



**A PLAN FOR TOMORROW,
CRAFTED TODAY.**



MEMORANDUM

DATE September 1, 2026

TO City of Bend

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RE Task 4.2 Community Impact Spatial Analysis Methodology

The following memorandum summarizes the proposed methodology for the Community Impact Spatial Analysis (CISA). The CISA will document current spatial demographic, built environment, and policy analysis within the City of Bend as a lens to inform engagement and decision-making throughout the project. Considering community impact means analyzing how people are affected by decisions on growth, land use, transportation, housing, and infrastructure including an analysis of who benefits, who is burdened, and where systemic barriers exist.

I. CISA Overview

The CISA will consist of grouped data layers that can be easily referenced by technical and non-technical participants in the Bend Growth Plan. Grouped layers will consist of two types:

- **Thematic Layers** - maps depicting a single data indicator such as household income and asset point locations.
- **Composite Layers** - maps depicting multiple data indicators combined into a score to aid decision making such as a displacement vulnerability index or climate resilience score.

The CISA has two main goals: first, to provide a spatial equity lens for all policy creation and decision making that occurs within the Bend Growth Plan. Second, to support the mapping requirements needed to satisfy the reporting required per Oregon Administrative Rules (OAR) 660 Divisions 8 and 12. These spatial resources will be used to inform major deliverables and engagement activities across the project through an integrated community impact reporting process.

The CISA will help answer two questions:

1. What people and places in the City of Bend will require extra support to mitigate the effects of growth and change?
2. What people and places in the City of Bend have housing-secure populations, high-quality amenities (assets), and jobs that support future growth?

The CISA will be used in combination with a project specific version of the City of Bend's Ask, Identify, and Measure (AIM) tool to guide decision making in this project. The City's existing AIM Tool is intended to integrate equity into everyday decision making by using a series of streamlined questions to examine how decisions may affect internal and external City customers. The current AIM tool does not include a spatial component but encourages city staff to use data to guide decision making. As part of this project, a project specific AIM tool will be created to make explicit references to the CISA as a source of quantitative and contextual data to inform project engagement decision making.

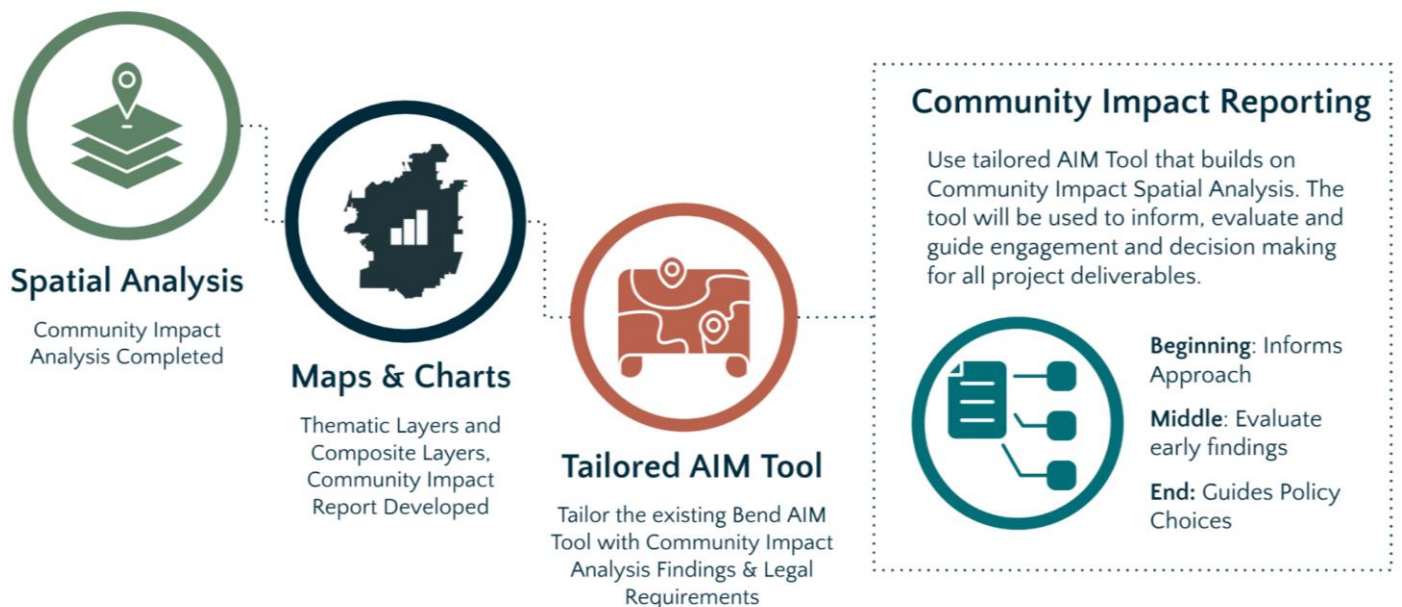


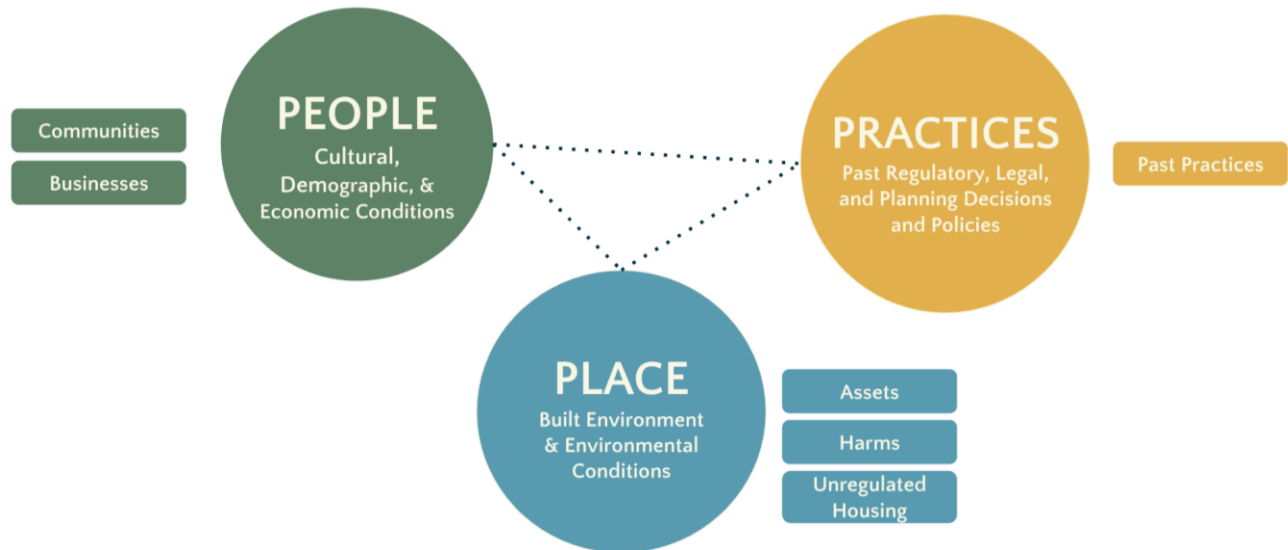
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II. CISA Approach

(1) The three lenses

The CISA will be rooted in the themes, or ‘lenses’ of People, Place, and Practices.



Key findings from the results of the analysis will be packaged into a Community Impact Report to understand:

- **PEOPLE**: Which areas within the city are experiencing high rates of neighborhood change and displacement for people and businesses, and which are stable;
- **PLACE**: Neighborhoods with a high density of “harms” and others that have more “assets;”
- **PRACTICES**: Historical regulatory, legal, and planning decisions and policies that have influenced and impacted existing patterns of land use, transportation, and distribution of wealth and resources.

This report will also help elevate priority areas for planning, direct efforts for targeted engagement, and guide consideration for implementing anti-displacement policies and strategies.

(2) Methodology Framework

The project team will review data across three analytical lenses and transform all spatial data into a standardized [H3 Hexagon grid](#) at Resolution 9 (approximately 26-acre hexagons). This hexagon size was selected for its suitability in analyzing trends at the neighborhood scale, providing a consistent spatial unit across all datasets.

The resulting library of hexagon-based maps will consist of thematic and composite data layers, organized by thematic grouping (people, place, practices). The data will be displayed using a dynamic online tool (likely via Arc Experience Builder) and will also exist individually as static maps for the Community Impact Spatial Analysis report. The Bend Made AIM tool will reference CISA products through a clarified workflow to support spatial considerations of community impact.

This methodological approach was derived from a combination of Lisa Bates' [Gentrification and Displacement Studies \(2013 & 2018\)](#); Department of Land Conservation and Development ([DLCD's Assets and Harms Methodology](#); [DLCD's Community Explorer Methodology](#); a review of [DLCD's Implementation Guidance Major Equity Analysis \(2025\)](#); Division 8 and 12 related statutes (See Table 4); [City of Bend Climate Friendly Area Displacement Risk Analysis \(2023\)](#); EcoNorthwest-informed [Colorado Displacement Risk Assessment Guide \(2024\)](#); and a review of the Deschutes County Natural Hazards Mitigation Plan.

People: Cultural, Demographic, & Economic Conditions

The "People" Lens examines who makes up the Bend community and how residents' experiences intersect with land use and planning decisions. A key consideration is displacement; the risk that growth and change may push people or businesses out of their current locations. Communities are assessed spatially, identifying neighborhoods with high or low vulnerability to displacement based on socioeconomic factors. Areas of high displacement risk are vulnerable to change and require mitigation actions to stabilize households and businesses, while areas of low displacement risk have greater capacity to absorb or withstand change. The "People" Lens also considers how growth and planning decisions may affect Bend's business community. Business conditions are assessed spatially to identify areas where employment clusters, community-serving establishments, or other businesses that are important to retain, based on City Council direction regarding industries that are targeted for support and growth, face higher risk of disruption or displacement due to market pressures, redevelopment activity, transportation changes, or conflicts with surrounding land uses. Together, these community and business perspectives ensure that planning decisions account for disproportionate harms and impacts of growth.

KEY QUESTIONS

- Where are people and businesses at a higher risk of displacement and housing instability?
- Where do people and businesses have higher economic resilience or a greater capacity to withstand change based on their socioeconomic conditions?
- Where are there geographic concentrations of:
 - Poverty and Low-Income Earners
 - High Income Earners
 - Underserved populations (as defined by ORS 660 Division 12)
 - BIPOC (Black, Indigenous, People of Color)
 - Immigrants, including undocumented immigrants and refugees¹
 - People with limited English proficiency
 - People with disabilities
 - People experiencing homelessness¹
 - Low-income and low-wealth community members
 - Low- and moderate-income renters and homeowners
 - Single parents
 - Lesbian, gay, bisexual, transgender, queer, intersex, asexual, or Two-Spirit community members¹
 - Youth and seniors
- Where do renters and homeowners live in Bend? Where is there access to wealth building through affordable and attainable housing options?

INDICATORS

¹ Spatial data is limited for immigrants, people experiencing homelessness and Lesbian, gay, bisexual, transgender, queer, intersex, asexual, or two-spirit community members (2SLGBTQIA+)

Consultants will map indicators to identify areas in Bend with acute displacement risk and those of high economic resilience, which will help define the drivers of stability and prosperity and inform policy recommendations.

Indicators for communities include financial and social data from a mix of data sources, some at the census tract level and other more granular data sources, like Multiple Listing Service (MLS). Indicators below were chosen based on Division 8 and 12 Requirements (see Table 4) as well as other financial and social indicators that are deeply connected to displacement risk. All the indicators included are important to understanding how changes in land use and growth may impact people and communities.

Business indicators are intended to help identify where public investment, transportation changes, or land use policy shifts could negatively affect existing businesses, particularly Targeted Sectors the City considers important to retain. Consultants will map business and employment clusters alongside market condition indicators to understand where priority businesses overlap with businesses that may face a higher risk of disruption or displacement.

This mapping will also overlay the policy and land use transition areas identified through the practices framework through a composite map (discussed in the Composite Maps section). Together, these layers will help the City better understand how public policy decisions may be influencing redevelopment pressure or land use transitions.

Table 1. Indicators for the People Lens

Indicator	Description	Data Source
Communities: Financial Indicators		
Poverty	Households that are below the US Census Bureau poverty line. Displayed by tract percentage.	U.S. Census Bureau, 2024 American Community Survey (ACS) 5-Year Estimates Subject Tables, Table S1701: Poverty Status in the Past 12 Months.
High and Low Income ²	Household income by income bracket. Concentrations of high-income earning populations (households earning over \$150k per year) and low-income earning populations (households earning less than \$50k per year). Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, B19001: Household Income
Renters	Households who do not own the housing they live in. These data include college students who live off-campus in regular, separate housing units, but excludes students living on-campus in college dormitories. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, ACS 2024 5-Year Estimated Table B25003: Tenure
Housing Cost Burdened Renters ²	Renter households paying >30% of gross income on housing (cost burdened) and >50% (severely cost burdened). Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, B25070: Gross Rent as a Percentage of Household Income in the Past 12 Months
Homeownership	Households that own their home [wealth building opportunities]. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, B25003:

² Can't disaggregate by race/ethnicity spatially but will be considered for the Contextualized Housing Needs Analysis using tabular data.

Indicator	Description	Data Source
		Tenure
Housing Cost Burdened Owners²	Homeowner households paying >30% of gross income on housing (cost burdened) and >50% (severely cost burdened). Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table B25091: Mortgage Status by Selected Monthly Owner Costs as a Percentage of Household Income;
Overcrowded Households	Occupied housing units with more total people than rooms (total number of rooms in the occupied unit, excluding kitchens and bathrooms). Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table B25014: Tenure by Occupants per Room
Recent Regulated Affordable Housing Units	Housing supply with income/rent restrictions serving households with low, very low, and extremely low incomes that have been permitted since 2015. Displayed by total units per map area (hexagon).	City Affordable Housing Data Set
Current Median Rents; Change in Median Rent from 2014-2024	2024 Median Rent across Bend; Change in average multiunit asking rent per unit between 2014 and 2024. Displayed by percentage change by tract.	U.S. Census Bureau, ACS 5-Year Estimates Subject Tables, Table B25064: Median Rent) 2024 and 2014
Current Home Values; Change in Home Value 2014-2024	Home Values in Bend; Change in average home value since 2014 (Real market value) compared to 2024. Displayed by percentage change by Zillow Neighborhoods areas.	Zillow Home Value Index (ZHVI)
Communities: Social Indicators		
Educational Attainment	Residents aged 25 or greater without a four-year bachelor's degree or higher. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table S1501: Educational Attainment
Population of Color	Population identifying as a race/ethnicity other than non-Hispanic white. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table B03002: Hispanic or Latino Origin by Race
Single-Parent Households	Households with a single head of house with a dependent child under 18 years of age. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table B11003: Family Type by Presence and Age of Own Children Under 18 Years
Limited English Proficiency	Households that report speaking English "less than well." Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table S1602: Limited English-Speaking Households
Population Living with a Disability	Residents who have difficulty with hearing, vision, cognition, mobility, self-care, or independent living. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table B18101: Sex by Age by Disability Status
Older Population (60+)	The population ages 60 or older. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table S0101: Age and Sex
Youth Population	The population younger than 18 years of age.	U.S. Census Bureau, 2024 ACS 5-Year

Indicator	Description	Data Source
	Displayed by tract percentage.	Estimates Subject Tables, Table S0101: Age and Sex
Zero Car Households	Households with no access to a vehicle. Displayed by tract percentage.	U.S. Census Bureau, 2024 ACS 5-Year Estimates Subject Tables, Table B25044: Tenure by Vehicles
Businesses: Employment Indicators		
Target Industries	Use Quarterly Census of Employment and Wages (QCEW) data to identify clusters of target industries, including businesses with specialized facility or site needs.	QCEW and/or Enterprise Zone locations
Locally Oriented Businesses	Retail and services businesses that are local or independently owned and use public business listing such as from Open StreetMap to distinguish chain versus local business. Shown nominally and by location quotient (a ratio measuring whether local businesses are more or less concentrated in an area than in the city overall).	Open Street Map
Businesses: Market Condition Indicators		
Building age/quality	Building quality (Class A/B/C, CoStar Rating) as an indicator of likely lower-cost spaces that may be more subject to repositioning or redevelopment if market conditions change. CoStar rates commercial buildings on a 1 – 5 star scale reflecting factors such as architectural quality, structural and building systems, amenities, site design, and other property-specific characteristics.	CoStar

Place: Built Environment & Environmental Conditions

The "Place" Lens examines the physical and environmental characteristics of Bend that shape quality of life and influence where and how growth occurs. This lens organizes place-based factors into three categories. Assets include key destinations, infrastructure, and services (like parks, childcare, tree canopy, etc.) that provide value, health, and opportunity to residents and act as magnets for growth. Harms are the environmental conditions or physical features — wildfire risk, heat island, high crash severity roads— that pose negative health outcomes or safety risks, and that may deter investment and growth. Unregulated Housing refers to privately-owned, lower-cost housing that, while currently affordable, is vulnerable to redevelopment and/or displacement of residents as market pressures increase. Together, these three factors help identify where Bend's neighborhoods are well-served or underserved, where residents face disproportionate risk, and where planning decisions can protect existing community assets while managing the pressures of change.

KEY QUESTIONS

- Which areas have the greatest access to community assets?
- What areas have the most exposure to harms?
- Where is Bend's housing stock at greater risk of displacement and/or demolition?

INDICATORS

Consultants will identify and locate the place-based factors in the natural & built environment that influence community stability and well-being by mapping the following:

- **Community Assets** - Magnets for growth such as key destinations, safe infrastructure, and services that provide value, health, and opportunity to residents.
- **Community Harms** - Potential deterrents for growth, such as environmental conditions or physical features that may lead to negative health outcomes or safety risks.
- **Unregulated Housing** - Privately-owned lower cost housing that is vulnerable to redevelopment or displacement.

Table 2. Indicators for the Place Lens

Indicator	Description	Data Source
Assets <i>Note: We recommend re-evaluating some of the “key destination” and transportation inventory data sources and indicators to support the Transportation System Plan and Major Equity Analysis in future phases of the project.</i> <i>Note: distance is as “as the crow flies”.</i>		
Licensed Childcare Centers	Scored as the count of licensed childcare centers within one mile of the hex boundary. A higher count yields a higher asset score.	Homeland Infrastructure Foundation-Level Data (HIFLD)
Higher Education	Scored as the distance to the nearest higher education location (community college or university). Closer proximity yields a higher asset score.	Deschutes County OpenData
K-12 Schools	Scored as the count of public schools, private schools, or higher education institutions within one mile of a hex centroid. All grades are considered. More schools yield a higher asset score.	Deschutes County OpenData
Healthcare	Scored as the distance of the hex centroid to the nearest hospital, rural health clinic, or Federally Qualified Health Center. A shorter distance to the closest healthcare provider yields a higher asset score.	Oregon Health Authority
Jobs	Scored as count of jobs within a half mile of the hex boundary. Jobs defined as covered employment (does not include self-employed). More jobs yield a higher asset score. Because this data is derived from unemployment insurance records, employment counts will include jobs held by remote workers as well as local residents.	QCEW
Library	Distance to nearest public library from the centroid of hex cell. Closer libraries yield higher asset scores.	OpenStreetMap (with City Staff Review)
Parks	Distance to the nearest public park. Closer parks yield higher asset scores.	Bend Park and Recreation District and Deschutes County (includes State Parks).
Community Centers / Recreation Centers	Distance to point locations of nearest community center from the centroid of the hex. Shorter distance yields a higher score. Referenced community centers include: Larkspur Community Center, The Pavilion, Latino Community Association, Juniper Swim & Fitness Center.	City of Bend Land Information System (BLIS) Data & Bend Park and Recreation District Parks (Recreation Centers)
Tree Canopy	Acreage of the hex that is covered by tree canopy, as determined by satellite imagery. Higher acreage yields a higher asset score.	United States Geological Survey 2023 Data
Grocery Stores	Count of point locations of Supplemental Nutrition Assistance Program (SNAP)-accepting locations, such as superstores, grocery stores, farmers markets, and specialty stores. Count of “superstores” within one mile of hex boundary, all other types within a half mile. More SNAP retailers yield a higher asset score. Large supermarkets are double counted to lend higher weighting.	United States Department of Agriculture
Transit Stops	The count of transit stops within half a mile of the hex boundary. More transit stops yields a higher asset score	Cascades East Transit Data-General Transit Feed

Indicator	Description	Data Source
		Specification (GTFS)
Sidewalks, Trails and Bike Facilities	Initially calculated as the ratio of combined linear feet of sidewalk, trails, and bike facilities to total linear street length within a hex cell. This ratio is then converted to a percentile score and averaged with the percentile score of total linear feet of all transportation infrastructure in the hex cell. The blended average is intended to reward both dense <i>and</i> accessible networks. Higher values denote a more complete multimodal network, and thus higher asset score.	City of Bend Multimodal Inventory Data (Streets, Trails, Bike Facilities, Sidewalks)
Harms		
Clean Up Sites	This indicator score considers the count of DEQ cleanup sites, leaking underground storage tanks, and leaking heating oil tanks. A greater number of sites yields a higher harm score.	Oregon Department of Environmental Quality (DEQ)
Crashes/Crash Risk	This indicator score takes into account a combined index of the number and severity of reported crashes on the roadway system between January 1, 2019, through December 31, 2023. Higher crash counts and more severe crashes (i.e., fatal or serious injury) yield a higher harm score.	2026 Transportation Safety Action Plan Update Layers
Heat Severity	ECONorthwest created this raster model to approximately replicate and improve upon the Trust For Public Land heat severity model. The model takes satellite surface temperature readings from June-August 2025, and computes at the raster cell level the difference between the raster cell temperature and the citywide mean surface temperature. This is then averaged across our hex grid. Higher scores yield higher harm scores.	US Geological Survey (USGS) LandSat 9 Surface Temperature Data, ECONorthwest calculations
Radon Exposure	Radon exposure happens when radioactive gas is released naturally from the breakdown of uranium in rock, soil, and water. This indicator uses a three-tiered radon risk assessment. The score is the area-weighted average value of the three-tiered radon risk within a hex cell. A higher score yields a higher harm score.	Radon Hazard- Oregon Department of Geology and Mineral Industries (DOGAMI)
Wildfire Exposure (Burn Risk/Probability, Flame Length)	Scored as the average burn probability and average flame length within a hex cell. These two scores can be converted to percentiles and averaged together to represent both wildfire probability and severity. Higher percentiles yield higher harm scores.	Burn risk- Oregon State University Oregon Explorer; Flame length- Oregon State University Oregon Explorer ³
Highways & Rails	Scored as the total linear feet of railways and highways within a half-mile buffer of a hex cell. Larger total lengths yield higher harm scores.	Highways: OpenStreetMap ; Deschutes County or City of Bend Roadway Centerlines
Air Emissions	This indicator score takes into account the distance to point locations of the closest toxic emissions site. A shorter distance yields a higher harm score	Environmental Protection Agency (EPA) National Emissions Inventory Facility Point Sources

³Using the same data layer as displayed in Walker Macy's Climate Assessment

Indicator	Description	Data Source
Natural Hazard Overlay	Floods, landslides, and liquefaction/earthquake hazard areas will be shown as with a natural hazards overlay.	Deschutes County Federal Emergency Management Agency (FEMA) 100 Year Flood Plain; Oregon Department of Geology and Mineral Industries (DOGAMI); Statewide Landslide Information Database of Oregon (SLIDO)
Unregulated Housing		
Manufactured Housing Units	Number and geographic location of manufactured housing parks. Not including subdivisions. Displayed by average unit count per hexagon.	Deschutes County Assessor Data
Regulated affordable housing	This is regulated affordable housing at risk of converting to market-rate housing because of expiring deed restrictions. Displayed by average unit count per hexagon.	Oregon Housing & Community Services (OHCS) , Low Income Housing Tax Credits (LIHTC) Properties, City of Bend Permit Data Points
Multi-Unit Development & Attached Rental Housing	Multi-unit and Attached Units, excluding condos, that were built before 2000 and are in the bottom quartile of Real Market Value (RMV) (\$/unit). Non-deed restricted rental housing. Displayed by average unit count per hexagon.	Deschutes County Assessor Data

Practices: Regulatory, Legal, and Planning Decisions

The "Practices" Lens examines how historical and present land use, transportation, and housing policy decisions have shaped Bend's built environment, and identifies how these practices continue to impact the community today. Past policy choices in Bend at the local, state, and federal level like redlining, restrictive covenants (CC&Rs), urban investments, and policy incentives through Urban Renewal Areas (URAs) have produced varied outcomes. This lens maps where historical policy decisions have resulted in spatial patterns. This analysis also draws on Bend's Equity Analysis Historical Research, a parallel City of Bend effort to document the local history of past practices and their lasting influence on neighborhood conditions. By grounding current planning decisions in this historical context, the "Practices" Lens ensures that future growth strategies actively work to address inequities that may be embedded in Bend's landscape.

KEY QUESTIONS

- Where have current and past land use, transportation and housing policies harmed or are likely to harm underserved populations?
- Where have there been historical patterns of segregation that need to be disrupted?
- How do these historical patterns of segregation relate to current geographic concentrations of affluence and poverty?

INDICATORS

Table 3. Indicators for the Practices Lens

Practices Indicators		
Indicator	Description	Data Source
Boundaries of CC&Rs with residential infill restrictions (pre-2021)	Platted subdivisions (prior to 2021) with recorded Covenants, Conditions, and Restrictions (CC&Rs) that contain restrictions on further addition of residential units. Restrictions documented for some, but not all identified subdivisions include— infill restrictions (further subdivision of platted lots), unit restrictions (additional units on a lot), and Additional Dwelling Unit (ADU) restrictions.	City of Bend CC&R research compiled in two phases: plats recorded pre-July 201 and July 2014–December 2020 (<i>Sources:</i> City of Bend research of Deschutes County/Western Title deeds). Data set is limited and based on varying methodologies. Does not reflect all subdivisions with CC&Rs in the City of Bend.
Known Racially Restrictive Covenants	Location(s) of subdivisions where recorded deeds or covenants contain racially restrictive language. The only instance identified in the City's research to date is the Weistoria Subdivision; a large parcel subsequently subdivided over time.	City of Bend
Properties served with Septic	Properties served with septic systems for sewer service and are not connected to city sewer systems.	City of Bend Data
1999 Annexation Area	Boundary of the voter-approved annexation plan area that was annexed into the City of Bend in 1999 that added 11 square miles and 13,600 residents into city limits.	Deschutes County Open Data

Practices Indicators		
Indicator	Description	Data Source
Historic Income	Median household income by census tract for Bend at four points in time (1990, 2000, 2010, 2020 and 2024).	National Historic Geographic Information System (NHGIS) from 1990 U.S. Decennial Census NP80A, NHGIS from 2000 U.S. Decennial Census NP053A, Decennial Census 2010, 2020, and 2024 5-year estimate B19013.
2016 Opportunity Areas (recently upzoned areas)	Opportunity areas, locations within the city that were identified as appropriate for growth and therefore recently up-zoned in 2016 as part of the City's Urban Growth Boundary Expansion/Remand Comprehensive Plan update.	City of Bend Open Data
Urban Renewal/Tax Increment Finance Areas (TIF/URAs)	Boundaries of city designated Urban Renewal Areas or Tax Increment Financing (TIF) districts the Bend Urban Renewal Agency uses to direct public investment including site-specific TIF areas for multi-unit projects that have committed to including a minimum percentage of middle-income housing priced at 61-80% of Area Median Income (AMI).	City of Bend Open Data
Enterprise Zones	Boundaries of Bend's state-designated Enterprise Zone(s), where qualifying business investment is eligible for a property tax exemption under the City's participation in the Oregon Enterprise Zone Program.	City of Bend Open Data
Opportunity Zones	Boundaries of federally designated Opportunity Zone(s) initially designated in 2017 where qualifying long-term investment is eligible for capital gains tax deferral. <i>Note: Opportunity Zone area boundaries and eligibility are anticipated to be updated in 2027.</i>	U.S. Treasury/CDFI Fund National Opportunity Zones GIS layer
Residential High-Density Zones	Residential areas that are currently zoned RM (Medium Density), RH (High Density) and Mixed-Use Urban (MU) zoned districts.	City of Bend Open Data
Candidate Climate Friendly Areas (CFAs)	Candidate CFA boundary locations identified through the City of Bend's 2023 Climate Friendly Area Study	City of Bend Open Data

III. Methodology and Results

The CISA will ultimately result in 1) Thematic layers and 2) Composite layers that will be included in (3) the Community Impact Report, and (4) a Bend Growth Plan AIM tool and workflow.

(1) Thematic Layers

Indicators described in the previous three sections will be used to create a baseline understanding of Bend's People, Place, and Practices context. The resulting data atlas will be a structured collection of spatial datasets, maps, and supplementary reference material organized into the "Three P" framework:

1. **People** - Communities and Businesses

2. **Place** - Assets, Harms, and Unregulated Housing
3. **Practices** - Regulatory, Legal, and Planning Decisions and Policies

(2) Composite Layers

Select datasets from the thematic layers will be scored and normalized to construct several multi-criteria decision indices, or “composite layers” to understand the city and help translate this information into actionable strategies to consider and evaluate in the tailored AIM tool.⁴ By layering specific indicators and assigning weights to key variables, these indices will offer the following distinct lenses:

Table 4. Composite Maps and Descriptions

Composite Map	Description
Key Composite Analyses (2) <i>Note: We recommend developing a second round of these two composite indices after key destinations and transportation inventory data indicators are further refined to support the Major Equity Analysis to satisfy Division 12 requirements in future phases of the project.</i>	
Opportunity Index	Stable, high-opportunity (high-asset) areas that are better positioned to sustain increased development and absorb urban change based on concentrations of high income, high housing values, and higher concentration of assets. Indicators above their median (or average) value are assigned a 1, below are assigned a 0. All these scores are summed into a composite “opportunity index” with a value of 0-3.
Displacement Vulnerability Index	Less stable, at-risk areas (low-asset or high-harm with higher concentrations of poverty and underserved communities) where growth must be paired with specific policy protections. This index will consider manufactured housing units, multiunit and attached housing, affordable housing, concentrations of low income, concentrations of renters, concentrations or harms, and where increase in home value and rent values are above the citywide average (or median). Indicators above their median (or average) value are assigned a 1, below are assigned a 0. All of these scores are summed into a composite “displacement vulnerability index” with a value of 0-8. <i>Note: BIPOC populations will be calculated as tracts where % of white alone is less than the city median.</i>
Additional Composite Maps (4)	
Concentrations of Underserved Communities	Concentrations of populations who are considered underserved, as defined in Division 12 including: BIPOC Populations, Limited English Proficiency households, People with disabilities, Low-income and low-wealth community members, single-parent households, Low- and moderate-income renters and homeowners, and Seniors. Indicators above their median (or average) value are assigned a 1, below are assigned a

⁴ Composite maps will be produced unweighted initially and may be weighted in future through Council and community input.

Composite Map	Description
	0. Composite score will be 0-8. <i>Note: Some Division 12 populations (e.g. 2SLGBTQIA+ and homeless community members) do not have comprehensive available quantitative spatial data and are not considered spatially. Some populations including in this composite (Limited English Proficiency and Single Parent Households) have higher margins of error and sensitivity testing for including those layers will be explored. BIPOC populations will be calculated as tracts where % of white alone is less than the city median.</i>
Populations with Lower Mobility	Concentrations of populations of youth (under 18 years of age), seniors (60+ years of age), zero car households, and people who identify as having disabilities. Indicators above their median (or average) value are assigned a 1, below are assigned a 0. Composite will be scored 0-4. <i>Note: Zero car households data has high margins of error and therefore sensitivity testing for including that layer will be explored.</i>
Community Assets and Community Harms	Concentration of key physical assets as a composite score of access to places like childcare, community centers, health facilities, jobs, libraries, parks, schools, community based supportive services, and tree canopy. Areas that experience higher concentrations of environmental risks and potential harms including pollution (cleanup sites, radon and toxin distance, proximity to industrial uses that may be harmful), natural hazards (wildfire risk, radon), transportation safety risk (prevalence and severity of automobile crashes), and heat islands. Indicator assets and harms are scored individually in nominal terms at the hex grid level and then converted to quartiles (0-25th percentile, 25th-50th- 50th-75th, 75th-100th). Assets and harms are then each averaged and then visualized as a bivariate shaded map (e.g. 0-25th percentile harms, and 75th-100th percentile assets would represent an area with especially high access to assets, and very low harms). The bivariate map shows both scores (assets and harms) at once on a single map.
Policy & Land Use Transition Areas (Neighborhood Change Areas)	Areas of recent upzoning (UGB Opportunity Areas), Urban Renewal Areas, Transportation Investment Corridors, and Enterprise Zones. Indicators above their median (or average) value are assigned a 1, below are assigned a 0. All of these scores are summed into a composite index with a value of 0-4.

Together, these indices can help ensure that future policy decisions provide both a clear roadmap for expected growth and a robust safeguard against involuntary displacement.

(3) The Community Impact Report

The CISA will be a standalone data atlas and spatial resource; however, key findings from the CISA will be integrated into a Community Impact Report.

(4) Tailored AIM Tool

The consultant team worked with the City to develop a tailored Bend Made AIM tool to incorporate quantitative data included in the CISA. The AIM tool includes a proposed workflow that articulates how

a user of the CISA and the AIM tool should implement both in service of more equitable decision making.

IV. Appendix

(1) Division 8 and Division 12 Requirements

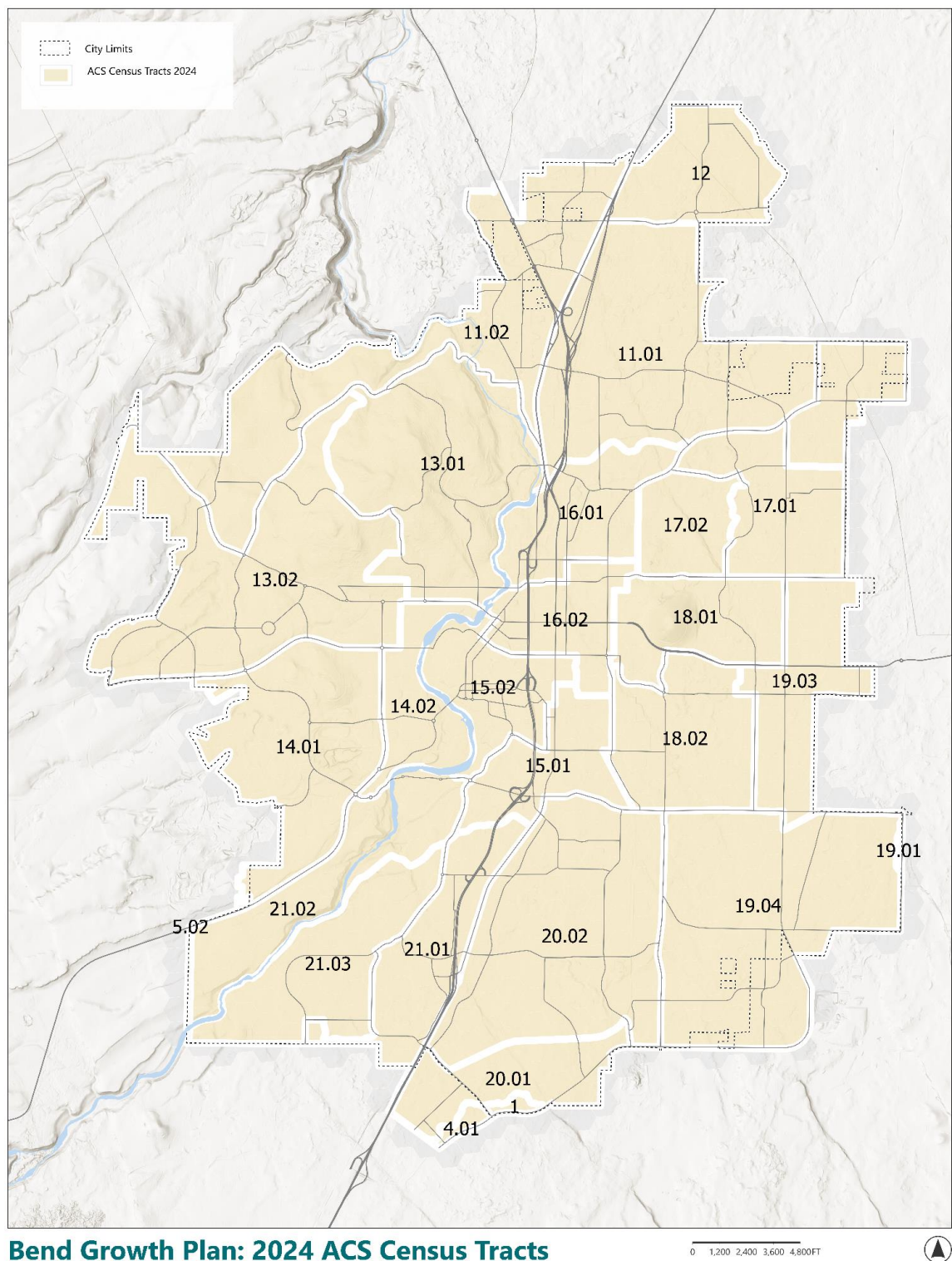
Divisions 8 and 12 are state-mandated conditions the City must satisfy to adopt the Contextualized Housing Needs Analysis, the Housing Production Strategy (Division 8) and the Transportation System Plan and Climate Friendly Area designation (Division 12). Table 5 summarizes what each division requires alongside its legal citation.

Table 5. Division 8 and Division 12 Analysis Requirements Summary, Oregon Revised Statutes (ORS)

Topic	Division 8: applicable to the Contextualized Housing Needs Analysis (CHNA) and Housing Production Strategy (HPS)		Division 12: applicable to Transportation System Plan and Climate Friendly Area Designation	
	Summary of Requirement	Legal Citation	Summary of Requirement	Legal Citation
Geographic Concentrations and Demographics	Must analyze the following populations and disaggregate by race/ethnicity: - Protected classes - BIPOC - Low-income - Disabled - Tribal - Named communities in ORS 197A.018: - Agricultural workers - Individuals with disabilities - Older persons - Students - Communities of Color - Low-Income Communities - Individuals with Disabilities - Tribal Communities	660-008-0075; 660-008-0075(2)(b); 660-008-0075(2) or (4)	Identify concentrations of “Underserved Populations” and Recognize intersectional discrimination. Underserved Populations include but are not limited to: - Black and African American People - Indigenous people (including Tribes, American Indian/Alaska Native and Hawaii Native); - People of Color (including but not limited to Hispanic, Latina/o/x, Asian, Arabic or North African, Middle Eastern, Pacific Islander, and mixed-race or mixed-ethnicity populations) - Immigrants, including undocumented immigrants and refugees - People with limited English proficiency - People with disabilities; - People experiencing homelessness - Low-income and low-wealth community members - Low- and moderate-income renters and homeowners - Single parents - Lesbian, gay, bisexual, transgender, queer,	660-012-0135(3)(c); 660-012-0125; 660-012-0135(4)(c)

Topic	Division 8: applicable to the Contextualized Housing Needs Analysis (CHNA) and Housing Production Strategy (HPS)		Division 12: applicable to Transportation System Plan and Climate Friendly Area Designation	
	Summary of Requirement	Legal Citation	Summary of Requirement	Legal Citation
			intersex, asexual, or two-spirit community members Youth and seniors	
Policy Assessment Requirements	Understand access to community assets and harms, opportunity and displacement risk for communities of color, low-income communities, individuals with disabilities, and tribal communities.	660-008-0075; 660-008-0075(1)(c)	Acknowledge and address historical and present inequities in land use, climate change, and transportation systems, and how underserved populations are impacted.	660-012-0135(3)(a); 660-012-0135(4)(d)
Racism Assessment Requirements	Analyze past discriminatory land and housing practices, map their geographic impacts, and compare those patterns to current segregation and socioeconomic disparities.	660-008-0075(1)(b)	Assess, document, acknowledge and address where current and past racism in land use, transportation, and housing has harmed or is likely to harm underserved populations.	660-012-0135(3)(b)
Performance Measure Requirements	Not Applicable		Develop or review key performance measures for community outcomes including bicycle/pedestrian facility coverage, safe crossings, transit access for low-income households, and transportation equity programs in underserved communities – and use those measures to analyze how proposed land use and transportation changes align with desired outcomes over time.	660-012-0135(d); 660-012-0135(4)(d); 660-012-0905; 660-012-09052(b)(A-D)
Engagement Requirements	Conduct equitable engagement prioritizing communities of color, low-income households, people with disabilities, and tribal communities and show how that feedback directly informed housing needs.	660-008-007(5)	Engage underserved populations in the assessment process and adopt strategies to create greater equity or minimize negative consequences. Engagement with underserved populations must be hosted in areas with concentrations of underserved populations.	660-012-0135(4)(a, b, c, d, f); 660-012-0130 (1-3)

(2) Margins of Error



Margins of error were calculated for all 5-year American Community Survey (ACS) data pulled from the US Census using a standard metric, Coefficient of Variation (CV) calculated using the following equation:
$$CV = (MOE / 1.645) / (\text{estimate} \times 100).$$

For indicators that are derived from adding or subtracting two or more ACS columns, MOEs are recalculated using the sumsquare method: $=\text{SQRT}(\text{IndicatorA}^2 + \text{IndicatorB}^2)$

Data indicators with high margins of error (>40%) will be identified on individual thematic layers to ensure that decision making considers data reliability.

CV measures relative reliability and is used to evaluate reliability of the data according to US Census guidance:

- 0 = CV < 15% – reliable, use freely
- 1 = CV 15–30% – **low-reliability** use with caution, note in methodology
- 2 = CV 30%-40% – **unreliable**, consider suppressing, aggregating tracts, or using a different vintage/geography
- 3 = CV > 40% – **highly-unreliable** US Census Bureau recommends against using data for decision-making

Table 6. Margins of Errors for ACS People Indicators

People ACS Indicator (2024 5-Year Estimates Unless Otherwise Noted). Dataset is flagged if over 50% of the 24 tracts have CVs > 40%.		1= Low Reliability Count of tracts where CV = 15–30%	2= Unreliable Count of Tracts where CV = 30%-40%	3= Highly Unreliable Count of Tracts where CV > 40%
Affluence: Income above 150k (ACS Table B19001: Household Income)	Low	21	3	0
	High	20	2	0
Poverty: Income below 50k (ACS Table B19001: Household Income)		7	9	8
Tenure (ACS Table B25003: Tenure)	Renters	15	1	2
	Owners	4	0	0
Housing Cost Burdened Renters (ACS Table B25106: Tenure by Housing Costs as a Percentage of Household Income)	30%+	0	2	22
	50%+	1	12	11
Housing Cost Burdened Owners (ACS Table B25091: Mortgage Status by Selected Monthly Owner Costs as a Percentage of Household Income)	30%+	13	8	3
	50%+	4	9	11
Overcrowded Households (ACS Table B25014: Tenure by Occupants per Room)		0	0	0
Median Rents (ACS Table B25064, 2014 and 2024) *2014 has different tracts than 2024 – 11 total.	2014	0	0	0
	2024	18	4	0

People ACS Indicator (2024 5-Year Estimates Unless Otherwise Noted). Dataset is flagged if over 50% of the 24 tracts have CVs > 40%.		1= Low Reliability Count of tracts where CV = 15–30%	2= Unreliable Count of Tracts where CV = 30%-40%	3= Highly Unreliable Count of Tracts where CV > 40%
Educational Attainment (ACS Table S1501: Educational Attainment)		7	1	1
Population of Color (Total Race Population - White Alone – ACS Table B03002: Hispanic or Latino Origin by Race) White Alone				
White Alone		2	0	0
BIPOC		1	0	23
Black/African American Alone		-	-	12
American Indian/Alaska Native Alone		-	-	15
Asian Alone		-	2	20
Native Hawaiian/Pacific Islander Alone		-	-	5
Hispanic/Latino		4	10	10
Single-Parent Households (ACS Table B11003: Family Type by Presence and Age of Own Children Under 18 Years)		0	7	16
Limited English Proficiency Population (ACS Table S1602: Limited English-Speaking Households)		-	-	7
Population Living with a Disability (ACS Table B18101: Sex by Age by Disability Status)		21	2	1
Age (ACS Table S0101: Age and Sex)	Youth	13	2	1
	Older	9	0	0
Zero Car Households (ACS Table B25044: Tenure by Vehicles)		1	2	19