **Section 3.8 Land & Shoreline Use**, land in the study areas is primarily zoned Industrial; light and glare standards for Industrial Buffer (IB) or Industrial Commercial (IC) zones are established in SMC Chapter 23.50.046.

- A. *Exterior lighting shall be shielded and directed away from lots in adjacent residential zones.*
- B. *Interior lighting in parking structures shall be shielded, to minimize nighttime glare affecting lots in adjacent residential zones.*
- C. *When nonconforming exterior lighting in an Industrial Buffer (IB) or Industrial Commercial (IC) zone is replaced, new lighting shall conform to the requirements of this section.*
- D. *Glare diagrams which clearly identify potential adverse glare impacts on residential zones and on arterials shall be required when:*
 1. *Any structure is proposed to have facades of reflective coated glass or other highly reflective material, and/or a new structure or expansion of an existing structure greater than sixty-five (65) feet in height is proposed to have more than thirty (30) percent of the facades comprised of clear or tinted glass; and*
 2. *The facade(s) surfaced or comprised of such materials either:*
 - a. *Are oriented towards and are less than two hundred (200) feet from any residential zone, and/or*
 - b. *Are oriented towards and are less than four hundred (400) feet from a major arterial with more than fifteen thousand (15,000) vehicle trips per day, according to Seattle Department of Transportation data.*
- E. *When glare diagrams are required, the Director may require modification of the plans to mitigate adverse impacts, using methods including but not limited to the following:*
 1. *Minimizing the percentage of exterior facade that is composed of glass;*
 2. *Using exterior glass of low reflectance;*
 3. *Tilting glass areas to prevent glare which could affect arterials, pedestrians or surrounding structures;*
 4. *Alternating glass and nonglass materials on the exterior facade; and*
 5. *Changing the orientation of the structure.*

Current Conditions

Full Study Area

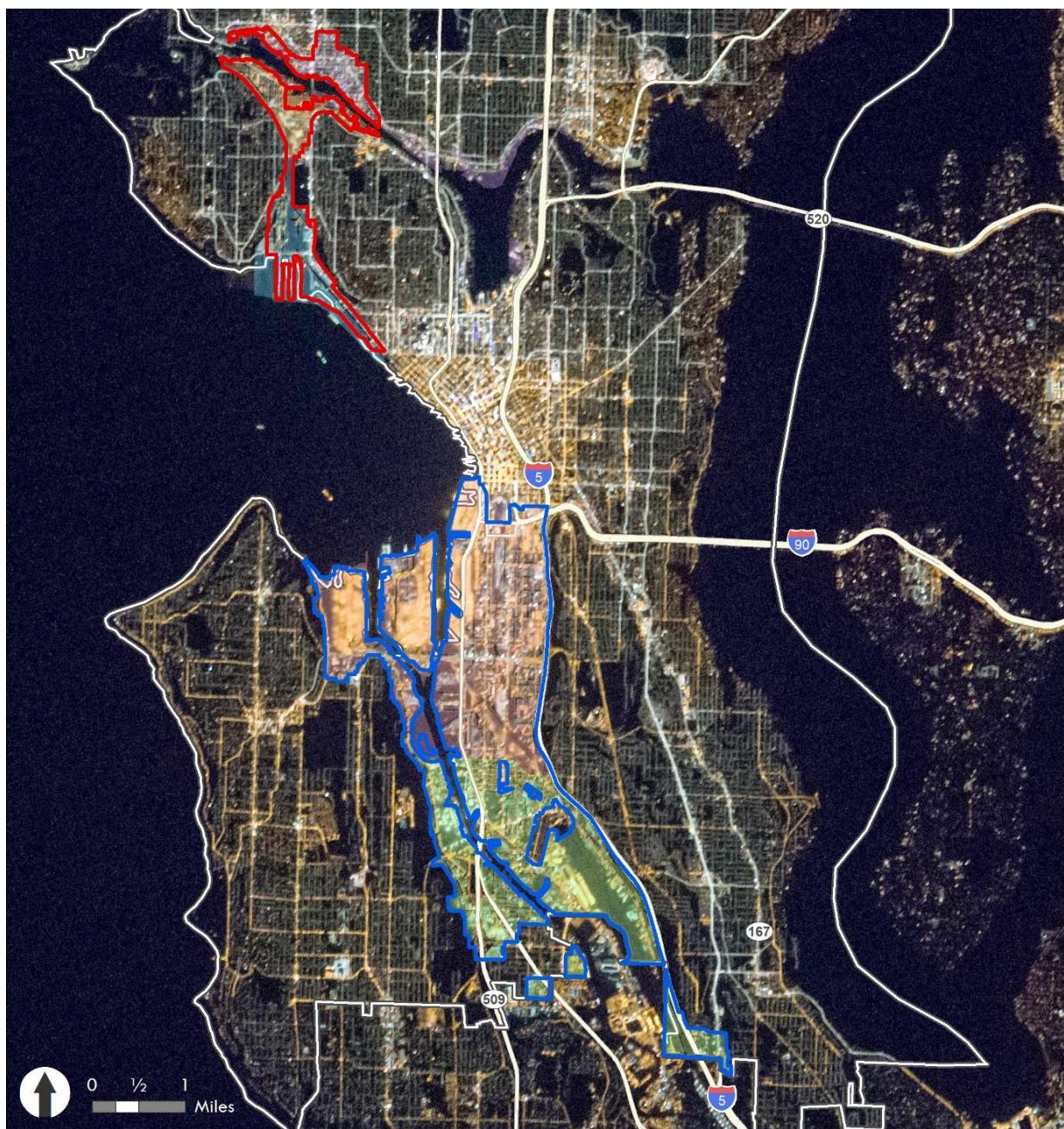
As described in **Section 3.8 Land & Shoreline Use**, the study area consists primarily of industrially-zoned properties occupied by a variety of commercial and industrial uses. This style of development is often characterized by larger lot sizes and buildings than lower-intensity commercial or residential properties and a higher level of exterior building and site illumination.

Exhibit 3.7-3 shows nighttime illumination levels across Seattle, including the study area and adjacent neighborhoods. These visible light sources are a combination of streetlights, vehicles, and on-site exterior lighting. As shown on the map, nighttime illumination is brightest along major transportation corridors and in areas characterized by high-density commercial or industrial development, including Downtown, Uptown, the University District, Ballard, and the Greater Duwamish MIC. Adjacent residential neighborhoods appear darker by comparison, partially due to the lower level of lighting present and partially due to greater tree canopy presence, which can shield and screen light sources.

In general, the Greater Duwamish MIC (including the SODO/Stadium and Georgetown/South Park subareas) exhibits higher levels of light and glare than the Ballard and Interbay subareas. In particular, Harbor Island and the northwestern corner of the SODO/Stadium Subarea exhibit high levels of illumination comparable to the nearby Downtown core, with slightly lower levels of illumination present in the Georgetown/South Park Subarea to the south. The Ballard and Interbay subareas exhibit lower levels of light and glare, though still brighter than surrounding residential areas.

Exhibit 3.7-4 shows a topographic viewshed of the study area, based on City of Seattle 2016 elevation contours and maximum structure heights allowed by zoning. This viewshed provides an estimate of locations where portions of the study area are visible to observers and where light and glare generated by new and existing development could be perceived. The map also highlights locations that are likely to be highly sensitive to light and glare emissions; such locations include residential populations, scenic viewpoints, public parks and recreation areas, and open space and wildlife habitat areas. Major light sources and high-sensitivity locations in each subarea are described in more detail in the following sections.

Exhibit 3.7-3 Nighttime Illumination, 2015



City of Seattle

Manufacturing Industrial Centers

Ballard-Interbay MIC

Duwamish MIC

Industrial Lands Subareas

Ballard

Georgetown

Interbay Dravus

Interbay Smith Cove

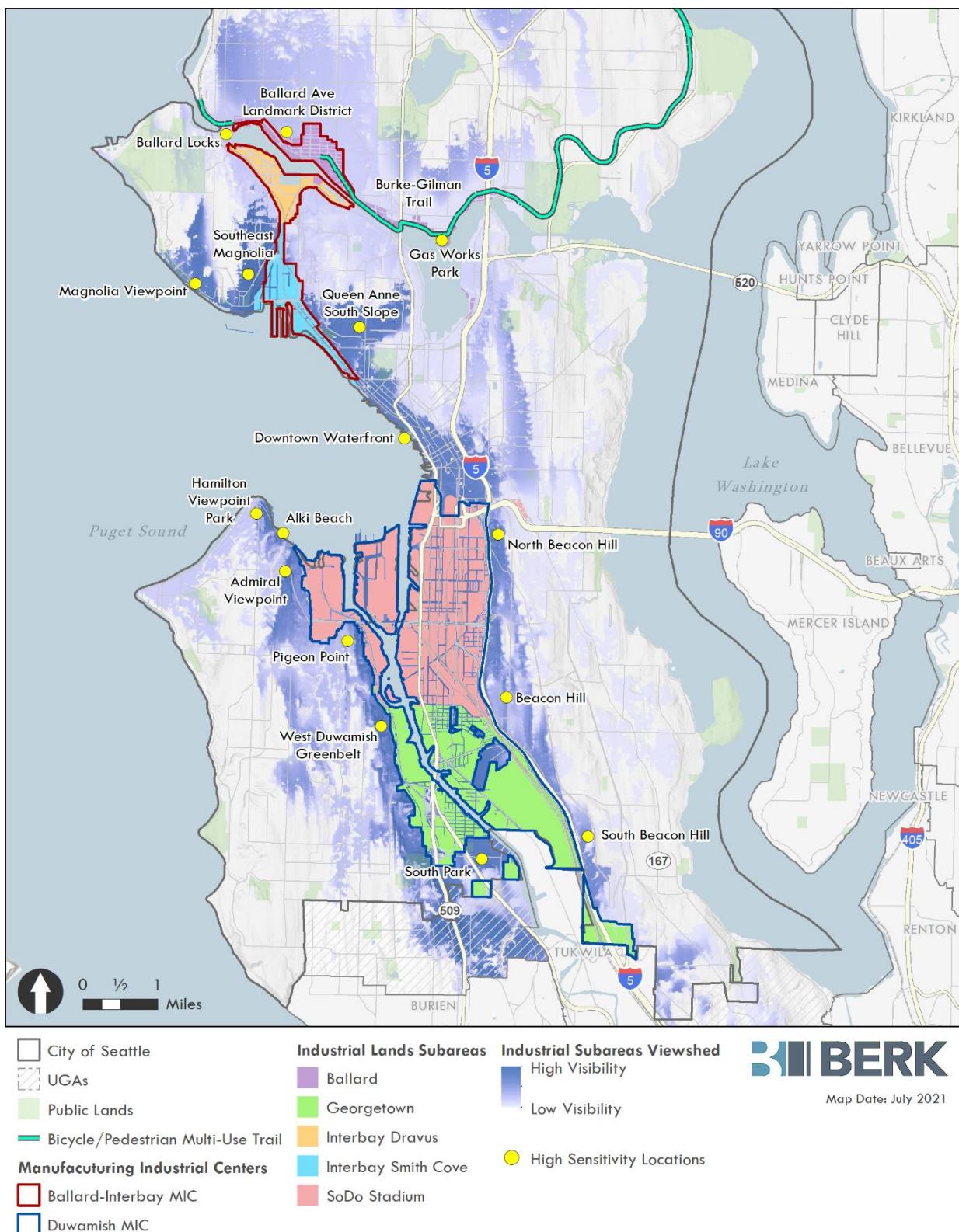
SoDo Stadium

BERK

Map Date: July 2021

Source: NASA, 2015; City of Seattle, 2021.

Exhibit 3.7-4 Industrial Subarea Viewshed, 2021



Source: City of Seattle, 2016. City of Seattle, 2021.

Ballard

Major Sources of Light & Glare

As shown in **Exhibit 3.7-5**, the Ballard Subarea occupies the northern shore of Salmon Bay and the Lake Washington Ship Canal. Much of the light and glare generated in the subarea comes from waterfront facilities, including docks and several small marinas, as well as the non-water oriented commercial/industrial area east of 15th Avenue NW. This area is characterized by small-scale commercial industrial properties, generally 1-2 stories in height. The area includes several breweries, multiple grocery stores and small-scale shopping centers, and limited large-format retail (Fred Meyer).

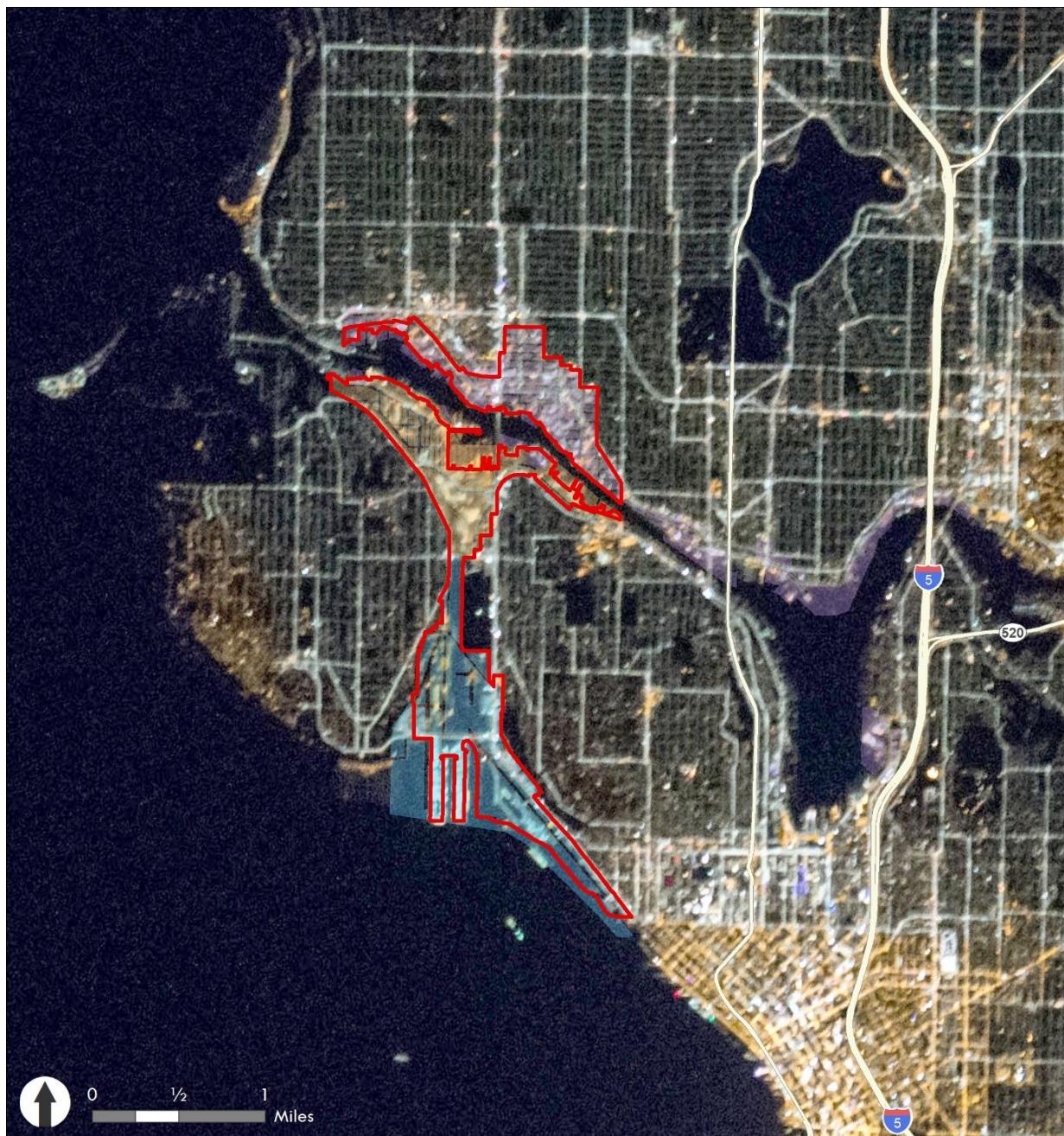
The Ballard Subarea also include several non-contiguous areas along the northern and eastern shores of Lake Union in Fremont and Eastlake, respectively. These areas consist primarily of docks and boat moorages; the Eastlake area includes a drydock, a seaplane dock, and several water-related industrial businesses.

High-Sensitivity Locations

Locations that are potentially sensitive to increases in light and glare associated with industrial development in the Ballard Subarea include the following:

- **Burke-Gilman Trail:** This major bicycle and pedestrian trail runs through the eastern portion of the main Ballard Subarea, as well as the non-contiguous portion of the subarea along the northern shore of Lake Union.
- **Gas Works Park:** One of Seattle's most popular parks, Gas Works Park provide approximately 19 acres of recreation opportunities and open space. The central hill offers views south to Downtown, as well as east and west along the ship canal.
- **Ballard Locks:** The Ballard Locks, one of Seattle's most popular tourist attractions, is located at the western end of the Ballard Subarea. The locks and their associated waterfront parks offer views eastward along the ship canal toward Lake Union, including the marine industry that lines the waterway.
- **Ballard Avenue Landmark District:** This historic district is home to a wide variety of hospitality, retail, office, and manufacturing uses and serves as an entertainment center for the Ballard neighborhood. The district is adjacent to the northern edge of the Ballard Subarea.

Exhibit 3.7-5 Nighttime Illumination—Ballard Interbay Northend MIC, 2015



Manufacturing Industrial Centers Industrial Lands Subareas

<input type="checkbox"/> Ballard-Interbay MIC	<input type="checkbox"/> Ballard
<input type="checkbox"/> Duwamish MIC	<input type="checkbox"/> Georgetown
	<input type="checkbox"/> Interbay Dravus
	<input type="checkbox"/> Interbay Smith Cove
	<input type="checkbox"/> SoDo Stadium

BERK

Map Date: July 2021

Source: NASA, 2015; City of Seattle, 2021.

Interbay Dravus

Major Sources of Light & Glare

Industrial development in the Interbay Dravus Subarea consists of marine-related facilities along the south shore of Salmon Bay (Fisherman's Terminal and associated businesses) and railroad-related facilities generally located between W Emerson Place and W Dravus Street. The southern portion of the subarea, including the BNSF rail yard and the industrial development between the railroad and 15th Avenue W, is the primary source of light and glare; the area contains extensive on-site lighting and outdoor storage and parking areas, particularly along Thorndyke Avenue W. Several commercial businesses, including a grocery store and restaurant, as well as an apartment complex, also contribute to light generation in this portion of the subarea.

High-Sensitivity Locations

Locations that are potentially sensitive to increases in light and glare associated with industrial development in the Interbay Dravus Subarea include the following:

- **Ballard Locks:** The Ballard Locks, one of Seattle's most popular tourist attractions, is located at the western end of the Interbay Drave subarea. The locks and their associated waterfront parks offer views eastward along the ship canal toward Lake Union, including the marine industry that lines the waterway.

Interbay Smith Cove

Major Sources of Light & Glare

Primary light sources in the Interbay Smith Cove Subarea are concentrated in the western and southern portions of the study area. The Interbay rail yard forms the north-south spine of the subarea, with several large packing and shipping facilities located west of the rail yard. These facilities include large outdoor areas for loading, parking, and storage with extensive exterior lighting. The area east of the rail yard consists primarily of large-format commercial development, including a car wash, self-storage, a grocery store, a shopping center, and an Army National Guard facility with extensive outdoor storage. The Smith Cove Waterway, located south of the Magnolia Bridge, includes the Smith Cove Cruise Terminal (Pier 91) and several other port facilities. As shown in **Exhibit 3.7-5**, the cruise terminal and associated piers generate the highest levels of light and glare in the subarea.

High-Sensitivity Locations

Locations that are potentially sensitive to increases in light and glare associated with industrial development in the Interbay Smith Cove Subarea include the following:

- **Southeast Magnolia:** The southeast slope of Magnolia overlooks the Interbay rail yard and Smith Cove terminal. This area along Thorndyke Avenue W is characterized by a mix of

small-lot single family and moderate-density multifamily residential development, as well as the Magnolia Greenbelt, which occupies the steeply sloped hillside.

- **Queen Anne South Slope:** The south slope of Queen Anne Hill, above Uptown, is characterized by moderate to high-density urban housing and offers picturesque views of Downtown, Elliott Bay, Mount Rainier, and Harbor Island. In particular, two parks (Kinnear Park and Kerry Park) are popular with visitors and local photographers because of their exceptional views.
- **Downtown Waterfront:** Seattle's waterfront contains some of the city's most popular tourist attractions, such as the Seattle Aquarium, the Edgewater Hotel, Pier 66, and the Seattle Great Wheel, as well as lodging and restaurants. The waterfront provides visitors with panoramic views of southern Magnolia, Elliott Bay, Harbor Island, and West Seattle.

SODO/Stadium

Major Sources of Light & Glare

Due to the presence of extensive Port of Seattle facilities and associated private industrial development, the SODO/Stadium Subarea contains the most intense sources of light and glare in the study area, as shown in **Exhibit 3.7-6**. Harbor Island, located at the mouth of the Duwamish Waterway, and the surrounding facilities at Terminals 5, 25, 30, 37, 42, and 46, are characterized by large shipping facilities with extensive outdoor storage and staging areas. Compared with other portions of the study area, these locations include relatively few buildings; these facilities consist primarily of large open spaces where cargo can be staged and loaded, and the outdoor illumination necessary for operations generates large amounts of light and glare with few obstructions.

The portions of the SODO/Stadium Subarea east and south of the harbor also contribute to light and glare conditions, though to a lesser degree than the Harbor Island facilities. The industrial land use pattern in these areas consists of a mix of warehousing and manufacturing uses with large building footprints and limited outdoor storage or staging space.

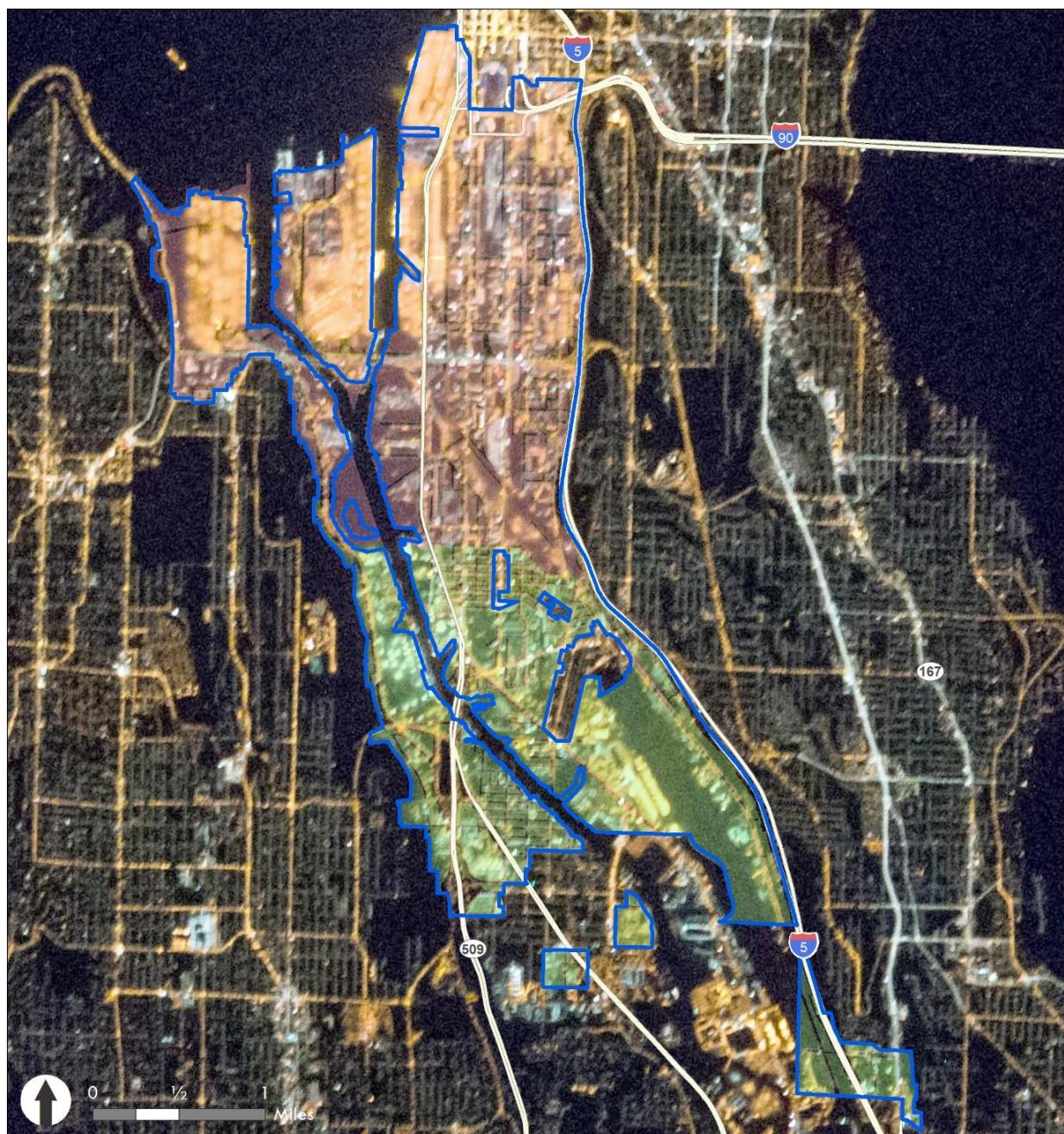
High-Sensitivity Locations

Locations that are potentially sensitive to increases in light and glare associated with industrial development in the SODO/Stadium Subarea include the following:

- **West Duwamish Greenbelt:** Seattle's largest contiguous forest, the West Duwamish Greenbelt provides over 550 acres of recreation opportunities, open space, and wildlife habitat and runs roughly north-south along the western edge of both the SODO/Stadium and Georgetown/South Park subareas. The greenbelt provides a buffer between industrial development in the Greater Duwamish MIC and the residential neighborhoods of High Point and Delridge to the west.

- **Magnolia Viewpoint:** The Magnolia Viewpoint is a small park on the southwest side of Magnolia, along Magnolia Boulevard. This viewpoint offers unobstructed views of Downtown, Harbor Island, and West Seattle.
- **Pigeon Point Neighborhood:** This West Seattle residential neighborhood is located south of the West Seattle Bridge and west of West Marginal Way. The neighborhood occupies a hill overlooking Harbor Island and much of the northern Greater Duwamish MIC.
- **West Seattle Viewpoints:** Several parks and viewpoints in West Seattle offer scenic views looking eastward to Downtown, including Harbor Island and the Port of Seattle. Specific locations include:
 - Hamilton Viewpoint Park
 - Admiral Viewpoint
 - Northeast Alki Beach
- **West Seattle—Harbor Avenue SW:** Harbor Avenue SW runs along the northeastern edge of West Seattle between the West Seattle Bridge and Duwamish Head. The road runs along the shoreline, providing views of Elliott Bay and Downtown Seattle. The shoreline is the location of several public waterfront parks. As shown in **Exhibit 3.7-2**, this portion of Harbor Avenue SW is designated as a scenic route for purposes of SEPA under Seattle Municipal Code Chapter 25.05.675.P.2.a.1.
- **Beacon Hill:** This residential neighborhood occupies the eastern side of I-5 south of I-90. The north end of Beacon Hill overlooks both the Greater Duwamish MIC to the west and Downtown to the northwest. The neighborhood is separated from the Greater Duwamish MIC by the western slope of Beacon Hill and the I-5 corridor, but residences along the western edge of the hill have expansive views of the Duwamish Waterway, Elliott Bay, and West Seattle beyond. The central portion of Beacon Hill (south of Jefferson Park) has intermittent views of the Greater Duwamish MIC along the western edge of the neighborhood.
- **Downtown Waterfront:** Seattle's waterfront contains some of the city's most popular tourist attractions, such as the Seattle Aquarium, the Edgewater Hotel, Pier 66, and the Seattle Great Wheel, as well as lodging and restaurants. The waterfront provides visitors with panoramic views of southern Magnolia, Elliott Bay, Harbor Island, and West Seattle.

Exhibit 3.7-6 Nighttime Illumination—Greater Duwamish MIC, 2015



Manufacturing Industrial Centers Industrial Lands Subareas

█ Ballard-Interbay MIC	█ Ballard
█ Duwamish MIC	█ Georgetown
	█ Interbay Dravus
	█ Interbay Smith Cove
	█ SoDo Stadium

BERK

Map Date: July 2021

Source: NASA, 2015; City of Seattle, 2021.

Georgetown/South Park

Major Sources of Light & Glare

The Georgetown/South Park Subarea contains a mix of both large and small-scare industrial properties, as well as commercial and a small amount of residential development. The Duwamish Waterway divides the subarea, and the two sides differ in development pattern and intensity. The west side of the waterway features generally smaller lots with limited outdoor storage space or exterior illumination. The east side of the waterway features larger lots and buildings and more outdoor space for parking and storage. The eastern edge of the subarea is also the location of the King County International Airport (Boeing Field) and associated aviation-related industries. As shown on **Exhibit 3.7-6**, the airport runways themselves contribute very little illumination, but the adjacent terminals, hangars, and aircraft tie-down areas generate substantial light emissions.

High-Sensitivity Locations

Locations that are potentially sensitive to increases in light and glare associated with industrial development in the Georgetown/South Park Subarea include the following:

- **West Duwamish Greenbelt:** Seattle's largest contiguous forest, the West Duwamish Greenbelt provides over 550 acres of recreation opportunities, open space, and wildlife habitat and runs roughly north-south along the western edge of both the Georgetown/South Park and SODO/Stadium subareas. The greenbelt provides a buffer between industrial development in the Greater Duwamish MIC and the residential neighborhoods of High Point and Delridge to the west.
- **South Park Neighborhood:** The residential South Park neighborhood abuts the southern edge of the Georgetown/South Park Subarea on the west side of the Duwamish Waterway. The area features primarily moderate-density single-family and low-density attached housing, along with several parks and playgrounds, a school, and a branch of the Seattle Public Library. The neighborhood is bound on all sides by either a state highway, industrial development, or the Duwamish Waterway.
- **South Beacon Hill:** This residential neighborhood is located across I-5 from Boeing Field. The more southerly portions of the neighborhood are screened from views of the airport and MIC by vegetation, but the more northerly areas (north of S Kenyon Street) have little vegetation screening along the western periphery.

3.7.2 Impacts

The threshold of significance utilized in this impact analysis is as follows:

- Light and glare from new development that has the potential to affect substantial numbers of residents, shoreline views, or protected scenic views (e.g., scenic routes, designated parks).

Impacts Common to All Alternatives

Light and glare impacts associated with development depend on a variety of factors, including the type of development proposed, outdoor illumination needs of the specific uses proposed, elevation of the development site relative to surrounding areas, the density and size of on-site vegetation, and the architectural and site design characteristics of the structures and lighting elements specific to the development site. This combination of factors makes predicting potential impacts at an area-wide, programmatic scale challenging.

As described in **Chapter 2**, the proposed alternatives employ a combination of either existing land use designations (No Action Alternative) or new land use concepts (alternatives 2, 3, and 4 and the Preferred Alternative). Though development on individual sites may vary, these land use concepts define a baseline development typology for industrial development in the areas where they are applied, including factors such as allowed building size and height, allowed land use mix, and architectural and landscaping design requirements. The following impact analysis evaluates the potential light and glare impacts associated with each of the proposed land use concepts at the programmatic level, followed by analysis of the individual subareas under each of the alternatives.

Light & Glare Effects of Proposed Land Use Concepts

Maritime, Manufacturing, & Logistics (MML)

Overall, light and glare conditions on sites designated Maritime, Manufacturing, and Logistics (MML) would be similar in nature to existing industrial areas, though the intensity of light emissions would depend on specific site characteristics. Similar to existing General Industrial zones, the MML land use concept is focused on traditional industrial and manufacturing uses, as well as shipping, logistics, and port facilities. As illustrated in **Exhibit 2.4-1** and **Exhibit 2.4-4**, development patterns will be similar to existing industrial areas, characterized by large parcels, substantial outdoor storage and staging areas, and relatively low building heights.

Light and glare impacts associated with this land use concept are likely to be similar to existing heavy manufacturing and port-related industrial development typologies, extensive examples of which can be seen in the Greater Duwamish MIC. Major sources of light and glare associated with this land use concept would include outdoor illumination at storage yards and cargo staging areas. Manufacturing facilities that use exterior lights for operations and safety during

nighttime hours would also be sources of light and glare. The MML land use concept would include zoning requirements for streetscape improvements, but on-site vegetation is anticipated to be sparse due to the intensive nature of development and the operational needs of shipping and logistics facilities, which are the primary anticipated uses. This lack of on-site vegetation would result in minimal screening of light sources. Similar to existing industrial development, the magnitude of light and glare impacts would depend on the specific design of on-site facilities and the proximity of high-sensitivity locations.

Industry & Innovation (II)

The Industry and Innovation (II) land use concept promotes higher-density industrial uses, including mixed-use development, as illustrated in [Exhibit 2.4-2](#) and [Exhibit 2.4-4](#). Areas designated II are intended to be employment centers integrated with the high-capacity transit network. As such, the II land use concept is focused on a mix of uses that incorporates contemporary industrial methods and creates opportunities for combining light industrial and technology-oriented uses with associated office space. Compared to existing industrial areas, the II concept would exhibit taller building heights (up to 160 feet, including bonuses) and greater development density with fewer outdoor storage and/or staging areas. The integration of transit and bicycle/pedestrian connections would also result in fewer large parking areas.

Light and glare impacts associated with this land use concept are anticipated to be more similar to a commercial or mixed-use district than existing industrial areas. Without extensive outdoor areas requiring night-time lighting, exterior building illumination would be less intense, though taller allowable building heights could make buildings visible from farther away, depending on location and relative elevation.

Urban Industrial (UI)

The Urban Industrial (UI) land use concept focuses on a mix of smaller-scale industrial uses (such as fabrication shops, artist and maker spaces, and light industry) and limited non-industrial uses, such as retail, offices, or industry-supportive housing. These areas would also include bicycle and pedestrian transportation facilities, and landscaped open spaces to promote environmental health. UI areas would be designed to include flexibility of uses and development standards that promote compatibility with nearby residential uses. See [Exhibit 2.4-3](#) and [Exhibit 2.4-4](#).

Development in UI areas is anticipated to generate relatively lower light emissions compared to existing industrial typologies and the proposed MML and II land use concepts, due to the smaller scale of development and a greater emphasis on vegetation and green space, which can screen exterior illumination from surrounding areas. The UI land use concept would allow building heights up to 75 feet, which would represent a height increase in some industrial areas. Though less pronounced than potential height increases under the II land use concept, taller building heights may result in development being visible from farther away than current conditions, depending on location and relative elevation.

Equity & Environmental Justice Considerations

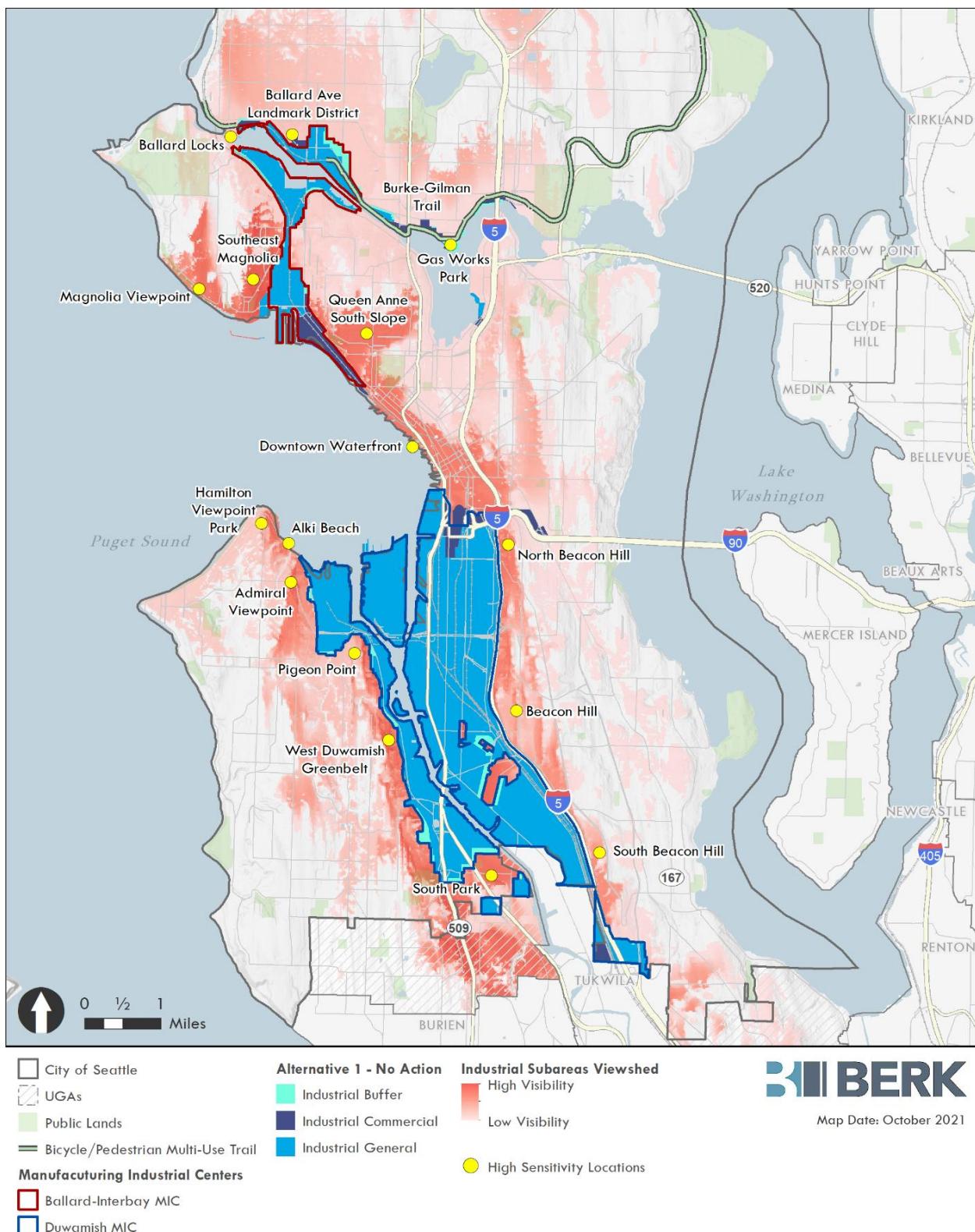
This EIS recognizes that impacts associated with industrial development, including exposure to light and glare emissions, are location-dependent and not equally distributed throughout the city. Due to market forces, historical practices regarding siting of industrial facilities, and historical restrictions on housing for people of color, residential areas near industrial centers are often home to communities of color and lower-income populations. The following impact analysis examines the potential for the alternatives to adversely affect residential populations, public spaces, and park and recreation facilities through exposure to increased light and glare emissions. The analysis also identifies instances where such impacts are likely to specifically affect vulnerable populations.

Impacts of Alternative 1 No Action

The No Action Alternative would preserve existing zoning and development regulations, resulting in future industrial development patterns similar to existing conditions. The No Action Alternative is anticipated to produce up to 11.23 million square feet of new employment-generating building space. Light and glare impacts associated with such development would be similar in nature to existing conditions, though the additional anticipated growth would increase overall light emissions as development occurs. **Exhibit 3.7-7** shows the viewshed and industrial zoning in the study area under the No Action Alternative.

Under the No Action Alternative, future industrial growth would generate additional light and glare emissions that could be perceived by non-industrial areas surrounding the study area, including high-sensitivity locations described in **Section 3.7.1 Affected Environment**. The following sections describe potential location-specific impacts.

Exhibit 3.7-7 Land Use Concepts Viewshed—Alternative 1



Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

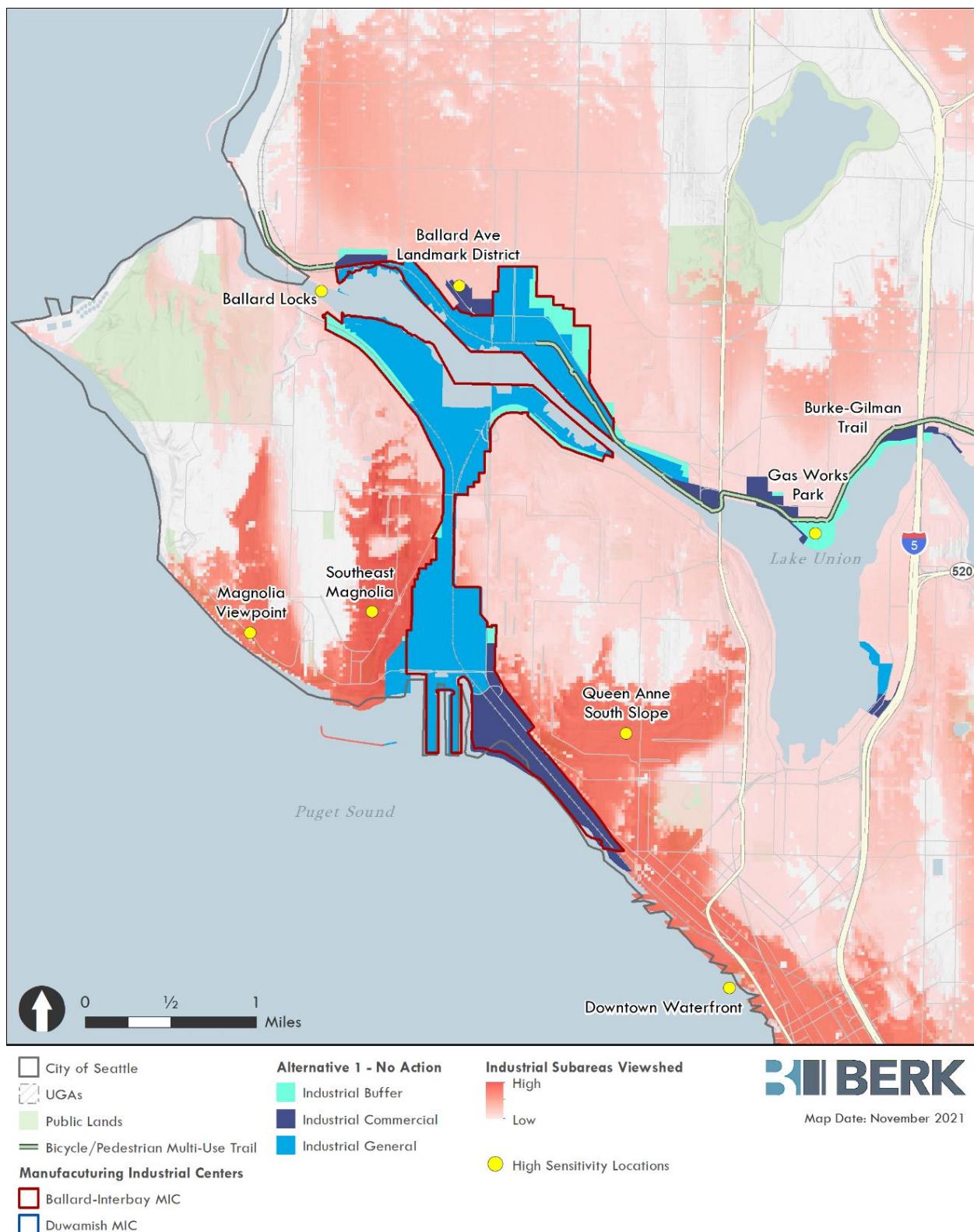
Ballard

Anticipated industrial development in the BINMIC would generate additional light and glare emissions that could be perceived by surrounding non-industrial areas (see **Exhibit 3.7-7** and **Exhibit 3.7-8**). The high-sensitivity areas primarily affected in the Ballard Subarea would include the western portions of the Burke-Gilman Trail and the Ballard Locks due to their close proximity to industrial development; the Ballard Locks would potentially be impacted by light and glare emissions from both the Ballard and Magnolia sides of the ship canal. However, use of these park and trail facilities is relatively low during nighttime hours, when light and glare emissions would be most evident.

Increased light and glare emissions from the BINMIC would potentially be visible to non-industrial areas north of the Ballard Subarea, including the Ballard Avenue Landmark District. The landmark district itself is unlikely to experience significant impacts due to its location in the commercial center of Ballard, where nighttime illumination is already extensively used, though the portion of the district closest to industrial uses along Shilshole Avenue could experience impacts from the more intense lighting on industrial properties. Residential neighborhoods to the north at higher elevations could potentially observe the increased light and glare, though the effect would be attenuated with distance.

Industrial development at the eastern end of the Ballard Subarea could also potentially increase light and glare emissions observed at Gas Works Park, though potential increases in exposure at this location are likely to be reduced relative to other portions of the Ballard Subarea due to the smaller amount of adjacent industrial land. Likewise, the Eastlake portion of the Ballard Subarea is likely to experience minimal impacts; visibility of other industrial lands is relatively low, and the major concentrations of new industrial development in the BINMIC and Greater Duwamish MIC are screened by topography.

Exhibit 3.7-8 Ballard, Interbay Dravus, and Interbay Smith Cove Viewshed—Alternative 1



Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Interbay Dravus

Additional light and glare associated with new development in the Interbay Dravus Subarea would primarily be visible on immediately adjacent properties and along the Ballard waterfront, due to topography screening by nearby Magnolia and Queen Anne hillsides (see **Exhibit 3.7-7** and **Exhibit 3.7-8**). As described above, development in Interbay Dravus would contribute to light emissions observed at the Ballard Locks, which could potentially be impacted by light and glare emissions from both the Ballard and Magnolia sides of the ship canal. As described in **Chapter 2**, Interbay Dravus is anticipated to receive the smallest share of future employment growth under the No Action Alternative, so the increase in light and glare emissions is likely represent only an incremental increase compared to existing conditions.

Interbay Smith Cove

As shown in **Exhibit 3.7-7** and **Exhibit 3.7-8**, additional light and glare emissions in Interbay Smith Cove would primarily affect Southeast Magnolia and the South Slope of Queen Anne. As described in **Section 3.7.1 Affected Environment**, these areas contain a mix of single- and multi-family housing, exposing local residential populations to increased light and glare during nighttime hours. As described in **Chapter 2**, Interbay Smith Cove is anticipated to receive the second smallest share of future employment growth under the No Action Alternative (slightly more than Interbay Dravus), so the increase in light and glare emissions is likely represent a minor increase compared to existing conditions. Though minor, these increased light and glare emissions would be visible to a larger population than the northern portion of the Interbay corridor.

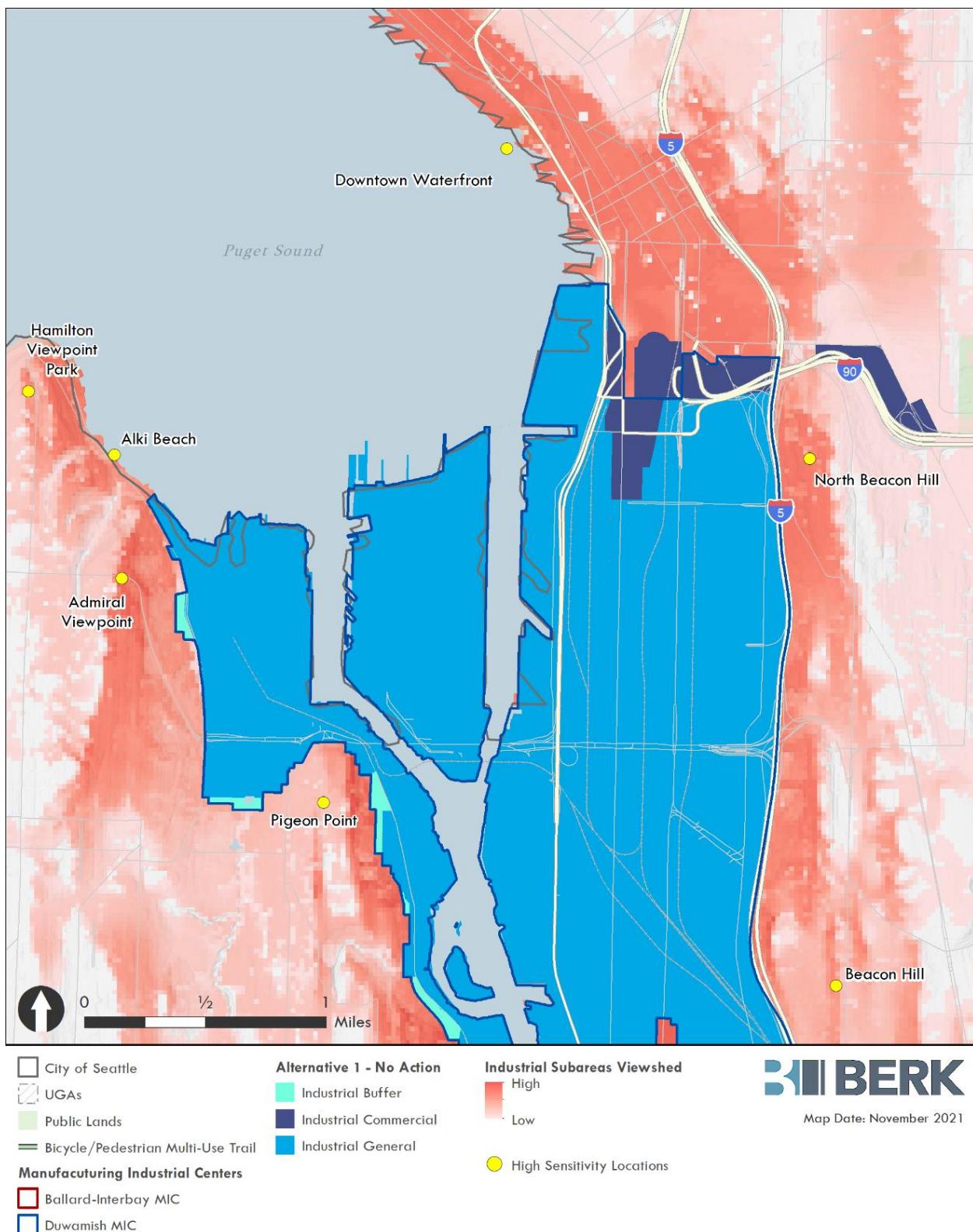
SODO/Stadium

As described in **Section 3.7.1 Affected Environment**, the SODO/Stadium Subarea is the largest and most intensely developed industrial area, and it produces the highest levels of light and glare emissions, due to the presence of the Port of Seattle and associated private industrial facilities. As shown in **Exhibit 3.7-7** and **Exhibit 3.7-9**, light and glare emissions from this study area have wide visibility, including residential areas in Beacon Hill and West Seattle (Pigeon Point, Alki) and public spaces in West Seattle (West Duwamish Greenbelt, Hamilton Viewpoint Park, Alki Beach, Harbor Avenue SW), Downtown, and Magnolia. Under the No Action Alternative, the SODO/Stadium Subarea would absorb the greatest share of future employment growth, generating additional light and glare emissions as development occurs.

Increased light and glare under the No Action Alternative would be most perceptible to nearby residential areas in Pigeon Point and Beacon Hill due to their close proximity and higher elevation relative to the study area. Because future development would include a similar mix of industrial uses and facility types as existing conditions, the increase in light and glare emissions may not be perceptible at greater distances, such as Downtown or south Magnolia.

Light and glare emissions would also be visible from the West Duwamish Greenbelt, which runs along the western edge of the Greater Duwamish MIC. Those recreational use of the greenbelt occurs primarily during daylight hours when light and glare emissions are least perceptible, the greenbelt also include wildlife habitat areas that could be affected by nighttime light and glare. An analysis of potential impacts of the proposal on wildlife is contained in **Section 3.4 Plants & Animals**.

Exhibit 3.7-9 SODO/Stadium Viewshed—Alternative 1

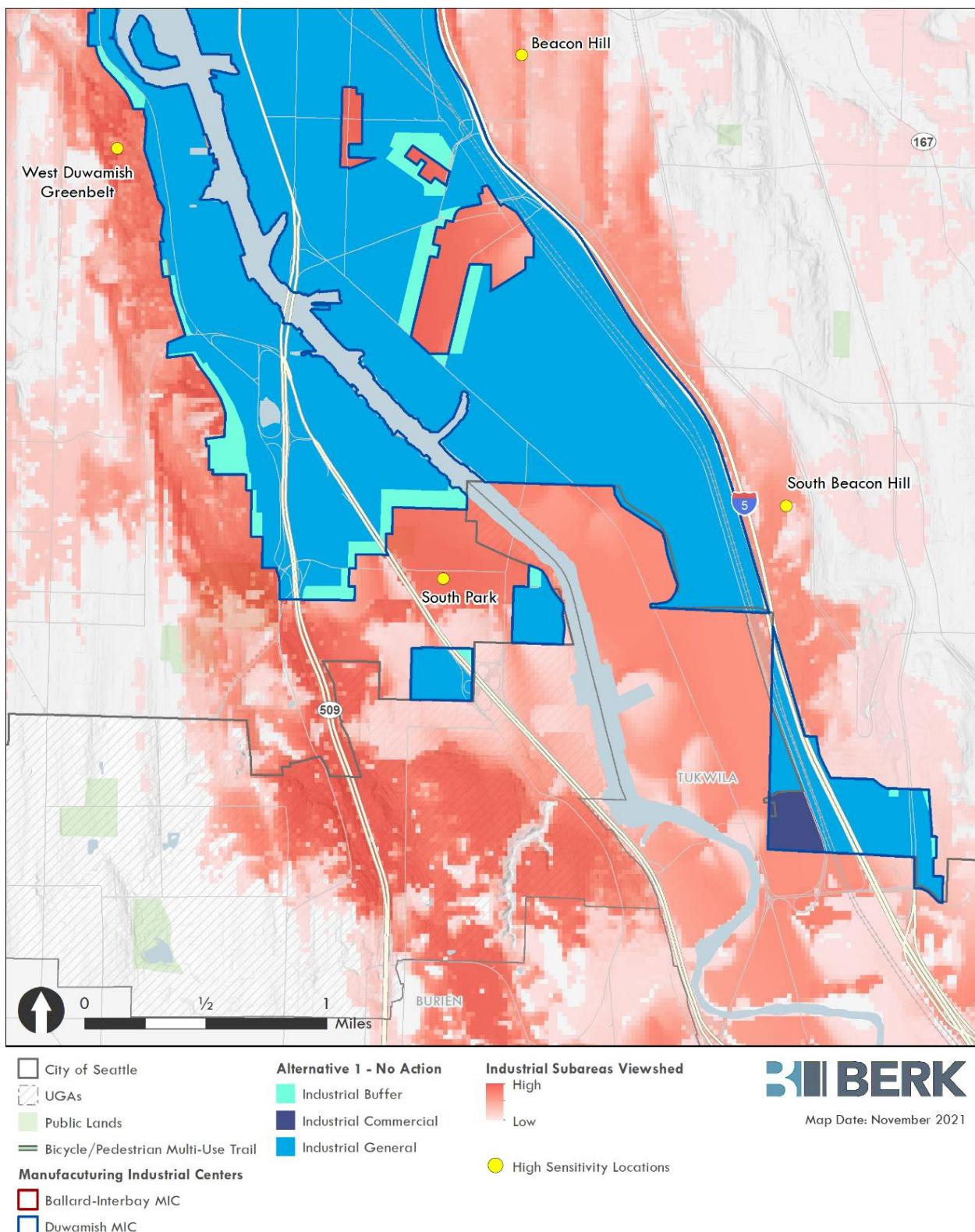


Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Georgetown/South Park

As shown in **Exhibit 3.7-7** and **Exhibit 3.7-10**, light and glare emissions from the Georgetown/South Park Subarea would primarily affect South Beacon Hill, the South Park neighborhood, and the West Duwamish Greenbelt. South Park and South Beacon Hill are primarily residential areas and generally exhibit lower household incomes and higher populations of persons of color than other areas of Seattle. Increased light and glare emissions would be particularly visible in South Park, which is surrounded on three sides by portions of the Georgetown/South Park Subarea.

Exhibit 3.7-10 Georgetown/South Park Viewshed—Alternative 1



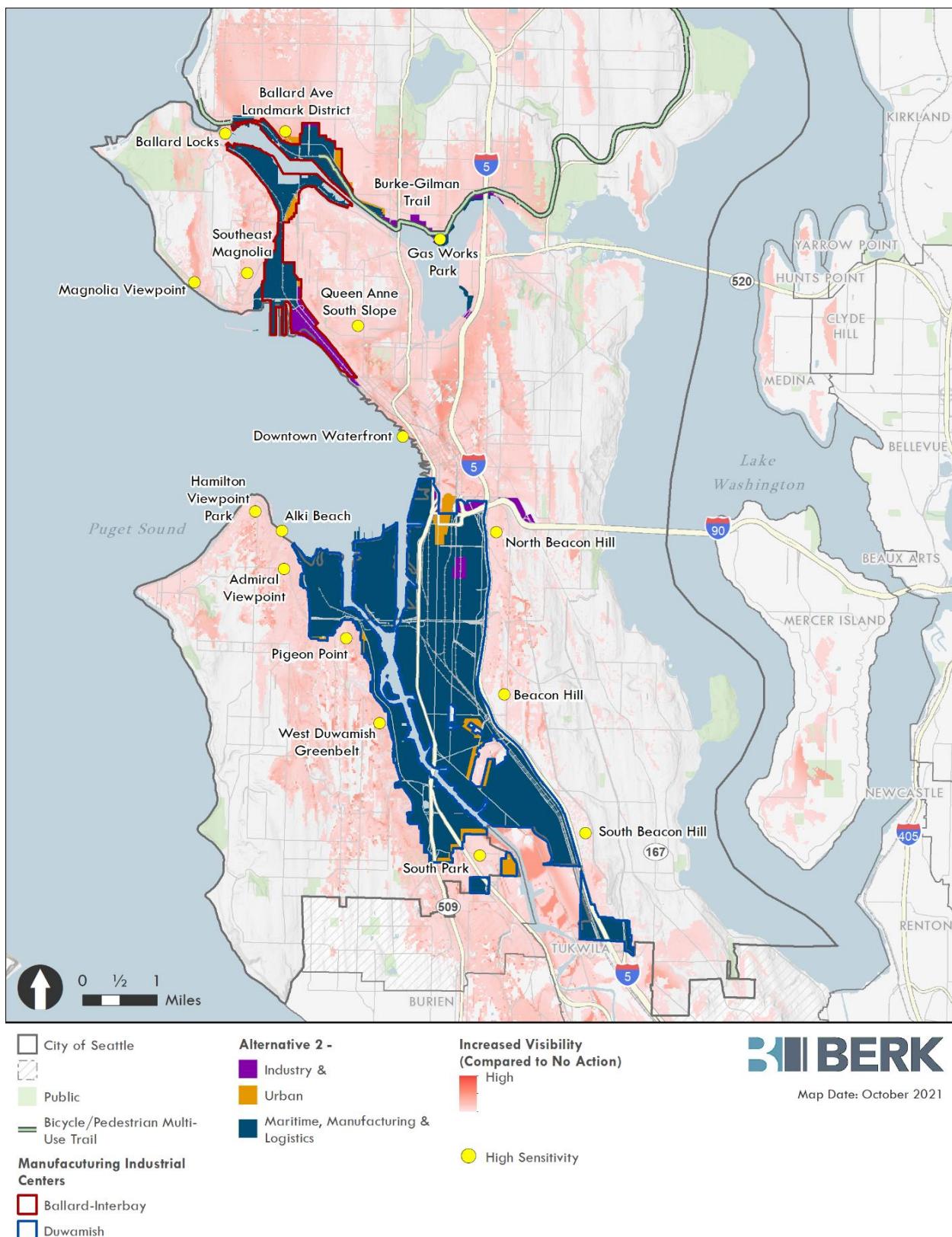
Source: City of Seattle, 2016. City of Seattle, 2021. BERK, 2021.

Impacts of Alternative 2

Alternative 2 applies the proposed land use concepts with relatively less Industry and Innovation and Urban Industrial land use than the other two Action Alternatives; the bulk of industrial land would be classified as MML, which would allow a mix of industrial uses and building typologies similar to the existing Industrial General zone. Sources of light and glare emissions would consist primarily of outdoor illumination for streets, storage and staging areas, as well as exterior operations and safety lighting for shipping and manufacturing facilities. Of the three Action Alternatives, Alternative 2 is the most similar to the No Action Alternative in terms of development type and distribution of light and glare sources and effects. **Exhibit 3.7-11** shows the land use concepts and potential viewshed for Alternative 2.

As described in **Chapter 2**, Alternative 2 is anticipated to produce up to 19.8 million square feet of new employment-generating building space. Overall light and glare emissions, though similar in nature and distribution to the No Action Alternative, are anticipated to be greater in intensity due to more extensive development of the study area. The following sections describe potential location-specific impacts and how the alternative differs from the No Action Alternative.

Exhibit 3.7-11 Increase in Viewshed—Alternative 2



Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

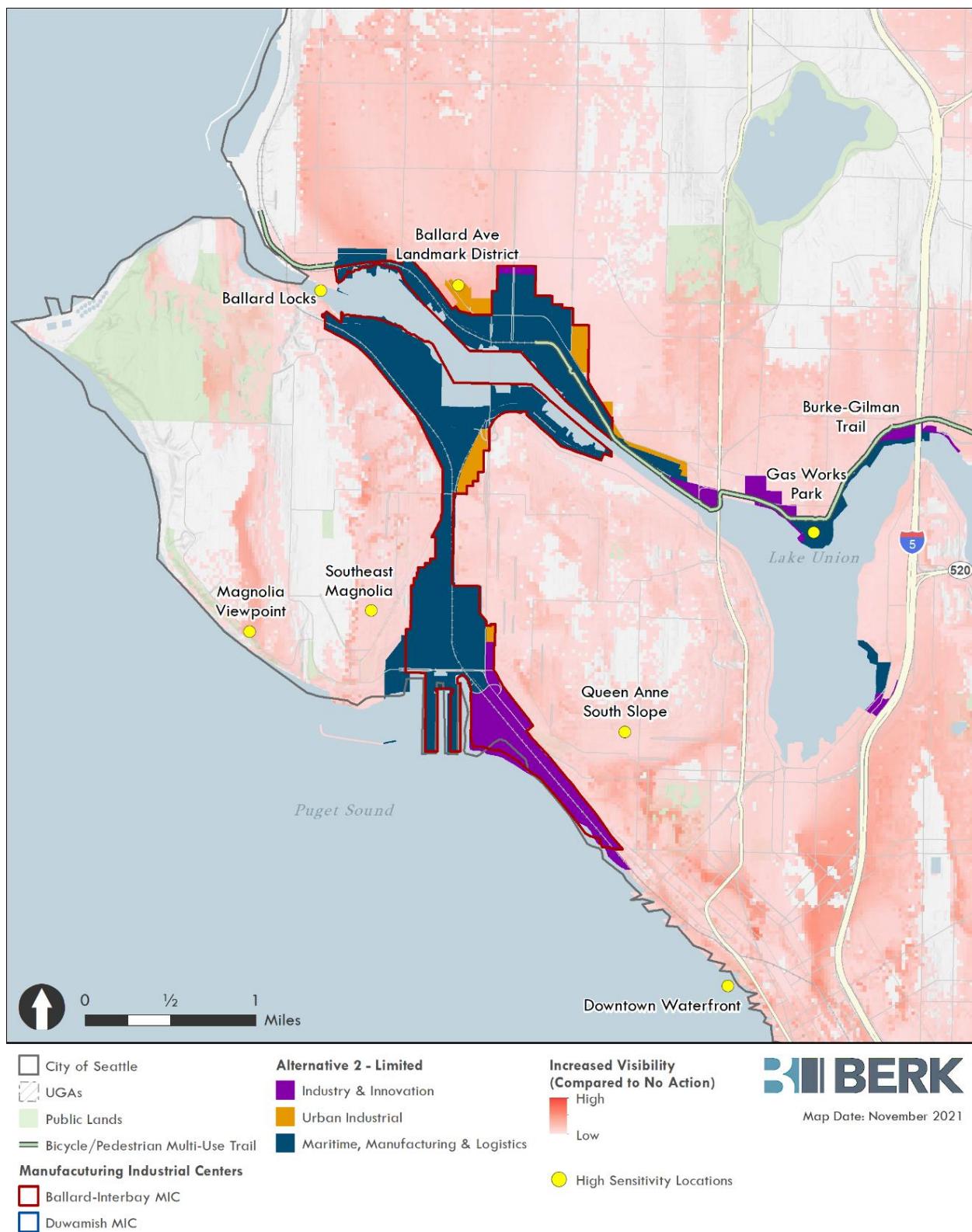
Ballard

Light and glare emissions under Alternative 2 would be similar to the No Action Alternative; the majority of the study area would be classified MML, which would produce development types and lighting conditions similar to existing Industrial General zoning. Alternative 2 would incorporate the Urban Industrial and Industry & Innovation land use concept on the edges of the Ballard Subarea to serve as transition zones between MML areas and surrounding non-industrial development, as shown in [Exhibit 3.7-11](#) and [Exhibit 3.7-12](#). These areas would generally allow greater building heights than current zoning, particularly in the II area on the northern edge of the subarea, where building heights could reach up to 160 feet. As described for the No Action Alternative, these increased heights would increase visibility of new buildings for residential areas to the north.

Though the II and UI areas would increase visibility of new buildings, development typologies in these areas would include fewer outdoor storage and staging areas, resulting in less use of intense exterior nighttime lighting, which would reduce light and glare emissions compared to the No Action Alternative. In particular, application of the UI land use concept to the area around the Ballard Avenue Landmark District would provide a buffer from more intense lighting conditions along the waterfront to the south.

Alternative 2 would implement the Industry & Innovation land use concept in the eastern portion of the Ballard Subarea, near Gas Works Park. Greater building heights would make this development more visible to the residential neighborhoods to the north, as well as from Lake Union itself. However, as described above, this land use concept places less emphasis on outdoor operations, reducing site lighting needs and resulting in reduced light and glare emissions compared to the No Action Alternative.

Exhibit 3.7-12 Increase in Viewshed (Ballard, Interbay Dravus, and Interbay Smith Cove)—Alternative 2



Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Interbay Dravus

Under Alternative 2, the Interbay Dravus Subarea would consist primarily of the MML land use concept, which would allow similar development types and intensities as the No Action Alternative, resulting in similar light and glare emissions and effects on high-sensitivity locations, such as the Ballard Locks. See **Exhibit 3.7-11** and **Exhibit 3.7-12**.

Interbay Smith Cove

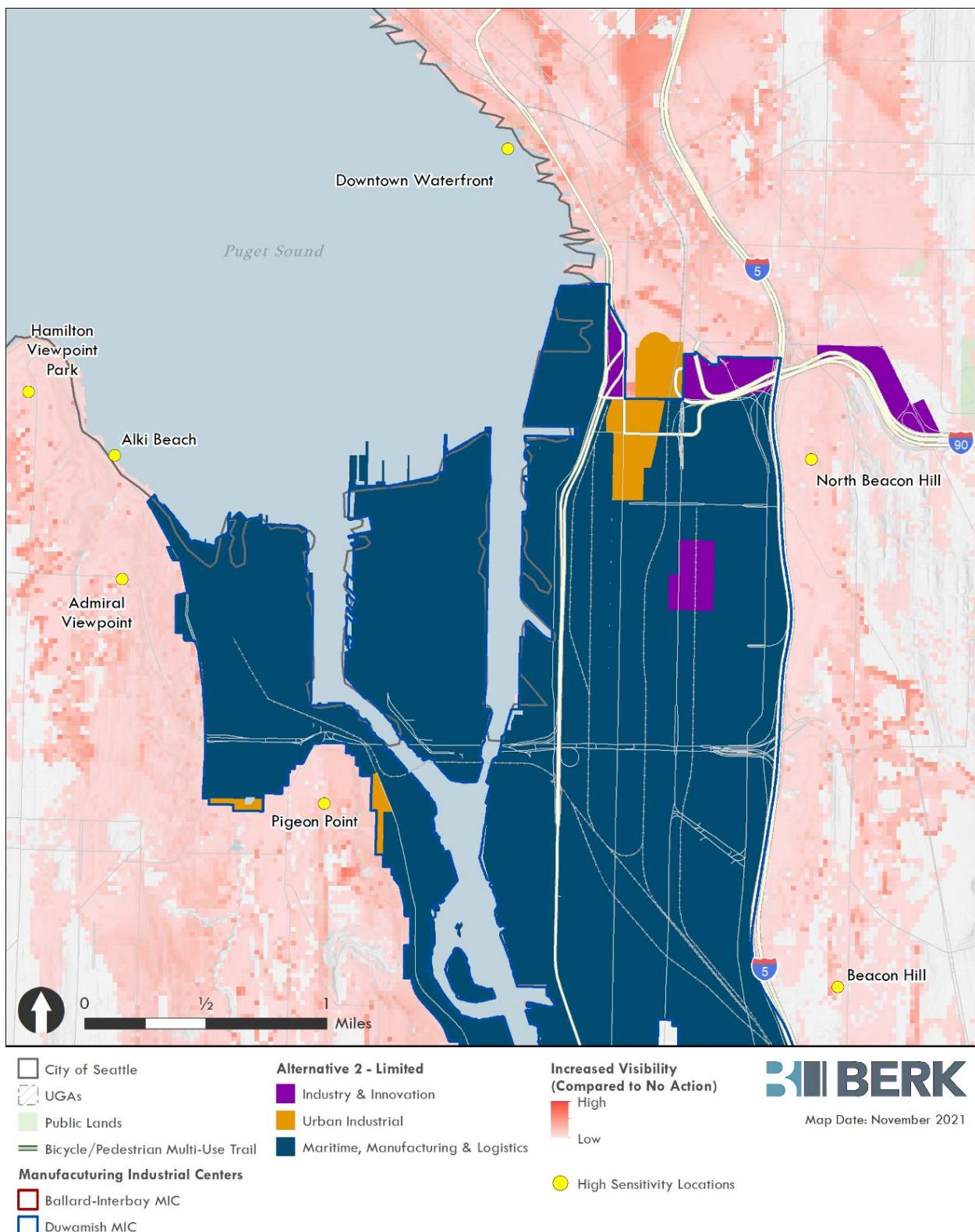
Under Alternative 2, the southeastern portion of the Interbay Smith Cove Subarea, currently zoned Industrial Commercial, would be converted to Industry & Innovation (see **Exhibit 3.7-11** and **Exhibit 3.7-12**). The Industry & Innovation land use concept would promote greater development density and a wider mix of office and commercial uses than the current Industrial Commercial zone. With fewer outdoor storage and operations areas, light emissions would generally be reduced in this area compared to the No Action Alternative. However, the II land use concept would allow a substantial increase in building heights, resulting in greater visibility to surrounding areas, particularly Southeast Magnolia and the South Slope of Queen Anne.

SODO/Stadium

Similar to the No Action Alternative, the SODO/Stadium Subarea would absorb the greatest share of future employment growth under Alternative 2, generating additional light and glare emissions as development occurs. Most of the study area would be designated MML, resulting in similar building types and lighting features as under the No Action alternative. As shown in **Exhibit 3.7-11** and **Exhibit 3.7-13**, Alternative 2 would introduce the Urban Industrial land use concept in targeted locations on the edge of the Greater Duwamish MIC to create transition areas to surrounding neighborhoods (i.e., Pigeon Point and the Stadium District). In the area surrounding the stadiums, this would result in a slight increase in maximum building heights, increasing the visibility of development, but light emissions from the UI land use concepts are anticipated to be lower than MML or existing industrial zones. In the areas adjacent to Pigeon Point, application of the UI land use concept would implement lower building heights and reduce light and glare emissions on surrounding residential areas.

Alternative 2 would also implement the Industry & Innovation land use concept in the northern portion of subarea, near the stadiums and the I-5/I-90 interchange. As previously described, increased building heights would make development in these areas more visible, but light emissions are anticipated to be lower compared to the No Action Alternative.

Exhibit 3.7-13 Increase in Viewshed (SODO/Stadium)—Alternative 2

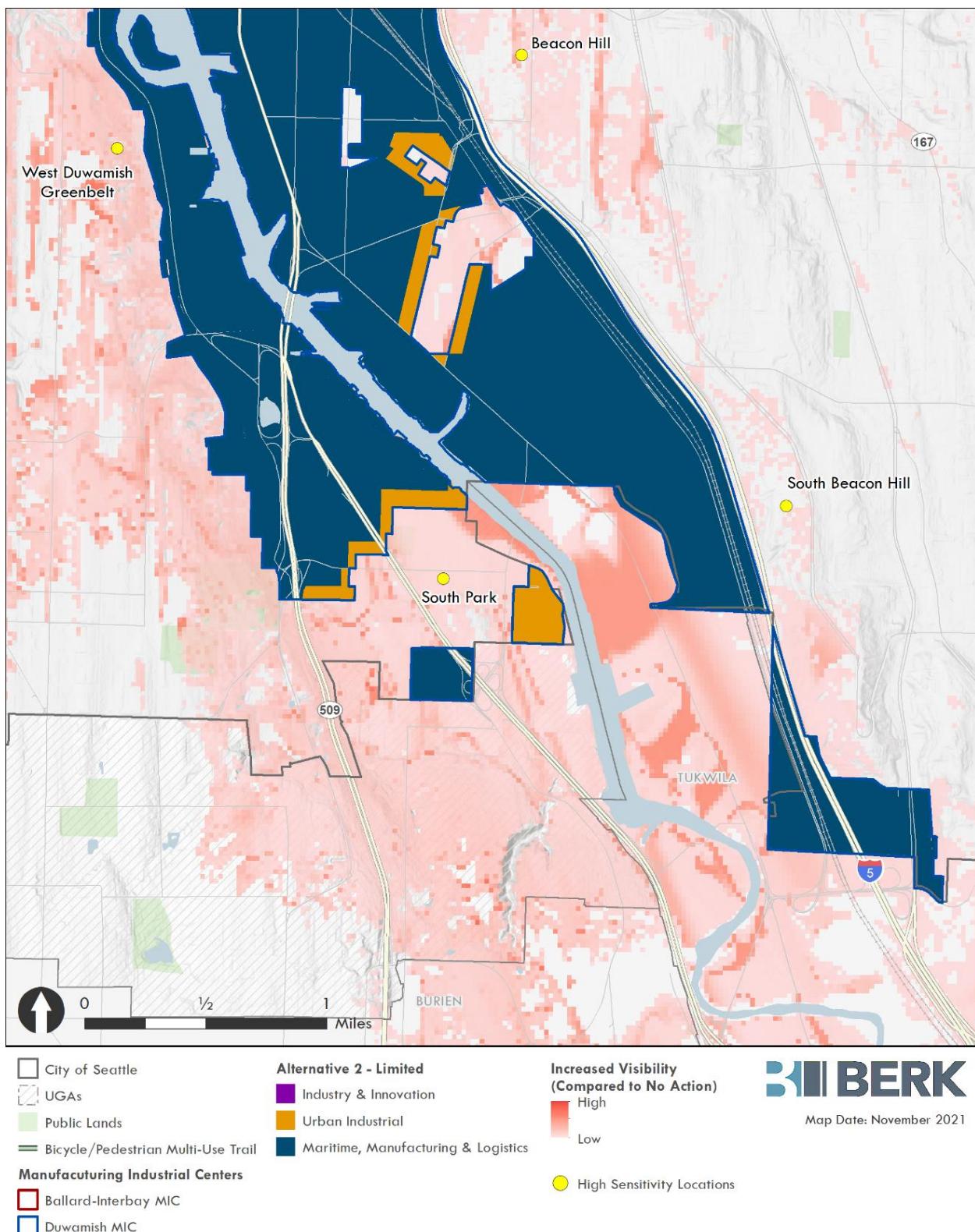


Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Georgetown/South Park

Alternative 2 would apply the Urban Industrial land use concept in most portions of the Georgetown/South Park Subarea currently zoned Industrial Buffer, providing a transition space to areas not within the Greater Duwamish MIC boundary. As described previously, this would slightly increase building heights and visibility of development in these locations, though the proposed land use mix of the UI designation would generate less intense light and glare emissions than the No Action Alternative. In particular, the South Park neighborhood is likely to experience reduced light and glare exposure compared to the No Action Alternative. See [Exhibit 3.7-11](#) and [Exhibit 3.7-14](#).

Exhibit 3.7-14 Increase in Viewshed (Georgetown/South Park)—Alternative 2



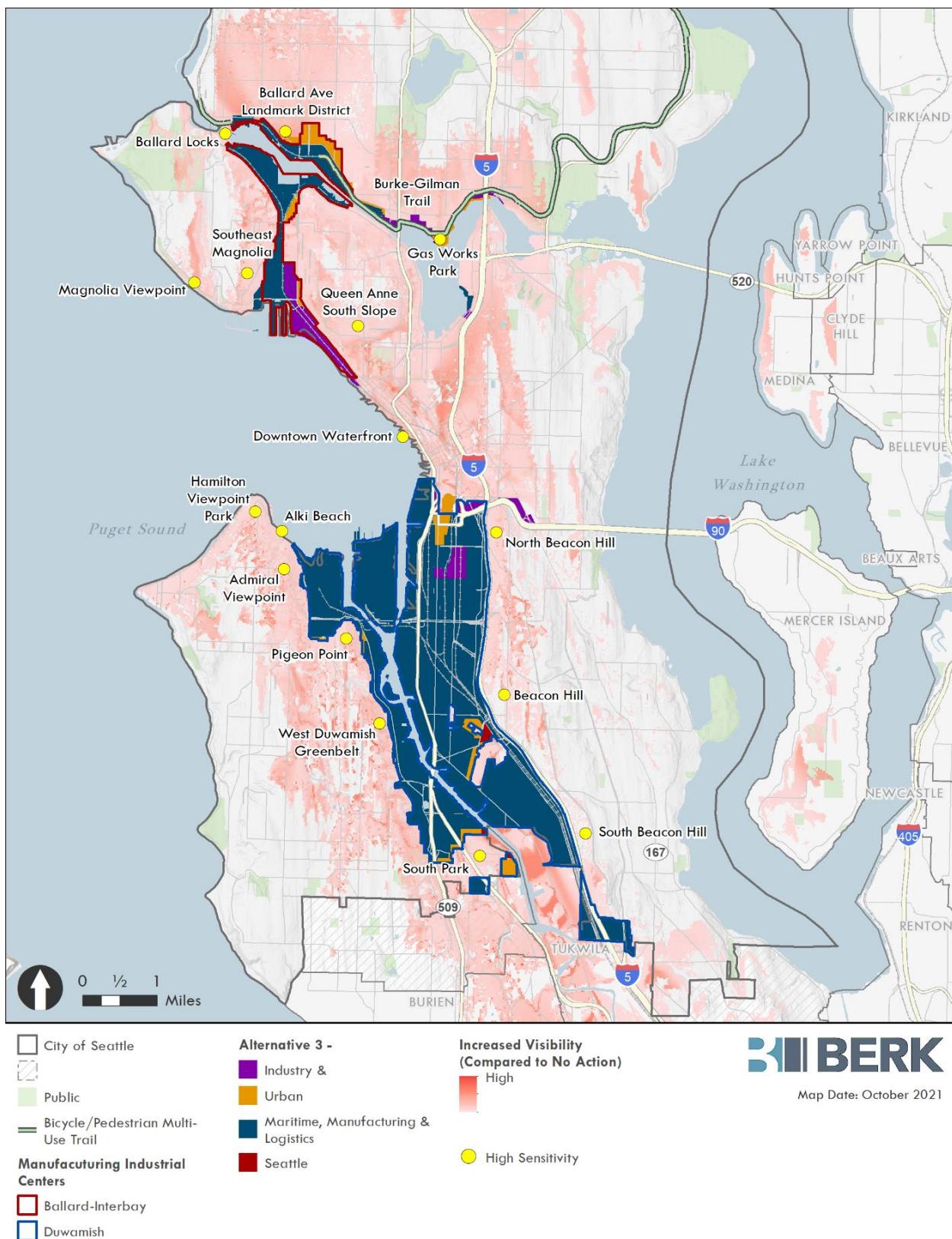
Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Impacts of Alternative 3

As described in **Chapter 2**, Alternative 3 would apply the proposed land use concepts with a greater share of Industry & Innovation and Urban Industrial than Alternative 2. **Exhibit 3.7-15** shows the land use concepts and potential viewshed for Alternative 3.

As discussed previously, the building typologies and land use mix allowed under these land use concepts would generally reduce light and glare emissions from those areas due to a reduced focus on large-scale outdoor operations that require extensive lighting. However, Alternative 3 is anticipated to produce up to 27.4 million square feet of new employment-generating building space, and overall light and glare emissions from future development is likely to be greater than both the No Action Alternative and Alternative 2. Potential location-specific impacts are described in the following sections.

Exhibit 3.7-15 Increase in Viewshed—Alternative 3



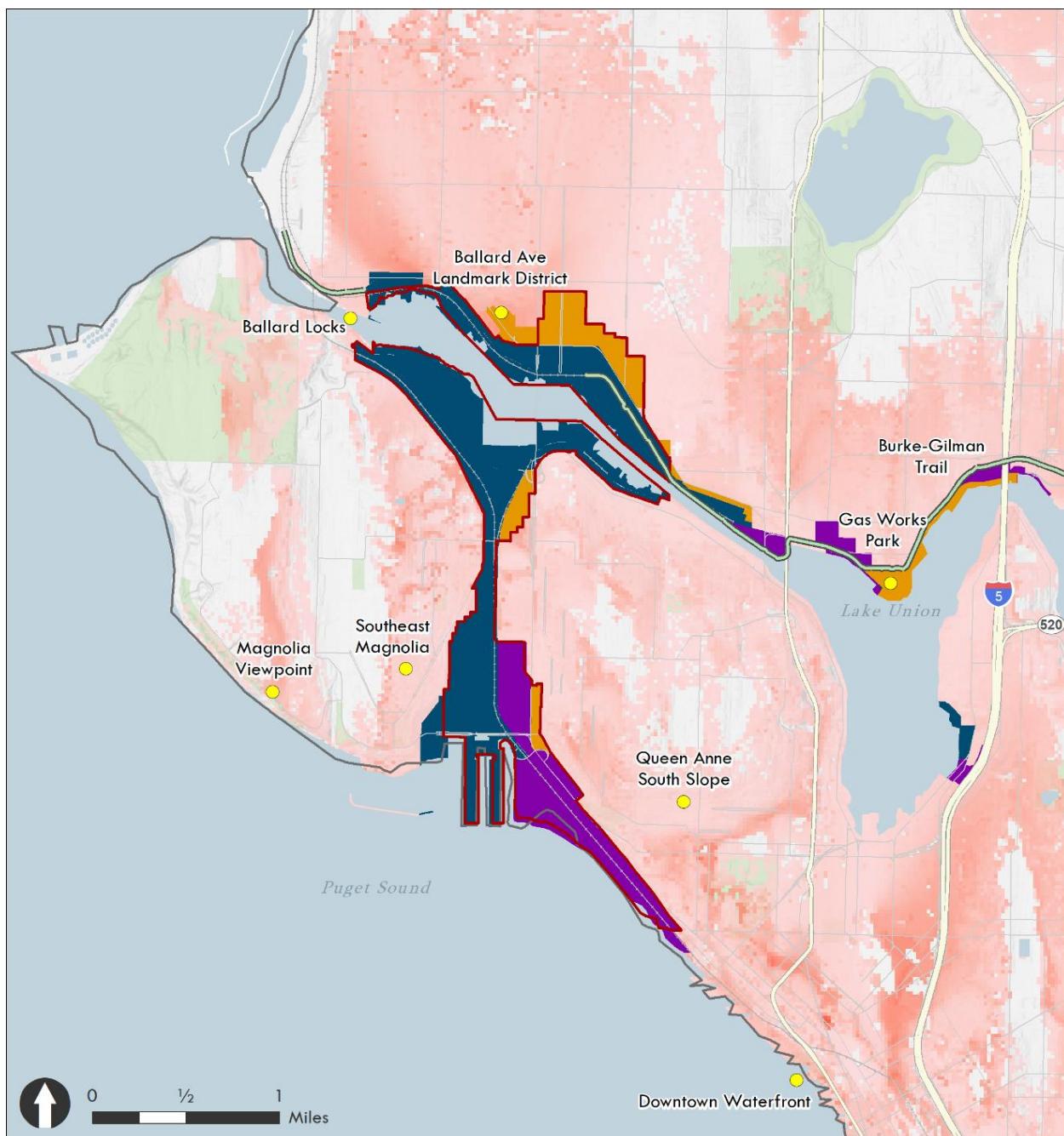
Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Ballard

As shown in **Exhibit 3.7-15** and **Exhibit 3.7-16**, Alternative 3 would implement the Urban Industrial land use concept more widely in the Ballard Subarea, specifically in the areas north of NW Leary Way and NW Market Street. Compared to Alternative 2, this change would increase building heights in this area (except for the small area designated Industry & Innovation under Alternative 2), though it would reduce light and glare emissions. This would create a transition zone between the MML area along the waterfront and reduce impacts on residential areas north of the subarea.

In the eastern portion of the subarea near Gas Works Park, the areas designated MML under Alternative 2 would be designated UI under Alternative 3. As described above, this would increase building heights and visibility of development, but it would result in lower light and glare emissions, reducing impacts on residential areas to the north, as well as the Burke-Gilman Trail, which travels through the area.

Exhibit 3.7-16 Increase in Viewshed (Ballard, Interbay Dravus, and Interbay Smith Cove)—Alternative 3



- City of Seattle
- UGAs
- Public Lands
- Bicycle/Pedestrian Multi-Use Trail
- Manufacturing Industrial Centers**
- Ballard-Interbay MIC
- Duwamish MIC

- Alternative 3 - Targeted**
- Industry & Innovation
- Urban Industrial
- Maritime, Manufacturing & Logistics
- Seattle Mixed

- Increased Visibility (Compared to No Action)**
- High (Red)
- Low (Dark Red)
- High Sensitivity Locations

BERK

Map Date: November 2021

Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Interbay Dravus

As shown in [Exhibit 3.7-15](#) and [Exhibit 3.7-16](#), Alternative 3 would implement the same land use concept pattern in the Interbay Dravus Subarea as Alternative 2, resulting in similar light and glare impacts.

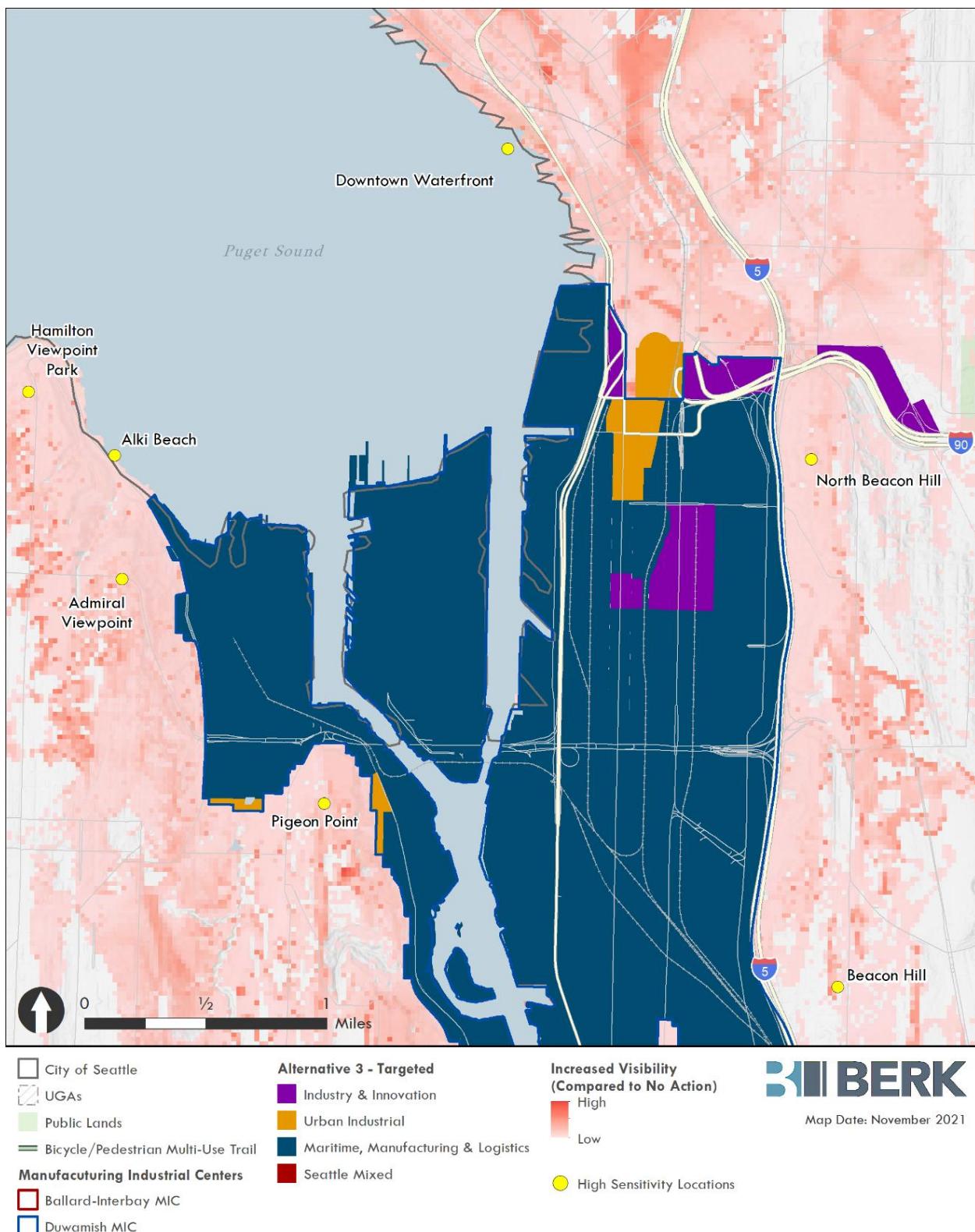
Interbay Smith Cove

Alternative 3 would implement the same land use concept pattern in Interbay Smith Cove as Alternative 2, with the exception of the southwest slope of Queen Anne, where Alternative 3 would implement a greater amount of Urban Industrial instead of Industry & Innovation. Light and glare impacts in Interbay Smith Cover under Alternative 3 are therefore anticipated to be similar to, or less than, Alternative 2. See [Exhibit 3.7-15](#) and [Exhibit 3.7-16](#).

SODO/Stadium

As shown in [Exhibit 3.7-15](#) and [Exhibit 3.7-17](#), Alternative 3 would implement the same land use concept pattern in the SODO/Stadium Subarea as Alternative 2, with the exception of a larger node of Industry & Innovation south of S Holgate Street. Compared to Alternative 2, this change would result in a slight increase in visibility due to taller building heights in this location, though light and glare emissions would be less than the surrounding MML land use. As such, light and glare impacts in the SODO/Stadium Subarea under Alternative 3 are anticipated to be similar to, or less than, Alternative 2.

Exhibit 3.7-17 Increase in Viewshed (SODO/Stadium)—Alternative 3



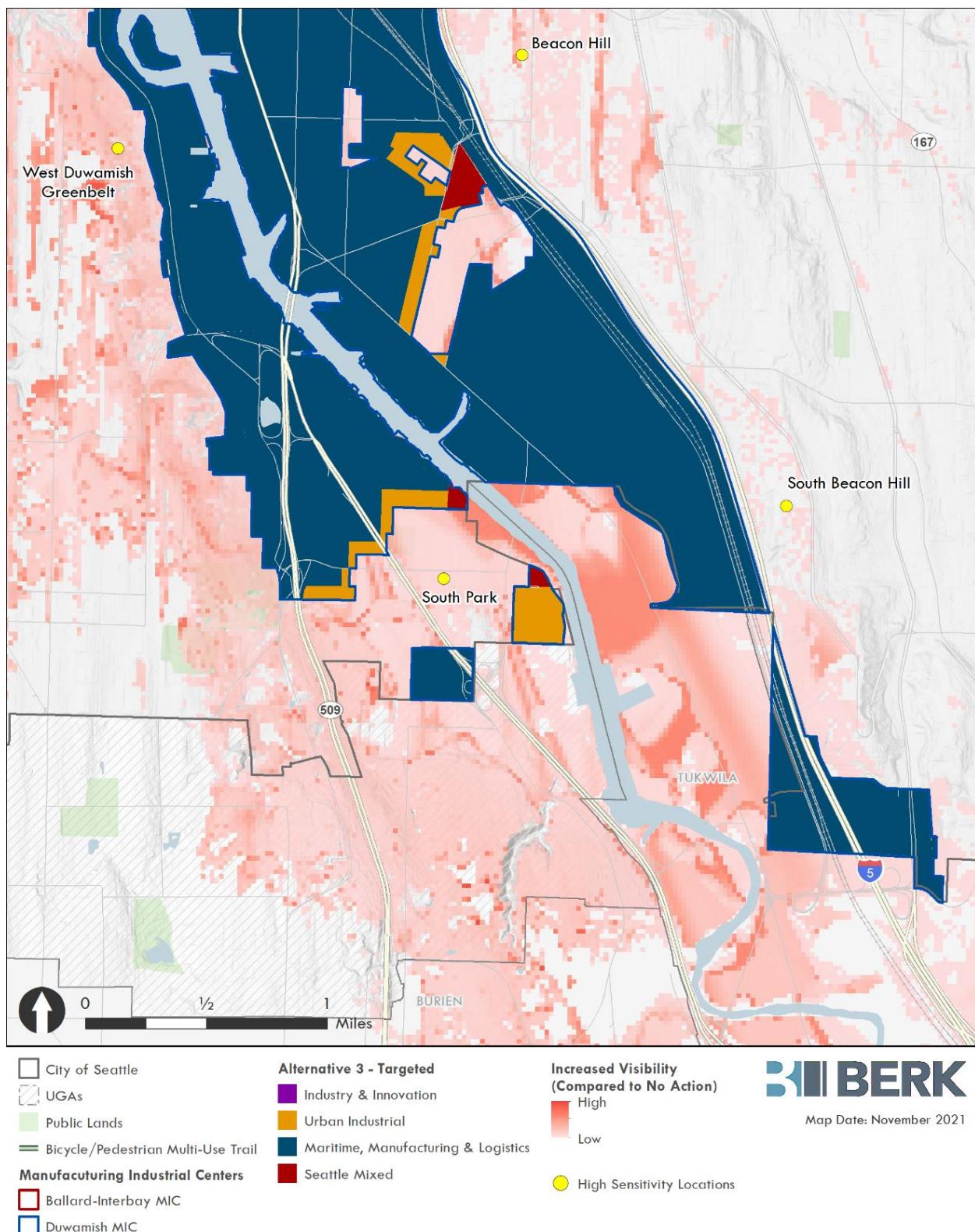
Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Georgetown/South Park

Alternative 3 would apply a similar land use concept pattern in the Georgetown/South Park Subarea as Alternative 2 with the following changes:

- Removal of three targeted areas from the Greater Duwamish MIC, shown on **Exhibit 3.7-15** and **Exhibit 3.7-18** as Seattle Mixed:
 - One area approximately bounded by Corson Avenue S, ~~Carleton Avenue S~~ Michigan Street, and Airport Way S. Removal of this area from the MIC would result in future development of this location for commercial and multifamily residential uses instead of industrial facilities. Light and glare emissions would be reduced compared to the MML land use proposed under Alternative 2, which would reduce potential impacts on the nearby Georgetown Playfield and Spryspark, located across Corson Avenue from the removal area.
 - Two areas adjacent to the South Park Neighborhood along the Duwamish Waterway. Removal of these areas and rezoning to Seattle Mixed would affect the uses allowed, but the building typologies and scale of development would be similar to the Urban Industrial land use concept proposed under Alternative 2, resulting in similar light and glare emissions.
- Designation of the eastern side of Ellis Avenue S north of S Myrtle Street as MML instead of UI. The use mix and building typologies allowed by the MML land use concept would potentially generate greater light and glare emissions than the UI land use concept proposed under Alternative 2. These impacts would primarily affect existing residential uses west of Ellis Avenue S, which are not included in the MIC.

Exhibit 3.7-18 Increase in Viewshed (Georgetown/South Park)—Alternative 3



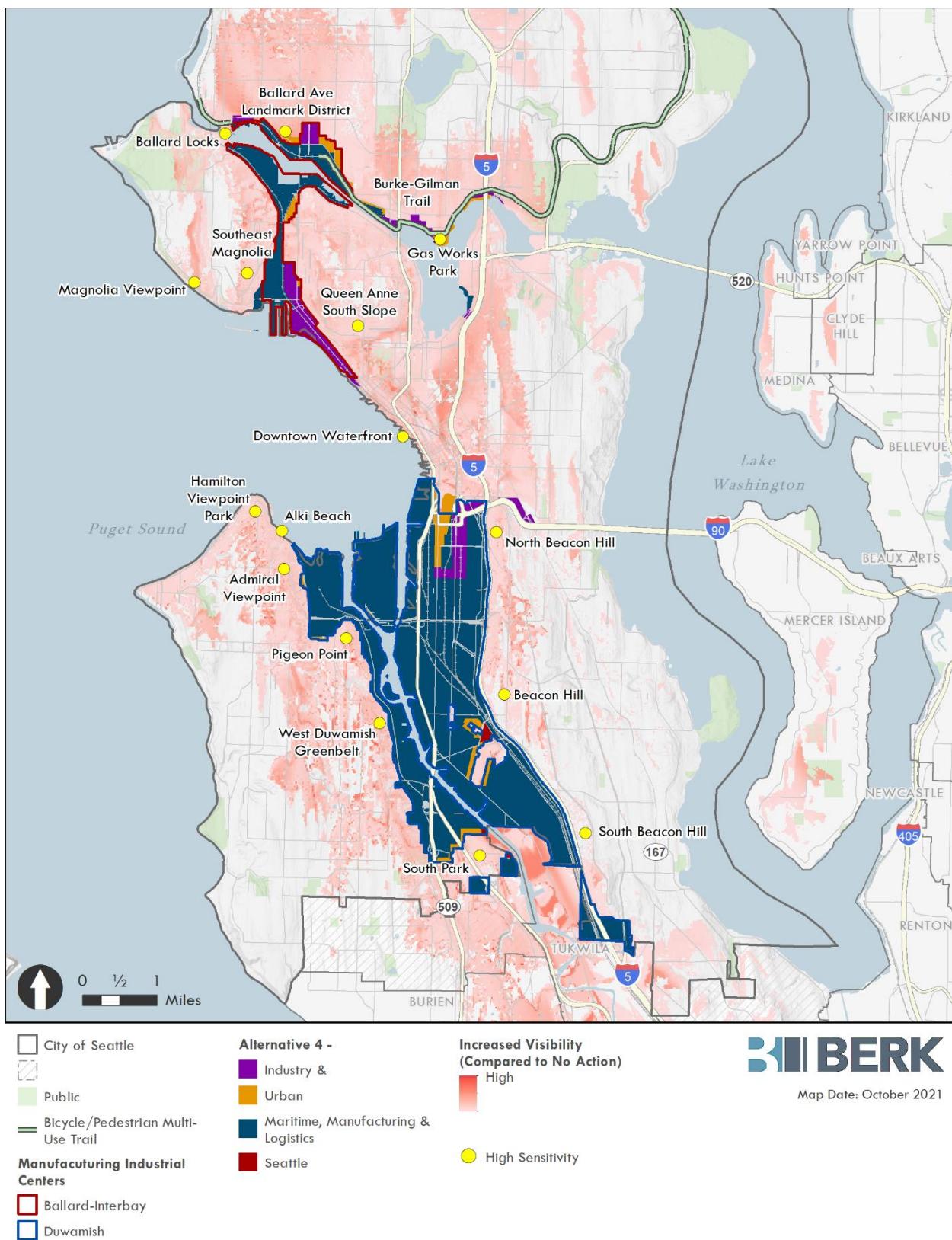
Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Impacts of Alternative 4

As described in **Chapter 2**, Alternative 4 would implement a land use pattern similar to alternatives 2 and 3, but with a greater share of Industry & Innovation and Urban Industrial than Alternative 2. Compared to Alternative 3, Alternative 4 would have slightly higher shares of Maritime, Manufacturing, & Logistics and Industry & Innovation, and a lower share of Urban Industrial. **Exhibit 3.7-19** shows the land use concepts and potential viewshed for Alternative 4.

As described in **Chapter 2**, Alternative 4 would produce up to 27.8 million square feet of employment-generating building space, the highest of the four alternatives. Of the four alternatives, Alternative 4 also proposed the most extensive use of the Industry & Innovation land use concept, which would allow building heights up to 160 feet. As described in the introduction to this chapter, these increased heights would increase the visibility of industrial development to surrounding areas, though the building typologies allowed would likely generate less light and glare emissions due to less focus on outdoor operation and storage areas that require extensive outdoor lighting. Overall light and glare emissions are anticipated to be similar to or slightly higher than Alternative 3 due to the higher overall developed square footage and slightly greater share of land designated MML. Potential location-specific impacts are described in the following sections.

Exhibit 3.7-19 Increase in Viewshed—Alternative 4



Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Ballard

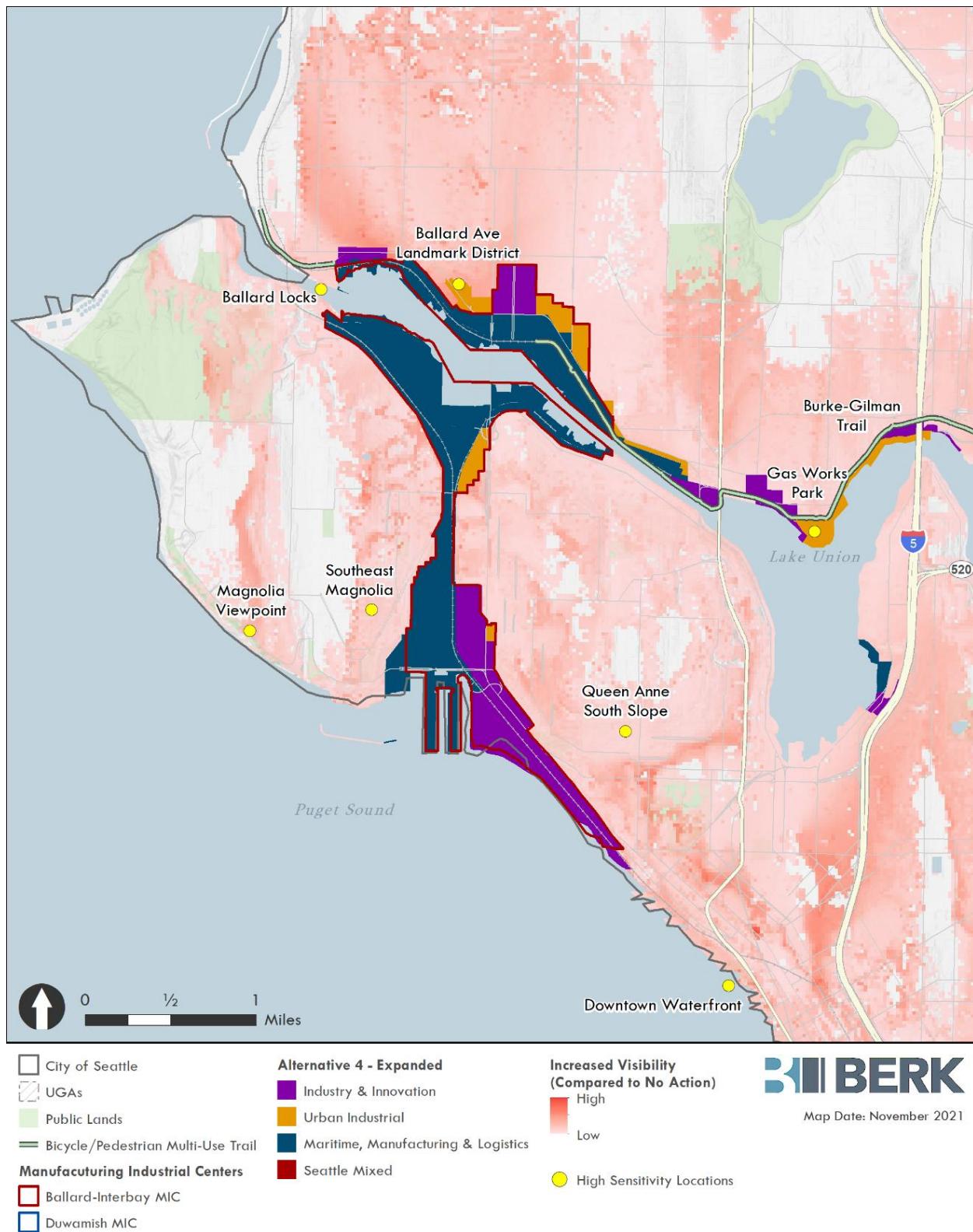
In the Ballard Subarea, Alternative 4 would implement two areas of Industry & Innovation on the north side of the subarea, as shown in **Exhibit 3.7-19** and **Exhibit 3.7-20**:

- At the northwest corner of the subarea, along NW Market Street; and
- North of NW Market Street on either side of 14th Avenue NW.

Implementation of the Industry & Innovation land use concept would allow increased building heights up to 160 feet, increasing the visibility of development to surrounding residential areas, particularly neighborhoods north of the subarea, which are located at higher elevations. While development under the II land use concept would generate lower light and glare emissions compared to the MML development proposed for these locations under Alternative 2, the increased height would expose a greater number of residents to light and glare effects than under alternatives 2 and 3.

Other portions of the subarea would implement the same land use concept pattern as Alternative 3 and would generate the same potential impacts.

Exhibit 3.7-20 Increase in Viewshed (Ballard, Interbay Dravus, and Interbay Smith Cove)—Alternative 4



Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Interbay Dravus

Alternative 4 would implement the same land use concept pattern in the Interbay Dravus Subarea as alternatives 2 and 3, resulting in similar light and glare impacts. See **Exhibit 3.7-19** and **Exhibit 3.7-20**.

Interbay Smith Cove

Alternative 4 would implement the same land use concept pattern in the Interbay Smith Cove Subarea as Alternative 2, except for MML areas east of the railroad, resulting in similar light and glare impacts for most of the subarea. Compared to alternatives 2 and 3~~Alternative 3~~, Alternative 4 would implement more Industry & Innovation on the southwest slope of Queen Anne, resulting in taller building heights and increased visibility of development in western Queen Anne and Southeast Magnolia. See **Exhibit 3.7-19** and **Exhibit 3.7-20**.

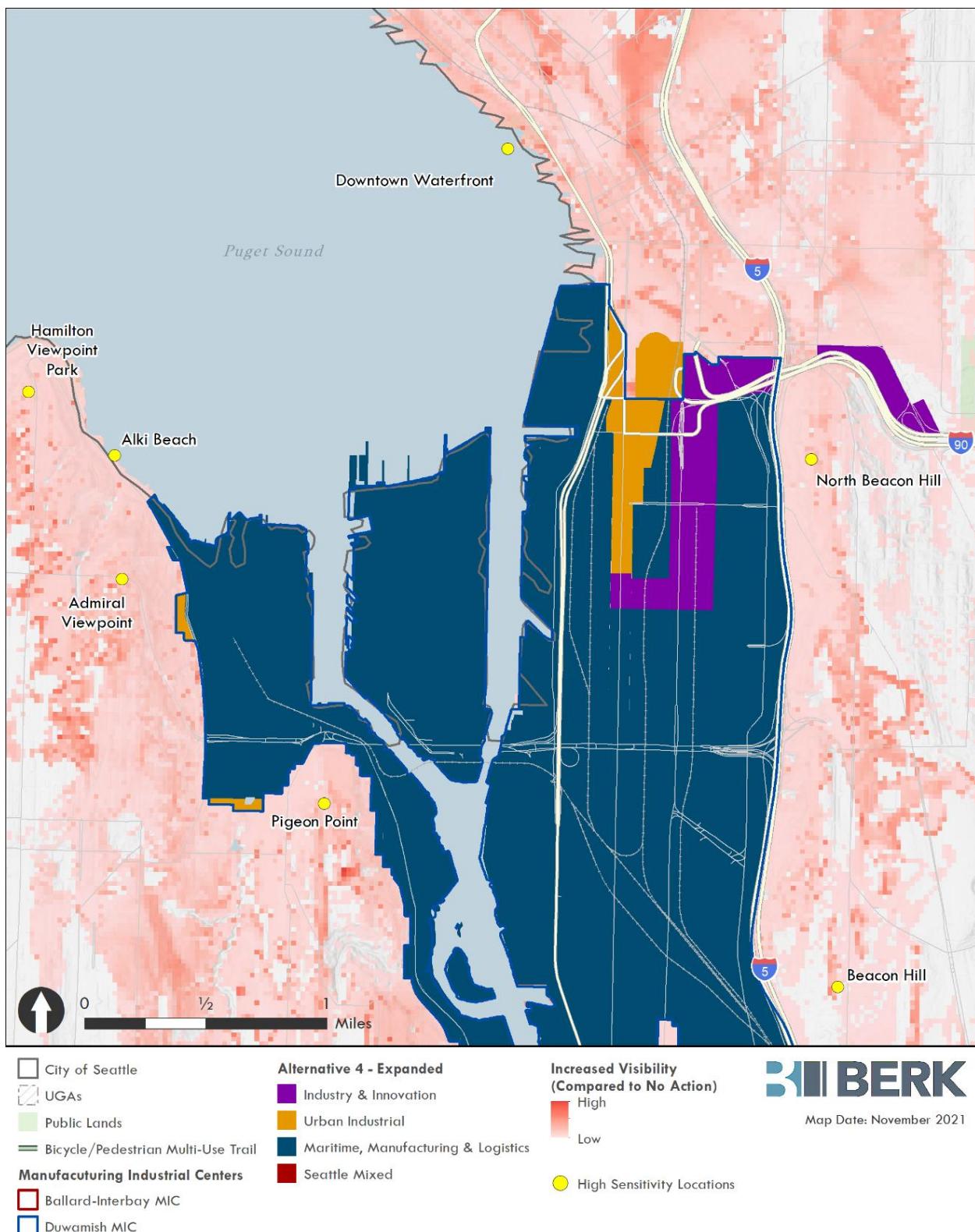
SODO/Stadium

In the SODO/Stadium Subarea, Alternative 4 would apply a similar land use concept pattern as Alternative 3 with the following changes:

- Expand the Industry & Innovation node east of the stadiums northward to the I-5/I-90 interchange. This would increase building heights and visibility to residential populations in North Beacon Hill but reduce light and glare emissions compared to the MML land use concept.
- Expand the Urban Industrial node that encompasses the stadiums southward along 1st Avenue S Similar to above, this would increase allowed building heights but potentially reduce light and glare emissions.
- Convert the area west of Lumen Field bounded by Alaskan Way S, S Royal Brougham Way, and 1st Avenue S from Industry & Innovation to Urban Industrial. This would reduce building heights and visibility to the adjacent portions of Downtown.
- Incorporate additional Urban Industrial along Harbor Avenue SW in West Seattle and W Marginal Way in Pigeon Point. This change could increase building heights in this location, but effects on visibility to populations to the west in West Seattle and Pigeon point would be minimal due to steep terrain. Light and glare emissions would likely be reduced compared to the MML land use concept proposed under alternatives 2 and 3 in this area.

Overall, these changes would result in greater visibility of development to surrounding areas, particularly Downtown and North Beacon Hill, but reduced light and glare emissions, relative to alternatives 2 and 3. See **Exhibit 3.7-19** and **Exhibit 3.7-21**.

Exhibit 3.7-21 Increase in Viewshed (SODO/Stadium)—Alternative 4



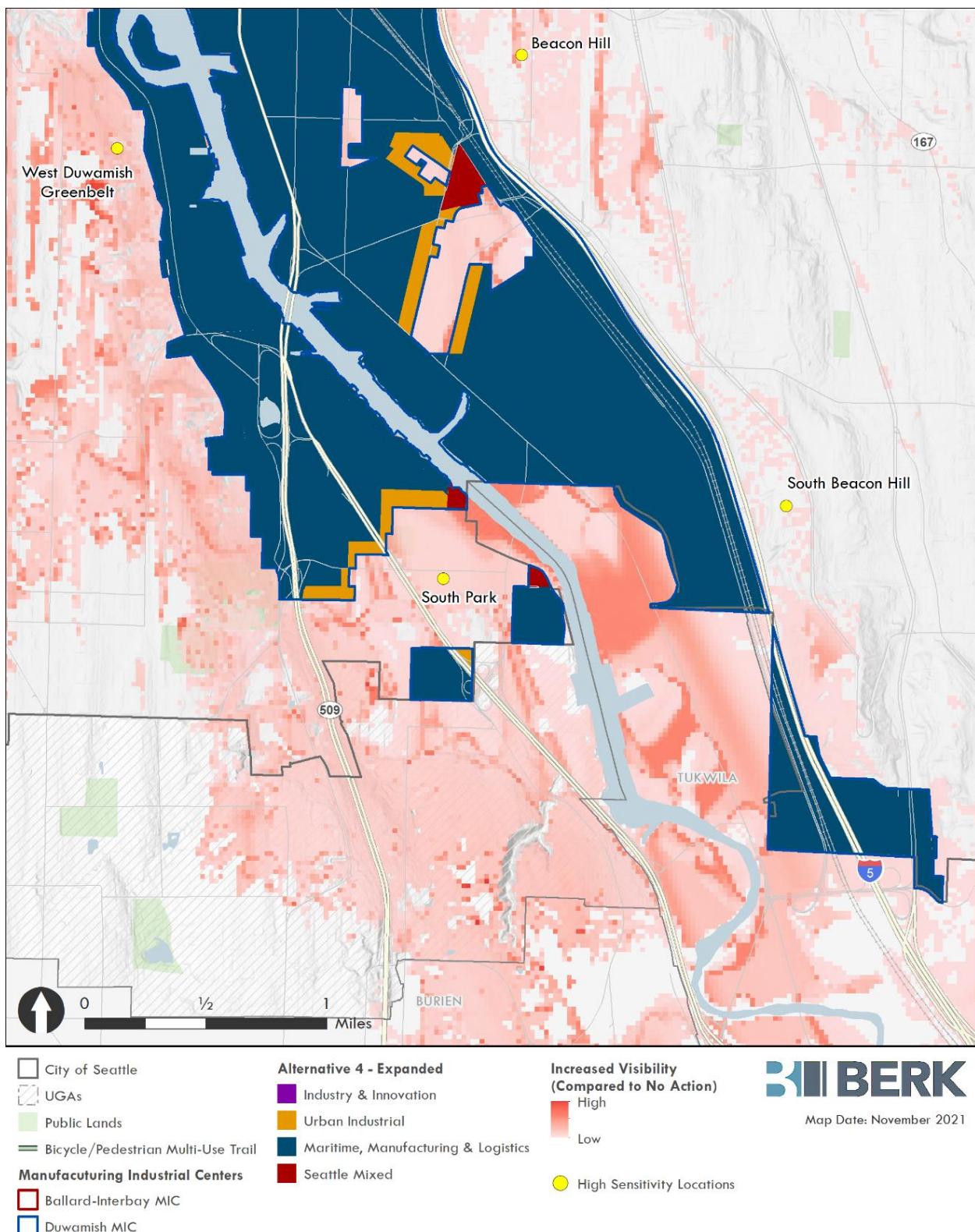
Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Georgetown/South Park

In the Georgetown/South Park Subarea, Alternative 4 would apply a similar land use concept pattern as Alternative 3 with the following changes (see **Exhibit 3.7-19** and **Exhibit 3.7-22**):

- Designation of a small area near the intersection of Padilla Place S and S Orcas Street as MML instead of UI. This change could increase light and glare emissions and associated impacts on nearby residential properties not included in the MIC, as well as the nearby Georgetown Playfield and Spraypark to the northeast (which is within the MIC).
- Designation of the eastern side of Ellis Avenue S north of S Myrtle Street as UI instead of MML (similar to Alternative 2). Compared to Alternative 3, this would reduce light and glare emissions and effects on residential properties outside the MIC, west of Ellis Avenue S.
- Designation of the MIC area east of 14th Avenue S as MML instead of UI (as proposed for alternatives 2 and 3). This location is currently occupied by a Boeing facility and other manufacturing and warehouse uses consistent with the MML land use concept, so future light and glare emissions in this area would be similar to the No Action Alternative and greater than alternatives 2 and 3. Residential and commercial areas on the west side of 14th Avenue S in the South Park neighborhood would be most affected.
- Designation of a small area bounded by W Marginal Way, S Director Street, and 12th Avenue S as UI instead of MML. Due to the small size of this area, effects on overall light and glare emissions would be small, but it would create a transition area and reduce localized impacts on non-MIC residential properties in South Park north of S Director Street.

Exhibit 3.7-22 Increase in Viewshed (Georgetown/South Park)—Alternative 4

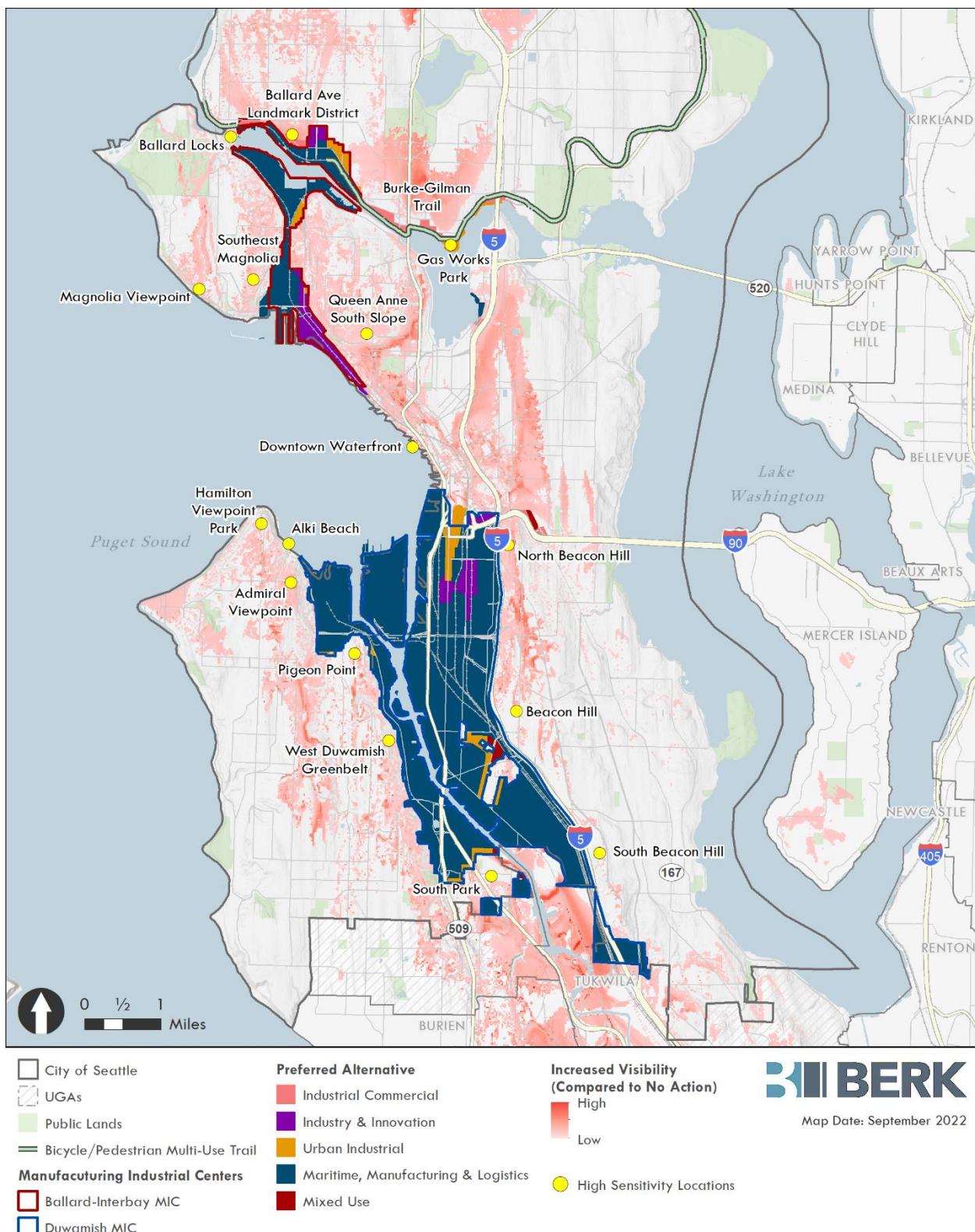


Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2021.

Impacts of the Preferred Alternative

As described in **Chapter 2**, the Preferred Alternative represents a blend of the other alternatives, resulting in a land use mix similar to alternatives 3 and 4, but with a greater share of Mixed Use Commercial and Industrial Commercial for areas outside the MICs. **Exhibit 3.7-23** shows the land use concepts and potential viewshed for the Preferred Alternative. The Preferred Alternative viewshed uses a combination of district-wide maximum building heights for each land use concept and more detailed height limits based on location-specific criteria. These represent a refinement of the height assumptions used for alternatives 2, 3, and 4. Where height assumptions for the same land use concept differ between alternatives, this is identified in the analysis.

Similar to Alternative 3, the Preferred Alternative would have reduced focus on large-scale outdoor operations, relative to alternatives 2 and 4, resulting in less usage of intense outdoor lighting. Similar to all the other Action Alternatives, the Preferred Alternative is anticipated to produce an increase in employment-generating building space above the No Action Alternative. Overall light and glare emissions from future development under the Preferred Alternative would be similar to those generated by alternatives 3 and 4, depending upon location. Potential location-specific impacts are described in the following sections.

Exhibit 3.7-23 Increase in Viewshed—Preferred Alternative

Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2022.

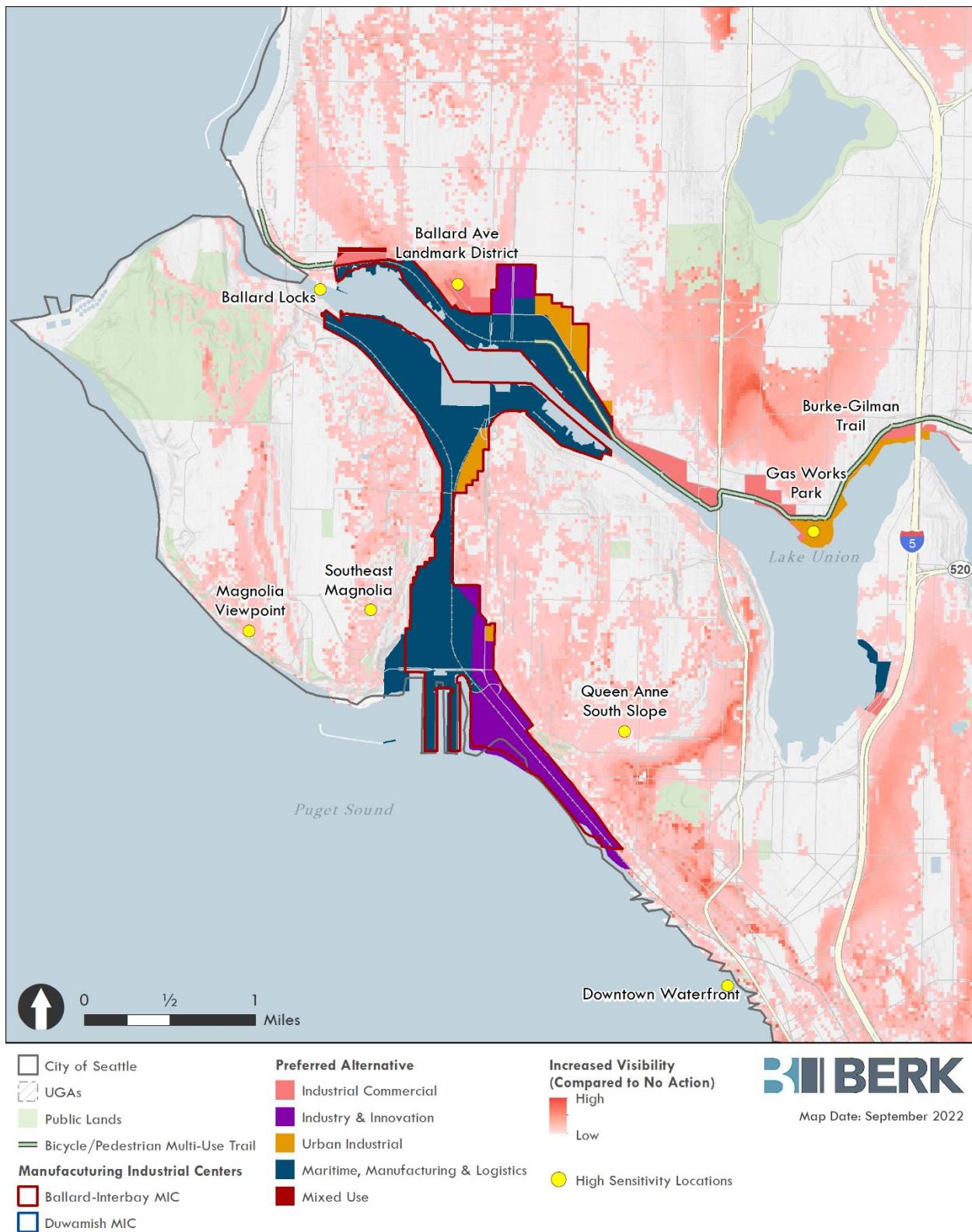
Ballard

In the Ballard Subarea, the Preferred Alternative would implement the same land use pattern as Alternative 4 for areas within the MIC, with the exception of one block east of 14th Avenue NW and north of NW Leary Way, where the MML land use concept would be applied instead of Industry & Innovation (see **Exhibit 3.7-24**). Given the small area of change, potential impacts from development within the MIC under the Preferred Alternative are anticipated to be the same as Alternative 4.

Outside the MIC, the Preferred Alternative would implement a combination of Urban Industrial, Mixed Use Commercial, and Industrial Commercial land use concepts.

- Along the northern edge of the MIC, west of 15th Avenue NW, existing Industrial Commercial zoning would be maintained where it currently applies, resulting in similar impacts as the No Action Alternative.
- The area northwest of the MIC along NW Market Street currently zoned Industrial Buffer would shift to Mixed Use Commercial. This would increase maximum allowed building heights to 75 feet, compared to 45 feet for alternatives 2, 3, and the No Action Alternative. The Preferred Alternative would reduce maximum building heights compared to Alternative 4 (160 feet).
- From Gasworks Park eastward, the Preferred Alternative would apply the Urban Industrial land use concept to the same locations as Alternative 4, resulting in similar building heights, typologies, and potential impacts.
- Portions of the subarea east of the MIC along the northern shore of the ship canal and Lake Union not designated as Urban Industrial would be zoned Industrial Commercial. As shown in **Exhibit 2.4-6**, the Industrial Commercial zone currently applies to much of this area. Potential impacts of the Preferred Alternative in these locations would therefore be similar to the No Action Alternative.
- The Preferred Alternative would rezone the portion of the subarea between the eastern MIC boundary and Evanston Avenue N from a mixture of Industrial General and Industrial Buffer to Industrial Commercial. However, allowed building heights would remain similar to existing zoning. Along the northern edge of this area, the Preferred Alternative would reduce building heights compared to alternatives 2, 3, and 4.

Exhibit 3.7-24 Increase in Viewshed (Ballard, Interbay Dravus, and Interbay Smith Cove)—Preferred Alternative



Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2022.

Interbay Dravus

The Preferred Alternative would implement the same land use concept pattern in the Interbay Dravus Subarea as alternatives 2, 3, and 4, resulting in similar light and glare impacts. See **Exhibit 3.7-23** and **Exhibit 3.7-24**. Compared to alternatives 2, 3, and 4, the Preferred Alternative would slightly increase maximum heights in the Urban Industrial area west of 15th Avenue NW (from 75 feet to 85 feet), resulting in increased visibility.

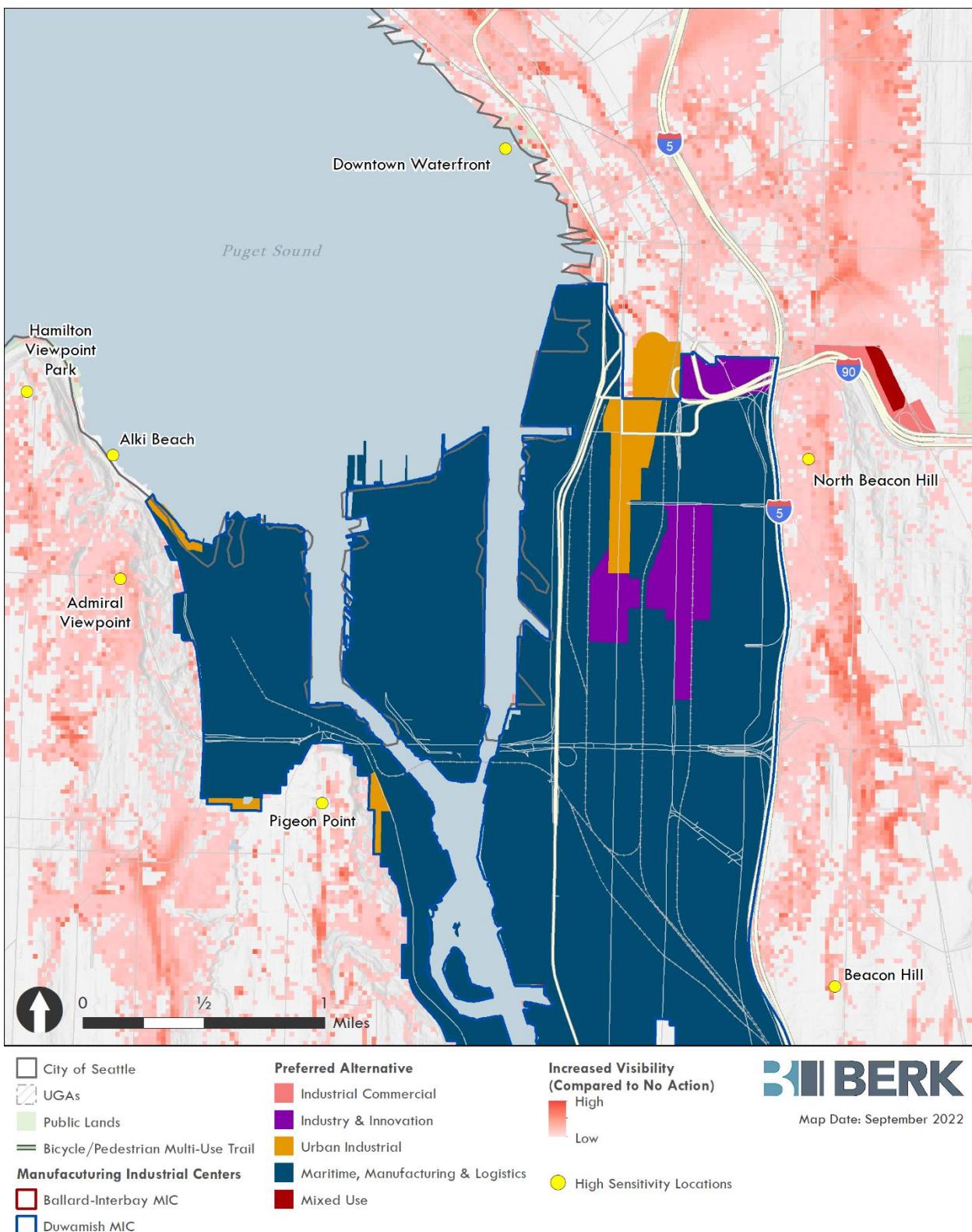
Interbay Smith Cove

The Preferred Alternative would implement the same land use concept pattern in the Interbay Smith Cove Subarea as Alternative 4, except for an area of II on the southwest slope of Queen Anne adjacent to the east side of the railroad, which would instead be MML. The Preferred Alternative also assumes lower maximum building heights in the portions of the subarea zoned for Industry & Innovation compared to Alternative 4 (85 feet versus 160 feet), resulting in reduced visibility and reduced light and glare impacts overall. See **Exhibit 3.7-23** and **Exhibit 3.7-24**.

SODO/Stadium

In the SODO/Stadium Subarea, the Preferred Alternative would apply a similar land use concept pattern as Alternative 4 with the following changes (see **Exhibit 3.7-23** and **Exhibit 3.7-25**):

- The area west of Lumen Field bounded by Alaskan Way S, S Royal Brougham Way, and 1st Avenue S would be designated Maritime, Manufacturing & Logistics instead of Urban Industrial. Maximum building heights in this area would be 85 feet, representing a small increase over Alternative 4 (75 feet). This would increase visibility to the adjacent portions of Downtown compared to Alternative 4 and the No Action Alternative, but reduce visibility compared to alternatives 2 and 3.
- The non-contiguous portion of the subarea east of I-5 and north of I-90 would be designated as a combination of Industrial Commercial and Mixed Use. This land use pattern (and associated building heights) would be similar to the No Action Alternative and would result in reduced visibility compared to alternatives 2, 3, and 4.
- The area east of 3rd Avenue S, north of S Holgate Street, south of S Royal Brougham Way, and west of I-5 would be designated as Maritime, Manufacturing & Logistics. Potential impacts would be consistent with alternatives 2 and 3 and would result in reduced building heights and visibility compared to Alternative 4.
- The Industry & Innovation node south of S Holgate Street is expanded southward along the east side of 4th Avenue S to S Horton Street and westward from Utah Avenue S to Colorado Avenue S (north of S Lander Street). The II zone is also expanded south of S Lander Street from Colorado Avenue S to Occidental Avenue S and north of S Forest Street. This would increase maximum building heights (from 85 to 160 feet) and visibility in these locations relative to all other alternatives.
- West of the Duwamish Waterway, the Preferred Alternative applies the same land use concepts as alternatives 2 and 3, except for the Urban Industrial area at the northwest corner of the subarea along Harbor Avenue SW (west of Port of Seattle Terminal 5). In all Urban Industrial areas west of the Duwamish Waterway, the Preferred Alternative would reduce maximum building heights to 45 feet, which would reduce building visibility relative to all other alternatives.

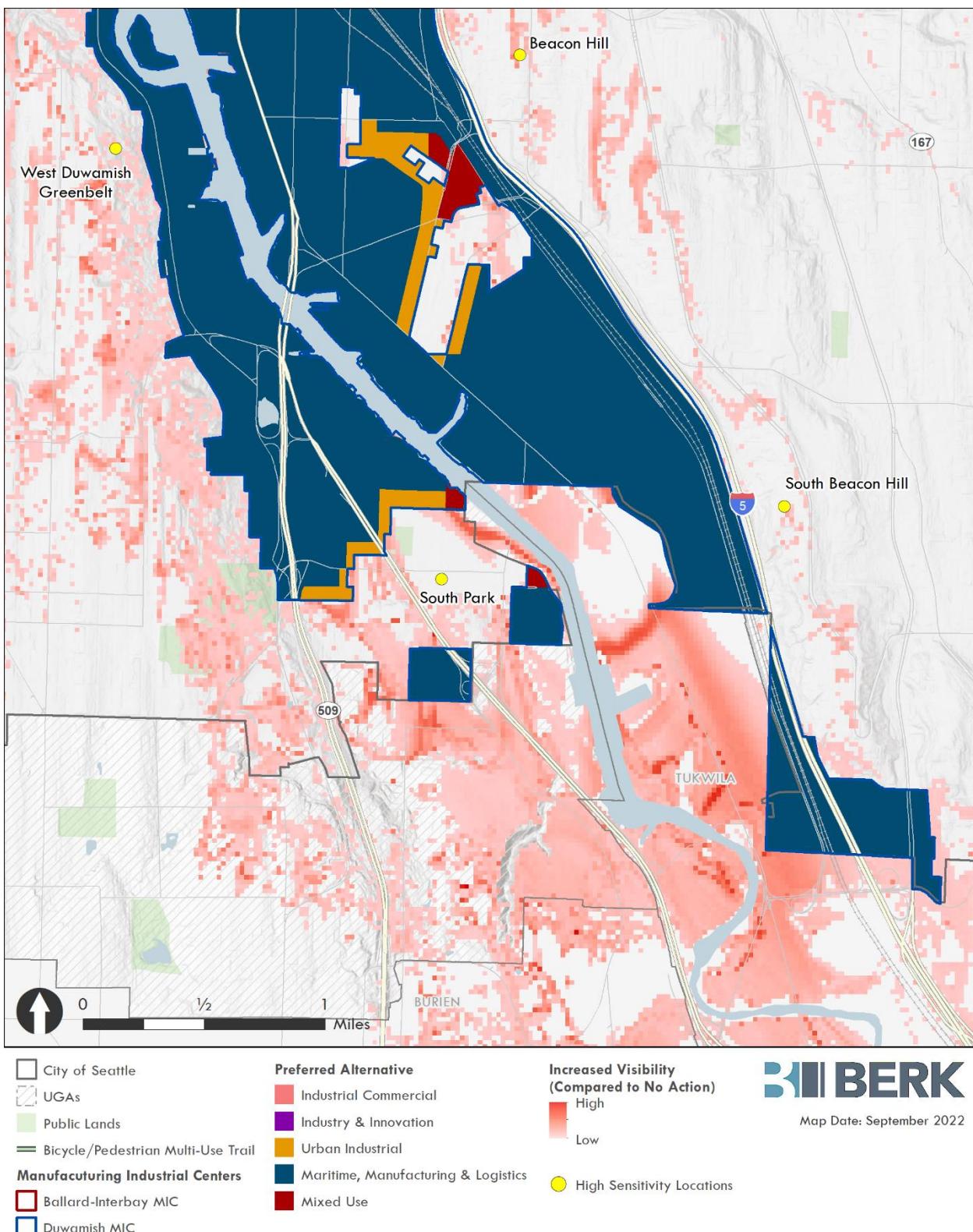
Exhibit 3.7-25 Increase in Viewshed (SODO/Stadium)—Preferred Alternative

Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2022.

Georgetown/South Park

In the Georgetown/South Park Subarea, the Preferred Alternative would apply a similar land use concept pattern as Alternative 4 with the following changes (see **Exhibit 3.7-23** and **Exhibit 3.7-26**):

- Designation of a small area near the intersection of Padilla Place S and S Orcas Street as UI instead of MML, consistent with alternatives 2 and 3. This change could reduce light and glare emissions and associated impacts on nearby residential properties and the nearby Georgetown Playfield and Spraypark compared to Alternative 4.
- Designation of a small area bounded by W Marginal Way, S Director Street, and 12th Avenue S as MML, consistent with alternatives 2 and 3. Due to the small size of this area, effects on overall light and glare emissions would be minimal.
- Expansion of the Seattle Mixed node between Corson Avenue S and Airport Way S:
 - Northwest across Corson Avenue S to include the Georgetown Playfield and Spraypark. This change would be unlikely to result in any change in the current use of the property as a park and playfield; light and glare conditions would be consistent with alternatives 2, 3, and 4.
 - Southward to include the areas between Corson Avenue S and Carleton Avenue S, north of S Bailey Street. Future development in this area would be mixed-use rather than urban industrial, but building heights would be similar to alternatives 2, 3, and 4, resulting in similar light and glare conditions.
- Expansion of the Urban Industrial corridor along S Orcas Street and S Homer Street westward to include areas west of 6th Avenue S. The use mix and building typologies allowed by the UI land use concept would potentially generate reduced light and glare emissions compared to the MML land use concept proposed under alternatives 2, 3, and 4. Additionally, the Preferred Alternative would reduce maximum building heights to 75 feet in this area, compared to 85 feet under the other alternatives, further reducing building visibility.

Exhibit 3.7-26 Increase in Viewshed (Georgetown/South Park)—Preferred Alternative

Source: City of Seattle, 2016; City of Seattle, 2021; BERK, 2022.

Summary of Impacts

Exhibit 3.7-27 provides a summary of impacts and comparison of the alternatives.

Exhibit 3.7-27-23 Summary of Light and Glare Impacts—Action Alternatives

Subarea	Land Use Concept	Alternative 2	Alternative 3	Alternative 4	Preferred Alternative
Ballard	Maritime, Manufacturing, & Logistics	<ul style="list-style-type: none"> ▪ Development style and light emissions similar in nature and location to existing Industrial General zones. ▪ Higher level of development would increase overall light emissions, especially along waterfront and near Ballard Avenue Landmark District. 	<ul style="list-style-type: none"> ▪ Smaller MML footprint (compared to Alternative 2), resulting in reduced light emission exposure, particularly in areas northeast of the subarea. 	<ul style="list-style-type: none"> ▪ Further reduced MML footprint, resulting in reduced light & glare emissions away from the waterfront. 	<ul style="list-style-type: none"> ▪ <u>Within in the MIC, similar MML footprint as Alternative 4—except one block of II that would become MML.</u> ▪ <u>Outside the MIC, applies Industrial Commercial or Mixed Use to areas zoned MML under Alternatives 2, 3, and 4.</u>
Industry & Innovation		<ul style="list-style-type: none"> ▪ Taller buildings would increase visibility in residential neighborhoods to the north. ▪ More office/commercial building typologies would reduce exterior light emissions. 	<ul style="list-style-type: none"> ▪ See Alternative 2 	<ul style="list-style-type: none"> ▪ Larger II footprint would increase visibility of buildings from surrounding neighborhoods. Largest potential viewshed of the alternatives. 	<ul style="list-style-type: none"> ▪ <u>Within the MIC, similar to Alternative 4 (see above).</u> ▪ <u>No II outside the MIC—applies IC and SM to areas zoned II under alternatives 2, 3, and 4.</u>

Subarea	Land Use Concept	Alternative 2	Alternative 3	Alternative 4	Preferred Alternative
	Urban Industrial	<ul style="list-style-type: none"> ▪ Small increases in building heights would increase visibility in limited areas. ▪ Reduced light emissions and greater screening through landscaping and design concepts. 	<ul style="list-style-type: none"> ▪ Increased UI footprint (compared to Alternative 2), providing more transitions to residential neighborhoods to the northeast and near Gas Works Park. ▪ Limited increases in height and visibility. 	<ul style="list-style-type: none"> ▪ Smaller UI footprint than Alternative 3, but otherwise similar to Alternative 3. 	<ul style="list-style-type: none"> ▪ <u>Inside MIC, same footprint as Alternative 4.</u> ▪ <u>Reduced footprint outside MIC, Industrial Commercial applied in downtown Ballard and between the MIC and Gas Works Park.</u>
Interbay Dravus	Maritime, Manufacturing, & Logistics	<ul style="list-style-type: none"> ▪ Development style and light emissions similar in nature and location to existing Industrial General zones. ▪ Light & glare emissions along the waterfront (including Ballard Locks) similar to No Action. 	<ul style="list-style-type: none"> ▪ See Alternative 2 	<ul style="list-style-type: none"> ▪ See alternatives 2 & 3 	<ul style="list-style-type: none"> ▪ <u>See alternatives 2, 3, and 4.</u>
	Industry & Innovation	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ <u>N/A</u>
	Urban Industrial	<ul style="list-style-type: none"> ▪ Small UI area would provide reduced emissions and transition to residential areas on northwest Queen Anne. 	<ul style="list-style-type: none"> ▪ See Alternative 2 	<ul style="list-style-type: none"> ▪ See alternatives 2 & 3 	<ul style="list-style-type: none"> ▪ <u>Same footprint as alternatives 2, 3, and 4. Slight height increase (10 feet); slight increase in visibility compared to alternatives 2, 3, and 4.</u>
Interbay Smith Cove	Maritime, Manufacturing, & Logistics	<ul style="list-style-type: none"> ▪ Development style and light emissions similar in nature and location to existing Industrial General zones. 	<ul style="list-style-type: none"> ▪ <u>Reduced footprint of MML compared to Alternative 2 east of the railroad.</u> See Alternative 2 	<ul style="list-style-type: none"> ▪ See Alternative 23 	<ul style="list-style-type: none"> ▪ <u>Greater MML footprint east of the railroad than alternatives 3 or 4, but less than Alternative 2.</u>

Subarea	Land Use Concept	Alternative 2	Alternative 3	Alternative 4	Preferred Alternative
	Industry & Innovation	<ul style="list-style-type: none"> ▪ Would replace existing Industrial Commercial zoning in southeastern subarea. ▪ Reduced light emissions compared to No Action, but taller building heights would increase visibility in Southeast Magnolia and South Queen Anne. 	<ul style="list-style-type: none"> ▪ Reduced II footprint compared to Alternative 2. ▪ Light emissions similar to Alternative 2, but smaller viewshed. 	<ul style="list-style-type: none"> ▪ <u>Greater II footprint than alternatives 2 or 3.</u> ▪ <u>Light emissions similar to alternatives 2 and 3, but greater viewshed.</u> See Alternative 2 	<ul style="list-style-type: none"> ▪ <u>Reduced II footprint compared to alternatives 3 and 4, but greater than Alternative 2.</u> ▪ <u>Reduced height assumptions for II areas, reducing viewshed compared to other action alternatives.</u>
	Urban Industrial	<ul style="list-style-type: none"> ▪ <u>Convert IB areas east of railroad to UI. Reduced light emissions compared to IB.</u> N/A 	<ul style="list-style-type: none"> ▪ Would create transition areas on southwest slope of Queen Anne. Light emissions would be similar to Alternative 2, but viewshed would be reduced. 	<ul style="list-style-type: none"> ▪ <u>See Alternative 2</u> N/A 	<ul style="list-style-type: none"> ▪ <u>See Alternative 2</u>
SODO/ Stadium	Maritime, Manufacturing, & Logistics	<ul style="list-style-type: none"> ▪ Development style and light emissions similar in nature and location to existing Industrial General zones. ▪ Higher level of development would increase overall light emissions. 	<ul style="list-style-type: none"> ▪ See Alternative 2. MML footprint reduced relative to Alternative 2 in area south of stadiums. 	<ul style="list-style-type: none"> ▪ See Alternative 2. MML footprint further reduced relative to alternatives 2 and 3. 	<ul style="list-style-type: none"> ▪ <u>See Alternative 2. MML footprint increased west and southeast of stadiums. MML reduced in West Seattle.</u>

Subarea	Land Use Concept	Alternative 2	Alternative 3	Alternative 4	Preferred Alternative
Industry & Innovation		<ul style="list-style-type: none"> ▪ Taller building heights in small area south of stadium district would increase visibility from surrounding areas, including Beacon Hill. ▪ Reduced light emissions in this location due to less intense exterior lighting. 	<ul style="list-style-type: none"> ▪ See Alternative 2. Increased footprint compared to Alternative 2, further increasing visibility in surrounding areas. 	<ul style="list-style-type: none"> ▪ II node east of stadiums expanded relative to alternatives 2 and 3, further increasing visibility in surrounding areas. ▪ II reduced west of the stadiums, reducing building heights and visibility relative to alternatives 2 and 3. 	<ul style="list-style-type: none"> ▪ <u>II removed southeast of stadiums (between I-90 and S Holgate Street), but expanded south along 4th Avenue S.</u> ▪ <u>II removed west of stadium.</u> ▪ <u>II in Judkins Park (alternatives 2, 3, and 4) converted to SM and IC, reducing heights.</u>
Urban Industrial		<ul style="list-style-type: none"> ▪ Would reduce light emissions and create transition areas in targeted locations near the stadium district/downtown. 	<ul style="list-style-type: none"> ▪ See Alternative 2. 	<ul style="list-style-type: none"> ▪ Increased UI footprint south and west of stadiums compared to alternatives 2 and 3. ▪ Conversion of MML to UI south of stadiums would slightly increase heights and visibility but would reduce light emissions. 	<ul style="list-style-type: none"> ▪ <u>UI removed west of stadium, reducing visibility but increasing light/glare emissions.</u> ▪ <u>UI increased in West Seattle (Harbor Avenue SW).</u> ▪ <u>Reduced UI heights west of Duwamish, reducing visibility.</u>

Subarea	Land Use Concept	Alternative 2	Alternative 3	Alternative 4	Preferred Alternative
Georgetown/ South Park	Maritime, Manufacturing, & Logistics	<ul style="list-style-type: none"> ▪ Development style and light emissions similar in nature and location to existing Industrial General zones. 	<ul style="list-style-type: none"> ▪ Increased light emissions in the area between Corson Ave and Ellis Ave due to conversion of current Industrial Buffer zoning to MML. ▪ Compared to Alternative 2 and No Action, increased visibility of MML areas removed from MIC due to taller building heights under SM zoning. 	<ul style="list-style-type: none"> ▪ Light emissions in the area between Corson Ave and Ellis Ave similar to Alternative 2 and No Action. ▪ Compared to Alternative 2 and No Action, increased visibility of MML areas removed from MIC due to taller building heights under SM zoning. 	<ul style="list-style-type: none"> ▪ <u>Reduced MML footprint in Georgetown compared to alternatives 2, 3, and 4. Similar footprint to Alternative 4 in South Park.</u> ▪ <u>Reduced overall light emissions compared to other alternatives.</u>
Industry & Innovation		▪ N/A	▪ N/A	▪ N/A	▪ N/A
Urban Industrial		<ul style="list-style-type: none"> ▪ Implementation of UI along edges of the MIC would reduce light emission exposure 	<ul style="list-style-type: none"> ▪ Compared to Alternative 2, increased visibility of UI areas removed from MIC due to taller building heights under SM zoning. 	<ul style="list-style-type: none"> ▪ See Alternative 2. 	<ul style="list-style-type: none"> ▪ <u>Expanded UI west along S Orcas Street and S Homer Street, reducing light emissions.</u> ▪ <u>Convert UI at Georgetown Playfield to SM—similar heights as alternatives 2, 3, and 4.</u>

Source: City of Seattle, 2016. City of Seattle, 2022²⁴. BERK, 2022²⁴.

3.7.3 Mitigation Measures

Incorporated Plan Features

As described in **Chapter 2**, the Industry & Innovation and Urban Industrial land use concepts include several design principals that would limit light and glare impacts:

- The Industry & Innovation land use concept would include standards for frontage improvements, trees and landscaping, and maximum limits on vehicle parking areas.

- The Urban Industrial land use concept would incorporate open space and landscaping, which can reduce or screen light and glare emissions from surrounding areas.
- All proposed land use concepts would prohibit principal use parking areas, which often require extensive outdoor illumination. The Urban Industrial land use concept would also prohibit heavy manufacturing uses, which likewise may generate substantial light emissions due to operational and safety needs.
- The Urban Industrial land use concept includes standards for ground-level and upper-story setbacks from adjacent residential zones to create transition areas and reduce impacts.

Regulations & Commitments

- As described in **Section 3.7.1 Affected Environment**, Seattle Municipal Code Chapter 25.05.675 codifies environmental policies related to light and glare and public view protection. Future site-specific development projects requiring SEPA review will be evaluated for consistency with these policies.
- The Seattle Land Use Code (Seattle Municipal Code Title 23) contains development regulations, including standards governing the design and placement of exterior site and building illumination. Future development in the study area will be required to comply with the standards established for industrial zones in SMC Chapter 23.50, or their successor zones.

Other Potential Mitigation Measures

- Consider implementation of additional development standards to address maximum height of exterior illumination. The ~~Industry & Innovation~~ II land use concept would allow buildings up to 160 feet in height, and the MML land use concept does not impose a maximum height, only a maximum Floor Area Ratio (FAR). These standards should address placement, light output, direction, and shielding of any exterior illumination above a given height to reduce light and glare emissions to adjacent non-industrial areas.

3.7.4 Significant Unavoidable Adverse Impacts

Urban development, including development of a non-industrial nature, generates light and glare emissions associated with occupation and operation. The precise nature of these emissions and impacts vary based on building design, location, and shielding/screening measures employed, but any future growth in the study area, regardless of the specific uses or building design, will generate at least some increase in light and glare. Though unavoidable, these effects can be minimized and reduced to less than significant levels through application of design standards and the mitigation measures described in this analysis.