PLANNING FOR THE FUTURE

Assessing the Legacy of the Growth Management Act and Potential Policy Alternatives in the Puget Sound Region

Prepared for the Puget Sound Partnership

By Mirjam Amstutz, Hailey Fagerness, Meghan Ryan, and Andrew Tomes

May 31, 2021

EVANS SCHOOL
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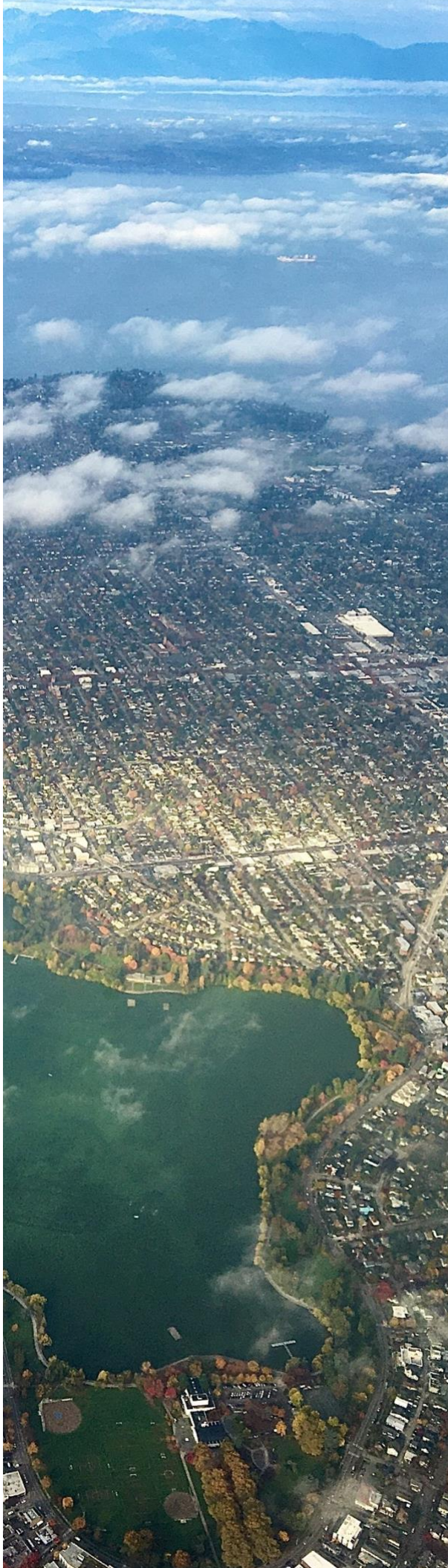
UNIVERSITY of WASHINGTON

PUGETSOUND PARTNERSHIP



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Executive Summary

Report Purpose

The purpose of this report is to guide Puget Sound Partnership (PSP) in its upcoming alternative future scenario planning initiative by assessing the legacy of Washington's Growth Management Act (GMA) on Environmental Justice (EJ), tribal collaboration, and ecosystem indicators. This report identifies current growth planning trends, development outcomes, and potential GMA modifications to help achieve vibrant, enduring natural systems and communities. PSP can use the findings presented in this report to further develop approaches to managing urban growth that minimize ecosystem impacts and enhance restoration objectives, while also advancing EJ and tribal collaboration.

Scope and Focus

This report is written with the PSP Science and Evaluation team as the primary audience, but the content is generally applicable to local planning departments across Washington State (especially Island, King, Kitsap, Pierce, Snohomish, and Thurston counties). Our approach combined a retrospective content and spatial analysis of EJ, tribal inclusion, and ecosystem indicators for the above six counties with a prospective policy analysis of GMA modifications adapted from recent literature from the William D. Ruckelshaus Center and University of Washington Center for Livable Communities. Two research questions (with additional sub-questions) motivated our work:

How does the current iteration of Washington's GMA and comprehensive planning align with PSP's vision for the Puget Sound?

- How is the GMA-mandated comprehensive planning addressing EJ in the Puget Sound Region?
- How is the GMA-mandated comprehensive planning including federally recognized tribes in the growth planning and decision-making process in the Puget Sound Region?
- How is the GMA-mandated comprehensive planning addressing PSP-identified ecosystem priorities?

How will proposed revisions to the GMA affect EJ, tribal access to collaborative growth planning, and ecologically important areas?

Findings and Recommendations Summary

EJ Highlights: With a few exceptions, current growth planning frameworks do not explicitly consider EJ in their planning processes. New state-sponsored spatial tools

show that several communities have moderate-to-severe environmental health risks combined with socio-economic disadvantages such as lower income or higher population of immigrants and people of color. Our spatial analysis highlighted that high environmental health risk ratings are associated with more densely populated areas in the central Puget Sound region (specifically King and Pierce Counties) and our content analysis found that, of the two counties, only King County is considering the EJ implications of growth planning. Based on our policy analysis, ***we recommend that PSP support EJ by encouraging EJ planning goals and definitions in the GMA and by incorporating EJ as a PSP Vital Sign.***

Tribal Collaboration Highlights: Counties are amenable to collaborating with tribal territories, but Comprehensive Plans more often include tribes in a longer list of potential stakeholders, eliding the unique treaty rights these groups hold. The extent to which counties acknowledge and include tribal interests in planning is variable, with few counties going beyond simple recognition. This misses the opportunity to collaboratively plan with these important governmental partners that depend on culturally important resources, and also bring diverse expertise to the growth planning process. Based on our policy analysis***, we recommend that PSP work with its tribal partners to endorse a GMA modification formalizing tribal participation via a Memorandum of Understanding process.***

Ecosystem Highlights: Current growth planning frameworks are inconsistent in addressing ecosystem conditions, as measured through land cover indicators like habitat restoration and/or protection, forest conversion, and impervious surfaces. In general, there are relatively few mentions of specific policies to tackle these issues, despite the clear recognition of the value of healthy habitats and forests. In a possible reflection of this lack of centralized policy, conservation and restoration of habitat areas has generally been decentralized and is insufficient to achieve a goal of net ecosystem gain. Overlapping jurisdictions and regulations add additional complexity, making it more difficult for local governments to adopt protective measures. Therefore, ***we recommend that PSP improve local land-use decision-making by increasing the ability of planners to monitor and address indicators of both sprawl and over-concentrated growth***.

General Highlights: Disparities in the level of planning between focal Puget Sound counties contribute to the slow progress of updating planning frameworks. The process is highly decentralized and is resulting in inequitable access to resources, planning burdens and outcomes across the region. As a backbone agency, PSP is well-positioned to support a consistently informed planning process across counties. Thus, ***we recommend that PSP leverage its role as a nexus of state and local organizations to improve county planners' access to information and state funding.***

Acknowledgements

We would like to express our deepest gratitude to the following people and groups for their invaluable support throughout the duration of this project. This report was made possible by the incredible support we received over the last six months.

We want to thank our main PSP contact, **Katherine Wyatt**, for her continuous feedback, partnership, and guidance in creating a report that is valuable to PSP and its partners.

We deeply appreciate **Dr. Ann Bostrom's** invaluable support throughout the process of researching, analyzing, writing, and editing this report. Thank you for your far-reaching expertise and your calming encouragements.

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Thank you, **capstone seminar colleagues**, for your helpful peer feedback. The supportive and encouraging work environment we were part of pushed us to do better.

We also want to thank the **planning offices of Island, Pierce, Snohomish, and Thurston Counties** for giving us timely access to archived versions of their planning documents.

And finally, to our respective **friends, family, partners, and pets,** thank you for your continued love and support. We could not have completed this project without it.

Positionality

As researchers and authors for this project, we want to acknowledge our positionality and potential biases we carry due to our lived experiences, backgrounds, and identities. Our team consists of four white Master of Public Administration students at the University of Washington's Evans School of Public Policy and Governance, three of whom did not grow up in the Puget Sound region. We recognize the significant privilege of our background and the opportunity to access a graduate level education. These personal and societal factors might have influenced the literature and themes we chose to analyze, as well as the conclusions drawn from our analyses and our recommendations. We make recommendations in this report intended to mitigate environmental injustices and bolster tribal relationships with Washington counties. Our biases and lived experiences have presumably impacted these recommendations and this report should be read with the possibility of authors' positionality in mind. We do not attempt to speak on behalf of tribal nations that have resided in the Puget Sound area since time immemorial or on behalf of other minority groups.

Additional research on this topic would profit from perspectives of tribal community members, people of color, and other primary stakeholders in the Puget Sound region.

Land Acknowledgement

We respectfully acknowledge that the land where we study is the ancestral territory of the Coast Salish peoples, and that the land touches the shared waters of all tribes within the Duwamish, Puyallup, Suquamish, Tulalip and Muckleshoot nations, who have been here since time immemorial. We honor with gratitude the land itself and the Coast Salish peoples, past and present, who have stewarded this land throughout the generations.

Glossary of Terms

Comprehensive Plans (CPs): CPs are county-level policy documents that organize a jurisdiction's growth planning and management efforts, as prescribed by the Growth Management Act. There are several mandatory elements that counties must address in a CP, including land use, housing, capital facilities, utilities, transportation, and rural development. More information on county-level CPs can be found in section 2.1.3.

Environmental Justice (EJ): Per the Washington State Environmental Justice Task Force, EJ is defined as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. This includes using an intersectional lens to address disproportionate environmental and health impacts by prioritizing highly impacted populations, equitably distributing resources and benefits, and eliminating harm." (EJTF, 2020, pp. 6)

Federally recognized tribes: According to the U.S. Bureau of Indian Affairs, a federally recognized tribe is "an American Indian or Alaska Native tribal entity that is recognized as having a government-to-government relationship with the United States, with the responsibilities, powers, limitations, and obligations attached to that designation, and is eligible for funding and services from the Bureau of Indian Affairs." These tribes have tribal sovereignty, or the inherent right to self-government. There are 29 federally recognized tribes in the greater Puget Sound region: Chehalis, Colville, Cowlitz, Hoh, Jamestown S'Klallam, Kalispel, Lower Elwha Klallam, Lummi, Makah, Muckleshoot, Nisqually, Nooksack, Port Gamble S'Klallam, Puyallup, Quileute, Quinault, Samish, Sauk-Suiattle, Shoalwater Bay, Skokomish, Snoqualmie, Spokane, Squaxin Island, Stillaguamish, Suquamish, Swinomish, Tulalip, Upper Skagit, and Yakama (ALA, 2018).

Growth Management Act (GMA): The GMA is primarily codified under Chapter RCW 36.70A. This legislation was first adopted in 1990 and aimed to manage growth in Washington State via mandated CPs and other planning endeavors. More information on the GMA can be found in section 2.1.

Impervious surface: Impervious surfaces are areas where construction materials such as concrete prevent infiltration of water into soil.

Overburdened communities: According to the Washington State Environmental Justice Task Force, overburdened communities are "communities who experience disproportionate environmental harms and risks due to exposures, greater vulnerability to environmental hazards, or cumulative impacts from multiple stressors." (EJTF, 2020, pp. 12)

Puget Sound Partnership (PSP): PSP is our client and a science-based state agency that oversees the restoration of the environmental health of the Puget Sound Region. It operates with various partners to achieve 6 recovery goals: healthy human population, vibrant quality of life, thriving species and food web, protected and restored habitat, abundant water quantity, and healthy water quality.

Puget Sound or Puget Sound Area or Region: The Puget Sound is defined by oceanographers as the combination of the five marine basins known as the Whidbey Basin, the Central Puget Sound, the Carr-Nisqually Inlets, the South Sound Inlets, the Hood Canal, and the Port Madison and Sinclair Inlets in Washington State. The Puget Sound Area or Region is a broader term that encompasses land as well as water bodies. The Washington State Legislature defines the Puget Sound Region as the combination of all watershed areas draining into the marine basins (see Figure 1.1 for a visual representation).

Urban Growth Areas (UGAs): UGAs are designated by county-level CPs to be areas of high-density urban growth and development. Most future population growth and development is supposed to occur in these areas, and growth outside the boundaries can only be rural in nature.

Urban Sprawl: A pattern of development characterized by widely spaced suburban or exurban developments that initially occur outside established urban areas, connected by roads, and gradually surrounded by low-density infill and commercial strips (see Robinson, Newell & Marzluff, 2005).

Abbreviations

BAS	Best Available Science
CP	Comprehensive Plan
CPPs	Countywide Planning Policies
EHD	Environmental Health Disparities
EJ	Environmental Justice
EJTF	Environmental Justice Task Force
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information System modeling
GMA	Growth Management Act
GMHB	Growth Management Hearings Board
HB	House Bill (Washington State)
HRCD	High-Resolution Change Detection
NLCD	National Landcover Database
MOU	Memorandum of Understanding
PSP	Puget Sound Partnership
PSRC	Puget Sound Regional Council
RCW	Revised Code of Washington
SEPA	Washington State Environmental Policy Act
SMA	Shoreline Management Act
TDR	Transfer of Development Rights
UGA	Urban Growth Area
UW	University of Washington
VSP	Voluntary Stewardship Program
WDFW	Washington Department of Fish and Wildlife
WSAC	Washington State Association of Counties
WWU	Western Washington University

1 Introduction

1.1 The Puget Sound Partnership

The Puget Sound Partnership (PSP) is a non-regulatory, science-based state agency that was established in 2007 under the Puget Sound Water Quality Protection Act (RCW 90.71) to oversee floral and faunal recovery of the Puget Sound region. At the time of PSP's establishment, the Washington State Legislature considered the Sound to be in serious decline (Puget Sound Water Quality Protection, 2007). PSP partners with federal, state, and local government agencies, tribes, cities, counties, special purpose districts, scientists, businesses, and non-profits to achieve ecosystem recovery.

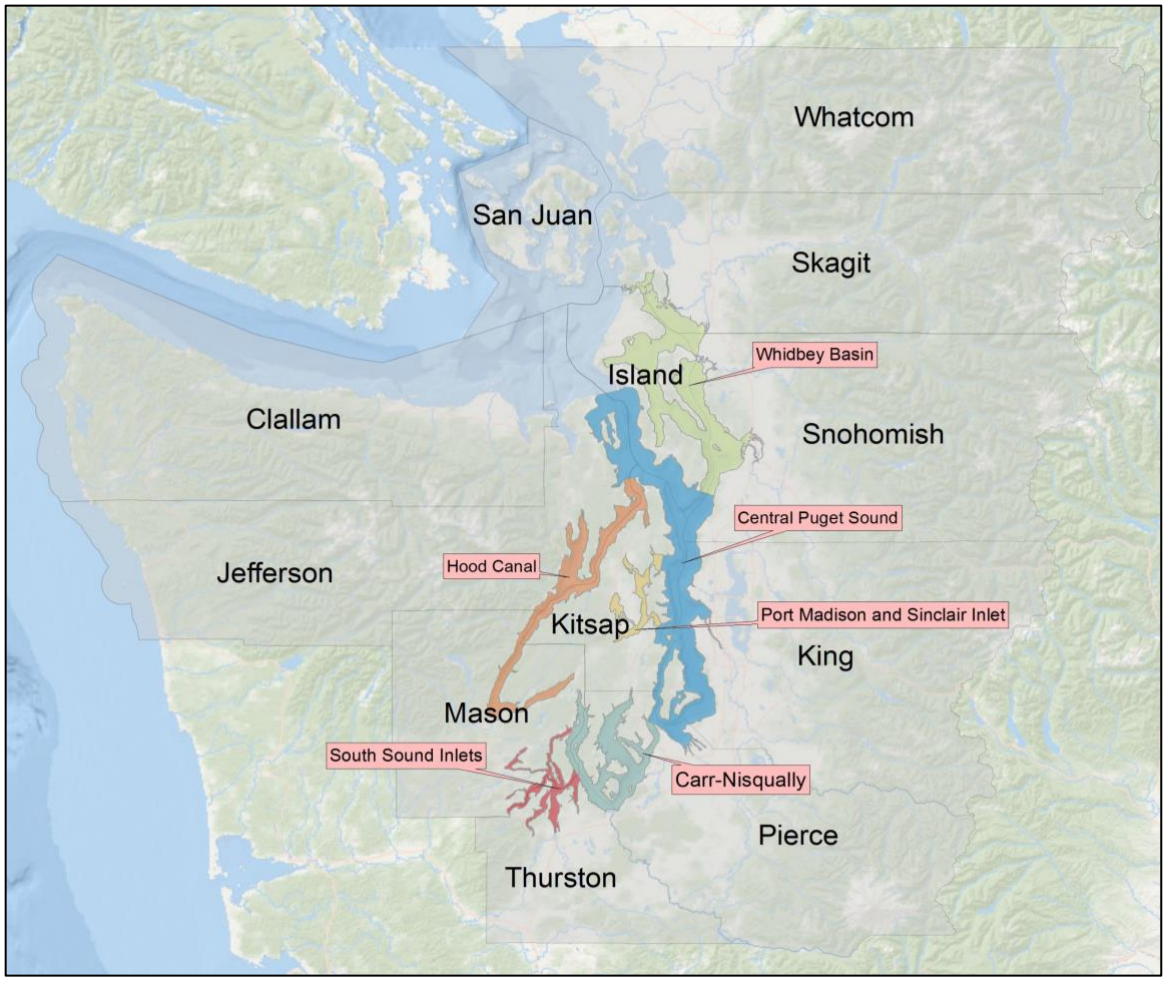


***Figure 1.1**: Map of the Puget Sound region. The Puget Sound is made up of six marine basins known as Whidbey Basin, the Central Puget Sound, Carr-Nisqually, the South Sound Inlets, the Hood Canal, and the Port Madison and Sinclair Inlets. The Washington State Legislature defines the Puget Sound Region as the combination of counties that have watersheds draining into the marine basin.*

PSP was established with six recovery goals: healthy human population, vibrant quality of life, thriving species and food web, protected and restored habitat, abundant water quantity[1], and healthy water quality. Within these goals, three strategic initiatives are emphasized as regional priorities critical to Puget Sound recovery: stormwater, habitat, and shellfish (PSP, 2018). The Partnership works towards enduring natural systems and communities within the context of both population growth and development in the surrounding region and the rapid global ecosystem changes induced by human activity.

As a collaborative governance agency, PSP aligns the work of its partners around a shared vision and strategy, known as the Action Agenda. The Agenda is built collaboratively to ensure smart investment of recovery resources in the Puget Sound region. This promotes accountability among partners, which improves program effectiveness. As a backbone agency, it works with an array of partners across the region to promote priority actions and to remove barriers to recovery.

To achieve the six recovery goals and to continue to be effective planners and conveners, PSP must account for changing pressures in the region under conditions of substantial uncertainty. Pressures like climate change will interact with population growth and public and private land use decisions in ways that will be difficult to anticipate. To account for this uncertainty in their planning, PSP is developing alternative future scenarios that describe how the future might unfold. PSP will then assess the efficacy of alternative strategies within each of these futures.

1.2 Study Rationale and Research Questions

Our product will inform the extended scenario planning project by assessing the Growth Management Act (GMA) and GMA-mandated Comprehensive Plans (CPs). The GMA can be viewed as both a driver for how the Puget Sound region will develop and also a potential roadmap for achieving a future in line with PSP's recovery goals. This report is intended to support PSP's thinking about potential scenarios related to growth management frameworks. We focus on how the GMA has shaped the Puget Sound since its passage and how specific human wellbeing and environmental outcomes may change under different potential GMA modifications. We concentrate our efforts on identifying and evaluating three key components of development policy: environmental justice (EJ), collaboration with federally recognized tribes, and ecosystem conditions. PSP can use the findings presented in this report to develop appropriate strategies that consider growth management from both a community and an ecosystem perspective.

This report explores the following research questions (and sub-questions):

[1] In terms of groundwater levels and river- and stream flows

How does the current iteration of Washington's GMA and comprehensive planning align with PSP's vision for the Puget Sound?

- How is the GMA-mandated comprehensive planning addressing EJ in the Puget Sound Region?
- How is the GMA-mandated comprehensive planning including federally recognized tribes in the growth planning and decision-making process in the Puget Sound Region?
- How is the GMA-mandated comprehensive planning addressing PSP-identified ecosystem priorities?

How will proposed revisions to the GMA affect EJ, tribal access to collaborative growth planning, and ecologically important areas?

1.3 Introduction to Main Concepts

1.3.1 The Growth Management Act

The GMA (RCW 36.70A), adopted by the Washington State Legislature in two parts during 1990 and 1991, sought to regulate development, organize land use, and guide economic growth (GMA, 1990, RCW 36.70A.010) by establishing a policy of concentrating development in county-designated Urban Growth Areas (UGAs) and limiting density in the surrounding rural areas. Along with the 1971 Shoreline Management Act (RCW 90.85) (SMA), the GMA was established to ensure public access to and protection of the state's natural resources for recreation, economic activity, and aesthetic value.

Understanding Washington's growth management policies and how they have affected ecosystem restoration efforts in the Puget Sound is therefore highly relevant to PSP's organizational purpose. The state of Washington estimates that the Puget Sound region will grow by more than 1.5 million residents within the next two decades, so it will be critical to consider growth management and development practices in future regional restoration planning (Washington State Office of Financial Management, 2020).

1.3.2 Concern for Environmental Justice

The concept of EJ originated as a code of principles adopted by the First National People of Color Environmental Leadership Summit (October 1991, Washington DC) (Appendix A). Since it became an established concept in the early 1990s, EJ and related initiatives have become increasingly significant to policy makers, as exemplified in 2019 when the Washington State Legislature funded an Environmental Justice Task Force (EJTF) to research and provide recommendations on how to incorporate EJ principles and practices into state agency protocols (HB 1109, Section

221, 48., 2019). Two themes are common among EJ definitions and principles: equitable access to decision-making processes and the equitable enjoyment of a healthy environment (EPA, 2021; EJTF, 2020; PSRC, 2020A, p. 7; etc.). Section 2.2.1 goes into more detail on EJ and its relevance in connection with the GMA.

1.3.3 Concern for Tribal Inclusion

In addition to general EJ concerns, tribal communities are uniquely affected by ecosystem decline due to cultural ties to the land and its natural resources. As sovereign nations, federally recognized tribes are guaranteed by treaty the right to government-to-government relationships with local and state governments, but they rarely have decision-making authority on growth management planning that might impact the larger Washington ecosystem.

PSP includes processes to enhance collaboration on EJ and tribal concerns in its 2020-2024 Science Work Plan. Later in this report (section 2.2.2), we discuss how the GMA has affected the goals and priorities of these communities, which are among those most directly impacted by environmental injustices.

1.3.4 Concern for Ecosystem Condition

The rapidly increasing population in the Puget Sound region - especially in recent decades - has put immense pressure on the ecosystem health of the area. When inappropriately sited, housing and commercial development can damage the local environment. For example, draining and infilling wetlands to increase the amount of buildable land in the area impacts the essential ecosystem services such areas provide, including pollutant filtration, groundwater recharge, and habitat for sensitive wildlife. Reinforcing shorelines to reduce erosion or to build structures, a process known as armoring, can reduce the amount of organic matter entering the ocean and alter beach dynamics, which in turn reduces food availability and reproductive success of the forage fish species that are favored by native salmon.

Both state and federal policy objectives have attempted to address these issues, notably through the 1971 Washington State Environmental Policy Act (SEPA) and the 1972 federal Clean Water Act and subsequent executive orders establishing a national policy of “no net loss” for wetlands (Bendor, 2009). However, incidental impacts or difficult-to-regulate activity on privately owned lands has resulted in continued degradation of these critical areas both nationally and in Washington (Zedler & Kercher, 2005).

1.4 Report Roadmap

Our three research questions will be investigated in the following chapters through a review of existing growth management literature, as well as GIS and content analysis of existing data. This will culminate with an analysis of potential GMA modifications.

Figure 1.2: *Research Approach*

The retrospective analysis will consider current issue areas for EJ, tribal collaboration, and ecosystem conditions. The prospective policy analysis will complement these findings and provide ideas for PSP to consider in their legislative networking, as well as in their strategies for fostering collaborative ecosystem restoration.

This report is divided into nine chapters encompassing a review of relevant literature, research methods, data analysis and findings, and our final recommendations to PSP:

- **Chapter 1** provides more information on the case for exploring growth management and the GMA as part of PSP's scenario planning.
- **Chapter 2** builds the baseline for our analysis through a contextual review of Washington's current growth management framework. This section outlines both current disputes related to the GMA, as well as proposed changes that are relevant to EJ objectives, tribal collaboration, and ecosystem conditions.
- **Chapter 3** details the evaluation methods we used to answer our research questions about how the current GMA aligns with PSP's vision for EJ, tribal collaboration, and ecosystem conditions. We present our content analysis coding strategy, spatial data analysis structure, and the rationale for our analysis of GMA modification alternatives. We also discuss the limits of our analysis in this section, including a sensitivity analysis of our EJ keywords.
- **Chapters 4, 5, and 6** outline our findings for our first research question that encompass retrospective EJ, tribal collaboration, and ecosystem condition analyses. We summarize how current growth management frameworks have impacted these indicators via content and spatial analyses.
- **Chapter 7** addresses our second proposed research question on how revisions to the GMA would affect EJ, tribal collaboration, and ecosystem conditions. We combine the results from our earlier research into a cohesive policy analysis of potential policy modifications.
- **Chapter 8** presents our recommendations for PSP regarding growth management and the GMA in their future scenario planning process.
- **Chapter 9** concludes this report and looks to the future for growth planning in Washington State.

2 Background

To contextualize this report, we begin with an overview of:

- The Growth Management Act (section 2.1),
- Opportunities for Enhancing the Growth Management Act (section 2.2),
- Puget Sound Partnership-Related Growth Management Act Implications (section 2.3), and
- Potential Growth Management Solutions (section 2.4).

2.1 The Growth Management Act

2.1.1 Historical Growth Management Context

Washington's GMA was adopted in two parts in 1990 and 1991. The legislative findings at the beginning of the Act outline that:

> Uncoordinated and unplanned growth, together with a lack of common goals expressing the public's interest in the conservation and the wise use of our lands, pose a threat to the environment, sustainable economic development, and the health, safety, and high quality of life enjoyed by residents of this state. It is in the public interest that citizens, communities, local governments, and the private sector cooperate and coordinate with one another in comprehensive land use planning. Further, the legislature finds that it is in the public interest that economic development programs be shared with communities experiencing insufficient economic growth. (RCW 36.70A.010)

Before the adoption of the GMA, development planning was primarily the responsibility of cities and counties and was not governed by the state (Kline, et al., 2014). The SMA, adopted in 1972, instituted state-supervision of growth planning to protect natural resources against adverse environmental effects along the shoreline. However, the SMA statutory requirements to protect the environment from population growth remained minimal; this paved the way for the eventual passage of the GMA (Settle, 1999, pp. 6-7).

The adoption of a state-wide growth management framework was heavily contested. While environmental activists advocated for conservation language in the text, developers, business, and most local cities did not want to include those legal restrictions. The latter groups' influence is reflected in the text through inconsistencies and politically necessary omissions (Ibid, p. 7). The many compromises between stakeholder groups that were necessary to pass the GMA resulted in an act with several vaguely defined terms that were clarified through years of amendments and subsequent judicial rulings (Settle, 1999, p. 7). Two such vaguely defined concepts were the construct of "rural" and "urban" growth: the GMA prescribes that urban growth stay within UGAs and growth outside should be "not urban in nature." However, the original text of the GMA does not contain a definition

for "rural growth" and does not define "urban growth" in terms of population density standards. A 1997 amendment improved the differentiation (Ibid, pp. 14-15) by defining more specifically what constituted rural and urban development.

Differing environmental objectives also contributed to the political divide over the original GMA. Environmental goals in the GMA are mainly framed as human quality of life concepts (e.g., preserve natural resources for recreation purposes and maintain agriculturally productive lands). The reasoning behind this anthropocentrism, as Lloyd (2002, p. 80) argues, is that growth management and environmentalism are two distinct, separate policy fields. He notes that while the former aims to plan for population growth to promote efficient development based on designated land use, the latter's focus is on limiting growth to preserve the ecosystem.

Continued contention over provisions in the GMA has resulted in a continuous process of developing clarifying updates and amendments such as the 1997 clarification to define rural and urban development (Settle, 1999, p. 8; Washington State Department of Commerce, 2017). However, the GMA has never seen a comprehensive overhaul and the planning requirements are substantially the same as those adopted in 1990. This lack of movement stands in contrast to issue areas that have become more important for planning, such as climate change, equity, public health, and intergovernmental collaboration (Sterrett, 2015).

Further modification has also occurred through the courts system and the Growth Management Hearings Board (GMHB), which was established with the initial passage of the GMA under RCW 36.70A.250. The GMHB has the power to determine whether a CP is in compliance with the GMA and applicable provisions of the SMA. However, Henry McGee Jr., then a professor of law at Seattle University who has written extensively on the GMA, and coauthor Brock Howell (2007) accused the GMA of being particularly deficient in the standards of review it set for the GMHB, writing:

> To the consternation of many… the Washington Legislature created in section 320 an incoherent linguistic rubric of the burdens and standards to be applied by the hearing boards. As a result, the burdens and standards have been subject to much debate. A 1997 amendment to section 320 provided no greater help. At the core of the problem is the legislature's failure to understand basic general legal theory and application regarding burdens of proof and standards of review. (p. 554)

The result, according to McGee and Howell, is that hearing outcomes can be unpredictable because it is unclear to petitioners before the board what standards must be met. In the 1997 amendment cited above, the Washington State Legislature "eliminated the quantum of proof" (Ibid. p. 558), meaning that it unintentionally omitted guidance for determining that a petitioner has presented sufficient evidence to prove their case and leaving the GHMB to find their own. Although the section was amended again in 2010, the language at issue was not changed.

2.1.2 Structure of the Growth Management Act

The GMA does not directly regulate growth management; instead, it requires counties with rapidly increasing populations, including all that border the Puget Sound, to develop CPs that govern population growth and development planning within their jurisdictions (RCW 36.70A.040). CPs are mandatory for counties where there has been at least a 17% increase in population in the last 10 years and for municipalities with a population of at least 50,000 people or where there has been at least a 20% increase in population in the last 10 years, regardless of population size (GMA, 1990).

Washington's approach to growth management is referred to as a "Bottom-Up Framework" (Settle, 1999). Thus, local governments have a large amount of flexibility in developing their plans. Subchapter RCW 36.70A.020 defines 13 baseline goals for local governments to consider while developing a growth management plan, with a 14th goal later added within RCW 36.70A.480 (outlined further in Table 2.1). These planning goals, despite not having a specific order of priority, are often mutually competing with development goals being prioritized over ecosystem preservation (Settle, 1999, p. 11). An example of development's pre-emption over environmental regulations is the "vested rights doctrine." As described in detail in section 2.2.3, the vested rights doctrine codified in the GMA allows developers to use strategic permit applications to "freeze" environmental regulations and avoid compliance with anything passed after the application date. In this example the GMA environment goal competes with the goal of economic development, with the latter being prioritized.

Washington State's Office of Financial Management and Department of Commerce are both important actors in implementing the GMA. Under RCW 36.70A.115, the Office of Financial Management projects population growth for the state and each county. Based on these projections, counties develop their own CPs at least every 8 years (MRSC, 2020). The Washington State Department of Commerce is the primary contact point for questions related to the GMA and provides technical assistance to counties developing CPs (Washington State Department of Commerce, 2017).

Table 2.1: *Baseline Planning Goals in the GMA (RCW 36.70A.020)*

Goals	Description
1. Urban growth	Encourage development close to public facilities and services
2. Reducing sprawl	Avoid low-density development
3. Transportation	Develop efficient systems that are coordinated between cities and counties
4. Housing	Ensure affordability and promote a variety of residential densities and housing types
5. Economic development	Provide economic opportunities for all citizens, promote recruitment, retention, and expansion of businesses, and encourage growth in underserved areas
6. Property rights	Protect landowners from arbitrary and discriminatory actions
7. Permits	Process permits in a prompt, fair, and predictable manner
8. Natural resource industries	Maintain and enhance natural resource-based industries (agriculture, timber, and fisheries)
9. Open space and recreation	Retain open space and conserve habitat to enhance access
10. Environment	Protect the environment and ensure high quality of life
11. Citizen participation and coordination	Encourage citizen involvement in planning processes and ensure coordination between communities and jurisdictions
12. Public facilities and services	Ensure public facilities and services are adequate to serve development
13. Historic preservation	Identify and preserve lands, sites, and structures of historical or archaeological significance
14. Shoreline management	Preserve the natural character, resources, and ecology of the shoreline while preserving or expanding public access for aesthetic enjoyment or recreation

A Hearings Board made up of governor-assigned members is responsible for handling disputes related to the GMA. Citizens, NGOs, and other actors can dispute a CP provision if they believe it is not in accordance with the GMA. If provisions are found to be non-compliant with the GMA, the governor can impose sanctions on local governments as stated in RCW 36.70A.340/345 (McGee, 2007).

2.1.3 Comprehensive Plans

The CP is a general, coordinated land use policy statement that is intended to guide decisions at the local government level (MRSC, 2020). CPs are mandatory for counties with rapidly increasing populations (defined in 2.1.2), and counties that do not meet the population requirements that would warrant a mandated CP can opt into the planning process (GMA, 1990). By 1998, Island, King, Kitsap, Pierce, Snohomish, and Thurston counties were among the majority that had adopted CPs (Hepinstall-Cymerman, Coe & Hutyra, 2011, p. 6). Today, 28 of the 39 counties (representing 95% of the state's population) in Washington are required to or have opted into full planning under the GMA (Figure 2.1). Counties that have not opted in are typically more rural and not experiencing growth patterns that would call for an intentional

growth planning approach (Tovar, et al., 2021). Once a county has opted in to planning under the GMA, it cannot later opt out.

GMA provisions RCW 26.70A.045 through RCW 26.70A.217 set requirements for CPs and provide guidance to local governments on their planning endeavors. The GMA mandates that all counties -- even those not fully planning -- adopt development regulations that designate critical areas and natural resource lands and identify steps to preserve them (Washington State Department of Commerce, 2017; Tovar, et al., 2021).

Critical areas include the following areas and ecosystems: wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas (and in this case, development regulations are adopted to assure preservation). Resource lands include agricultural lands, forestlands, and mineral resource lands (and in this case, development regulations are adopted to ensure conservation).

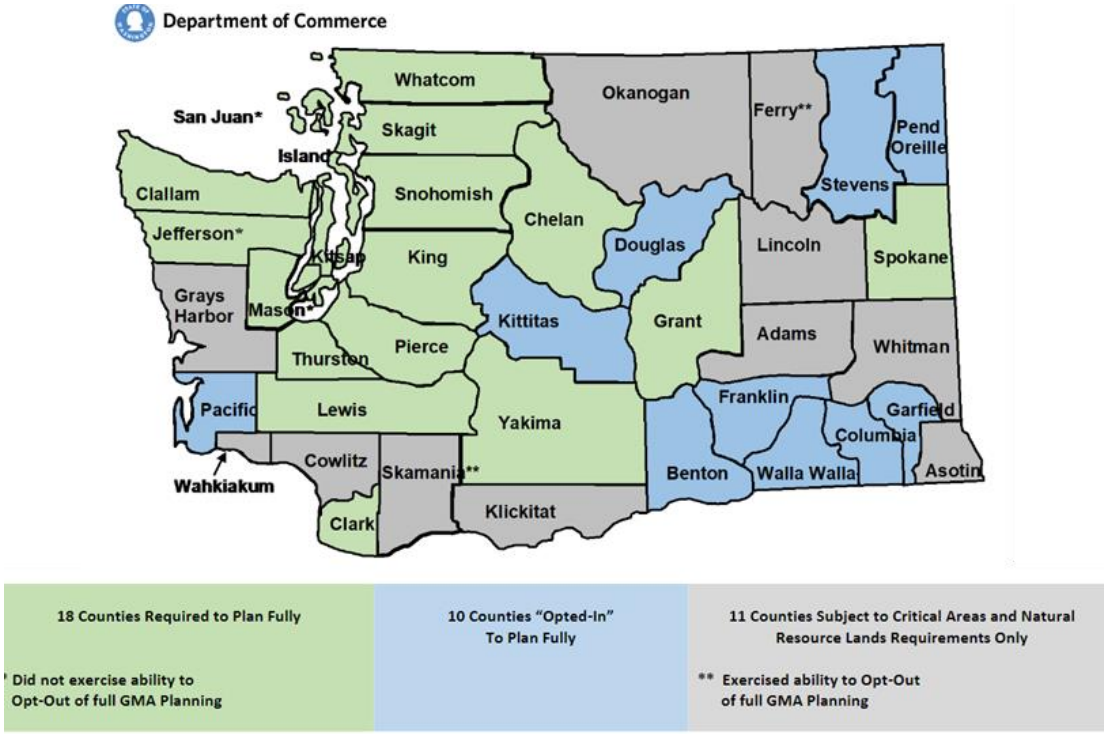


Figure 2.1: *Map of Washington State counties by GMA planning designation. Image source: MRSC (2020)*

Fully planning municipalities prepare CPs that include maps and standards for the following elements: land use, housing, capital facilities, utilities, transportation, and rural development (GMA, 1990). The land use element sets the direction for future community growth, usually depicted in a policy oriented "future land use map" that guides the official regulatory zoning map. CPs also include information on

demographic trends and changes in population, data which are used to create minimum standards for how many public facilities and services are required to adequately serve the population.

In addition, cities and counties adopt development regulations to implement their CPs. These regulations are typically controls placed on development or land use activities, such as zoning ordinances, critical area ordinances, or planned unit development ordinances (GMA, 2017). These regulations do not replace project permit approval processes but serve as a guiding framework for future planning and capital budgeting decisions.

CPs are produced and updated on an 8-10-year cycle. Five years after the adoption of a new plan, a county must produce a midterm assessment and update. Because the implementation of the GMA was phased in, different planning counties are on different cycles. Planning entities must establish programs allowing "early and continuous public participation" in the planning process, including feedback on development regulations (RCW 36.70A.140). CPs must also be coordinated between adjacent cities and counties (RCW 36.70A.100). To better structure this collaboration, county legislative authorities adopt countywide planning policies (CPPs) to coordinate planning within the county and with adjacent cities and counties. CPPs include designated UGAs that sufficiently meet planned population projections within the Office of Financial Management's 20-year range for the county (RCW 36.70A.210).

2.1.4 Managed Growth and the Environment in Puget Sound

By the time the GMA was passed, there had already been substantial changes to the Puget Sound coastline due to development. Most of the coastal lowlands had been developed or converted to farmland. The Puget Sound Nearshore Study, conducted to understand the extent of alterations and the cost of restoration, recorded the following declines in 2016 from the natural areas that existed pre-settlement (U.S. Army Corps of Engineers, 2016):

- A 27% decrease shoreline footprint of coastal deltas
- Loss of 35% of coastal embayments
- Armoring of 25% of the shoreline
- Loss of 74% of tidal wetlands
- Reduction of 15% of the overall shoreline length

Without a restoration mandate it is unlikely that substantial tracts of impacted areas will be returned to their original state; the GMA only requires that counties preserve, not expand, extant critical areas. A combination of state and federal policy has been directed at addressing the goal of habitat restoration, with cooperation from counties, but a lack of funding has stalled progress. The Puget Sound Nearshore report suggested a total of 36 projects to restore 2,100 acres of habitat at a cost of approximately $450 MM (as of 2016; see U.S. Army Corps of Engineers, 2016), but

implementation has been piecemeal and spearheaded by heterogeneous mixtures of state, local government, tribal government, and private actors.

It is difficult to draw direct connections between the GMA and these projects, as they are typically not referenced in CPs despite the involvement of county governments. This omission shows that parallel processes of conservation are occurring outside the purview of the planning offices and the aegis of the GMA. Furthermore, counties have favored alternative approaches that involve direct engagement with individual landowners instead of strategies that produce coherent natural spaces. These programs have involved significant amounts of land, but affected areas are highly dispersed. One example is the Transfer of Development Rights (TDR), which allows rural landholders to sell density rights to developers that can be transferred to parcels within the UGAs. Since their implementation in 1998, TDRs have been used to relocate subdivisions for 2,800 potential dwellings in deals that have involved over 144,000 acres (King County, 2019). In 2008, a regional program was established to allow TDR trading among King, Pierce, Snohomish, and Kitsap counties; Snohomish and Whatcom counties also operate local systems (Washington State Department of Commerce, 2017).

In addition to TDRs, Wright (2020) cites the 2011 Voluntary Stewardship Program (VSP), which was designed to reconcile the competing economic and environmental goals of the GMA by providing state funding to "agricultural landowners to develop and then implement watershed work plans" (Wright, 2020, p. 69) that are administered at the county level. Mason, Lewis, San Juan, Skagit, and Thurston counties have opted into the VSP. These programs are indicative that the original intent of the GMA to encourage preservation of natural areas has not gone disregarded, but that the GMA itself does not appear to be a significant driver of the UGAs, many of which cover areas that likely would have been designated as critical had they not been developed prior to the GMA's passage.

2.2 Opportunities for Enhancing the Growth Management Act

2.2.1 Opportunity to Implement an Environmental Justice Framework

In the same year the second part of the GMA was adopted, the concept of EJ originated as a code of principles adopted by the First National People of Color Environmental Leadership Summit (October 1991, Washington DC) (Appendix A). This code of principles defined the commitment to pursuing EJ as a response to the impacts of environmental racism (Energy Justice Network, 1991). EJ requires eliminating and reimagining current hazardous practices, rather than relocating or redistributing the burden (Ewall, 2012). Environmental racism and injustice have historically been measured by air and water pollutant levels, but metrics have been

expanded to incorporate other measures. While initially adopted 30 years ago, the 1991 EJ code of principles are still as relevant as ever. Communities with Black and Indigenous residents, along with other nonwhite residents and those living in poverty, are still more likely to be exposed to environmental health hazards than affluent white communities (EJTF, 2020). Today, the injustices are more universally recognized as being connected to systemic environmental racism than was realized in the 1990s.

The GMA does not currently have provisions recognizing environmental injustices, nor does it incorporate EJ considerations into its planning goals. The GMA only references a notion of "disadvantaged persons" in planning goal #5: "[e]conomic [d]evelopment within the context of 'providing economic opportunity for all citizens of this state," which excludes many noncitizen residents. The GMA planning goal #10 calls for "[protecting] the environment and enhanc[ing] the state's high quality of life, including air and water quality, and the availability of water." Neither of these planning goals directly addresses environmental health disparities (EHD) and counties have discretion in how they interpret the planning goals when developing their CPs.

Growth management can be a tool to counter structural racism, as its goal is to densify and enhance public facilities to meet the needs of a growing population, and to avoid concentrating social needs on a declining tax base. Creating more sustainable regions encompassing large metropolitan areas can not only mitigate environmental injustices, but also increase environmental sustainability (Sadd et al., 2012).

In its 2019-2021 biennial budget, the Washington State Legislature allocated funds to create an Environmental Justice Task Force (EJTF) responsible for developing recommendations and strategies for all state agencies to implement EJ actions. The task force is formed of individuals representing several state agencies and community-based organizations, along with union, agricultural, and business partners. In the fall of 2020, the EJTF submitted a comprehensive report to the Governor and Legislature which recommended measurable goals, policy models, community engagement strategies, and guidance on utilizing a Washington State Department of Health EHD Map to identify rates of environmental health risk across Washington census tracts.

Recommended Statewide EJ Definition

The fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. This includes using an intersectional lens to address disproportionate environmental and health impacts by prioritizing highly impacted populations, equitably distributing resources and benefits, and eliminating harm (EJTF, 2020, p.6).

Within the report, EJTF suggested a statewide EJ definition founded on the Environmental Protection Agency (EPA) definition and includes "outcomes [EJTF] want[s] to see in Washington state" (p. 6). Additionally, the EJTF specified that they used the term 'overburdened communities' to describe groups who "experience disproportionate environmental harms and risks due to exposures, greater vulnerability to environmental hazards, or cumulative impacts from multiple stressors" (p. 12). Among its recommendations, the EJTF report suggested adding language to the GMA that incorporates EJ, modeled after California's 2016 Senate Bill No. 1000 that required local governments to identify EJ communities (called "disadvantaged communities") in their jurisdictions and address EJ in their general plans.

While the modern EJ field has expanded to include nuanced, multifaceted issues affecting many disadvantaged communities, EJ uses a framework that is insufficient to address the interests of tribal nations. There is a unique relationship between tribal communities and the EJ movement given the cultural significance of the natural environment, historical oppression and marginalization, and tribal status as sovereign nations (Harris & Harper, 2011; Hernandez, 2019). As each tribe is an independent sovereign nation, the tribal community as a whole has varying priorities and concerns related to environmental conservation (Hernandez, 2019). We consider these issues further in section 2.2.2.

2.2.2 Opportunity to Collaborate with Tribal Governments

Tribal governments are invested in development and land management bordering their nations and throughout the state, as it affects the natural resources integral to their culture. The GMA directs counties to notify, or engage in a participatory process with, governmental entities spanning from the federal government to sovereign tribes on development changes. However, the GMA does not require any further involvement of tribal governments in the growth management process. According to the Urban Transitions Planning Studio within the Huxley College of the Environment at Western Washington University (WWU), tribal governments are most concerned with the lack of regulation requiring CPs to protect culturally significant areas and the lack of intergovernmental communication about inconsistencies between CPs and tribal government plans (Zaferatos et al., 2020).

The central Puget Sound region holds ten federally recognized Indian reservations, owned by the Chehalis, Muckleshoot, Nisqually, Puyallup, Sauk-Suiattle, S'Klallam, Snoqualmie, Stillaguamish, Suquamish, and Tulalip tribes. The broader region also has the recognized Lower Elwha Klallam, Lummi, Makah, Nooksack, Quileute, Quinault, Samish, Skokomish, Squaxin Island, Swinomish, and Upper Skagit tribes and the unrecognized Duwamish Tribe, Kikiallus Indian Nation, Marietta Band of the Nooksack Tribe, Snohomish Tribe, Snoqualmoo Tribe, and Steilacoom Tribe.

There is substantial jurisdictional complexity because these reservations often either overlap, adjoin, or are partially embedded in UGAs (Figure 2.2). For example, the Puyallup Reservation partially overlaps both the Tacoma and Fife UGAs, the Snoqualmie Reservation is embedded in the Snoqualmie UGA, the Muckleshoot Reservation both adjoins and is partially dispersed within the Auburn UGA, and the Tulalip Reservation borders both the Marysville and Everett UGAs. Additionally, some UGAs overlap unceded territories and areas claimed by tribes that are not federally recognized, so the map in Figure 2.2 should be viewed as a partial representation of tribal territories in the area.

Despite the overlap in land and interest, formal relationships at the county level are rare. The need for a working relationship between the government and the tribes was established at the state level in the 1989 Centennial Accord and the 1999 Millennium Agreement. In 2013, Snohomish County established a Memorandum of Understanding (MOU) with the Tulalip Tribe to manage a jurisdictional dispute regarding deeded land inside the Tulalip Reservation's borders. The two governments agreed to coordinate their long-term land use planning through a joint working group and a data-sharing agreement. As of May 2021, this is the only MOU establishing joint land-use planning between a county government and a tribe in the six central Puget Sound counties.

To explore the current state of collaborative land management, the Urban Transitions Planning Studio surveyed counties and tribes on their relationship with one another throughout the planning process (Zaferatos et al, 2020). The survey responses exposed several negative impacts on tribes and their land that were created by the lack of coordination between the two government systems. This was the case for land both "on-reservation" and "off-reservation."

Tribal concerns for "on-reservation land" (defined as land that is legally owned by tribes, including fee lands) include land use and water management, and annexation and UGAs (Zaferatos et al., 2020, p. 21). Compared to the GMA framework, tribal land use policies are generally more stringent to regulate against adverse externalities of development on the natural environment. However, tribes often rely on existing county utilities, such as water infrastructure, and the GMA does not require county consultation with tribes prior to new development (Ibid, p. 22).

Existing UGAs are not required to coordinate with tribes when they annex land bordering the reservation (Ibid, p. 25). As such, during an annexation, the new portions of a larger UGA undergo development that is often inconsistent with tribal land use policies.

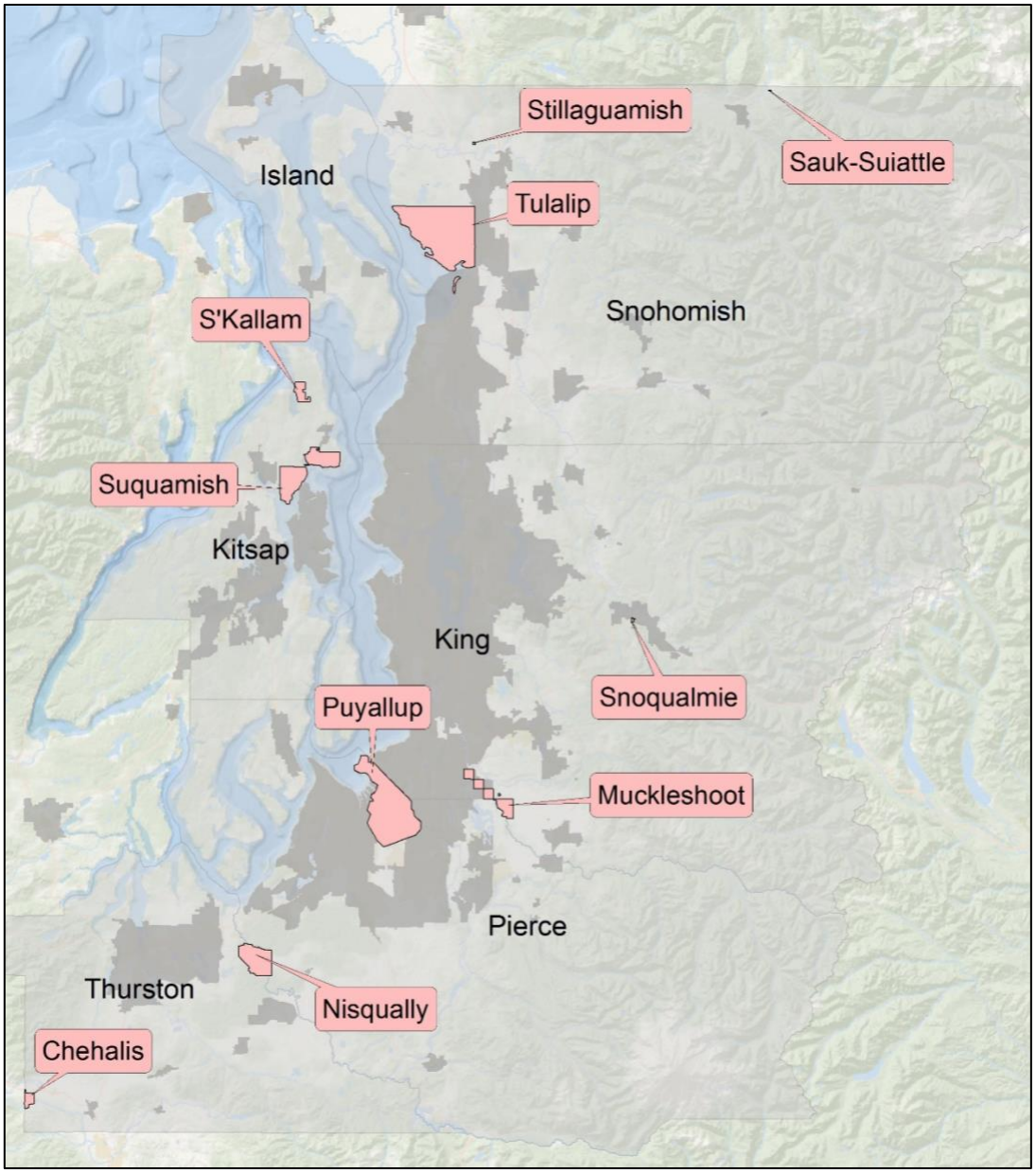


***Figure 2.2**: Distribution of UGAs (gray) and tribal territories (red) in the central Puget Sound counties. UGA and reservation boundaries are from the Washington State Department of Ecology; basemap is from ESRI's national hillshade dataset*

Tribal concerns for "off-reservation land" (defined as land that is not owned by tribes and is subject to Washington's growth management policies and CPs) focus on the planning outcomes that have an impact on the greater ecosystem and resource management surrounding the reservation land. Since tribes are generally relegated to participatory influence on development decisions, a general area of concern is the extent to which counties are legally allowed to use their discretion in many permitting instances (Ibid, p. 29). For example, the Washington Supreme Court ruled in 2007 that the GMA merely requires counties to include consideration of best available

science (BAS) in its determination of planning developments. Without the requirement to prioritize the impacts to the natural environment projected by BAS, counties can depart from those recommendations for any reason, including prioritizing economic development over culturally significant natural resources that are prioritized by tribal partners (Ibid, p. 28). Similarly, development permits must undergo "independent environmental review" which are intended to assess the developmental impacts on critical areas. This review is generally accepted by county governments without any added analysis. As a result, there have been instances where development led to "significant adverse impacts to tribal natural-resource interests" (Ibid, p. 29).

Furthermore, counties have discretion in issuing reasonable-use exemptions which make it more difficult for tribal governments to anticipate and plan. There have been several legal decisions by the Washington State Legislation that have retracted the enforcement of Washington State Department of Ecology rules on development in relation to water supplies (Ibid, p. 30). These have codified disregard for the negative externalities on instream flows, watersheds, and thus tribal fishery interests which are supposed to be protected through treaty rights (Northwest Indian Fisheries Commission, p. 3). Tribes are often left no other avenue than to simply report their concerns as a general complaint against the counties. Many tribes support specific reforms to the GMA that require counties to "formally address [these concerns] in order to ensure the protection of tribal resources." (Zaferatos, 2020, p. 28).

2.2.3 Opportunity to Better Meet Ecosystem Objectives

The GMA goals (in Table 2.1) are predominately focused on managing growth rather than on environmental protection. This implicit priority has manifested in ongoing ecological issues. The Puget Sound Nearshore Restoration Program, an entity that coordinates restoration efforts in the Puget Sound, has identified five priority issues occurring from development: barriers in large river deltas that restrict the movement of fresh water, blocking or infilling of coastal inlets, shoreline armoring, loss of nearshore wetlands, and simplification and shortening of shorelines (PSNRP, 2016). In a challenge for conservation, these processes are mutually reinforcing and can act simultaneously. For example, modifications to coastal inlets to improve passage for ships can result in shoreline simplification, armoring, and infilling of coastal wetlands as dredge material is discarded.

As the GMA was not initially structured with environmental conservation as a priority, it has hampered recovery efforts. The GMA jurisdiction overlaps with the SMA and SEPA. The adoption of a CP is classified as an "action" under SEPA (RCW 41.21C.440) and is therefore subject to environmental review, but ambiguous wording in the GMA has been used to protect projects and plans that have later been found to violate SEPA if approved by a municipality before review is completed (Calandrillo, Deliganis, & Ellis, 2017).

The key concept underpinning these conflicts is known as "vested rights doctrine", which allows permit applicants to "freeze" the applicable environmental regulations at the date of application submission. The GMA does not specify any requirements beyond submitting a proposal (including having that proposal undergo SEPA review) and does not expire vested rights, allowing developers to submit proposals for projects in advance of announced changes to local environmental policies in a strategy termed "permit speculation" (Ibid.). Although a 2016 ruling by the Washington Supreme Court restricted the applicability of vested rights to local development restrictions, exempting state and federal laws (Bremer, 2017), permit speculation has successfully been used to avoid county-level restrictions (Calandrillo, Deliganis & Ellis, 2017). Examples include increased protections for critical areas in King County and wetland and stream protection ordinances in Snohomish County (Ibid.).

The GMA has also been criticized for its lack of holistic environmental vision. The low-density zoning requirements outside of UGAs have encouraged sprawl by spreading impacts over wider rural areas (Robinson, Newell & Marzluff, 2005; Cymerman-Hepinstall, Coe & Hutyra, 2013). Sprawl, or widespread low-density development, has increased the rate of agricultural-to-residential conversion (Robinson, Newell & Marzluff, 2005) in contravention of the GMA's stated goal of natural resource preservation and encouraging fragmentation of wildlands (GMA planning goal #9; Shandas & Alberti, 2009). Fragments are less desirable for wildlife habitat because they prevent free movement of wildlife and are more vulnerable to erosion or further encroachment. Thus, the GMA, initially established with the goal of maintaining the "rural character" of regions outside of UGAs has conflicted with mandates to preserve agricultural lands and wildlife habitat, two goals that were of ostensible equal importance.

While the GMA includes a planning goal to protect the environment, its implementers lack the tools to conduct that vision. Shandas et al. (2008) found a lack of knowledge and communication among urban planners that may be preventing effective ecologically conscious planning, since CPs focus on political and jurisdictional boundaries rather than environmental ones. Planners generally do not coordinate with neighboring jurisdictions and rely on physical surveys rather than ecological information when determining critical areas. CPs are created primarily based on what was assumed would be accepted by approvers such as the local council or the state Department of Ecology. Although a requirement was added to the GMA in 1995 requiring planners to use BAS, a follow-up survey by Mills et al. (2009) found that planners were often forced to rely on studies conducted in dissimilar jurisdictions that had limited actual applicability.

Another highly relevant aspect of environmental preservation absent from the GMA is impervious surface. Because limiting impervious surface is not included as a planning

goal in the GMA (Shandas & Alberti, 2009), it is possible that it represents an overlooked aspect of the urban environment. Impervious surface area plays significant roles in water management as it can increase stormwater runoff. High runoff rates lead to streambank erosion and channelization, processes that reduce the quality of habitat for fish who depend on sheltered upstream areas for spawning. Stormwater is also known for increasing pollutant concentrations in waterways because impervious surfaces do not supply the same services of sedimentation or breakdown of pollutants that occur in soils and wetlands.

2.3 Puget Sound Partnership-Related Growth Management Act Implications

To protect forests, maintain water quality, and restore salmon runs (all key PSP goals), focusing population growth on cities and urban landscapes - as the GMA emphasizes - can reduce the rate of new development taking over ecologically important areas, but it can also worsen impacts on historically sensitive lands that have already been settled. The current population growth trends in the Puget Sound region affect many of PSP's overarching ecosystem recovery goals; unchecked population growth and urban sprawl can put pressure on environmental and ecological preservation efforts. Housing and commercial development degrades water quality, increases the risk of flooding, and damages fish and wildlife habitats. In the greater Puget Sound region, more than two-thirds of old-growth forests, more than 90% of native prairies, and almost 80% of tidal marshes have been eliminated in the last 150 years (Dunagan, 2016).

PSP tracks the progress towards its mission with the help of various Vital Signs, each with its own set of indicators. The Vital Signs are organized across the organization's recovery goals (PSP, 2013). These goals are highly interconnected; progress on one of the Vital Signs might affect others. PSP's Vital Signs under the "protected and restored habitat" category, the "water quality" category, and the "healthy human population" category overlap with some of the GMA's central goals. More specifically, PSP inadvertently tracks Vital Signs that are related to GMA planning goals 1-2, 8-11 and 14. Table 2.2 shows these connections in more detail. For a full list of the GMA's 14 planning goals and their description, refer back to Table **2.1**. PSP tracks many additional Vital Signs and indicators that do not directly relate to any of the GMA's 14 planning goals and are not shown in the table. The organization has recently even expanded its metrics under the six recovery goals (PSP, 2013).

Table 2.2: *GMA Goals, as they relate to PSP Vital Signs*

Area of Interest	GMA Goal(s) RCW 36.70A.020	Related PSP Vital Signs and indicators
Containment of Urban Growth	Planning goal 1: Urban Growth Planning goal 2: Reduce Sprawl	*Land Cover and Development*: Growth in UGAs
Natural Resources	Planning goal 8: Natural Resource Industries	*Shellfish beds*: Areas of harvestable shellfish beds *Local foods*: locally harvestable foods, bivalve harvester-days, recreational Dungeness crab catch *Land Cover and Development*: rate of forest cover loss to development
Recreation	Planning goal 9: Open space and recreation	*Outdoor activities*: Nature-based recreation, Nature-based work, condition of swimming beaches
Environment	Planning goal 10: Environment	*Land Cover and Development*: Conversion of ecologically important lands *Air quality*: Exposure to impaired air quality *Freshwater Quality:* Freshwater impairments, water quality index *Marine Water Quality*: Marine Water Condition Index *Abundant Water*: summer stream flows
Participation	Planning goal 11: Citizen participation and coordination	*Good Governance*: Good Governance Index
Shorelines	Planning goal 14: Shoreline Management	*Shoreline Armoring*: Net change in permitted shoreline armor, use of soft shore techniques, armor on feeder bluffs

This overlap of goals might give the impression that the current growth management framework aligns well with PSP's restoration work, but it is worth remembering that the GMA must balance these overlapping goals with other, more economic development focused priorities (Settle, 1999, p. 11; see section 2.1.1). Moreover, as opposed to PSP Vital Signs, the GMA does not provide indicators for counties to measure their progress towards its 14 planning goals. The lack of specific indicators gives counties and cities extensive leeway on how to interpret the goals and which to prioritize. Developing a set of indicators for each of GMA's 14 goals was the topic of an earlier capstone project at the Evans School in 2019 (Behr & Liu, 2019). However, as of May 2021, such an overarching measurement framework has not been adopted.

PSP's current 2018-2022 Action Agenda outlines priorities for addressing critical issues outlined in each Vital Sign at a regional level, as well as implementation

strategies to mitigate these issues (PSP, 2018). While the Action Agenda is not a direct response to regulations under the GMA, there are clear parallels in priorities between PSP's goals and the need for growth management. Implementation strategies are typically designed to advance a single, regional goal within each indicator, to be completed collaboratively by local partners. PSP puts out an agency-wide report card that displays implementation and funding progress as a collaboration tool between stakeholders.

2.4 Potential Growth Management Solutions

The authors of the GMA stated that one of their interests in creating a growth management system was to address the increasing threats to environmental conservation. However, it is clear that the other goals of the GMA have overshadowed the intent to protect the environment from "uncoordinated and unplanned growth" (RCW 36.70A.010, 1990). Legislators and advocacy groups have recently given more thought to the GMA as a vehicle for managing Washington's explosive population growth as the state attempts to preserve local natural environment and resources from further decay, while also addressing environmental and equity objectives.

Since 2017, the Washington State Legislature has sponsored two projects to research the GMA in relation to Washington's vision for the future and provide recommendations for how the Legislature should modify the GMA. Neither study achieved their goal to garner broad stakeholder support for specified legislative reforms to the GMA, but they provide perspectives from a wide range of stakeholders and recommendations to reform the GMA. As both studies were completed within the last twenty-four months, we believe that these studies and their recommendations provide a pulse of how Washington communities are perceiving the current growth management framework. In the 2021 legislative session, the Washington State Legislature considered two bills that would modify the GMA to include goals and regulations around the topic areas of salmon recovery and climate change (as will be discussed in 2.4.3).

2.4.1 *A Road Map to Washington's Future* (2019)

The William D. Ruckelshaus Center spent two years collecting data, and in June 2019 published *A Road Map to Washington's Future*. This report provides a comprehensive overview of the desired future for Washingtonians, as well as an analysis of how the GMA is, or is not, contributing to that future. The study contains expansive qualitative data which directly influences their set of guiding principles and ultimately identifies actions that would lead to transformational change.

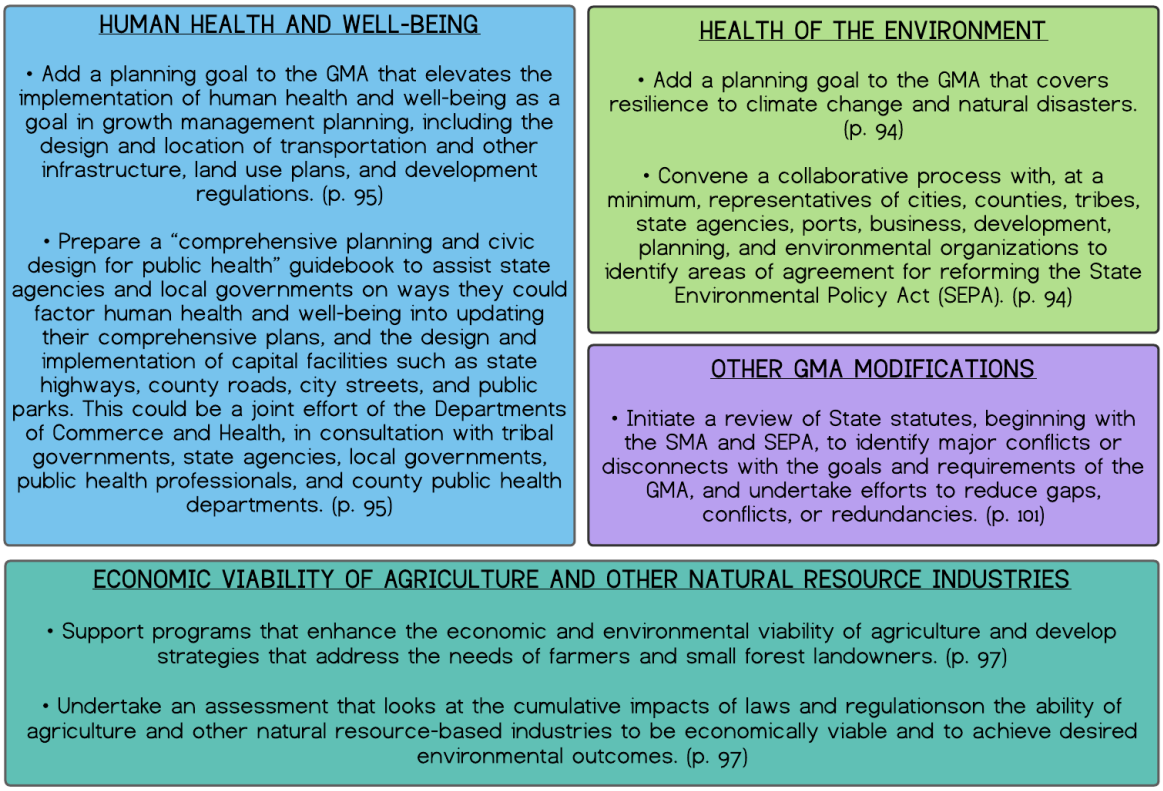


***Figure 2.3**: Several reforms to the existing growth planning framework as proposed in A Roadmap to Washington's Future (Murphy et al., 2019). The reforms are listed as they are in the report under their assigned heading.*

The study obtained qualitative data from interviews and collaborative workshops conducted with stakeholders from a range of diverse sectors and communities throughout the state. The report, however, does not provide explicit language for legislative reform. Figure 2.3 shows several recommended reforms pulled directly from the study which we believe are relevant to the scope of our project and their concepts could be of interest to PSP.

2.4.2 *Updating Washington's Growth Framework* (2021)

To supplement the Ruckelshaus Center report, the Washington State Legislature allocated funds at the beginning of the 2020 session for the Washington State Department of Commerce to create a working group directed to determine specific GMA reform language that could garner consensus by a wide-ranging group of stakeholders. Unfortunately, the Governor vetoed the funds due to the crises caused by the COVID-19 pandemic. The Washington State Department of Commerce then worked with the Center of Livable Communities within the College of Built Environments at the University of Washington (UW) to convene a working group with a modified format and a shorter timeline than originally expected during the planning phase of the original project.

The report, titled *Updating Washington's Growth Policy Framework*, was published in January 2021. None of the study's proposed changes to current GMA language could garner broad consensus from all stakeholder groups. These groups represented over a dozen unique stakeholder entities with competing interests that limited their capacity to effectively compromise, as the reforms were designed to address "mutually compounding" issues (Tovar et al., 2021, p. 22). Nonetheless, the report provides valuable insight in data collected from those working groups, including qualitative data from many of the representative stakeholders indicating which reforms they supported or opposed, and why. Overall, there was support for the addition of EJ and equity language to the GMA planning goals, definitions, public participation requirements, and CP elements. Conversely, the majority of the changes which would provide specific detail on how CPs should coordinate with local tribal governments or on ecosystem protection did not garner much consensus. Figure 2.4 shows several reforms from the report as they fall within our focus areas.

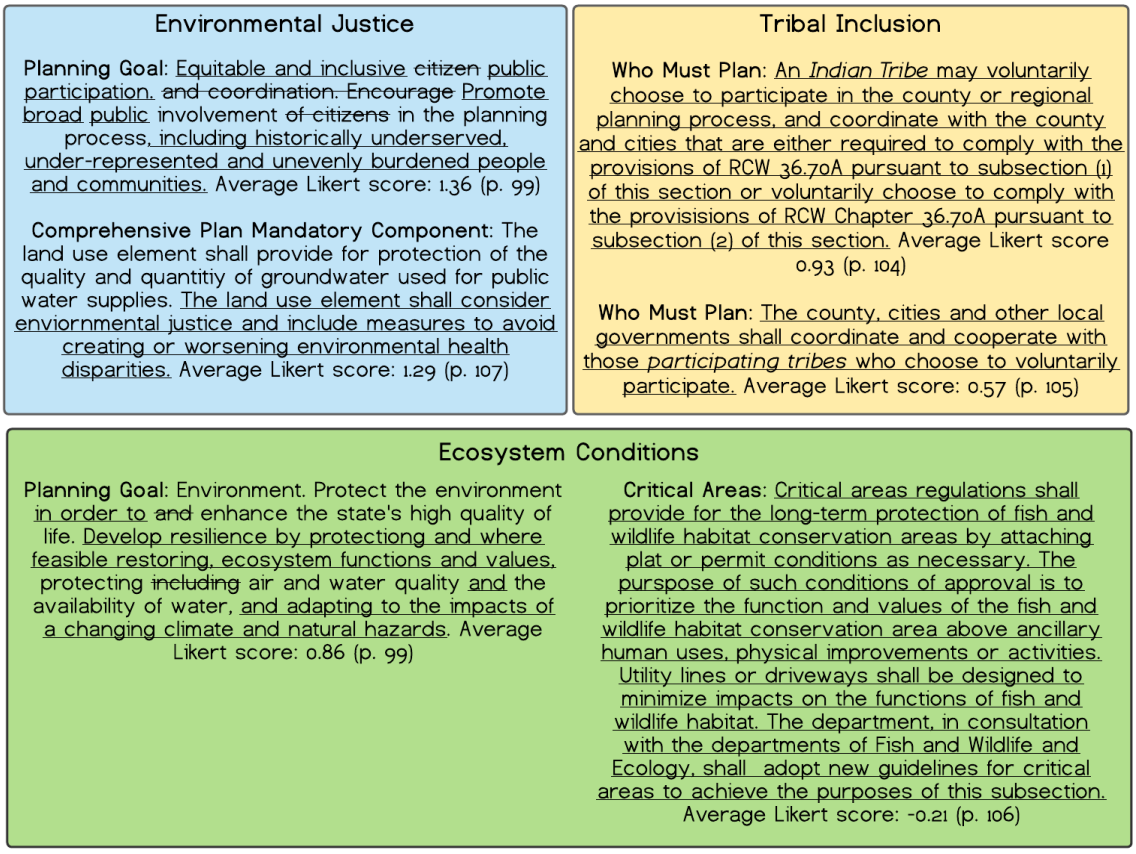


Figure 2.4: *Several reforms categorized under EJ, Tribal Inclusion, and Ecosystem Condition focus areas as proposed in the Updating Washington's Growth Policy Framework report (Tovar et al., 2021). The reforms are listed as they are in the report under their corresponding GMA subheading, with any underlined phrases representing new edits or additions to the section, and any words removed have a strikethrough. Added at the end of each phrase is the recommendation's average Likert score made up of all stakeholder's votes on approving or disapproving the change. 3 was the highest rating (stakeholders strongly approve), and -3 was the lowest rating (stakeholders strongly oppose).*

2.4.3 Pending Legislation

While these legislature-funded studies did not establish consensus among various stakeholders for a large overhaul of the GMA, a more piecemeal approach to expanding the requirements under the GMA is underway in the Washington State Legislature. In January 2021, two bills were introduced in the house. These bills address salmon recovery and climate change within the scope of the current growth management framework. If adopted, both areas of concern could fall within the scope of our third research sub-question, related to the GMA's approach to ecosystem protection.

House Bill (HB) 1117, titled "Promoting salmon recovery through revisions to the state's comprehensive planning framework," would introduce a 15th planning goal to the GMA that is focused on salmon recovery. In addition, it would add a required element that has a strategy to achieve net ecological gain in salmon habitats. It further includes an evaluation component directing the Washington Department of Fish and Wildlife (WDFW) to adopt rules that establish net ecological gain measurement criteria. As of May 2021, the Senate had returned HB 1117 to the House Rules Committee at the end of the 2021 legislative session. The second substitute of the bill had previously passed the house floor on March 2nd with 58 to 38 votes.

HB 1099, titled "Improving the state's climate response through updates to the state's comprehensive planning framework," would add a climate change mitigation goal to the GMA's 14 listed goals. As it currently stands, the bill would require counties and cities planning under the GMA to add a climate change resiliency element to their comprehensive plans. This element would include a description of actions the jurisdictions plan to take to reduce greenhouse gas emissions and vehicle miles traveled, consistent with new established guidelines by the Washington State Department of Commerce. Furthermore, counties and cities would be required to address the adverse impacts of climate change on people, property, and ecological systems within the climate and resilience element. HB 1099 also includes a provision that would require updates to the Shoreline Master Program and flood control management plans. After passing the house with 56 to 41 votes on March 5th, HB 1099 had been returned to the House Rules Committee by the Senate at the end of the 2021 legislative session.

By the end of the legislative session, a Senate vote on both bills was still outstanding, thus postponing an eventual adoption until at least 2022 (Washington State Legislature, 2021).

3 Evaluation Methods

3.1 Introduction to Evaluation Methods

Given the complexity of current challenges in growth management, we conducted both a retrospective and prospective analysis. In these analyses, we emphasized the EJ, tribal collaboration, and ecosystem health elements of growth planning and management because prior research and current initiatives at PSP suggest that these areas are the highest priority for reform. The retrospective analysis includes both a content analysis of GMA-prescribed CPs and GIS data analysis of the Puget Sound region for both EJ and ecosystem health data measures. The inclusion of tribal communities during growth planning processes is assessed through CP content analysis. The prospective analysis qualitatively evaluates how proposed GMA modifications compare across our chosen EJ, tribal inclusion, and ecosystem criteria, as well as their potential for stakeholder collaboration and consensus. This process illustrates how the GMA has affected EJ, included tribal communities, and affected ecosystem conditions in the past and how they might impact similar indicators in the future, depending on potential policy modifications. Figure 3.1 below visualizes our research process in more detail.

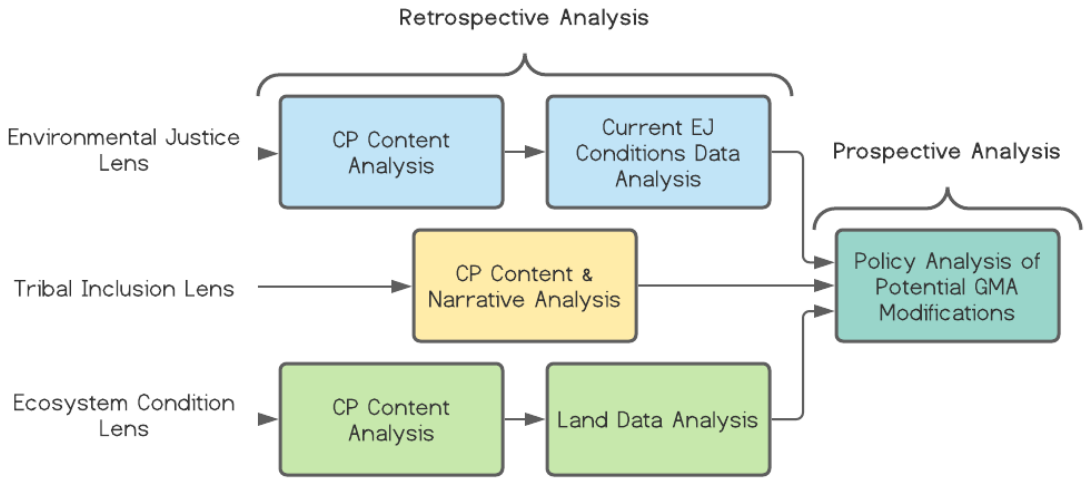


***Figure 3.1**: Research Approach*

This analysis is primarily focused on Island, King, Kitsap, Pierce, Thurston, and Snohomish counties (Figure 3.2). These six counties account for approximately 60% of the state's population, as well as some of the fastest-growing areas in the state (Washington State Office of Financial Management, 2020). This increasing growth rate makes the subregion the most salient area for an analysis of how growth management frameworks might factor into PSP's future scenario planning.

***Figure 3.2**: Map of the Puget Sound region, outlining the counties we selected for our retrospective analysis.*

This chapter is divided into four main sections that follow our four research questions. Section 3.2 establishes our rationale for the retrospective analysis through the EJ lens. Sections 3.3 and 3.4 mirror the rationale for the retrospective analysis, but through tribal inclusion and ecosystem lenses. Section 3.5 constructs the basis of our prospective policy analysis of potential modifications and section 3.6 outlines the limits of our analysis.

3.1.1 Content Analysis

To conduct the content analysis, we collected two versions of each selected county's CP, resulting in a corpus of 12 documents. We concentrated our efforts on the second and newest periodic revision of the CPs, as mandated every 10 years by the GMA. For the six analyzed counties, the second major revision (after the GMA's initial passage in 1990) happened between 2004 and 2007, while the newest version of each CP was published between 2016 and 2020. We collected these plans from publicly accessed county websites or by requesting specific plans from local county offices via email. We focused on relatively newer versions of CPs (compared to the

first editions developed in the mid-1990s) in our attempt to highlight recent trends that would be informative to the current status quo and to PSP's future scenario planning, as well as due to availability and digitization constraints. Moreover, we did not consider the intermediate updates due to their similarity to the periodically updated CPs.

Content analysis of CPs has been used both normatively to assess efficacy and descriptively to determine patterns in planning and implementation. Work in the former category was reviewed by Lyles and Stevens (2014), who defined several "core principles" based on their findings: goals, fact bases, policies, public participation in plan creation, and plan provisions for implementation and monitoring (Ibid, p. 436). For our analysis we focused on goals and provisions for implementation and monitoring. Defined more extensively by Berke et al. (2012), goals are "future desired conditions that reflect the breadth of values affected by the plan" whereas "policies (or actions) serve as a general guide to decisions about development and assure that plan goals are achieved." Greater specificity still is found in implementation and monitoring, which consists of assigning "organizational responsibilities, timelines, and funds to implement plan [sic]" and "tracking the extent to which policies are carried out" (p. 140). This finding leads to the conclusion that there is likely a qualitative difference between plans that establish general goals or principles and plans that lay out a more concrete path to implementation or a measurable outcome.

Following Berke et al. (2012), we utilized keyword searches with an ordinal scale assigning "0", "1", or "2" to each of our keywords. "0" indicated that the keyword was not found within the plan, "1" indicated that the keyword was mentioned, and "2" indicated that the keyword was mentioned in context of a specific policy, goal, or participation mechanism (Ibid, p. 141). For keywords coded "1" and "2", we took numeric count of each keyword and annotated its context. This process allowed us to distinguish between a simple mention and a more sophisticated policy.

All these descriptions, codes, assignments, counts, and annotations were done in a coding spreadsheet accompanied by a codebook that describes all the coding specifics (see Appendix B). Following standard practice, all four team members participated in the development of the codebook and coding process prior to the analysis of the CPs (Lyles et al., 2014). The CPs were randomly assigned among three team members, and each CP was independently coded by two team members with the goal to reduce coder bias (Berke & Godschalk, p. 236). After all CPs were coded, the assigned coders reviewed for discrepancies and reconciled any disagreements (Lyles et al., 2014) for a 98.08% overall agreement rate.[2]

[2] We had a 99.12% agreement rate for EJ keywords, 98.65% agreement rate for tribal inclusion keywords, and a 96.50% agreement rate for ecosystem condition keywords.

We detail our deliberation process for each key area keywords in sections 3.2, 3.3, and 3.4, and assess sensitivity in 3.6.

3.1.2 Spatial Analysis

We conducted GIS spatial analyses to complement our EJ and ecosystem content analyses with visualizations of the status quo and current trends. We did not perform a spatial analysis for our tribal inclusion lens because we focused on analyzing the process of tribal inclusion, rather than the outcome.

In section 3.2.2, we describe the methodology and data set we used to analyze current EJ conditions. We used the Washington State EHD Map to evaluate how health impacts are distributed across the Sound and whether they coincide with other aspects of the built environment associated with urban planning, such as population densities, impervious surface, and canopy cover.

In section 3.4.2, we describe the use of the National Landcover Database (NLCD) from the United States Geological Survey and the High-Resolution Change Detection (HRCD) dataset from the Washington Department of Fish and Wildlife, and the Washington State Department of Ecology's modeled wetlands inventory to visualize current conditions related to conversion of natural areas, canopy cover, and impervious surfaces.

3.2 Environmental Justice Lens Approaches

Research question 1.1: How is the GMA-mandated comprehensive planning addressing EJ in the Puget Sound Region?

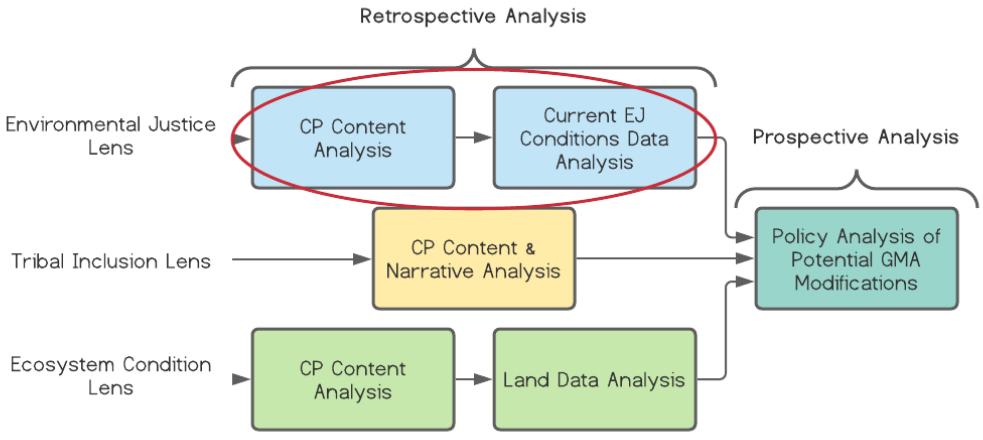


Figure 3.3: *Research Approach for EJ Lens*

To answer our first research sub-question, we conducted a content analysis of Puget Sound CPs that focused on EJ keywords, followed by a spatial data analysis of how current EJ measures transpire in the region. As presented in our literature review, growth management planning has the capacity to address the disproportionate environmental and health impacts resulting from previous land and resource management practices. To align with the recommendations from the EJTF, we will use the following definition of EJ as stated in their 2020 report:

> *The fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. This includes using an intersectional lens to address disproportionate environmental and health impacts by prioritizing highly impacted populations, equitably distributing resources and benefits, and eliminating harm. (p. 6)*

3.2.1 Content Analysis

In the following, we summarize each of our EJ keywords used in the content analysis and the rationale behind them.

ENVIRONMENTAL JUSTICE KEYWORDS

- *"Environmental justice"*: This keyword assesses whether CPs already recognize EJ as a concept. While it is already an established concept in certain areas of the government, it is less so within growth planning (the GMA does not mention it). In cases where EJ was recognized, we were also interested in determining whether the CP has specific practices in place to include EJ in their planning process. A CP received a code "0" if there was no mention of EJ, "1" if there was a mention, and "2" when we also encountered specific processes. We provide a count of how many times each code (1 or 2) appeared and kept track of the context via annotation.
- *"inequit"*: This keyword brings up mentions of inequities, inequitable, and inequity. We recognized that EJ might still be a novel concept to some planners, and the word itself might not be mentioned in (especially older) CPs. The purpose of this keyword was to fill that gap and highlight acknowledgements of community inequities and potential plans to address them through growth planning. The coding for "inequit" follows the same pattern as for "environmental justice".
- *"disproportionate"*: This keyword aimed to spotlight health disparity impacts that can be caused by development decisions, such as placement of waste facilities, and how a county plans to address these. The keyword is also mentioned in EJTF's definition of EJ in relation to health outcomes as stated

above. The coding for "disproportionate" follows the same pattern for as for "environmental justice" and "inequit."

Below are two examples drawn from CPs, one each for a simple mention count and a more specific policy count.

- Simple mention (i.e., code 1): "… seek to reduce health inequities and proactively address issues of equity, social and **environmental justice** when evaluating and implementing its land use policies, programs and practices." (Keyword: Environmental Justice; King County, 2020, p. 12)
- Specific policy (i.e., code 2): "Data from the 2019 Health Equity Community Health Assessment process identified rural residents of Thurston County as being **disproportionately** impacted by a wide range of health-related issues and the 2020 Racial Equity Assessment process identified health disparities in birth outcomes and treatable chronic health conditions." (Keyword: Disproportionate; Thurston County, 2019, p. 334)

We recognize that there are limitations in our ability to capture the full scope of the EJ concept as it appears in CPs. Several other words were considered but were ultimately left out to ensure that our research remained relevant to the scope of our report. For example, we considered variations of *"low-income,"" health,"* and *"color*." We evaluated these words, as well as those chosen, while conducting a preliminary review of the 2020 King County CP. The vast majority of results for *"low-income"* came up in sections related to housing development, which is outside the scope of our project. We found that *"health"* was too vague and used throughout the CP regarding public health, environmental health, and physical health. Likewise, *"color"* was too vague, and we were unable to use this as an effective proxy for "communities of color" or "people of color".

SENSITIVITY ANALYSIS

As EJ is being incorporated more regularly into government considerations, we found that it was important to specify the conceptual framework from which we derived our appropriate keywords. We understand that our content analysis framework is not comprehensive of the overall EJ field. For example, the U.S. Environmental Protection Agency (EPA) and the Puget Sound Regional Council (PSRC) specifically include "decision-making" considerations and "healthy environment" within their working definitions of EJ[3].

[3] The EPA's definition online states that "[EJ] will be achieved when everyone enjoys…. [e]qual access to the decision-making process to have a healthy environment in which to live, learn, and work" (EPA, 2021). In their equity analysis of their VISION 2050 plan and used a definition of EJ that included "Environmental justice also promotes equal access to the decision-making process to have a healthy environment in which to live, learn, and work" (PSRC, 2020, p. 7).

The words we chose (environmental justice, inequit, and disproportionate) are founded from our working definition of EJ, which was established by the EJTF in 2020. Our content analysis focused on a broader conceptual understanding of EJ, rather than one focused on outcomes of addressing specific health impacts or resources, which we believed was too narrow for CPs. Unlike our key area of tribal collaboration, EJ does not have a specific population to search for within CPs to measure community engagement and specific decision-making processes. Our assumption was that if CPs mention EJ concepts through those specific lenses, our chosen keywords will be found in the same sections.

We conducted a sensitivity analysis for comparable words including "disparit," "proportionate," "overburdened," and "equit," as well as "healthy environment" and "access to (the) decision-making" to encompass frameworks other than our working definition. A brief discussion of the findings from the sensitivity analysis can be found in 3.6.1, our limitations section.

3.2.2 Current Environmental Justice Conditions Spatial Data Analysis

We used the Washington State EHD Map to evaluate what, if any, impact specific growth management regulations had on overburdened communities. Due to the myriad factors involved in how development occurs, it is not possible to directly relate impacts to specific policies. Our spatial analysis solely serves to identify patterns and trends. The EHD map was created in December 2018 by the Washington State Departments of both Health and Ecology, the Puget Sound Clean Air Agency, the Department of Environmental and Occupational Health Sciences at UW, and Front and Centered (a coalition of communities of color-led groups in the Pacific Northwest). Its purpose is to identify and compare EHD across communities (EJTF, 2020).

This map is part of the Washington Tracking Network and is displayed on the Information by Location tool. A technical report detailing the methodology of the map was prepared in 2019 by the UW Department of Environmental and Occupational Health Sciences. While we include pertinent information about the map below, we encourage readers to consult the technical report for a full comprehension of the map's methodology.

The interactive EHD map displays cumulative impacts of socioeconomic status, demographic identification, and environmental exposures and hazards. The map ranks over 1,450 census tracts[4], or "communities," for environmental risk factors. According to the map's technical report: "These rankings reflect the risk each

[4] "The spatial size of census tracts varies widely depending on the density of settlement. Census tracts generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people" (Washington State Office of Financial Management, 2019).

community faces from multiple environmental hazards and the degree to which a community is more vulnerable to those hazards because of sociodemographic factors" (p. 12). Each community is ranked to represent the cumulative impact of a variety of environmental harms. The rankings are reported on a scale of 1-10: each rank represents 10% of communities, or roughly 147 census tracts. A rank of 1 is the lowest, representing the least amount of relative environmental health risk, and is colored dark blue. A rank of 10 is the highest, representing the highest amount of relative environmental health risk and is coded dark red. Communities are ranked relative to one another based on a final composite score.

Final composite score = pollution burden score x population characteristics score

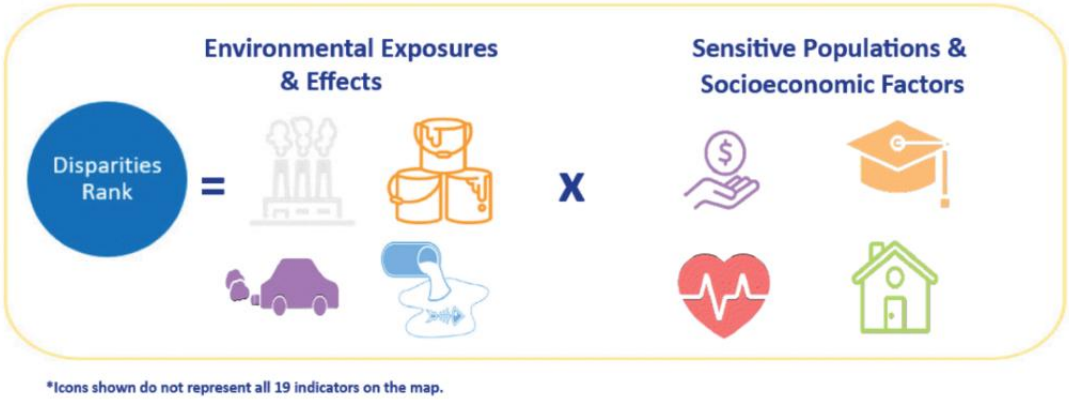


***Figure 3.4**: EHD Rank diagram (Washington State Department of Health)*

The pollution burden score is calculated with a formula averaging percentiles of environmental exposures and environmental effects indicators. The population characteristics score is calculated with a formula averaging sensitive population and socioeconomic factors indicators. The map additionally reports demographic information for each community including population size, age, gender, and race of residents.

In the fall of 2020, the EJTF recommended to the Washington State Legislature that state agencies conduct regular EJ analyses and should use this map, among other tools, when conducting policy development and program planning, monitoring and evaluation (EJTF, 2020, p. 48). One of the four recommended map uses outlined in the report is to "evaluate and measure reductions in disparities through service equity improvements," with the purpose of "evaluating the distributional equity characteristics of historic, current, and projected agency activities across the agency's service area."

We used this interactive map in standing with the recommendation outlined in the EJTF report to visualize community health risk as it relates to environmental hazards. After coding each CP for related EJ keywords, we used the data from the EHD map to

identify any patterns in growth management goals affecting the environmental health risks to certain communities.

3.3 Tribal Inclusion Lens Approaches

Research Question 1.2: How is the GMA-mandated comprehensive planning including tribal communities in the growth planning and decision-making process in the Puget Sound Region?

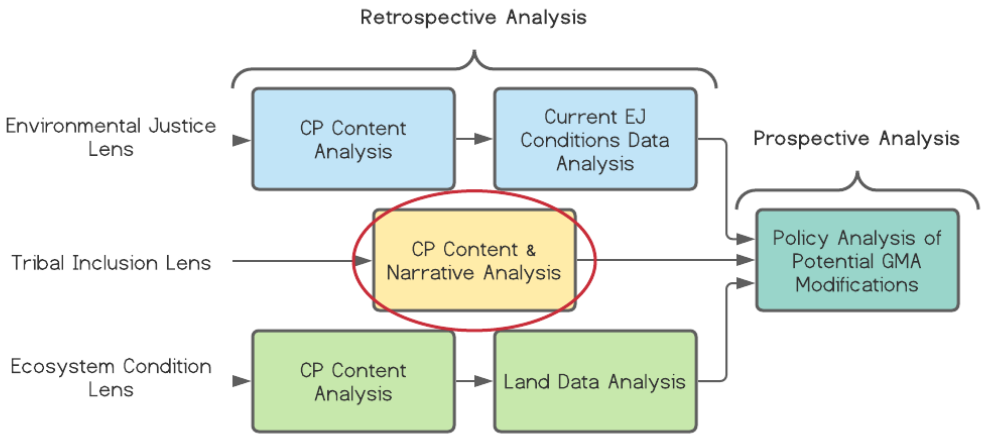


Figure 3.5: *Research Approach for Tribal Inclusion Lens*

Tribes in the Puget Sound are both directly and indirectly affected by growth management decisions on and off reservation lands. Moreover, there is ample complexity concerning jurisdictional boundaries, as reservation lands and UGAs often overlap or adjoin. However, the GMA and the surrounding growth management planning efforts have been criticized as being unresponsive to tribal concerns and as offering insufficient collaboration processes.

This second research sub-question attempts to assess if, and how, tribes are included in the CP planning process and if they are involved in decision-making on factors directly affected by growth planning. Since research question 1.2 is a process – not outcome - related question, we focused our analytical efforts on the CP content analysis with a more in-depth narrative description of our findings.

<u>TRIBAL INCLUSION INDICATORS</u>

- *"Native American", "tribe", "tribal" (general):* These "general" keywords seek to underscore how county level planning manages collaboration with nearby tribes in a larger coalition of planning partners. We coded "0" for this indicator if it mentioned none of the keywords, "1" if it did mention at least one of the keywords, and "2" if tribes were mentioned in participation processes. Like the

EJ keywords, we took count of the appearance of codes 1 and 2 and followed up with an annotation of the context.

- *"Native American", "tribe", "tribal" (tribe-specific):* This "tribe specific" keyword search intended to decipher if and how often a CP specifically collaborates with tribes without lumping them together with other government jurisdictions or stakeholders. The rationale behind this distinction is to see whether tribal-specific considerations are being made by county planners, given their past exclusion and the impacts of growth planning on tribal communities. We coded "0" for this indicator if there were no "tribe-specific" mentions of the keywords. We coded "1" if the CP did mention the keywords and those keywords appeared without reference to other jurisdictions or stakeholders. We coded "2" if the county either has tribe-specific collaboration processes in place or if it has limits on development based on tribal priorities. The codes were, as always, followed by counts and annotation.

Below are two examples drawn from CPs, one each for a simple mention count and a more specific collaboration process count.

- Simple mention (i.e., code 1): "Promote the visibility of native Indian culture in the design of public places by integrating Suquamish **tribal** symbols, colors and names through coordination with the **tribe**." (Keywords: Tribe, tribal; Kitsap County, 2006, p. 322)
- Specific collaboration process (i.e., code 2): "Establish and maintain government-to-government relations with local **Tribal** Preservation Officers (TPO) for the preservation of archeological sites and traditional cultural properties." (Keyword: tribal; Pierce County, 2019, p. 134)

We recognize that there are limitations in our ability to capture the full scope of this inclusion concept as it appears in CPs. Several other words were considered but were ultimately left out to ensure that our research remained relevant to the scope of our project. Since we are focusing on the tribal inclusion process, we did not search for words affiliated with tribal goals or priorities (i.e., treaty rights, salmon, repatriation, etc.) since those alone would not necessarily represent coordination with any tribal governments or communities. Likewise, we did not search for the terms "reservation" or "indigenous" because we found that those keywords resulted in redundant searches. Words like "tribal" and "Native American" typically preceded "reservation" or "indigenous", or were within the same section in our preliminary review of King County's 2020 CP.

3.4 Ecosystem Condition Lens Approaches

Research Question 1.3: How is the GMA-mandated comprehensive planning addressing PSP-identified ecosystem priorities?

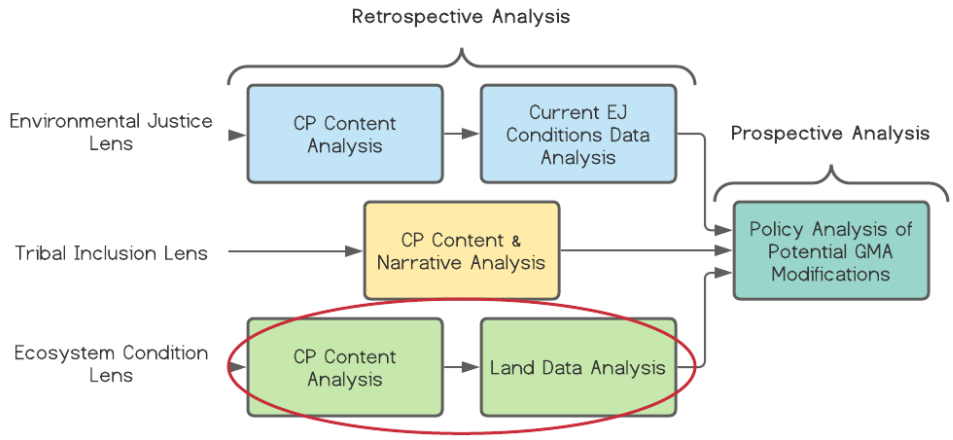


***Figure 3.6**: Research Approach for Ecosystem Lens*

To answer the third sub-research question, we used a similar approach as for question 1.1. We combined a CP content analysis on ecosystem conditions with a spatial land data analysis in the Puget Sound region, which can highlight how planning in the CPs has manifested.

Jurisdictional overlap and absence of a clear counterfactual complicates the effort to understand how the GMA has influenced development of critical areas. CPs are limited to reaffirming state and federal regulations and externally initiated restoration projects. For this analysis, we used NLCD modeled impervious surface and canopy cover datasets to determine trends in land cover within and outside of UGAs. While not directly indicative of the success or failure of any policy on ecosystem condition, impervious surface is associated with reduced water quality and habitat fragmentation or land conversion (Alberti & Marzluff, 2007) and canopy cover with habitat quality for native species and greenspace availability for citizens (Ibid.). We recognize that these indicators are not full determinants of a healthy ecosystem and habitat protection; however, they are good indicators of how well growth planning is limiting the conversion of ecologically important lands.

3.4.1 Content Analysis

In this section, we list our three keyword categories related to ecosystem conditions, describe our rationale behind the word choice and describe keyword-specific coding methods.

PROTECTED AND RESTORED HABITAT INDICATORS

- *"habitat restoration", "habitat protection"*: These two keywords gave us a general context overview of how the CPs approach habitat protection and restoration. We decided to search these words instead of "critical areas" because the latter is mandated to be mentioned and designated by the GMA. The habitat keywords highlighted whether planners considered habitat protection and restoration during their critical area designation process aside of protecting such areas because of their use as natural resource providers. Like the EJ indicators, CPs were coded "0" for these keywords if they did not appear within the text, "1" if they did appear, and "2" if a specific target or policy tool was prescribed to protect habitats. Codes were completed by counts and annotation of context.
- *"conversion"* (in relation to forest lands): This keyword highlighted discussions of forest land management specific to limits on conversion of canopy cover for development. CPs were coded "0" if the keyword was not mentioned (in relation to forest lands) or coded "1" if there was at least one mention of conversion (in relation to forest lands). A CP was coded "2" if there were specific limits set on conversion or specific policy tools set to limit conversion. We counted each of the code mentions and took notes on relevant context as well as specific limits and tools.
- *"Impervious surface":* This keyword emphasizes the blind spot in the GMA in controlling for impervious surfaces. The content analysis intended to assess whether counties recognize the negative effect of increased impervious surface on the ecosystem and if there are processes in place to limit such coverage. CPs were coded "0" if there was no mention of impervious surface, "1" if there was at least one mention, and "2" if the CP referenced specific limits on impervious surfaces or policy tools and processes to limit them. The coding was complemented by word counts and context annotation.

Below are two examples drawn from CPs, one each for a simple mention count and a more specific policy count.

- Simple mention (i.e., code 1): "Development, creation of **impervious surfaces**, channeling of surface water flows, and loss of wetlands and extensive forest vegetative cover have increased the rate of runoff, decreasing the capacity of upland areas to retain moisture and exacerbating flood problems." (Keyword: Impervious surface; Island County, 2007, p. 66)
- Specific policy (i.e., code 2): "**Habitat restoration** projects adjacent to agricultural resource lands should be undertaken in a manner to prevent, if possible, net loss to the agricultural resource lands of the county." (Keyword: Habitat restoration; Snohomish County, 2016, p. 195)

We recognize that there are limitations in our ability to capture the full scope of the ecosystem concept as it appears in CPs. We initially considered variations of

"wetlands," *"ecosystem,"* and *"critical area"* to include in our analysis. We evaluated these words, as well as those chosen, while conducting a preliminary review of the 2020 King County CP. Mentions of *"critical areas"* and *"ecosystem"* were too vague to decipher a specific policy process that was relevant to our project. After conducting our literature review and consulting with PSP about appropriate focus areas, we narrowed our scope of specific ecosystem concepts to forest land conversion and impervious surfaces.

3.4.2 Current Ecosystem Conditions Spatial Data Analysis

We used the NLCD from the United States Geological Survey, the HRCD dataset from the WDFW, and the modeled wetlands inventory produced by the Washington State Department of Ecology for our land data analysis. The NLCD collects data on land used based on reflectivity from satellite data on a 30 square meter grid. Computer models are used to estimate the percent coverage of impervious surface and canopy on each grid cell. The HRCD used 1-meter aerial imagery and modeling to create polygons representing areas that changed use type between surveys (a more detailed explanation is available here). The modeled wetlands inventory uses NLCD classifications and topography data to classify grid cells as probable wetland areas. Areas that meet the wetland criteria but are classified as a different cover type by NLCD are flagged as "potentially disturbed wetlands." The modeled wetlands inventory serves as a less detailed indicator of development than the HRCD but provides a convenient way to analyze a land type that receives significant attention in both the GMA and other environmental legislation. Therefore, it is likely an indicator of progress in preserving critical habitat and groundwater recharge areas rather than natural spaces in a broader sense. All three datasets are only current as of 2016, and so the period for the analysis runs from 2001 to 2016, ending slightly earlier than the last round of comprehensive planning analyzed for the content analysis.

All data were compiled in ArcGIS Desktop 10.7.1 and used to determine canopy cover and impervious surface coverage percentages for the 2010 census tracts in our study area. Census tracts offer several benefits in this assessment – they can be matched with the Washington State Department of Health's EHD Index (see Section 3.2.2) and generally follow the outlines of urban development. Furthermore, tracts can offer relatively fine-grain control and allow for the exclusion of state and federal protected lands whose development trajectory is not subject to comprehensive planning. Census tracts were excluded from the analysis if at least 50% of their area was covered by state or federal land. Tracts with at least 25% of their total area within a UGA were classified as within that UGA. For habitat conversion using the HRCD, we considered patches that were classified as forested or covered by herbs and shrubs in 2001 and were identified as changed due to development by 2016. The changes were tracked over four periods – 2006-2009, 2009-2011, 2011-2013, and 2013-2015. Because the periods vary in length, the affected area was adjusted to an annualized rate.

To understand relative distributions in impervious surfaces across census tracts, we fitted a logistic regression to the log-log relationship between population density and impervious surface coverage with a conservative upper bound of 100% percent coverage. This regression provides a general guide to understanding the dispersion of tracts around an empirically supported feasible level of coverage (see Box 1, p. 76). In addition, we also considered absolute coverage per capita on the assumption that higher-density populations will likely need less impervious surface overall given a reduced need for roads. These considerations result in multiple potential metrics: total area of impervious surface coverage, which will likely be higher with extensive rural development and minimal urban development; proportion (and relative spread in proportion across census tracts) which would likely increase with any development but rise faster with densification; and per-capita coverage, which would increase with rural development but decrease with high-density urban development.

Except where noted, this analysis was used to qualitatively identify trends to make comparisons with the CPs. Given the limitations of both GIS data and planning, the spatial analysis can demonstrate areas where goals established in the plans are, or are not, being met but does not determine causality.

3.5 Growth Management Act Policy Modifications and Criteria

Research Question 2: How will proposed revisions to the GMA affect EJ, tribal access to collaborative growth planning, and ecologically important areas?

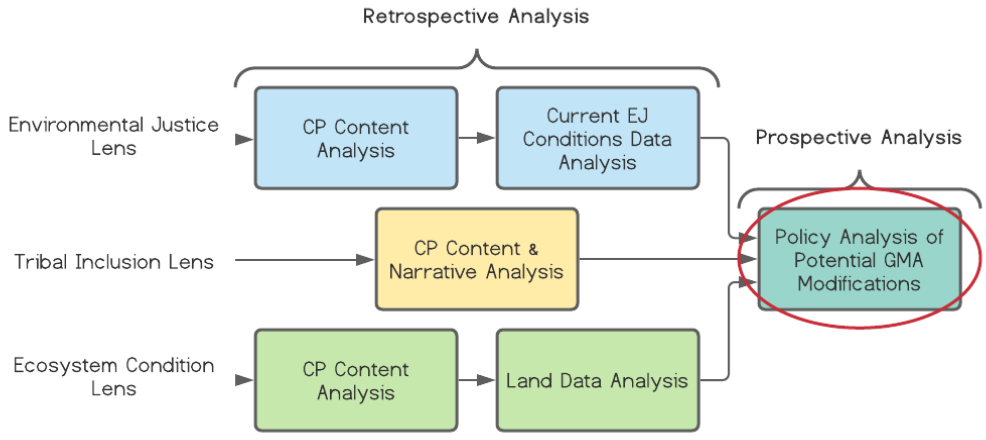


***Figure 3.7**: Research Approach for Policy Analysis*

We answered our final research question through a qualitative policy analysis approach. A policy analysis compares different policy alternatives against a set of

relevant criteria and shows outcomes via a matrix (Table 7.1). This allows the reader to understand the trade-offs among the alternatives. We analyzed modifications that are supported by the recent literature and remain in the scope of our project. The modifications and criteria we considered are outlined below.

3.5.1 Modification Alternatives

STATUS QUO: NO GROWTH MANAGEMENT ACT REFORMS

The status quo focuses on a growth planning model that is still heavily reliant on counties to independently plan for future growth and development. The GMA structure, as outlined in Chapter 2, would not undergo any revisions or adjustment. As such, we can assume that counties would follow current trends on the key GMA provisions:

- Identify and protect critical lands and resource lands,
- Designate UGAs and county-wide planning policies, and
- Adopt CPs and corresponding implementation regulations on a regular cycle.

We will use data from the retrospective analysis and from our literature review as a baseline outcome to comparatively evaluate the other policy options presented.

ALTERNATIVE 1: INCORPORATING ENVIRONMENTAL JUSTICE IN THE GROWTH MANAGEMENT ACT

Incorporating EJ in the GMA could include two measures: inclusion of EJ as a planning goal, and inclusion of EJ definitions. These directives would address the current absence of EJ or concerns for environmental health risks throughout the GMA. There have been increasing demands for government programs and legislatures to address EJ as we continue to understand the significant detrimental health risks burdening low-income communities and communities of color. As our first policy alternative, we evaluate the inclusion of these two additions to the GMA:

> ***Incorporation into planning goals:*** Environmental justice. Promote environmental justice. Develop and apply fair land use and environmental policy based on respect and justice for all peoples and seek to eliminate environmental and health disparities. (Tovar et al., 2021, p. 165)
>
> ***Definitions:*** "Environmental justice" means the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. This includes using an intersectional lens to address disproportionate environmental and health impacts by prioritizing highly impacted populations, equitably distributing resources and benefits, and eliminating harm. (Ibid)

According to the GMA, planning goals should "[guide] the development of [CPs] and development regulations." Adding the proposed EJ provision would add a 15th planning goal to the GMA. In addition, the definition is included to ensure that counties have a universal understanding of what is required within that planning goal.

Rather than modifying existing language, these statements would add new concepts to the GMA altogether. As a part of their stakeholder consultation, the UW Livable Communities report had proposed the adoption of the same definition of EJ that we use in this report based on the 2020 EJTF recommendations (Ibid).

The addition of an EJ planning goal and definition could be implemented through an amendment to the GMA, as has been a frequent practice since the GMA's adoption in 1990. Such an amendment would have to pass through a regular state legislative process, from proposal to vote to adoption.

ALTERNATIVE 2: INSTALLING AN INTERGOVERNMENTAL MOU AGREEMENT

Incorporating intergovernmental agreements in the GMA can be conceptualized as more formal agreement processes between tribes and counties via a MOU. There is no structure in the GMA that guides collaboration between regional governments with tribes, which results in fragmented growth management approaches, inequity, and land use or land access concerns for culturally important resources.

A MOU is an agreement between two or more parties that is outlined in a formal document. The required elements of contract law include offer and acceptance, consideration, and the intention to be legally bound (*animus contrahendi*). These intergovernmental agreements are not legally binding but signal a willingness from all parties to move forward in the cooperatively created agreement. These agreements strive for consistency in development regulations to minimize conflict and maximize clarity between parties.

In a 2018-2019 survey of planning relationships between Washington counties and tribal planning offices, researchers from the WWU Urban Transitions Planning Studio found a clear interest in cooperative regional planning. All survey respondents indicated support for establishing a formal cooperative intergovernmental planning relationship, but at least 70% of the tribes and counties surveyed had not entered into a formal agreement or MOU (Zaferatos, 2020). There are current examples of MOU agreements between tribal and non-tribal parties with respect to ecosystem recovery and growth management practices. For instance:

- The Cowlitz Tribe and WDFW adopted an MOU to promote cooperation in the maintenance of fish and wildlife populations, and
- The Tulalip Tribe and Snohomish County adopted an MOU that established a process for coordinated land use planning and information sharing on the Tulalip Reservation.

The final 2020 WWU report (Zaferatos, 2020, pp. 180-184) contains an appendix with an MOU agreement template for coordinated land use planning between reservations and counties (Appendix C). The template covers mutual points of understanding, strategic activities for coordinated planning, and structure in the

planning process (including commitments to coordinated planning, advisory planning board composition, and operational procedures).

To implement a MOU mandate modification in the GMA, we must also consider the potentially contentious intergovernmental relationships between tribes and county planning commissioners. Active, intentional stakeholder engagement strategies will be necessary. Recognizing that all federally recognized tribes in Washington are unique sovereign nations, this modification will likely require county planning boards to work closely with the Governor's Office of Indian Affairs to establish good points of contact and working relationships for all tribes.

3.5.2 Criteria

Each policy modification will be analyzed in Chapter 7 according to the criteria described in this section. To compare across modifications, our criteria ranking can be translated into an impact ranking system that assigns a number ranging from -1 to 1 to our criteria label. For example, if a modification were to earn a high and/or positive ranking for a criterion, we can convert this to 1. If a modification were to earn a low and/or negative ranking for a criterion, we can convert this to -1. This process is outlined in Figure 3.8 with additional numerical equivalents for our criteria rankings. The resulting scores from the ranking guided our comparison between policy modifications, which will in part guide our recommendations.

Impact Ranking System	
Low/Negative =	-1
Moderate Low =	-0.5
Neutral =	0
Moderate High =	0.5
High/Positive =	1

Figure 3.8: *Impact criteria ranking*

ENVIRONMENTAL JUSTICE

After reviewing pertinent literature within the EJ field, we have determined two criteria that would be most useful to understand the impact of the reforms as it relates to community building and human well-being: access to growth planning and reduction of health risk.

Access to growth planning

This criterion measures the extent that overburdened communities within the six Washington counties can engage in and have access to decision-making power in local growth management planning. According to the original *17 Principles of Environmental Justice*, EJ demands that communities have thorough access to growth planning, from participatory to decision making roles (Appendix A). As stated in section 3.2, the PSRC and EPA use terms of "access to decision-making" in their own definitions of EJ (PSRC, 2020B; EPA, 2021).

We evaluated each policy by its potential to incorporate community voices into various levels of development and implementation. We rated this criterion on a scale from low to high based on the anticipated impacts of the reforms.

- A **low** (-1) score indicates that overburdened communities are not considered within growth management planning.
- A **moderate-low** (-0.5) score means that overburdened communities are considered, but do not have a role in growth management planning.
- A **moderate-high** (0.5) score signifies overburdened communities are provided a participatory role in growth management planning.
- A **high** (1) score was given if overburdened communities are specifically prioritized within growth management planning.

Reduction of health risk

We chose to extend our retrospective consideration of environmental health risks to our prospective policy analysis. This criterion measures the level of health risks to overburdened communities that the policy alternative would either directly or indirectly effect. This measurement will be supported by information garnered from our retrospective analysis mapping and prior literature review.

We used the same scale to rate this criterion on the anticipated impacts of the reforms.

- A **low** (-1) score indicates that communities are overburdened with environmental health risks, and the growth planning framework does not address this issue.
- A **moderate-low** (-0.5) score means that there is no impact on the level of environmental health risks, and the growth planning framework alludes to the issue.
- A **moderate-high** (0.5) score signifies there is a positive reduction of health risk, and the growth planning framework addresses this issue.
- A **high** (1) score was given if there is a significant decrease of environmental health risks, and the growth planning framework addresses this issue.

<u>REGIONAL AND TRIBAL COLLABORATION POTENTIAL</u>

This criterion measures how well the proposed GMA modifications fare on enhancing the collaboration potential between regional governments, as well as between regional governments and tribal governments, as compared to the status quo. As we have noted in our content analysis, collaboration under the status quo varies vastly across jurisdictions and while the GMA requires collaboration between adjacent counties, it does not prescribe processes to do so. However, natural critical areas and habitats are not naturally divided by planning borders, instead they cross county and city lines as well as reservation lands.

Regional governments
We assessed whether there are specific processes in place (or proposed) to systemize collaboration across diverse government entities that are part of the growth planning process, such as local government, county governments, state government, and participating state agencies.

We employed ratings from low to high for each alternative and an accompanying narrative description.

- A **low** (-1) rating means that the GMA modification has neither goals nor processes in place to improve collaboration across government agencies.
- A **moderate-low** (-0.5) rating means that the GMA modification has collaboration goals but does not go further into specific collaboration processes.
- A **moderate-high** (0.5) rating means that the GMA modification has both goals and processes in place to ensure collaboration across government agencies.
- A **high** (1) rating is only given if a GMA modification gives a co-decision-making rights on certain provisions to a government agency other than the primary planning and implementation governing body.

Tribal Inclusion
In addition to regional governments, we assessed the capacity for tribal governments to be involved in county-level growth planning, particularly on the borders between the two governments. We will be using the same process as above to provide a narrative description and ratings scale.

- A **low** (-1) rating means that the GMA modification has neither goals nor processes in place to improve collaborative growth planning and management between counties and tribes.
- A **moderate-low** (-0.5) rating means that the GMA modification has collaboration goals connected to tribal partners but does not go further into specific collaboration processes.
- A **moderate-high** (0.5) rating means that the GMA modification has both goals and processes in place to ensure collaboration between government agencies and tribes.
- A **high** (1) rating is only given if the GMA modification gives a co-decision-making right on certain county provisions to tribes.

<u>ECOSYSTEM CONDITIONS</u>
We chose to focus on two ecological criteria to guide this analysis: canopy cover and impervious surfaces.

Canopy Cover
This criterion considers the impact of the physical environment on health and human wellbeing. Urban greenspaces play an important role in mitigating the urban heat island effect and provide important benefits to quality of life through improved

psychological well-being and air quality (Asselmeier, et al., 2019; EPA, 2019; Green Seattle Partnership, 2017; McPhearson et al., 2016; Ulmer et al., 2016)[5]. Given that higher population densities, while desirable and necessary in some areas, make greenspace coverage harder to achieve, we used the weighting system developed by American Forests.[6] For a forested area like the Puget Sound, the base target is 40%. For population densities below 2,000 people per square kilometer, the target is 48%, for 4,000-8,000 people per square kilometer, the target is 32%, and for more than 8,000 people per square kilometer, the target is 20%. These weighted targets are meant to balance the need for greenspace coverage with the inevitability of greater development in higher-density areas.

Policies were rated based on their anticipated impact:

- A **low** (-1) score was given if the policy would lead to net losses in canopy cover, either because it will fail to interrupt negative trends or accelerate them (e.g., by encourage higher land-use intensity or expansion into currently forested areas).
- A **moderate-low** (-0.5) score was given if the policy was expected to lead to marginal reductions in canopy cover but at a lower rate than a policy rated as low.
- A **neutral** (0) score was given if the policy was anticipated to have minimal influence on canopy cover or related processes.
- A **moderate-high** (0.5) score was given if the policy may have incidental impacts on canopy coverage but was not expected to directly lead to improvements.
- A **high** (1) score was given if a policy could be demonstrated to directly catalyze improvement or lead to conditions more favorable to increased forest cover (e.g., by facilitating lower-impact development, urban reforestation, or more equitable distribution of population densities across the urban landscape).

Impervious Surfaces

Impervious surfaces are materials such as concrete that prevent infiltration of water into soil. Higher levels of impervious surface are associated with negative effects on water quality[7] and higher rates of stormwater runoff, which can lead to more severe flooding and reduce groundwater recharge (Arnold & Gibbons, 1996; McPhearson et al., 2016; see also Cuo et al., 2009, who predict that impervious surface is likely to

[5] McPhearson et al. (2016) note that even when controlling for socio-economic factors such as income and race, canopy cover was still significantly associated with reduced crime in Baltimore.

[6] Per their website, American Forests was founded in 1875 and "is the oldest national nonprofit conservation organization in the United States" (American Forests, 2021).

[7] Although see Alberti and Marzluff (2007): they found that stream biotic integrity, as measured with the B-IBI index, was more directly associated with length of road and number of road crossings in an area. To address this component, we also examined relative levels of impervious surface per person (see analysis).

have a more significant effect on hydrology in the Puget Sound basin than climate change). These impacts can have localized consequences for fish and shellfish, reducing wild food access. Greater amounts of impervious surface are also associated with more severe urban heat island impacts (Heidt & Neef, 2006).

There is no standard for impervious surface coverage and reducing impervious surfaces can compete with the goal to increase urban density because multifamily lots tend to have more impervious surface than single-family lots (Arnold & Gibbons, 1996). However, it has been demonstrated that significant differences in greenspace can exist for tracts with the same density (Arnold & Gibbons, 1996; Tratalos et al., 2007).

To assess the potential impacts on impervious surface under the status quo and policy alternatives, we focused on both extent (as measured by total area of impervious surface) and distribution (as measured by per-capita changes in impervious surface). Movements toward multifamily housing would result in a positive increase in area but reduced per-capita coverage; increased rural development would likely result in large increases in per-capita coverage but smaller increases in total coverage.

- A **low** (-1) score was given if the policy outcome means substantial increase to impervious surface area at the county level and/or per-capita coverage.
- A **neutral** (0) score was given if the policy was anticipated to have minimal influence on impervious surface.
- A **high** (1) score was given if a policy could be demonstrated to directly catalyze improvement or lead to reduced total and/or per capita impervious surface.

The categories "moderate high" and "moderate low" were not used for this criterion but could emerge when the sub scores from each category (gross area, per-capita coverage) were averaged to determine a final score.

<u>CONSENSUS POTENTIAL</u>

This criterion measures how broad the consensus potential is on the proposed alternative as compared to the status quo. The assessment of options based on the consensus potential criterion is specifically relevant for PSP to understand how likely a reform is to be implemented, who supporters and potential allies are, and who will need to be convinced to agree to proposed changes.

We considered the following stakeholders to measure the consensus level for each alternative, following the UW report's stakeholder analysis (2021, p. 18): business and development associations, state agencies, planning and environmental organizations, local and regional governments, and tribal governments.

We assessed this criterion across four potential consensus levels (low, moderate-low, moderate-high, high) with a narrative explanation and mention of main supporters

and opposers of the reforms. The consensus level is determined across two indicators. The first consideration was the simple number of supporters and opposers among all stakeholder groups and the second assessment was made based on the apparent support from GMA planning and implementing agencies. We consider county governments as primary implementers, the Washington Department of Commerce as the state agency responsible for the growth planning framework, and Washington State Legislature as the adopters of eventual GMA reforms to be the main implementing agencies.

- A **low** (-1) designation means there are more stakeholders that disagree with the reform than agree with it. Also, GMA planning and implementing agencies mostly disagree with the reform.
- A **moderate-low** (-0.5) score signifies more stakeholders support the reform than oppose it, or there is about an equal amount of support and opposition. However, GMA implementing and planning agencies still mostly disagree with the reform.
- A **moderate-high** (0.5) score was given if a majority of the stakeholders support the reform, and GMA implementing agencies also mostly support the change.
- A **high** (1) score indicates if there is broad consensus that the reform should take place across almost all stakeholder groups.

The main source for determining the consensus level for our proposed alternatives was the UW Livable Communities report (Tovar, et al., 2021). The report collected various stakeholder opinions on potential GMA reforms in the form of commentaries and Likert score for each specific proposed change, stakeholder letters, and a narrative approach across the report reflecting controversial issues. Appendix F (in the UW report) shows a summary of Likert scores for each proposed reform and is followed by specific comments. Appendix H (in the UW report) includes letters from certain stakeholders that explain their position on reform proposals. In addition, where our proposed GMA revisions are too different from what the UW report proposed, we also consulted stakeholder opinion letters related to this topic to determine the level of support.

3.6 Analysis Limitations

We faced several limitations in our data collection and analysis process, given the materials and data accessible to us, and the general scope of our project.

3.6.1 Content Analysis

The limitations of our content analysis include heterogeneity in the target areas, processes or decision-making that occurred but were not captured by CPs, and observation errors. All six analyzed counties vary in size, population, and development structure. This means that the counties might have different growth

management needs and priorities, and direct comparisons of CPs should be done cautiously. As has been mentioned throughout the text, CPs vary largely in page number. These differences in length might blur our analysis and conclusions. While the keyword counts are not completely relative to the page numbers, one should take them into account while studying our results.

In addition to the CPs, counties (and cities within the counties) also develop and adopt other growth management documents such as work plans, specific ordinances, CPPs, community-level CPs, environmental specific regulations or separate facility or park work plans. For example, Pierce County, besides its county specific plan also offers a version that includes all community plans. We restricted our analysis to the former. By not analyzing those documents we risk leaving out content that might have been relevant to consider getting a fully encompassing answer to our research questions.

Finally, there is always the possibility for human error in coding, and thus, internal validity concerns. We mitigated this by assigning two team members to do the coding on each CP independently. We then compared our results and consolidated uncertainties for a 98.08% overall agreement rate. In addition to these general limitations, below are limitations specific to our three topic areas.

ENVIRONMENTAL JUSTICE

Our keyword choices were limited in scope to create a focused end-product. We conducted a sensitivity analysis to determine the effectiveness of our chosen keywords, and to ensure that we were not overlooking relevant EJ concepts. Our four-person team randomly divided the 12 CPs so one person reviewed three CPs for the following keywords: "disparit", "proportionate" (excluding disproportionate), "overburdened", "equit" (excluding inequit), "healthy environment", and "access to (the) decision-making."

Overall, our sensitivity analysis affirmed our findings detailed in Chapter 4. “Overburdened” was not found in any CP, and “proportionate” was not found in the context of our project. “Equit” was found in most CPs but in the same context that our chosen keywords appeared. “Disparit” did not appear but for the notable exception of Thurston County’s 2019 CP, which explicitly acknowledged and set goals to reduce health disparities. While these results are of interest to our research scope, they affirm our findings regarding Thurston County which are detailed in Chapter 4.

“Healthy environment” appeared only in the most recent King and Kitsap County CPs as well as both Snohomish County CPs. We describe in Chapter 4 that most counties did not have significant mentions of our EJ keywords, and it is important to note that Snohomish County did express the significance of a healthy environment.

"Access to (the) decision making" appeared in most CPs through searches for "decision-making" and "decision making". Many CPs make note of the value of public participation in growth management decision making processes. However, we did not find specific mention of enhancing public participation with overburdened communities, which was the primary intent of the search.

To conclude, with few exceptions, the sensitivity analysis reaffirmed the effectiveness of our initial keyword searches to pinpoint EJ relevant content in the CPs.

TRIBAL INCLUSION

Several of the keyword mentions were associated with the county's intent to protect tribal artifacts, historical gravesites, and archaeological sites. This is not what we had envisioned for tribal collaboration, and yet these mentions are reflected in some of our counts by the definition of manifest coding. This is most prevalent for Island County results.

Counties usually specify their collaboration to be with "federally recognized" tribes. In Washington, not all tribes are federally recognized, and would thus not be covered in these planning arrangements. In our chosen region, the following tribes would not have standing in current CP collaboration language:

- The Snoqualmoo Tribe of Whidbey Island in Island County
- The Duwamish Tribe in King County
- The Steilacoom Tribe in Pierce County
- The Snohomish Tribe of Indians in Snohomish County

Our coding process for these keywords required a degree of coder interpretation, since distinguishing between a simple mention and a policy or process calls for latent interpretation. Two coders analyzed each keyword, and our counts are based on some of these conceptual interpretations. Likewise, the ranges in tables 5.1 and 5.2 reflect minor discrepancies in evaluation.

ECOSYSTEM CONDITIONS

Maybe even more so than for EJ keywords, our ecosystem condition keywords were significantly restricted. The reasons behind our choices, made in accordance with PSP, are feasibility and relevance related. We aimed to use indicators that are relevant measures for ecosystem health, can be spatially represented, and draw a feasible amount of data to analyze.

While we looked for references to specific policies or limits on conversion in CPs, such specifics might appear in more detail in other county documents such as critical area regulations, environmental impact assessments, or other codes that were not mentioned in CPs. Thus, our takeaways from the content analysis are only an approximation of what policies and processes exist to protect forests or reduce impervious surfaces. However, we can also state that development directly affects the

environment, and so counties would have the incentive to reference relevant ecosystem protection policies in their CP.

3.6.2 Spatial Analysis

ENVIRONMENTAL JUSTICE

It should be noted that tribes were not formally involved in the development of the EHD map, and the data does not fully represent the potential risks that native communities may be facing.

One of the major limitations of our use of the EHD Map was that the data are measures from American Community Survey and Department of Health for 2013-2017. The map only provides a single snapshot in time, and we were not able to analyze historic changes or trends from this map.

Due to the design of the index, a given score aggregates multiple criteria, including several aspects of health and demographic composition that mean that lower-ranked census tracts are likely more similar to one another in terms of environmental quality whereas the top-ranked tracts may face significant pressures from different sources. We chose to use rankings of the general environmental health risks of a given community, rather than that of a specific hazard or exposure.

ECOSYSTEM CONDITIONS

The GIS data did not conform to the same temporal scales, leading to some atemporality in the analyses. Given that the NLCD is currently only up to 2016 and the HRCD to 2017 and given that the population estimates we used for per-capita comparisons come from 2011 while the EHD map uses 2018 populations, we are missing a substantial amount of the development that took place in the latter half of the 2010's. In addition, because the canopy cover, impervious surface, and land use data are all the products of models, it is probable that at least some classifications/values are incorrect.

3.6.3 Policy Analysis

As a prospective narrative policy analysis, our research relied on data, both quantitative and qualitative, from other studies. Although we used sources that have the most up-to-date information on our topic area, they were not comprehensive about the scope of our project.

The UW report (Tovar et al., 2021) states clearly that it is missing voices from its stakeholder engagement. By using the report as basis for measuring our consensus potential criterion, we risk perpetuating the same concerns. Also, the Likert scale consensus measure is limited because it only assesses the consensus among the

participating stakeholders from various groups (around 20) which might not be representative for the whole stakeholder groups.

The WWU study (Zaferatos, 2020) did not have a large pool of respondents in its survey of relationships between tribal governments and counties. While this is a limited sampling frame and would thus dictate a smaller sample size, the results should be considered in conjunction with other more substantial findings.

Finally, our criteria we are unable to guarantee exact outcomes within our criteria ratings. Our ratings are predictions that could be influenced by unanticipated variables. For example, our criterion “Access to growth planning” is limited in scope because we are unable to guarantee that access to growth planning would have significant impacts to EJ outcomes. While public participation and community engagement is a key EJ principle, we also know that participatory processes do not guarantee decision making power.

4 Environmental Justice Findings and Analysis

In the following, we present our results from the EJ content analysis of CPs and connect them to the results of the spatial analysis of EHD. By exploring the results of our content and spatial analyses across counties, we identified how well EJ is integrated in county-level growth management frameworks and to what extent EHD are prioritized in the six analyzed Washington counties. In this chapter we answer our first research sub-question:

How is the GMA-mandated comprehensive planning addressing EJ in the Puget Sound Region?

4.1 Key Takeaways

Our analysis, outlined in the following pages, suggests that EJ is not explicitly considered during the growth planning and CP drafting processes in a majority of counties. However, many counties have moderate-to-severe environmental health risks.

Our content analysis yielded that only King and Thurston Counties recognize EJ as a concept in their most recent CPs (Table 4.1). There is a small trend visible that EJ considerations have gained importance over the two sets of years, specifically for those two counties. When we broaden our keywords to a larger thesaurus of EJ-related terms and concepts, such as inequity and disproportionality, King and Thurston counties were still unique in their focus on policy tools to address disparities (see Table 4.1). Mentions of "disproportionate" are more common across jurisdictions compared to "inequit", but specific tools or processes remain sparse. Due to the emerging nature of EJ as an extensively accepted framework, we expected that most CPs from the early 2000s would not refer to it. However, the lack of reference to it in the newest CPs is more surprising.

***Table 4.1**: Results from EJ Content Analysis. Simple count represents a mention in the CP. Policy/process count represents a specific process in place that is explained in the CP.*

Jurisdiction		"Environmental Justice"		"inequit"		"disproportionate"	
		Simple Count	Policy/Process Count	Simple Count	Policy/Process Count	Simple Count	Policy/Process Count
Island	2007	-	-	-	-	1	-
	2016	-	-	-	-	-	-
King	2004	-	-	1	-	3	-
	2020	9	-	16	3	7	-
Kitsap	2006	-	-	-	-	-	-
	2016	-	-	-	-	-	-
Pierce	2004	-	-	-	-	1	-
	2019	-	-	-	-	1	-
Snohomish	2005	-	-	-	-	-	-
	2016	-	-	-	-	-	-
Thurston	2004	-	-	-	-	-	-
	2019	1	-	1	-	10	2

While the EJ-related vocabulary that we chose to focus on was found in very few county CPs, each county (except for Island County) had communities with moderate-to-severe environmental health risks. Our spatial analysis highlighted that high EJ risk ratings are associated with more densely populated areas in the central Puget Sound region (specifically King and Pierce Counties), as seen in Figure 4.1 and 4.2. However, of the two most at risk counties, only King County names tools to address environmental injustices resulting from development in their CP.

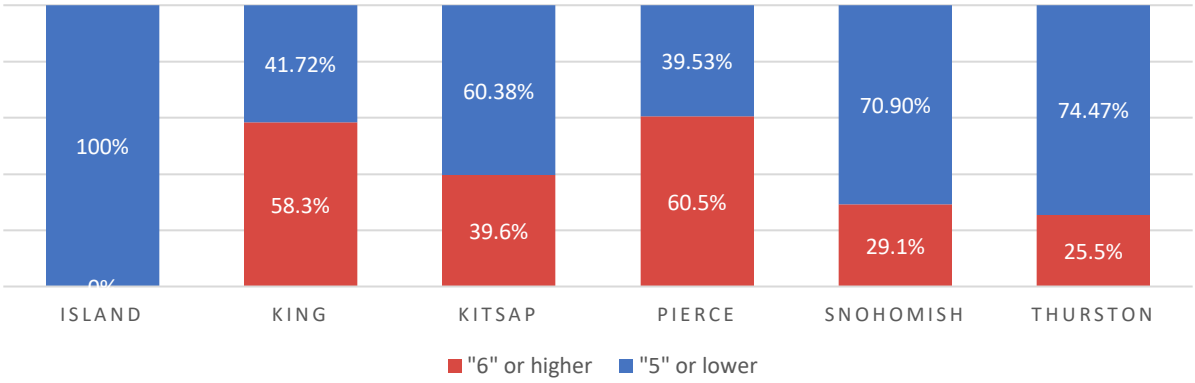


***Figure 4.1:** Percent of EHD rankings by county*

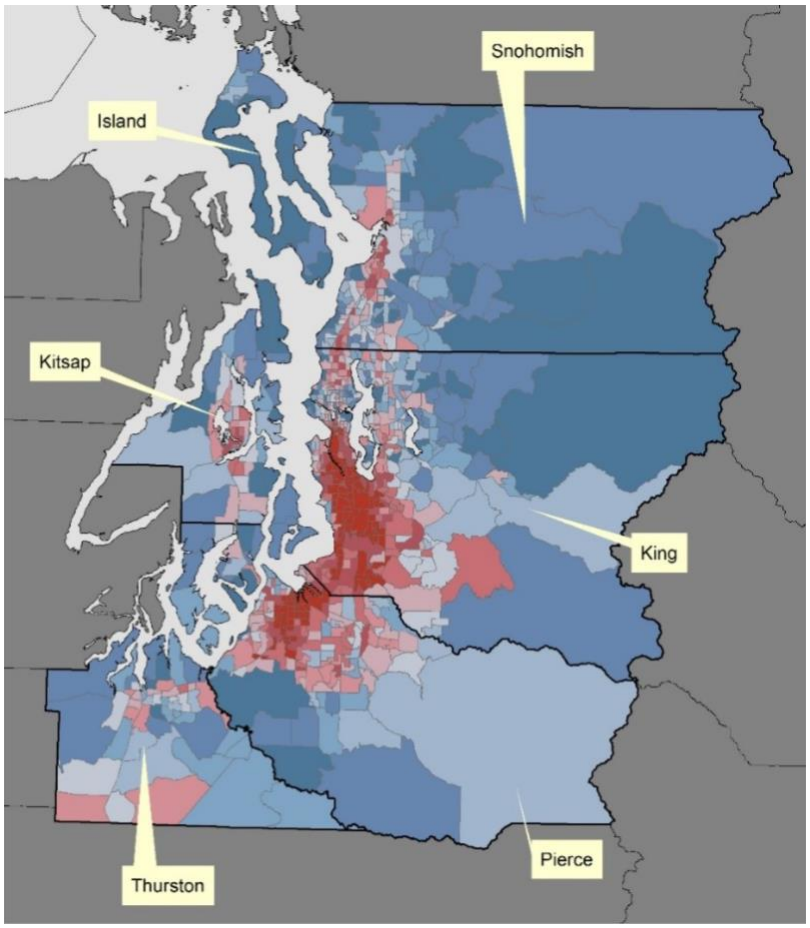


Figure 4.2: *EHD Rankings in the Puget Sound*

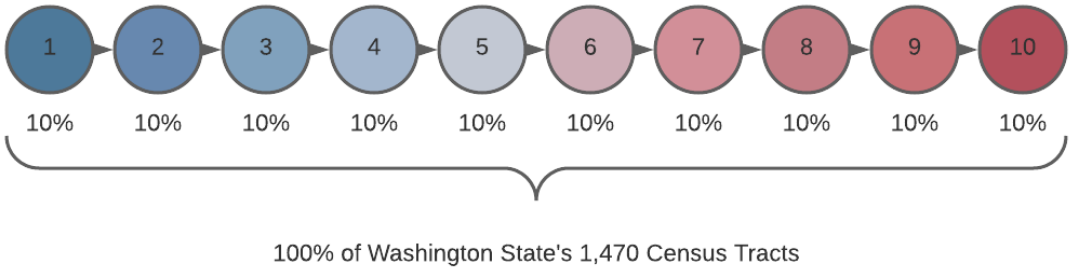


Figure 4.3**:** *EHD Ranking Legend (Washington State Department of Health). A rank of 1 indicates that the census tract is within the bottom 10% of communities with severe environmental health risks. These communities are likely to have both the lowest relative exposure to environmental hazards, and the lowest relative vulnerability to those hazards. Conversely, a rank of 10 indicates that the census tract is within the top 10% of communities with severe environmental health risks. These communities are likely to have both the highest relative exposure to environmental hazards, and the highest relative vulnerability to those hazards.*

The Washington State Department of Health's EHD map shows that the relative burden of risk tends to be higher in the urban zones of King and Pierce Counties compared to the statewide average (Figure 4.2). In total, 46.7% of census tracts within

our selected counties are subject to moderate-to-severe environmental health risks with 319 county tracts ranked "6" or higher. Only 9% of the region was ranked "1." As the two most populous counties in the state, King and Pierce are the only two of the six counties which have communities ranked "10," and make up 40.4% of the tracts with the most severe environmental health risks across the state.

Overall, King and Pierce Counties had the highest average proportion of EHD ranks after accounting for population with 58.3% and 60.5% of their census tracks ranking "6" or above, respectively (as seen in Figure 4.1). Although Pierce County has the highest overall average of above-average rankings, King County still has more tracts ranking "9" or "10" even after accounting for population difference (visualized in Figure 4.4).

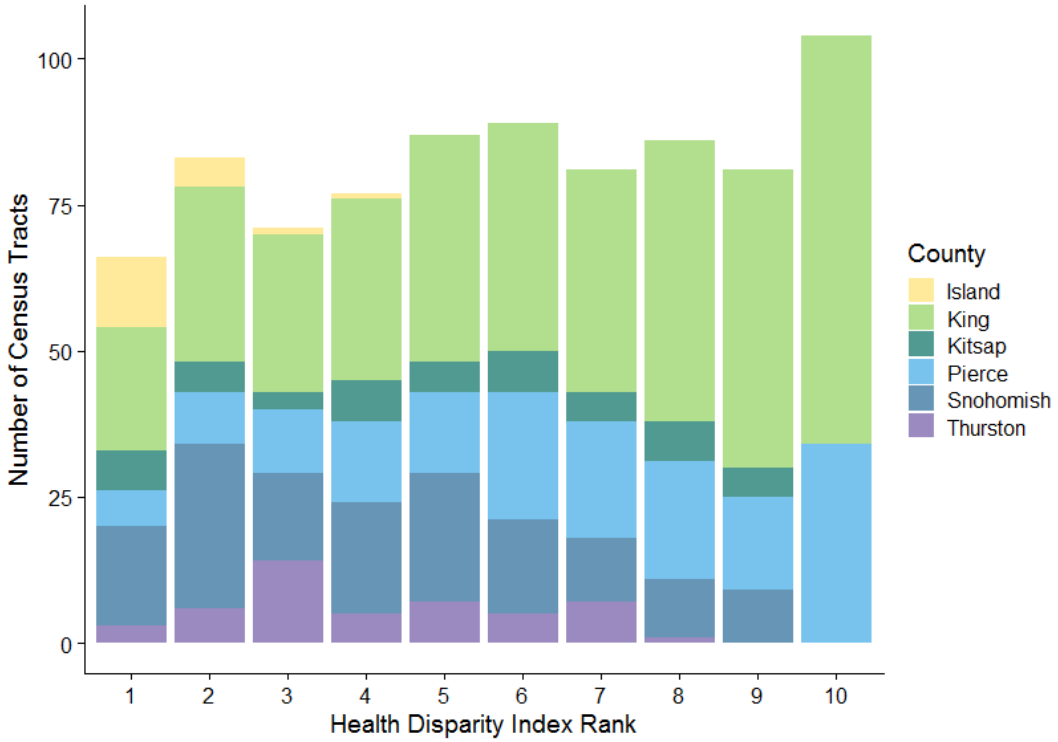


Figure 4.4: *Number of census tracts per EHD index, by county*

There are two major reasons for this association: urban areas tend to have more people living in proximity to industrial activity and permitted hazardous waste storage, treatment, and disposal facilities, and higher density development is associated with closer proximity to emissions from traffic (Brender, et al., 2011). In addition, the legacy of pollutive industrial activity in and around the ports of Seattle and Tacoma means that urban populations are in closer proximity to superfund sites than rural populations. This analysis verifies that how different jurisdictions oversee growth-related implications can impact health outcomes, and there is an opportunity

for our chosen counties (and likely the greater region) to identify and address EJ concerns in the years to come.

In the following analysis, we review the results from the content analysis and the spatial analysis in more detail. We present our findings and discussion by county, connecting visible trends across both our analyses.

4.2 Integrated Results from Content and Spatial Analysis

4.2.1 Island County

While Island County's CPs featured minimal EJ concepts, environmental health risks within the County are generally low. These relatively low environmental disparities could account for the lack of EJ related keywords within their CPs.

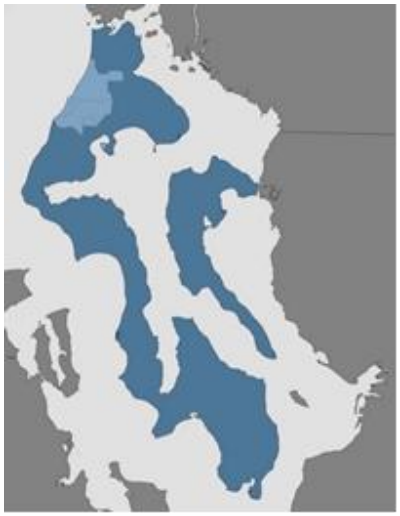


Figure 4.5: *EHD Map (Island County)*

Island County's single mention of EJ concepts was in their 2007 CP for "disproportionate." It notes disproportionate health burdens between jurisdictions and is thus not directly related to our research purpose.

On the spatial analysis side, there are 16 total census tracts within Island County, and 70% are ranked "1" by the EHD map (Figure 4.5). With 11 of the tracts ranked "1," Island County accounts for 7.5% of the best ranked census tracts in Washington. The highest ranking in Island County was "4" for only one census tract. With all tracks ranking lower than "5," Island County has the smallest range of total tract rankings across our selected counties.

4.2.2 King County

While King County's CPs feature the most mentions and policies related to EJ concepts, the County also has the highest average EHD ranking in our analysis. There is a visible time trend of EJ mentions, with significantly more mentions in the 2020 version as compared to the 2004 CP. Due to a lack of EHD data from the early 2000s, we cannot compare this finding to a spatial trend. Moreover, since 2004, the population in King County

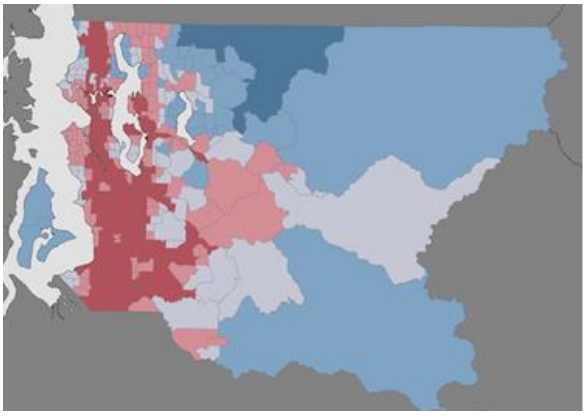


Figure 4.6: *EHD Map (King County)*

has increased nearly 30%, strengthening the need for comprehensive growth management. King County's CP more than doubled in length within this period.

With a population more than double that of the next most populous county, King County is home to 290 census tracts. About 49 of these tracts are ranked "10," accounting for 28.2% of the total amount of the worst ranked census tracts in Washington (Figure 4.6). Another 120 tracts are rated "6" or above, indicating that about 58.3% of King County census tracts are subject to higher-than-average environmental health risks. 19 tracts are ranked "1," making up only 6.2% of the county, and are all located in the northern half of the county.

While these maps make it evident that there are a significant number of overburdened communities within its borders, King County also leads the counties in mentions and specific policies addressing EJ concepts. This could be due to the need to address equity concerns due to its evidently large number of overburdened communities, as well as mitigating any environmental hazards caused by growing trends in development. Specific mentions and policies are described below.

King County's 2020 CP refers to "environmental justice" nine times, including "addressing health, equity and social and environmental justice" as one of its guiding principles. EJ is mentioned in the text related to an open space system, cultural resources, and facility placement. The same CP also has a section dedicated to addressing health, equity, and social and environmental justice where the County indicates that it will assess EJ impacts while planning. However, there is no specific policy or process aiming to reduce disparities that specifically mentioned the keyword "environmental justice."

King County, besides one mention in the Thurston County 2019 CP, is the only county that incorporates inequities into its CP text. In its 2004 plan, the only "inequit" mention stems from a commitment to equitably distribute public facilities. By 2020, it was mentioned 16 times relating to reducing health disparities, addressing root causes of inequities, inequities among people of color, climate change, transportation, air pollution, and still public facilities.

More interestingly, King County also has three different policies or programs in place to address disparities: Ordinance 16948 that established the fair and just principle in the county's strategic plan, the Equity Impact Review Tool, and the Environmental and Social Justice Initiative. The ordinance was adopted in 2010 and "transformed the work on equity and social justice from an initiative to an integrated effort that intentionally applies this principle to all work in order to achieve equitable opportunities for all people and communities," (p. 33). The Equity Impact Review tool is a process toolkit that is applied during planning to "identify, evaluate and communicate the potential equity impact of a policy, program or service," (p. 35). The Equity and Social Justice Initiative is designed to be incorporated in the "daily

practice of developing policies and making funding decisions and delivering services," (p. 90).

Finally, King County is the only jurisdiction that mentions "disproportionate" as it relates to our research purposes in the earlier version of CPs. The one related mention says that King County should provide amenities to communities that have a disproportionate share of human service facilities. In King County's 2020 CP, there are an increasing number of mentions related to EJ, such as references to actively engaging communities with a disproportionate share of existing facilities or with disproportionately lower health outcomes during planning.

4.2.3 Kitsap County

Although there are areas in Kitsap county with higher-than-average risk for EHDs, the county did not mention any of our EJ keywords in either CPs we analyzed. It should be noted that Kitsap county significantly shortened its main CP document during its recent revision, and some removed sections might have otherwise been updated with EJ concepts (i.e., the Environment Impact Assessment Statement).

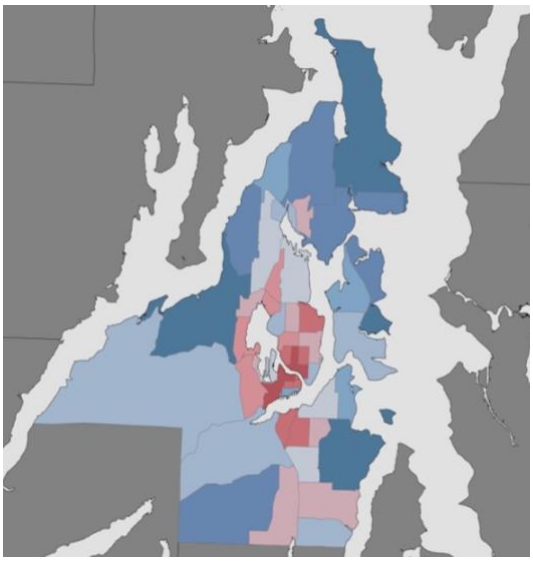


Figure 4.7: *EHD Map (Kitsap County)*

There are 53 census tracts in Kitsap County. Seven tracts are ranked "1," and four tracts are ranked "9," which is the highest ranking in this county (Figure 4.7). With 21 tracts rated "6" or above, 39.6% of the county is subject to higher-than-average health risks. However, the risks are not as severe as those in King or Pierce Counties. The majority of the highest rated tracts are within the Bremerton area.

4.2.4 Pierce County

While there is currently no mention of EJ or recognition of environmental health risks caused from development in Pierce County's CP[8], it is clear from the EHD map that there is a need to address the high level of risk across the county.

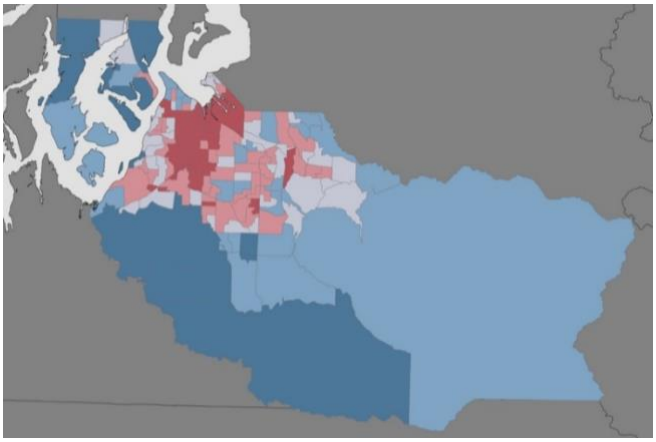


Figure 4.8: *EHD Map (Pierce County)*

One the one hand, Pierce County's CPs only feature one unrelated instance of the word "disproportionate" in the context of disproportionate financial burden across county jurisdictions.

On the other hand, the County has the highest overall number of census tracts ranking "6" or above, and the lowest proportion of county tracts ranked "1" among the six analyzed counties (Figure 4.8). With 17 out of the county's 129 tracts ranked "10," Pierce County accounts for 11.6% of the total amount of the worst ranking in Washington. Another 61 tracts are ranked "6" or higher, making 60.5% of census tracts in Pierce County subject to higher-than-average environmental health risks. Only 4.65% of the county tracts are ranked "1."

4.2.5 Snohomish County

Snohomish County did not include EJ[9] or related concepts within its growth planning processes in either 2005 or 2016, illustrating that EJ has not yet been made a priority within the county's CP.

Figure 4.9: *EHD Map (Snohomish County)*

While risks are not ranked as high as King County on its southern border, the County does have communities subject to EHDs. This suggests that there is a need for Snohomish County to include EJ considerations into its growth planning processes.

[8] Pierce County has two different CP documents, one including the plans from the communities within the County and one that only include the County level plan. Our analysis was focused on the latter.
[9] Our sensitivity analysis showed that Snohomish County did have a few mentions of "equit" and one mention of "healthy environment".

There are 134 census tracts in Snohomish County. The highest ranking within Snohomish County is "9," accounting for seven tracts (Figure 4.9). Another 30 tracts rank between "6" and "8," meaning that 29.1% of Snohomish County is subject to moderate-to-severe environmental health risks. 16 census tracts are ranked "1," making up roughly 12% of the county.

4.2.6 Thurston County

After King County, Thurston County had the most mentions and policies related to EJ in its CPs. However, as opposed to King County, its EHD rankings are significantly lower.

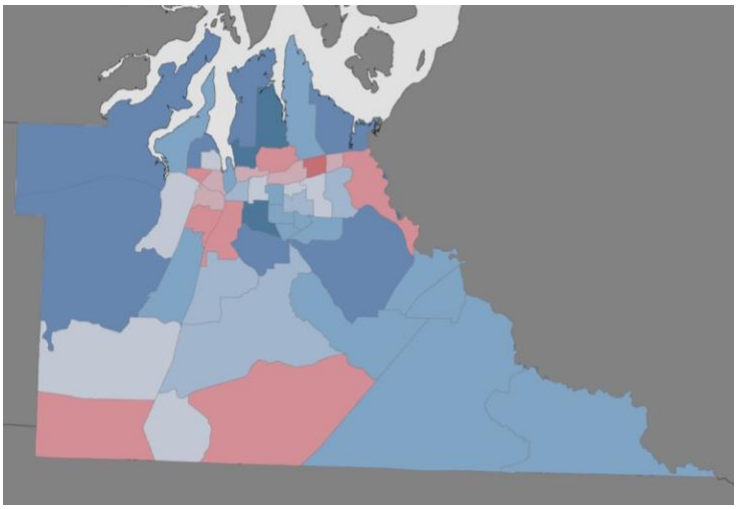


***Figure 4.10**: EHD Map (Thurston County)*

Overall, there are 47 census tracts in Thurston County. The highest rank in the county is a "7" for seven tracts, with another 12 ranking either "6" or "7" (Figure 4.10). Thurston County has the smallest range in high rankings between our selected counties, and the lowest percentage of rankings "6" or above aside from Island County. While 74.47% of the tracts are ranked "5" or below, only three tracts are ranked "1." Thurston County recognizes these risks and disparities within its most recent CP (2019) by focusing heavily on "disproportionate" environmental impacts.

Thurston County's one mention of "environmental justice" is related to transportation and federal requirements and states that the County must "ensure federal Title VI requirements for environmental justice are met." The CP does not include a policy or process aiming to reduce disparities that specifically mentioned the keyword "environmental justice." Thurston County has a single mention of "inequity," recognizing that a healthy community is "one that addresses disparities in health outcomes that often stem from inequitable conditions," (p. 331).

Thurston County stands out with 10 mentions and two policy tools related to "disproportionate" in the 2019 CP. Its 10 mentions are amongst others related to housing, health disparities for rural residents and communities of color, strategies to reduce costs of health services for disproportionately impacted groups, drug education, and transportation. The two mentioned policy process tools are the Health Equity Community Health Assessment that was first used in 2019 to identify a variety of health-related disproportionate outcomes, and the Racial Equity Assessment done

in 2020 to identify health disparities in birth outcomes and treatable chronic health conditions (p. 344).

5 Tribal Inclusion Findings and Analysis

This chapter presents our results from the tribal inclusion content analysis of CPs. Given the political and geographical boundaries in the Puget Sound between counties and tribal territories (visualized in Figure 5.1), we deemed it essential to intentionally explore the collaborative relationship between our chosen counties and their neighboring tribal nations. In this chapter we answer our second research sub-question:

How is the GMA-mandated comprehensive planning including tribal communities in the growth planning and decision-making process in the Puget Sound Region?

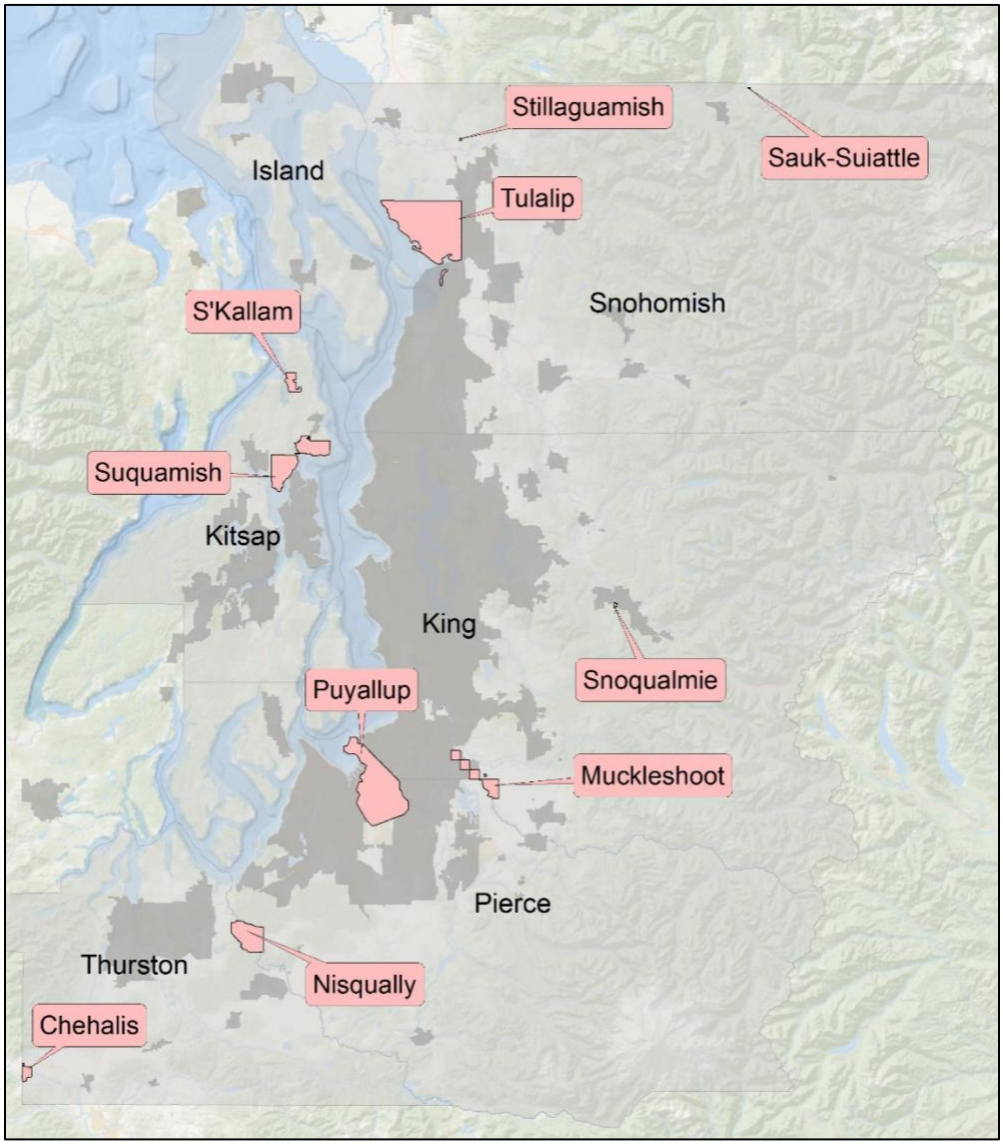


Figure 5.1: *Distribution of UGAs (gray) and tribal territories (red) in the central Puget Sound.*

5.1 Key Takeaways

Overall, counties appear receptive to collaborating with tribal territories, but CPs more often include tribes as part of a longer list of potential collaborative partners. This minimizes the important government-to-government relationship between counties and tribes to collaboratively plan for future land use and development goals, while simultaneously considering culturally important resources as part of ecological restoration work.

Some counties are more intentional about this planning process. Table 5.1 below shows our content analysis counts for tribal inclusion keywords by county. King, Snohomish, and Thurston counties all proactively engage with tribal communities and reference those engagement tactics in their CPs. Island County's lower number can be attributed to the lack of federally recognized tribes in the area; however, Kitsap and Pierce counties both border on the lands of at least two tribal territories.

***Table 5.1**: Results from Tribal Inclusion Content Analysis. Simple count represents a mention in the CP. Policy/process count represents a specific process in place that is explained in the CP.*

Jurisdiction		**General Stakeholder Collaboration** "native American", "tribe", "tribal"		**Tribal-Specific Collaboration** "native American", "tribe", "tribal"	
		Simple Count	Policy/Process Count	Simple Count	Policy/Process Count
Island	2007	21	2	16	6
	2016	20	2	8	-
King	2004	35	12	7	3
	2020	81	6	36	4
Kitsap	2006	74	4	12	3
	2016	37	6	11	-
Pierce	2004	9	3	1	-
	2019	8	4	1	1
Snohomish	2005	56	7	32	6
	2016	54	6	28	4
Thurston	2004	45	4	35	3
	2019	55	4	40	34

CPs do not outline many clear processes for engaging with tribes. The language in simple mentions is often vague (leading to overall lower process/policy counts) and thus leaves much of counties' stakeholder engagement strategies out of the CP. We cannot determine from this analysis whether this is simply an omission, or whether there are engagement strategies in place. The Ruckelshaus Center report (Murphy et al., 2019b) captures a desire from participants for more collaborative planning

processes between counties and tribes on growth management. Thus, there is significant room for improvement in the participation element of growth planning.

5.2 Results from Content Analysis

Like the EJ content analysis, data collected for this chapter were the result of manifest coding techniques and searching for specific keywords in CPs. We chose to search for three keywords encompassing potential tribal inclusion processes: "Native American," "tribe," and "tribal." These words were coded through two different perspectives: one where tribes were included as part of a broader stakeholder collaboration effort and one where tribes were included individually in an intergovernmental collaboration on regional planning with the county. In both cases we looked for both a simple mention of the chosen keywords (i.e., the chosen keyword simply appears in the text), as well as a mention of the chosen keywords in a targeted collaboration process or policy (i.e., the chosen keyword appears in the text with the intent to define a specific participative or collaborative process between counties and tribes).

5.2.1 General Stakeholder Collaboration

For the first perspective, our goal was to uncover how often tribes were included in general planning collaborative processes alongside other governmental and citizen stakeholders. Our rationale was that tribes should be included in these cross-jurisdictional collaboration efforts and mentioning them as partners is the first step in cultivating more inclusive planning.

Based on our analysis, counties seem to be generally inclusive of tribes, with mentions (in Table 5.1) proportional to the number of adjacent tribes that counties might include in their stakeholder engagement, as depicted in Figure 5.1.

- Island County, despite not having adjacent federally recognized tribal territories, gives 21 mentions in 2007 and 20 mentions in 2016.
- King County stands out with 81 mentions in their 2020 CP, compared to 35 mentions in their 2004 CP. This growth in mentions is not common across other counties and may reflect a change in King County's larger strategic planning efforts.
- Kitsap County moves from 74 mentions in 2006 to 37 mentions in 2016 which is proportionate to the decrease in document length. This may be a result of moving tribal engagement amongst other topic areas out of the CP into something more evergreen, or out of the planning environment entirely.
- Pierce County has very few mentions in its CP related to collaboration with tribes (9 in 2004 and 8 in 2019). Pierce County's CP was also much shorter than other counties' CPs, which could be because Pierce County further decentralizes growth planning to neighborhood community plans and land use commissions.

- Snohomish County, which has the most adjacent federally recognized tribal territories of our analyzed counties, was relatively constant with 56 mentions in their 2004 CP and 54 mentions in their 2016 CP.
- Thurston County, which only has two adjacent federally recognized tribal territories, stands out as being proactive on tribal inclusion with 45 mentions in 2004 and 55 mentions in 2019.

While counties include tribes in their intention-setting to consult entities like cities, public agencies, special interest groups, and others in their planning, there are significantly less mentions of specific policy processes that incentivize collaboration. Some of these mentions include structured programs like Snohomish County Tomorrow, the Kitsap Regional Coordinating Council, and the Thurston Regional Planning Council, while others call for written agreements with agencies, tribes, and other affected parties whose close coordination is essential to other planning policies.

There is a clear interest in incorporating tribal partners on natural resource management reflected in the process and policy keyword mentions. For example:

- King County coordinates with agencies, tribes, and others to develop and implement regional and watershed-based monitoring and adaptive management programs (King County, 2020).
- Thurston County adheres to the Timber, Fish and Wildlife Agreement among industrial timber landowners, environmental groups, state resource agencies, and Native nations for managing the state's public and private timber lands and public resources (Thurston County, 2019).
- Pierce County encourages tribes, among other stakeholders, to help plan for natural areas that increase access to the regional trail system (Pierce County, 2019).

5.2.2 Tribal-Specific Collaboration

For the second perspective, our goal was to investigate how often tribes were individually sought out by counties to engage in intergovernmental regional planning. Our rationale was that cultural practices and ways of knowing are critical to human well-being and the historical connection to Puget Sound resources, both of which are represented in PSP's Vital Signs. Instances in this section were only counted if our keywords did not appear in the same policy process as other stakeholders (i.e., the collaborative mention must be strictly between tribes and county agencies). This qualification thus calls out mentions that outline some form of an intergovernmental agreement between tribes and counties.

Our analysis suggests that counties are generally inclusive of tribes, but the tribal-specific collaboration counts in Table 5.1 are typically lower than the general stakeholder collaboration counts.

- Island County, despite not having adjacent federally recognized tribal territories, gives 16 mentions in 2007 and 8 mentions in 2016.
- King County again stands out with 36 mentions in 2020, compared to approximately 7 mentions in 2004. This likely signals a shift in priorities over the period to be more intentional about engagement.
- Kitsap County holds relatively constant with 12 mentions in 2006 and 11 mentions in 2016.
- Pierce County only mentions tribal-specific collaboration once in 2004 and in 2019. This is analogous to the general stakeholder collaboration counts, which were also notably lower than other analyzed counties.
- Snohomish County, which has the most adjacent federally recognized tribal territories of our analyzed counties, holds relatively constant with 32 mentions in 2005 and 38 mentions in 2016.
- Thurston County stands out in this portion of the analysis for 40 mentions in 2019, and 35 mentions in 2004. The Thurston County 2019 CP is also notable for the highest percentage of policies and processes for tribal-specific collaboration; approximately 86% of all mentions had a specific, actionable policy attached to them.

Although there are fewer mentions of collaboration exclusively between counties and tribes, it is important to note that the processes and policies associated with such an arrangement are roughly on par with the process and policies associated with general stakeholder collaboration. King, Snohomish, and Thurston counties are all distinctive for their continued intergovernmental arrangements with tribes. Specific examples of intergovernmental inclusion policies include:

- King County has an agreement with the Snoqualmie Indian Tribe to keep the area at the base of Snoqualmie Falls free of development due to historical and cultural significance (King County, 2004; King County, 2020).
- Snohomish County coordinates with the Tulalip Indian Reservation on forest land designations and other planning elements via a MOU and workgroup (Snohomish County, 2016).
- Thurston County recognizes that the two nearby tribes (Squaxin Island and Nisqually) are “co-managers” of shellfish resources (Thurston County, 2019).

6 Ecosystem Condition Findings and Analysis

This chapter presents our results from the ecosystem condition content analysis of CPs and the results of the spatial analysis of observable land cover trends. This combined approach offers an opportunity to identify how well our chosen ecosystem indicators were integrated in CPs and how growth management practices have functioned beyond the stated planning policies. In this chapter we answer our third research sub-question:

How is the GMA-mandated comprehensive planning addressing PSP-identified ecosystem priorities?

6.1 Key Takeaways

Mentions of development limits to protect and/or restore habitats, minimize forest conversion, and reduce impervious surfaces vary vastly across counties and are reflected in greater detail in Table 6.1. Diverging from earlier findings for EJ and tribal inclusion, there are no consistent trends indicating increased concerns for the natural area indicators over the time between CPs analyzed. During this time frame, counties continued to lose wetland area and forest/herbaceous cover to development, albeit at declining rates. Some counties that produced forest conversion policies (notably Thurston) achieved substantial reduction in conversion rates within the UGAs and milder success in rural areas, with development staying comparatively low. The larger King and Pierce Counties tended to have high urban forest conversion that fluctuated with economic patterns rather than adoption of policies. Despite its larger area and population, King County's rural forest conversion rate compares favorably with its neighbors Pierce and Snohomish, as well as much smaller Kitsap County in terms of absolute area altered by 2015.

***Table 6.1**: Results from Ecosystem Content Analysis. Simple count represents a mention in the CP. Policy/process count represents a specific process in place that is explained in the CP.*

Jurisdiction		"habitat protection", "habitat restoration"		"conversion" (of forest)		"impervious surface"	
		Simple Count	Policy/ Process Count	Simple Count	Policy/ Process Count	Simple Count	Policy/ Process Count
Island	2007	-	-	2	-	5	-
	2016	5	1	-	-	6	-
King	2004	9	2	7	2	27	8
	2020	34	4	29	5	30	5
Kitsap	2006	14	4	2	-	12	3
	2016	4	2	-	-	2	1
Pierce	2004	4	2	3	1	3	2
	2019	2	-	1	-	2	1
Snohomish	2005	5	2	3	1	7	3
	2016	7	2	2	1	6	3
Thurston	2004	7	1	7	2	3	-
	2019	4	-	8	2	8	-

In general, there are relatively few mentions of specific habitat restoration efforts, limits to land conversion in response to natural areas, or limits on impervious surfaces in development. While all counties appear to recognize the value of healthy habitats and forests and the negative impacts of impervious surfaces, they are setting specific goals to address these issues sporadically at best. There appear to be other competing priorities in CPs, such as economic development and transportation access (as discussed in Chapter 2). The results of this conflict can be seen by the limited specific policy processes in place regarding our chosen land use indicators (which prioritize an ecosystem lens), despite the extensive length and scope of CPs. Despite the lack of specific attention, growth in urban impervious surface declined sharply in all counties during the study period, with trends in King and Pierce Counties apparently driven by population density and infrastructure. Rural areas, although developing at a slower initial rate than urban areas, also had much smaller relative declines in surface added. The overall picture shows highly dense settlement in urban population centers accompanying intense development that results in high overall impervious surface coverage but relatively lower coverage per capita compared to rural areas.

Results from our content analysis suggest that King County has both greater awareness of and greater planning challenges due to historical environmental degradation, as well as EJ and equity issues. Even though King County has absorbed over 90% of recent population growth in the area (Wright, 2020), it has been more

effective at containing that development to UGAs than neighboring Pierce and Snohomish counties, both of which have experienced more rural expansion despite lower population growth. However, this containment has come at the price of significantly higher impervious surface coverage in the UGAs compared to neighboring counties and attendant inequities related to access to urban canopy coverage.

6.2 Integrated Results from Content and Spatial Analysis

6.2.1 *"Habitat protection" & "Habitat restoration"* Keyword Findings and Spatial Trends

These habitat keywords were intended to give a general baseline for ecosystem goals and outcomes as outlined in CPs. Our findings indicate the possibility that habitat considerations may be under-emphasized in CPs if counties aim to meet the goals they set around habitat protection. Because the GMA mandates the specific consideration of "critical areas," we opted to explore a more focused keyword that is left up to counties for planning purposes. Searches for habitat keywords are complicated by the fact that the definition of "habitat" is variable; for example, habitats can include protected wild areas, wetlands, and unprotected forestlands. Particularly with wetlands and shorelines, CPs frequently acknowledge state mandates, but these acknowledgments are not necessarily representative of the planning process. Instead, they simply signal awareness of statute rather than lay out a goal or policy.[10]

For the keywords searched, the CPs did not reveal major trends. Most counties consider habitat protection and/or restoration across both selected time frames, with Island County in 2007 as the lone exception. A time trend is not clearly visible between CPs across the chosen counties. While King and Island County's mentions and policy processes increase with the newer CPs, opposing trends can be seen for Kitsap, Pierce, and Thurston County (Table 6.1). It is worth noting that King County's page count tripled in this period, whereas Kitsap County's page count was cut in half[11]; simultaneously, King County's count of habitat or conversion related keywords

[10] For example, Pierce County's 2019 plan had 24 mentions of "wetland(s)," but the usage was almost entirely definitional or used in conjunction with "habitat," as in statements like "Critical areas are defined in the Growth Management Act (GMA) to include wetlands, areas with a critical recharging effect on aquifers used for potable water (aquifer recharge areas), fish and wildlife habitat areas, frequently flooded areas, and geologically hazardous areas" (p.160). The plan does include a specific wetlands section, but the goals are largely non-discretional, e.g., ensuring no net loss, using wetland delineation criteria, and mitigating development impacts (see Goal ENV-11). We therefore conclude that focusing on protection/restoration is more representative of actual county planning processes.

[11] The page number count for Kitsap County decreases over the years because the County created a separate Capital Facilities Plan in 2016, which was previously part of the CP in 2006, among other adjustments.

jumped approximately fourfold while Kitsap County's mentions reduced by threefold and to zero, respectively.

Some examples of specific policies and processes include:

- Watershed-based salmon conservation strategies (King County, 2020),
- Shoreline easements for habitat protection and restoration programs (Kitsap County, 2016),
- Habitat Protection Plan with expedited review processes for habitat restoration projects (Kitsap County, 2006), and
- Designation of high priority aquatic habitat restoration projects as defined in the Water Resource Inventory Area (WRIA) (Snohomish County, 2016).

Using wetlands as a proxy for habitat did not reveal any significant trends during the survey period. Per the Washington State Department of Ecology's modeled wetlands inventory,[12] all counties except for Snohomish saw overall decreases in wetland area (both undisturbed and disturbed) between 2001 and 2016 (Figure 6.1); most counties also saw a decrease in potentially disturbed wetland area, implying that topography changes were resulting in net reductions in modeled wetlands inventory.

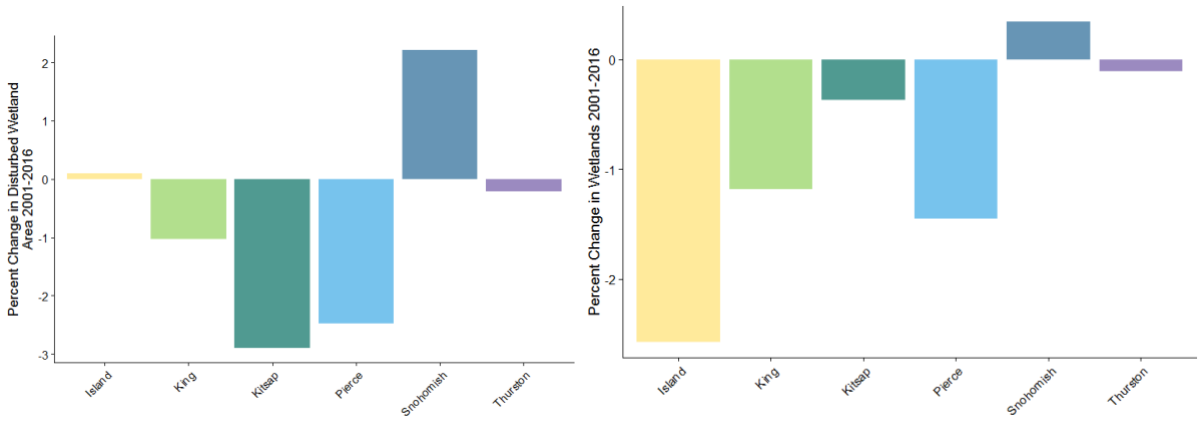


Figure 6.1: *Percentage Changes in Disturbed Wetlands (left) and Wetlands (right) 2001-2016*

On a proportional basis, Kitsap County saw less overall wetland loss than the more populated King and Pierce County; however, all three were outpaced by Island

[12] The modeled wetlands inventory is a 30m raster dataset constructed using the NLCD data. The department uses elevation among other indicators to classify areas as likely wetlands; areas that are likely wetlands but assigned to a different cover type due to reflectivity or RGB value (i.e., developed or farmed areas) are classified as "likely disturbed." Thus, there are four possible conditions that could be reflected in the data – both wetland area and disturbed wetland area could increase, indicating simultaneous restoration/regrading activity and development; wetland area could decrease while disturbed area increases, indicating both development and topography changes; wetland area could increase while disturbed area decreases, indicating net restoration; or wetland area and disturbed area could both decrease, which could possibly indicate commercial development of rural areas, model uncertainty, or a combination of wetland restoration and grade changes.

County, which lost nearly 3% of its total modeled inventory over the 15-year period. Habitat considerations therefore may be under-emphasized in CPs.

6.2.2 Forest land "*conversion*" Keyword Findings and Spatial Trends

Forests and an extensive tree canopy cover have various ecosystem and health benefits; as such, addressing the pressure that growth puts on the tree canopy and forest conversion should likely be considered during the growth planning process. Our goal with this keyword search was to investigate planning guidelines around forest conversion as addressed in CPs.

Earlier counts of keyword mentions all trend similarly across our chosen counties. Newer CPs start to highlight more discrepancies between counties, with King County standing out in 2020 with more mentions and related policies than any other county.

- Island County's only forest conversion reference mentions the number of acres that were converted from forest lands to non-forest uses under the IV Forest Practice Permits in the years 1993-1996 (Island County, 2007).
- King County leads our population on this keyword, and the 2020 CP notably outlines specific policy processes such as:
    - Mitigating the loss of carbon sequestration if forest lands are converted,
    - "No net loss" policy for shoreline ecological processes if forest lands are converted, and
    - The Forest Conversion Review Study, which attempts to measure the impact of class IV General Forest Practice Permits (King County, 2020).
- Kitsap County references forest conversions twice in 2006, in a context of considering habitat conservation impacts and water policy standards when converting forest lands (Kitsap County, 2006).
- Pierce County offers a specific plan in 2004 to identify priority areas for conversion efforts (Pierce County, 2004); however, the newer CP only references conversion in a discussion of the use of buffer strips and cluster development to limit minimize conversion (Pierce County, 2019).
- Snohomish County stays fairly consistent in mentions across the two years analyzed. Of note, both CPs mention the Conversion Option Harvest Plan, a voluntary plan indicating limits to timber harvest areas, roads and open space (Snohomish County 2005; Snohomish County 2016).
- Thurston County's reference to forest conversion limitations are primarily related to the economic value of forests in the 2004 CP (Thurston County). By 2019, the CP included language on handling forest conversion in a way that is compatible with surrounding areas, water quality, and environmentally sensitive features as well as fish habitat (Thurston County, 2019).

Actual development patterns during this period saw high variation in trends across counties (Figure 6.2). Although all counties saw decreases forest-classified

lands between 2006 and 2009 that are at least in part attributable to the 2008 financial crisis, post-crash recovery took different directions. King County quickly rebounded to its 2006-era highs, while the remaining counties did not. Kitsap County was unique in that its relative rate of non-UGA rural development was higher than within-UGA development, and it followed an increasing trend after 2009, while the remaining counties saw a decreasing trend. As a result, there is some correspondence between counties that provided specific plans (King, Pierce, Snohomish) and counties that did not (notably Kitsap) and their relative rates of rural forest conversion.

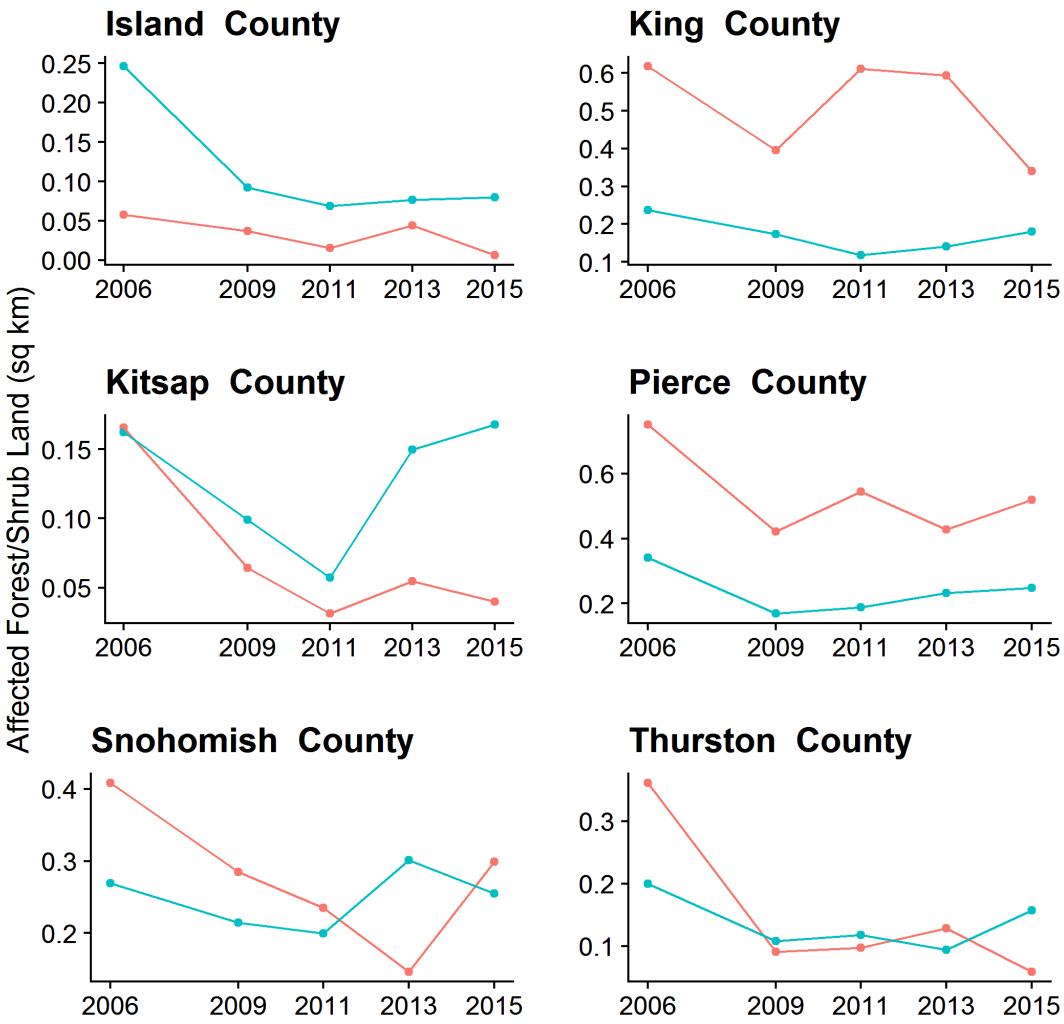


Figure 6.2: *Forest area impacted by development as identified in the HRCD dataset for urban areas (red) and rural areas (blue). The values are annualized and time points represent periods of assessed change; 2006 represents 2006-2009; 2009 represents 2009-2011, 2011 represents 2011-2013, 2013 represents 2013-2015, and 2015 represents 2015-2017. Note that that the scales differ; the purpose of this illustration is for the comparison of within-county trends.*

6.2.3 *"Impervious surface"* Keyword Findings and Spatial Trends

Impervious surfaces are a direct effect of development and therefore increase as more housing, facilities and streets are built to accommodate a growing population. However, an excessive amount of impervious can detrimentally increase stormwater runoff and decrease water quality. The goal of this keyword search was to explore how counties planned for minimizing this byproduct of development, and whether CPs recognized the negative effects of impervious surfaces and if they set specific standards to reduce such areas.

Impervious surfaces were a concern to all jurisdictions, although to varying degrees. There does not seem to be a clear, consistent trend that would indicate that this concern has increased since the mid-2000s. All six counties recognize the connection between development and increased impervious surfaces and the negative impact it has on stormwater runoff and toxins in waterways and see the importance in reducing impervious surfaces. Some counties even set specific limits on impervious surfaces in certain areas or mention policy approaches to follow through on goals.

- Island County's CP does not present specific impervious surface limits nor does it refer to policy practices to limit those areas.
- King County's 2020 CP contained a specific limit that impervious surfaces in the shoreline jurisdiction should be no more than 10%. The county also refers to Low Impact Design principles, which are a requirement for new development regulations in rural areas to include impervious surface limits (King County, 2020).
- Kitsap County mentions that the reduction of impervious surfaces should be in accordance to WWU's Stormwater Management Manual and that there is a maximum impervious surface coverage standard in limited areas of more intensive rural development (LAMIRDs) (Kitsap County, 2006; Kitsap County 2016).
- Pierce County's 2004 CP mentions open space standards that should include a ratio between impervious surface and open space and that this ratio should be based on low impact development techniques (Pierce County, 2004). By 2019, the CP mentions Low-Impact Development Standards that had been developed to manage land use to emphasize conservation while minimizing impervious surfaces (Pierce County, 2019).
- Snohomish County, across both versions of the CP, sets the following impervious surface limits: 50% in rural business zones, 60% in rural freeway designations, and 60% in rural industrial designations (Snohomish County, 2005; Snohomish County, 2016).
- Thurston County does not have a defined process, but they do indicate that minimizing impervious surfaces is a goal (Thurston County, 2004; Thurston County, 2019).

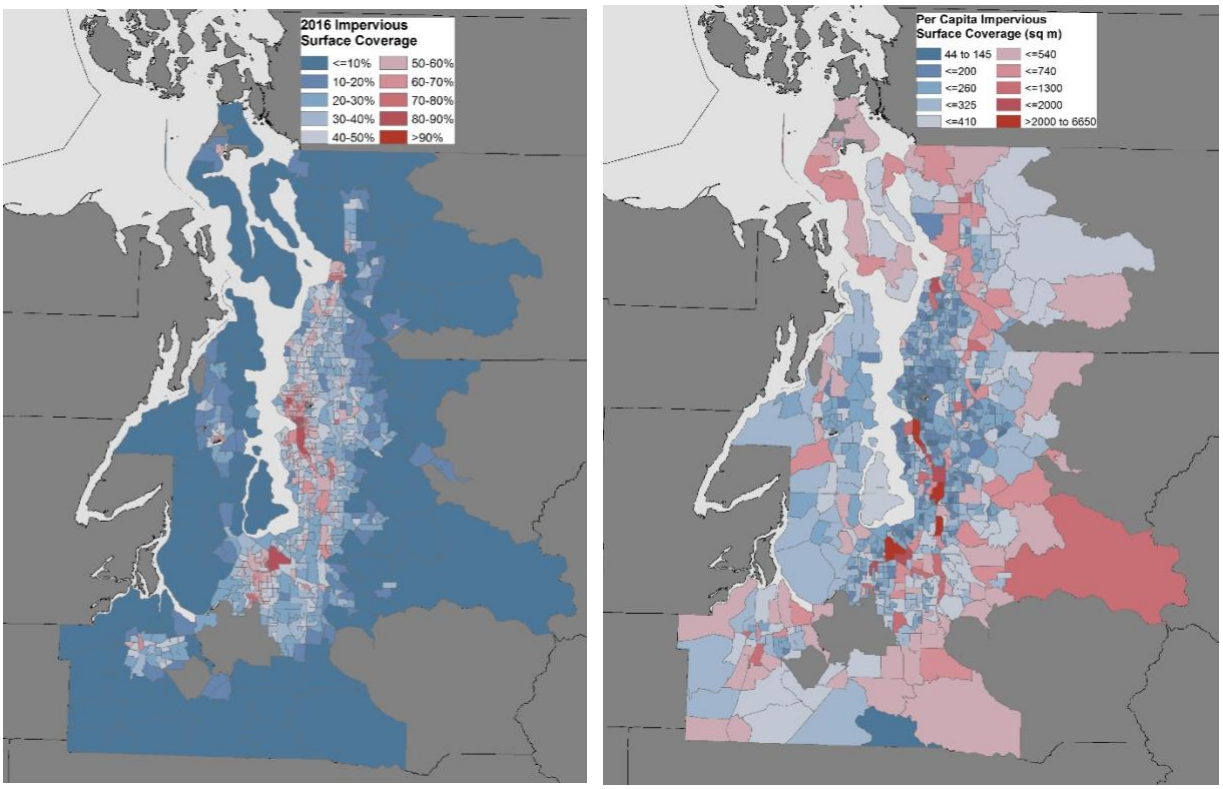


Figure 6.3: *Percent coverage (left) and per-capita impervious surface coverage (sq. m/person, right) by census tract*

Sound-wide, spatial analysis presents two different pictures (Figure 6.3) of impervious surface development: in terms of total percentage coverage, coastal King and Pierce counties tend to rank the highest. However, in terms of per-capita coverage, urbanized areas in King and Pierce counties are lowest, with some exceptions along the I-5 corridor and in the Sea-Tac airport area. Relatively less developed but also more sparsely populated rural tracts tended to be higher. Simultaneously, a comparison of all urban and rural census tracts indicates that urban tracts are more developed than rural tracts between population densities of 150 to 1800 people per square kilometer, the range of overlap between the two categories (Figure 6.4). Above densities of 1800 people per square kilometer, where the majority of the urban tracts fall, relative impervious surface coverage drops sharply and accounts for the differences between urban and rural spaces. Urban areas with relatively low population densities are primarily occupied by major infrastructure such as airports, seaports, and industrial zones.

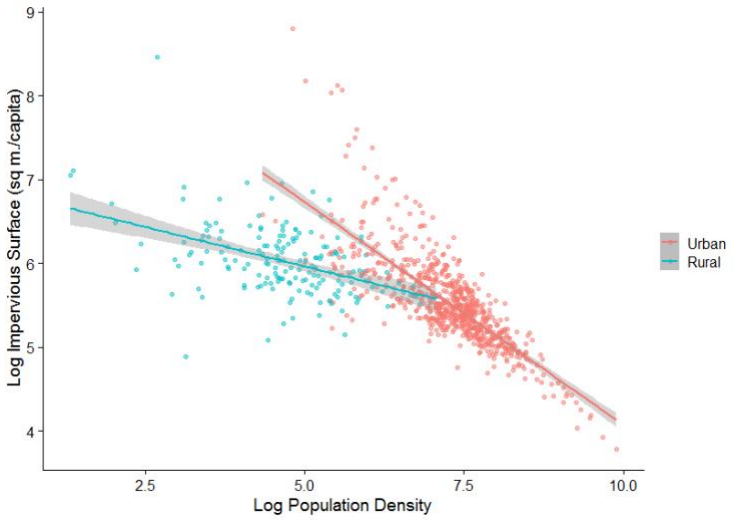


Figure 6.4: *Impervious surface coverage per capita versus population density for urban and rural census tracts, both displayed on log scales.*

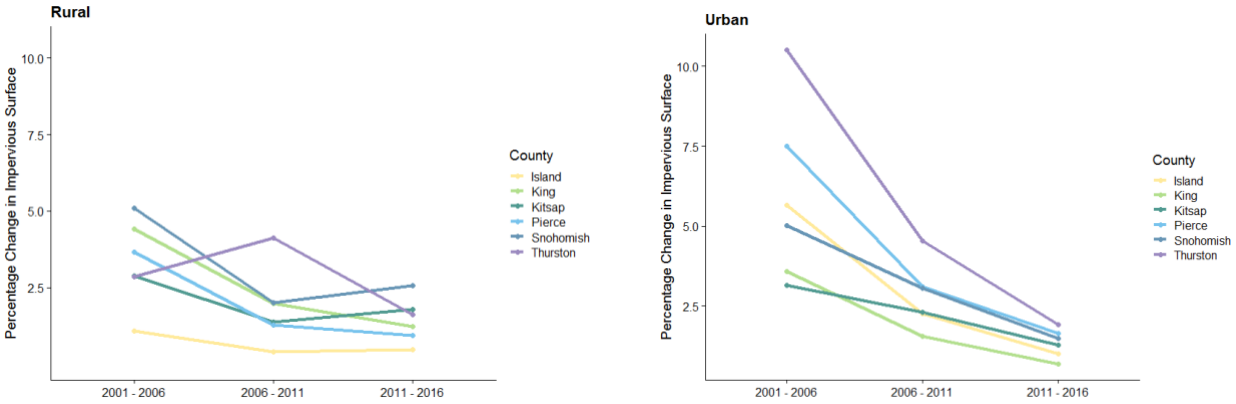


Figure 6.5*: Impervious surface coverage (percentage change in each time period, area weighted mean of census tracts in each category) for both rural and urban areas between 2001 and 2016.*

However, multi-year trends in coverage saw indications of improvement. Despite the wide variation in plans, all counties saw significant decreases in gains of urban impervious coverage, with Thurston County standing out as sharply higher than the remaining counties in terms of relative coverage added until 2011 (Figure 6.6). Most of this growth was contained in the UGAs; both King and Pierce Counties, for example, added approximately 90% of its total new impervious surface within UGAs (Table 6.2). As level of urbanization decreased, the expansion became more evenly distributed; Island and Kitsap added impervious surface in an approximately 2:1 urban-to-rural ratio. It is possible that this pattern has some relationship with the relative coverage of UGAs in each county; King County's UGA area, for example, is around 50% of the area not under state or federal control, while Island County's is less than 10%. To control for this variation, we constructed an index that is calculated by taking the ratio of proportion of impervious surface that occurs within UGAs to the proportion of UGA area out of total area. This index should be interpreted as a multiple of impervious surface coverage in UGAs over what would be expected if

impervious surface was evenly dispersed over the county area (Figure 6.7). The results indicate that counties with larger UGAs also tend to have more concentrated development than counties with smaller UGAs.

***Table 6.2**: Area of impervious surface added for each county between 2001 and 2016, in sq. km*

County	Impervious Surface Change – Urban	Impervious Surface Change-Rural	Total Change
Island	0.786	0.443	1.23
King	24.9	3.77	28.7
Kitsap	2.80	1.67	4.47
Pierce	25.7	2.90	28.6
Thurston	9.27	2.51	11.8
Snohomish	14.9	4.57	19.5

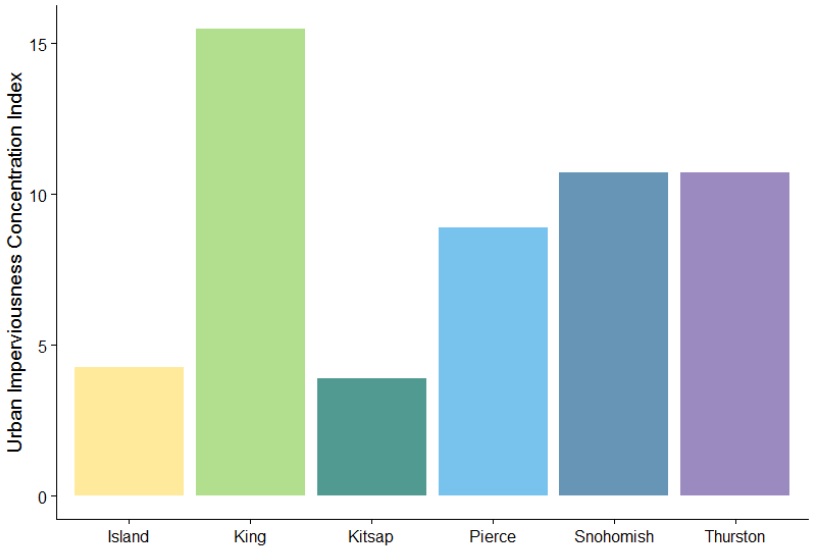


***Figure 6.6:** The "Urban Imperviousness Concentration Index," a measure of the relative quantity of impervious surface in the UGAs adjusted by the total area of UGAs in each county. An index of unity would indicate that the county's impervious surface is proportionally distributed among UGAs and rural areas; higher values indicate higher relative impervious surface density in urban areas. The more rural counties – Kitsap and Island – likely have higher relative impervious surface coverage due to the small relative size of their UGAs (e.g., Island's UGA area is approximately 10 times smaller than its rural area, while King's UGA area is only half the size of the rural area).*

At the census tract level, tracts at the periphery of the King, Pierce, and Snohomish UGAs were the fastest-developing; the top 5% of census tracts in terms of percentage increase in area include several the edge of the UGAs in King County along the I-90 corridor. In terms of largest amounts of impervious surface area added, the top 5% of tracts were concentrated in northern Pierce and southern Snohomish counties. New development was typically urban infill or expansion into the margins of the UGA (see Appendix E). These results suggest that overall, UGAs were effective at containing impervious surfaces at the cost – especially in King County – of producing highly concentrated areas inside the UGAs.

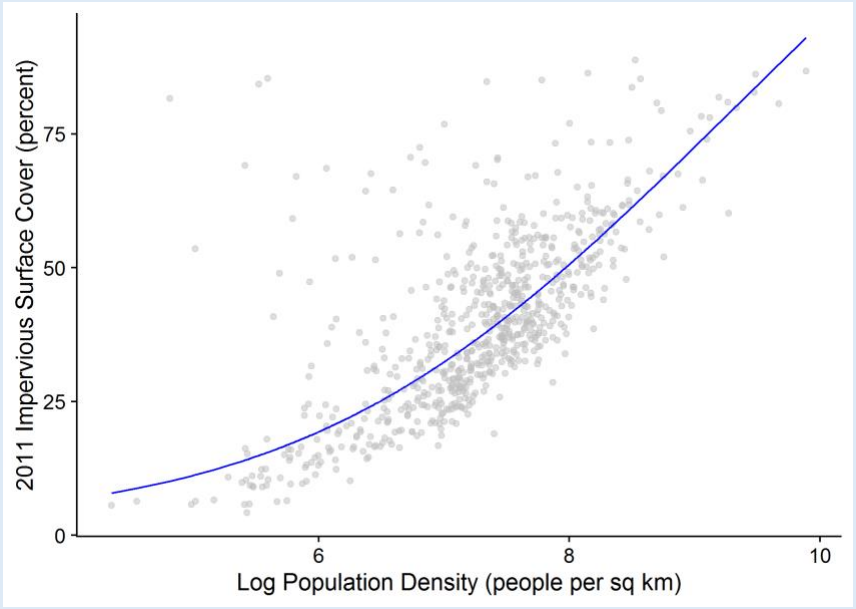
Box 1: Using Models to Set Endogenous Standards for Impervious Surface Coverage

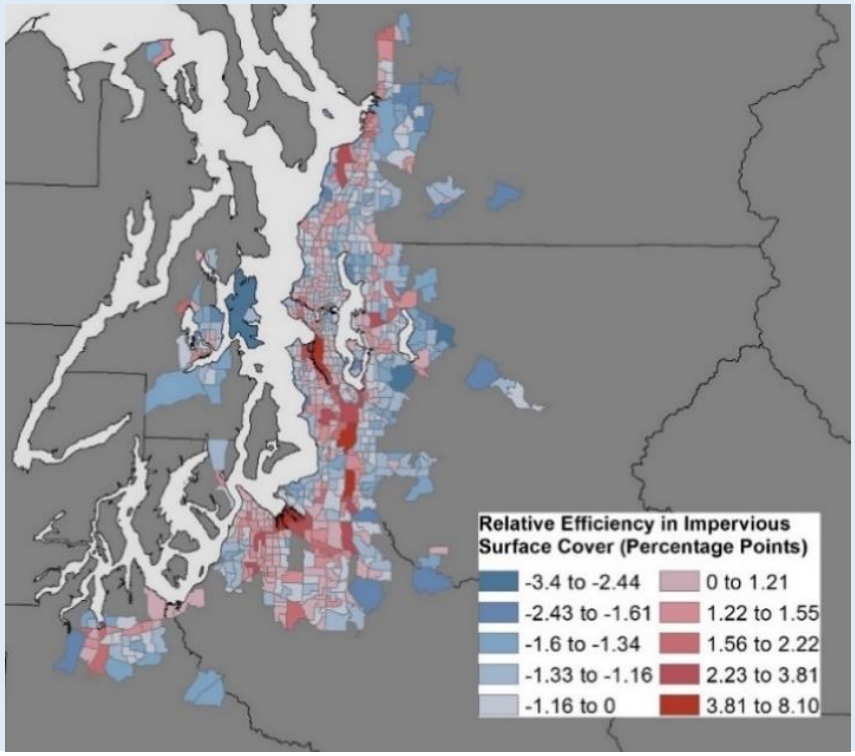
Given the diversity of applications of impervious surface and the absence of a consensus on how much coverage is too much, we used existing coverage to create an internal standard. That is, across a given population density there are areas with lower amounts of impervious surface that might represent feasible reduction targets for higher-coverage areas.

Given that moving all areas to their population minimum would be unfeasible because the low-coverage areas depend on higher-coverage neighbors for movement of goods or access to services and because future growth might by necessity obviate reductions, we instead propose that central values be used as a standard. Thus, assuming that (a) total impervious surface in the area was not optimized for its current population (otherwise reductions would simply produce offsetting development, reducing dispersion rather than the overall mean) and (b) impervious surface coverage is, on balance, higher than necessary, we fit a logistic (sigmoidal) growth curve to the log-log relationship between population density and impervious surface coverage in census tracts with in UGAs. The shape of this curve was chosen on the assumption that impervious surface development has both a quiescent stage and a saturation point. At low population densities, there is not enough economic activity to justify development, while at high densities growth becomes vertical instead of horizontal and the need for additional impervious surface slows.

The model was fit using the "nlm" function in the R package stats after estimating initial coefficients on a polynomial least-squares fit. The ceiling or "carrying capacity" of impervious surface was estimated as 100% coverage even though it is unrealistic to assume that even heavily developed areas will attain this level of coverage; the highest observed level in the sample was 88%. The reason for using a conservative asymptote was to produce lower-bound estimates for the amount of impervious surface coverage that might be classified as excess. Results of the regression are shown below right, and residuals are shown spatially below left.

The results of the regression indicate a substantial range of impervious surface coverage over areas of similar population densities, especially in areas of lower density. The total area of impervious surface coverage in excess of the trend line is about 159 sq km, or 4.6% of the total UGA area across the larger Puget Sound Area.





7 Policy Analysis Findings and Trade-Offs

In our final analysis chapter, we shift away from our retrospective analyses to a prospective analysis of two proposed GMA revisions. With this, we answered our final research question:

How will proposed revisions to the GMA affect EJ, tribal access to collaborative growth planning, and ecologically important areas?

Findings from Chapters 4 through 6 established our understanding of how the GMA is currently implemented at the county level as it relates to our three key areas of interest: EJ, tribal inclusion, and ecosystem condition indicators.

- Although EJ concepts became relatively more common in recent CPs, specific policies to address EJ disparities were only mentioned by two of our six selected counties in their CPs. However, five of our six selected counties had between 25-65% of their communities experiencing moderate-to-severe environmental health risks.
- There are no formal GMA directives for how counties should collaborate with tribes, and counties are inconsistent in their engagement.
- While ecosystem condition indicators are mentioned throughout CPs, counties provide few specific limitations for land conservation. GIS modeling indicates that over time, development has been both contained and concentrated within UGAs.

We used these findings to inform our choice of GMA alternatives to include in our narrative policy analysis. We analyzed two policy alternatives for their potential to enhance Washington's growth planning capacity: incorporating EJ definitions into the GMA planning goals and installing MOUs between county and tribal governments. We measure these policies, along with the status quo, against four criteria categories: EJ, regional and tribal collaboration potential, ecosystem condition, and consensus potential.

The following policy matrix (Table 7.1) summarizes the results from the policy analysis and presents the trade-offs of our proposed policy alternatives across our four criteria categories.

***Table 7.1**: Policy Matrix summarizing the analysis findings. Each rating represents the reviewers' assessment on a Likert-type scale ranging from -1 (significant negative impact) to +1 (significant positive impact.) The overall scores represent the simple sum of the scores in each of the policy analysis areas.*

Criteria \ Policies		Status Quo	Incorporating EJ	Installing MOUs
EJ	Access to Growth Planning	**Moderate-Low** (-0.5) The GMA does not ensure meaningful engagement with overburdened communities	**High** (1) An EJ definition and planning goal require enhanced community engagement	**Moderate- Low** (-0.5) MOUs do not significantly change how governments engage with overburdened communities
	Reduction in Health Risks	**Low** (-1) Communities are overburdened with environmental health risks	**Moderate-High** (0.5) Each county will specifically address EHD in their CPs	**Moderate-High** (0.5) Tribes are culturally invested in the reduction of environmental health risks
Regional and Tribal Collaboration Potential	Regional Governments	**Moderate-High** (0.5) GMA-mandated CPPs foster coordination on goals across jurisdictions	**Moderate-Low** (-0.5) EJ planning goals can be interpreted differently by different counties, which impedes collaboration	**Moderate-High** (0.5) MOUs between counties and tribes establish a statewide network of intergovernmental agreements
	Tribal Inclusion	**Low** (-1) Tribal governments are not included in planning under the current GMA	**Moderate-Low** (-0.5) EJ planning goals do not prescribe a specific process for tribal collaboration	**High** (1) MOUs grant co-decision-making rights on planning goals and processes to tribal governments
Ecosystem Condition	Canopy Cover	**Low** (-1) Canopy cover is in decline and will continue in the absence of policy changes	**Neutral** (0) Benefits would not likely differ between an EJ-focused policy and a general intention to increase cover in urban areas.	**Moderate-High** (0.5) Tribal action has improved natural areas; however, many land use decisions are made at the state and federal levels
	Impervious Surfaces	**High/Low** (0) Trends indicate that impervious surface growth is slowing, but few counties are addressing coverage	**High/High** (1) High-concern areas have more impervious surfaces and will improve with increased focus	**Neutral / Neutral** (0) Tribal participation in planning is not likely to influence impervious surface coverage
Consensus Potential		**Moderate-Low** (-0.5) There is an agreement among stakeholders that the current version of the GMA is does not meet the needs of its communities	**Moderate-Low** (-0.5) An EJ goal and definition are supported by many stakeholders but the EJ definition is a concern for WSAC	**Moderate-High** (0.5) Stakeholders, including counties are in general supportive of improving flexible professional collaboration processes with tribes
Total Rating		**-3.5**	**1**	**2.5**

7.1 Policy Discussions by Criteria

Impact Ranking System	
Low/Negative =	-1
Moderate Low =	-0.5
Neutral =	0
Moderate High =	0.5
High/Positive =	1

To compare alternatives, we have converted our ranking metrics into an impact ranking system, explained in 3.5.2 and outlined above. As we explore each policy through different criteria lenses, the total score will be displayed at the top of the discussion of the respective policy alternative. Likewise, the individual score for each criterion category will be displayed at the top of the corresponding section.

7.1.1 Status Quo

ENVIRONMENTAL JUSTICE

Access to Growth Planning

The GMA Planning Goal 11 (RCW 36.70A.020) states:

> Citizen participation and coordination. Encourage the involvement of citizens in the planning process and ensure coordination between communities and jurisdictions to reconcile conflicts.

This goal, while encouraging involvement and coordination, limits the stakeholder population to citizens and stops short of decision-making influence in the community. Both details impact achieving environmental equity because, for example, immigrant communities are more susceptible to environmental health risks than white communities and often are left out of public outreach initiatives due to language barriers (OneAmerica; EJTF report, 2020) and the social exclusion as noncitizens. Our working definition of EJ requires "meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies," which would necessitate additional language in the GMA to achieve an equitable co-governance model. The EPA states that

> [EJ] will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work (EPA, 2009).

While no language in the GMA guarantees that overburdened communities have access to growth planning, we saw in our retrospective analysis that two counties (King and Thurston) include EJ concepts in their latest CPs. Additionally, the 2020 EJTF report provided detailed community engagement recommendations on how to involve overburdened communities in local decision making (EJTF, 2020). Although there are movements to incorporate EJ community engagement principles statewide, the current version of the GMA does not explicitly encourage access to growth planning for all communities. Thus, we rate the status quo as **"moderate-low"** for this criterion.

Reduction in Health Risks

We found in our retrospective analysis that there are communities moderately or severely overburdened by environmental health risks in our selected counties, aside from Island County. An unhealthy physical environment has the potential to be more detrimental to a person's health than actual health behaviors or clinical care (Swain, 2016). As stated earlier in our report, recently, the state and localities have developed programs that increasingly focus on reducing environmental health risks. However, there is no mandate and thus no guarantee that counties will adopt these programs into their growth planning processes. As such, we are rating the status quo as **"low"** in its capacity to reduce health risks through the current growth planning framework.

REGIONAL AND TRIBAL COLLABORATION POTENTIAL 

Regional Governments

In the 2019 Ruckelshaus report, participants indicated that successful coordination between cities and counties on CPPs has bolstered increased collaboration between different jurisdictions (Murphy et al., 2019b). Under the GMA, counties adopt CPPs to coordinate planning within the county and with neighboring cities and counties that share common issues (RCW 36.70A.210). This formal process promotes specific processes to systemize collaboration across a diverse set of government entities. Participants agreed that the multi-county planning process helps address issues of regional concern, while clarifying distinct roles of counties and cities (Murphy et al., 2019b). Likewise, our content analysis in Chapter 5 demonstrated that counties are currently considering collaborative efforts as they write their CPs. There were mentions of countywide planning councils, regional collaboration with state agencies, and other cooperative planning agendas.

However, the current collaboration structure does not necessarily grant co-decision-making authority to counties being consulted in another county's CP or CPP. Many participants in the Ruckelshaus study said the current framework lacks consistency for issues that transcend jurisdictional boundaries, since planning approaches are delegated to planning counties and decisions can miss the connection between urban and rural issues (Murphy et al., 2019b). Therefore, because the status quo has

collaborative goals and basic processes between Washington regional governments, we rate this alternative as **"moderate-high"** for cross-jurisdictional collaboration potential.

Tribal Inclusion

The GMA does not require intentional tribal involvement, despite their historical and cultural presence in the Puget Sound area. The GMA directs counties to engage with government entities (which can span from federal government agencies to tribes) from a public participatory lens, but further collaboration is not codified in the GMA. The lack of cross-jurisdictional collaboration between Washington and tribes exacerbates differences in respective regional goals and is likely to result in regional conflicts between counties and their tribal neighbors. These conflicts are most salient in the example of potential local government policies being applied to lands or ecosystems in such a manner that would infringe upon historical tribal treaty rights (Zaferatos, 2020).

Our content analysis of tribal collaboration processes in counties' CPs indicated that while the GMA does not prescribe intergovernmental coordination on planning processes, counties have chosen to initiate shared procedures anyway. Since this activity is not codified in the original GMA language, there is cause for concern that counties may not always include tribes in their future decision-making processes. Because there are neither goals nor processes to foster collaboration between tribal governments and counties in the text of the GMA, we rate this alternative as **"low"** for cross-jurisdictional collaboration potential.

ECOSYSTEM INDICATORS 

Canopy Cover

Between 2011 and 2016, canopy cover declined in the Puget Sound area except for slight increases in the Island County UGAs (Figure 7.1, 7.2). Rural areas lost coverage more rapidly, although these declines would include permitted logging activities that happened during this period. In urban areas, most residents (>90%) live in areas with inadequate canopy cover according to the standards set by American Forests. Particularly in high-density King County, several census tracts had very low (<10%) levels of cover (Figure 7.2).

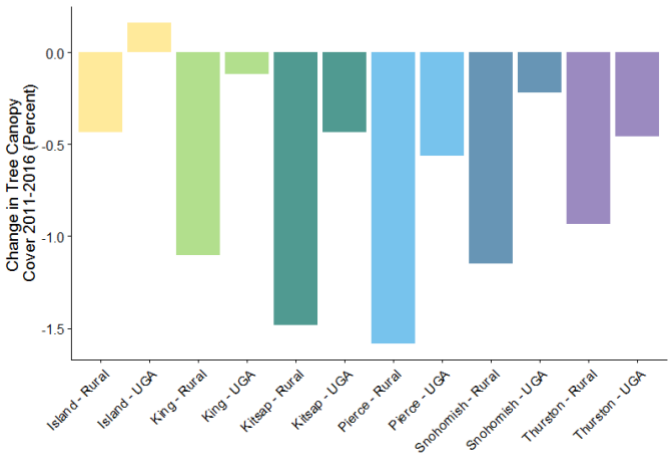


Figure 7.1: *Change in canopy cover between 2011 and 2016, per the NLCD data*

Both urban and rural canopy cover loss rates are declining and are considered acceptable under PSP's vital signs (although see also the HRCD results in Chapter 4; conversion is still occurring even if rates are declining). Most CPs, while recognizing this challenge, do not articulate plans to recover the significant losses that have already occurred within the UGAs. Without new policy action, it is likely that continued developmental intensification in high-density urban areas as well as expansion along the margins of the UGAs will result in continued small declines in canopy cover and many urban areas remaining well below the suggested cover targets. For these reasons, we rate the status quo as **"low"** on canopy cover.

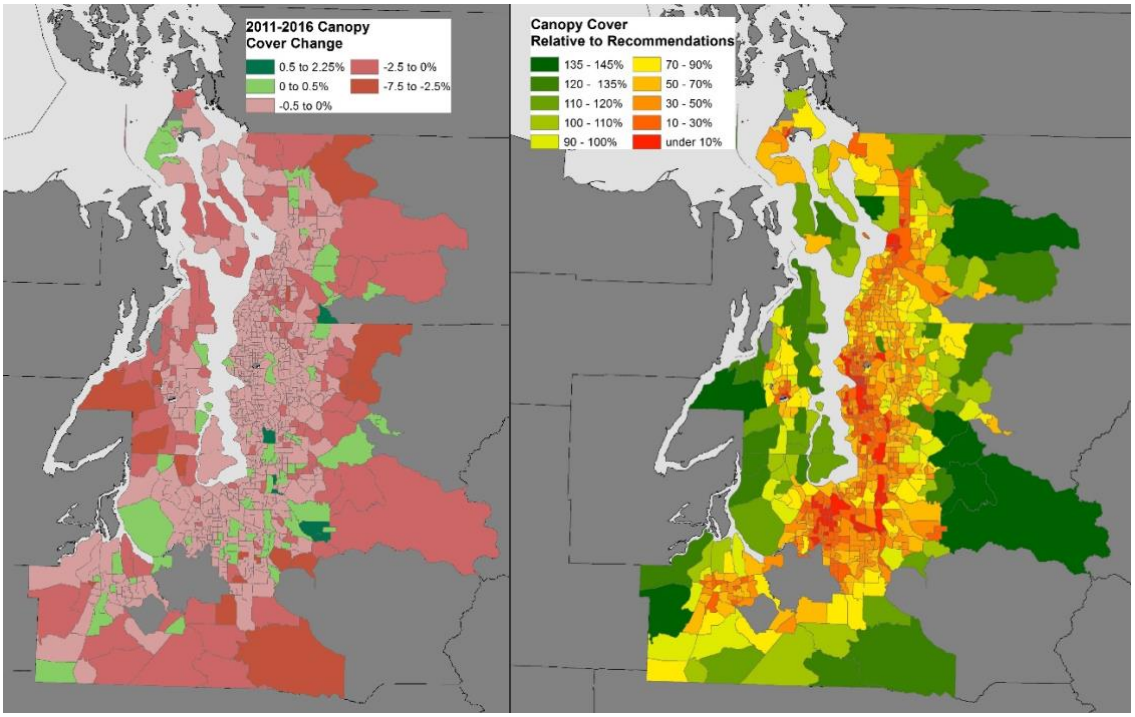


Figure 7.2*: Census tracts color coded by their relative change in canopy cover (left) and distance from the adjusted targets as defined by the American Forests association (right), ranging from 20% in high density areas to 48% in low-density areas. Darker areas of orange indicate less canopy cover relative to the target; gray areas indicate census tracts that were excluded from the analysis because they contained over 50% coverage from state and/or federally owned land.*

Impervious Surface

Growth trends in impervious surface have declined recently but overall levels remain high, particularly in the coastal areas of King and Pierce Counties and along the I-5 corridor (see section 6.2.3). Recent trends in impervious surface show that significant increases are still occurring, even if the relative growth rate is slowing and development remains relatively contained to urban areas. Continued development of multifamily housing in the Seattle-Tacoma metropolitan corridor will likely spur further increases in population density, reducing impervious surface per-capita but doing nothing to address the concentrating tendency of development in these areas. To adequately address impervious surface development, CPs will need to expand beyond the limited set of standards that apply mostly to rural areas. Thus, there is no

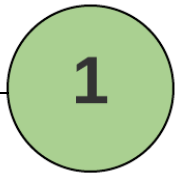
reason to believe these trends will change due to current policies. For these reasons, we rate the status quo as **"high"** on trends in impervious surface per capita but **"low"** in terms of overall impervious surface added.

CONSENSUS POTENTIAL 

There is broad agreement among stakeholders that the GMA is inadequate to meet current crises of environmental degradation and societal inequities, among others (Tovar et al., 2021, p. 22). There is also a consensus that these crises will increase in severity over time; thus, a discussion around change is urgently needed (Ibid.). The Washington State Legislature has expressed its support for amendments and has shown a willingness to overhaul the GMA. This commitment has been demonstrated through the allocation of funding for the Ruckelshaus Center report (Murphy et al., 2019) and the UW Livable Communities report (Tovar et al., 2021) that aimed to identify issue areas and suggest broad changes to the GMA. The Washington State Department of Commerce, as the state agency responsible for the implementation of the GMA, was a close partner in the creation of both reports (Ibid, p. 8). Several members of the Washington State Legislature also directly spoke out about the need for GMA reforms, the inadequacy of the current framework, and their intentions to address reforms in the 2021 legislative session (Dubicki, 2020). Moreover, as the Ruckelshaus Center identified during workshops for elected county officials, county legislators also see the need for reforming growth planning (Murphy et al., 2019c).

While there is a general across-the-board dissatisfaction of how the GMA operates today, there is significant disagreement on specific far-reaching GMA reforms (Tovar et al. 2021, p. 94). The lack of political will to work across such differences exacerbate the slow movement on the issue (Zaferatos, 2020, p. 168). Thus, even if the consensus on the GMA remaining unchanged is low, there has been a tendency for it to persist unchanged due to the lack of alternative options with broad consensus. For this reason, we rate the status quo option as **"moderate-low"** on the consensus potential criterion.

7.1.2 Incorporating Environmental Justice in the Growth Management Act



ENVIRONMENTAL JUSTICE 

Access to Growth Planning

One of the key components of this modification would be to codify EJ in the GMA with an emphasis on "meaningful involvement" of all people "with respect to the development, implementation, and enforcement of environmental laws, regulations

and policies", and to prioritize "highly impacted populations". There is work being done throughout the state to incorporate EJ principles into state and local practices (EJTF, 2020; PSRC, 2020B; City of Tacoma Office of Equity and Human Rights, 2020); for example, the EJTF report prescribed community engagement guidelines for state agencies to follow in order to incorporate EJ into their regular practices, specifying that this meaningful involvement must include culturally appropriate outreach to overburdened communities (2020, p. 91).

We found in our retrospective analysis that King and Thurston County, as the only counties which had EJ principles in their CP planning goals, had specific EJ related policies in place to incorporate community engagement in growth planning processes. With the addition of an EJ planning goal to the GMA, other counties will need to follow suit and incorporate new EJ processes in their next periodic CP update. As the EJTF guidelines are implemented across the state, counties will have reference points to incorporate community engagement guidelines directly into their CPs. For these reasons, we rate this alternative **"high"** for this criterion.

Reduction in Health Risks

A central component of the proposed EJ planning goal and definition is to "address disproportionate environmental and health impacts" and "eliminate environmental and health disparities." Our retrospective analysis showed that again, King and Thurston Counties were the only analyzed counties to include specific policies to address health disparities within their growth planning efforts. With the new planning goal (the universal definition of an EJ goal), counties will be responsible for outlining specific methods to address existing health disparities.

EHD occur through accumulation of hazards and demographic factors and are best addressed at regional levels (Sadd et al., 2017, p. 2011). Locally, we see examples of city developing tools to measure health disparities that encompass those caused by environmental hazards (City of Tacoma Office of Equity and Human Rights, 2020). As growth management planning is done at a local level in Washington, counties are more likely to reduce environmental health risks if they are all provided a universal framework to start from. For these reasons, we rate this alternative **"moderate-high"** for its potential to reduce health risks.

REGIONAL AND TRIBAL COLLABORATION POTENTIAL 

Regional Governments

Amending the GMA to include a formal definition of EJ would provide counties with a universal understanding of what is required in EJ planning policies and would thus guide the development of planning regulations within a county. However, this proposed amendment does not ensure partnership across jurisdictions to plan equitably for marginalized or overburdened populations. The language changes

described in Chapter 3 only call for "an intersectional lens to address disproportionate environmental and health impacts by prioritizing highly impacted populations, equitably distributing resources and benefits, and eliminating harm," (Tovar, et al., 2021).

Some participants in the Ruckelshaus study suggested that EJ concepts should be incorporated at the state, regional, and local levels (Murphy et al., 2019b). As presented now, this amendment, while providing a common definition, would not outline specific EJ policies or practices to be included in CPs or CPPs, which may lead to varying interpretations by different counties. This framework ignores the larger intersectional planning network in the Puget Sound and offers yet another "one size fits all" approach to planning. Since this reform has planning goals, but not planning policies, we rate this alternative as **"moderate-low"** for cross-jurisdictional collaboration potential.

Tribal Inclusion

Including the formal definition of EJ and an EJ-related planning goal in the GMA not only ignores collaboration efforts between Washington counties, but also between counties and tribal governments. The proposed amendments do mention general non-discriminatory clauses that can be applied to tribes and necessitate "the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies," (Tovar, et al., 2021). However, this language does not prescribe a specific process for tribal collaboration or inclusion. Because there are implicit goals for tribal inclusion but no actionable processes, we rate this alternative as **"moderate-low"** for cross-jurisdictional collaboration.

ECOSYSTEM INDICATORS

Canopy Cover

An EJ framework would require planning agencies to create and execute a plan to remedy imbalances in greenspace. Using the American Forests standards, area that is insufficiently covered is about 186 square kilometers in census tracts rated "9" or "10" on the EHD map, about 25% of the total. Thus, change in policy related to vegetation or canopy coverage on high-disparity tracts may not have a substantial impact compared to one focused on restoring canopy cover more generally. Nonetheless, it should be noted that canopy cover is declining faster in higher EHD percentiles; using a linear model, a unit increase in the EHD map disparities rank was associated with a 0.52-point higher rate of canopy loss between 2001 and 2016. Empowering overburdened communities to have greater control over planning and environmental management may at least reduce this trend. We rate this policy as **"neutral"** on canopy cover.

Impervious Surface

Impervious surface cover and growth is highly concentrated in high-disparity areas. A unit increase in the EHD map disparities rank was associated with a 0.14-point higher rate of impervious surface growth for the census tract between 2001 and 2016 and a 3.68-point increase in impervious surface coverage in 2016. In all, about 87 square kilometers of the estimated 159 square kilometers of "excess" impervious surface is in health disparity index categories 9 and 10, which means that the top 20% of areas account for 54% of potentially convertible impervious surface (see Figure 7.3 for a comparison of the two groups). Most of these areas also fall above the median in terms of population density, indicating that this convertible surface lies in areas that are already highly populated. Thus, focusing planning efforts on mitigating negative development impacts on these areas will have an outsized impact on both total impervious surface area and per-capita impervious surface coverage. Consequently, we rate improving the EJ framework as having a **"high"** impact on both aspects.

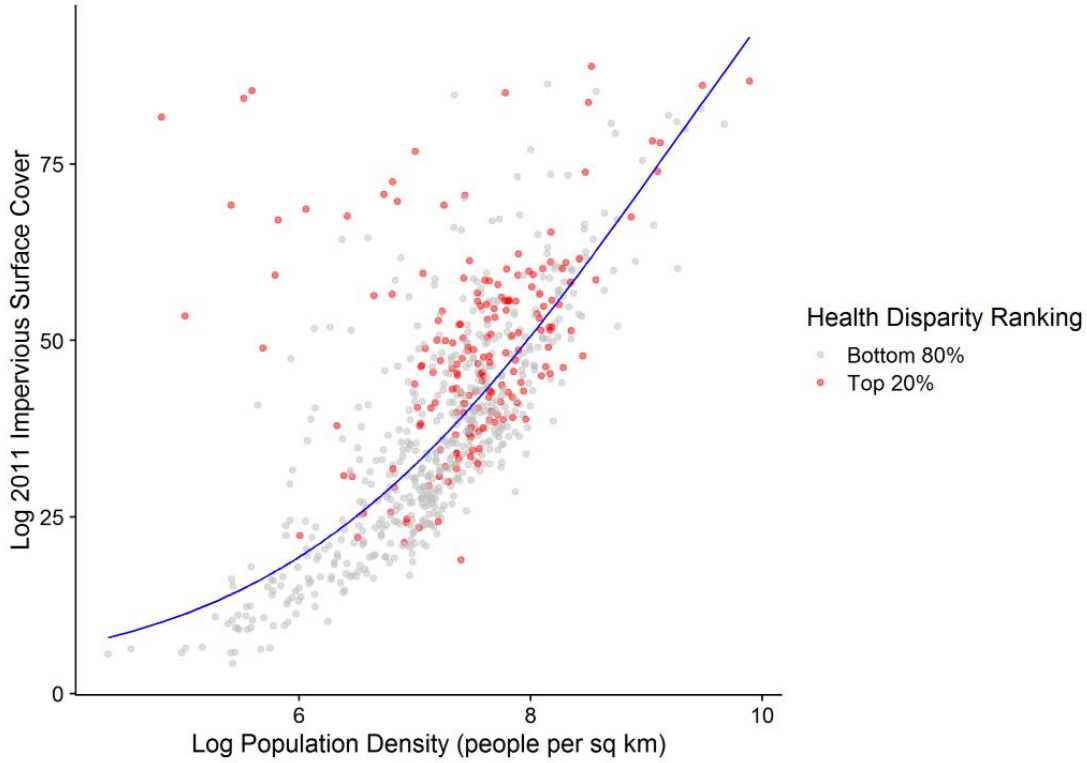


***Figure 7.3**: Regression results with color coding to show the areas of high environmental health disparity concern.*

CONSENSUS POTENTIAL -0.5

Both the inclusion of an EJ goal and definition into the GMA were well-received among stakeholders surveyed by the UW report (Tovar, et al., 2021, p. 94). The proposed provisions received an average of 1.21 and 1.00 scores on the -3 to 3 Likert scale, respectively (Ibid, p. 99). The Washington State Department of Ecology

commented on the EJ goal, stating that it "does not carry through" the proposed reform of the GMA (Ibid, p. 143). The Association of Washington Cities commented that more information on how to fairly work towards EJ is needed (Ibid, p. 143). Both comments hint at a willingness to set more guidelines to work towards EJ in Washington. The Washington State Department of Ecology also states that the definition of EJ aligns with its strategic plan and the EJTF Recommendations (Ibid, p. 145).

However, the Washington State Association of Counties (WSAC) has concerns with the definition of EJ that includes the prescription to "eliminate harm," which WSAC believes might be too high of a standard to meet and interfere with other GMA goals (Ibid, p. 144). Counties, represented by WSAC, are the main implementing actors of the GMA and receive extra weight in determining the consensus potential. Therefore, incorporating EJ into the GMA, as defined in Chapter 3, receives a **"moderate-low"** score on the consensus potential criterion.

7.1.3 Installing an Intergovernmental Agreement via Memoranda of Understandings

GENERAL CONSIDERATIONS

MOUs between tribal governments and counties would be an adaptive planning tool that rebalance regional interests between governments. The MOU agreement process ensures early tribal participation in decision making and that decisions affecting tribal treaty rights are made under free, prior, and informed consent, which was stated as a priority by tribal participants in the Ruckelshaus study (Murphy et al., 2019b). Appendix B shows a template for an MOU between a tribe and a county.

ENVIRONMENTAL JUSTICE

Access to Growth Planning

For the purposes of our analysis, we assess specific impacts on tribal communities within our cross-jurisdictional collaboration criteria. As such, we reviewed this criterion in how the installation of MOUs specifically impacts overburdened communities other than tribal communities.

The joint planning processes outlined by the Urban Transitions Planning Studio (2020) recommended MOU template are generally restricted to planning between tribal and county government representatives through an Advisory Planning Board. Zaferatos recommends that the Advisory Board itself should consist of an equal number of members between each of the two governments (Ibid, p. 182). The only

comment mentioning public engagement within the MOU template is the ability of the Advisory Board to "present recommendations to the County and Tribal Planning Commissions for public review and adoption by their respective governing bodies" (Ibid). Not only is this the sole mention of public engagement within the MOU template, but it is also limited to a public review of the Board's recommendations. Public reviews do not constitute a decision-making role, much less roles for overburdened communities.

This alternative does not significantly change how much access overburdened communities have to local county growth planning but does include opportunity for public review. For this reason, we rate this alternative as **"moderate-low"** for access to growth planning, consistent with the status quo.

Reduction in Health Risks

Tribal EJ principles are generally more comprehensive to reflect the cultural significance that tribes place on the natural world (Harper & Harris, 2012; Hernandez, 2017). Since Washington counties are not required to incorporate tribal values in the growth planning processes, tribal partners often experience severe impacts. For example, fish are culturally significant and a main source of food for many tribes, yet many fish habitats are contaminated due to overdevelopment outside of tribal regulation (Ibid).

While not mandated by the GMA, several county and local governments have tribal-local agreements specific to certain district areas, many of which are related to environmental and public health (Zaferatos, 2020, pp. 75-86). It is reasonable to assume that, with more decision-making power within growth management planning, tribal governments have more potential to withstand development decisions that are detrimental to local ecosystems. With more tribal values incorporated into growth planning, local ecosystems would be positively impacted, and overall environmental health risks could decrease for the entire local community. For these reasons, we rate this alternative as **"moderate-high"** in probable reduction of health risks.

REGIONAL AND TRIBAL COLLABORATION POTENTIAL 

Regional Governments

The MOU agreements envisioned in this alternative would be between tribal governments and counties planning under the GMA; as such, this alternative could only indirectly affect collaboration between regional governments. However, cultivating a more intentional planning environment with neighboring partners is likely to have an influence on the culture surrounding county planning processes and will thus impact how counties partner with other neighboring jurisdictions. The Ruckelshaus report highlighted that participants widely agreed that a "one size fits all" approach to planning was insufficient, given different circumstances, assets,

challenges, opportunities, and priorities in different regions (Murphy et al., 2019b). Rethinking planning processes and providing an outlet for more flexibility between jurisdictions is likely to result in aligned goals and processes across local governments planning for a common region. Therefore, we rate this alternative as **"moderate high"** for cross-jurisdictional collaboration potential.

Tribal Inclusion

Planning agreements that are based on regional cooperation with tribal governments can serve as a pathway for promoting inclusive planning across the Puget Sound region. Zaferatos (2020) concludes that research on this relationship makes clear that

> The resolution of historic conflicts in tribal and local government relations begins with a meaningful dialog intended to reconcile the differences between tribal and nontribal interests. The experiences between tribes and Washington State under the Centennial Accord illustrate the process for fostering cooperative relations to address long-standing disputes in the management of natural resources. (p. 17)

Counties in Washington are already engaging in informal inclusionary practices with neighboring tribes: 75% of all Washington counties surveyed in the 2020 WWU study identified some form of intergovernmental planning with tribes on or off reservations, but these were predominately informal agreements (Zaferatos, 2020). We discovered several of these arrangements for our chosen counties in our Chapter 5 content analysis of tribal inclusion. Washington lags behind other states on formal cooperative planning arrangements, and 72.7% of tribal governments surveyed in the WWU study reflect that no MOUs or other formal agreements exist between the state of Washington and federally recognized tribes (Zaferatos, 2020). Because this reform gives co-decision-making power to tribal governments, we rate this alternative as **"high"** for cross-jurisdictional collaboration potential.

ECOSYSTEM INDICATORS 

Canopy Cover

Zaferatos et al. (2020) identified through surveys of court cases that the first and second most common subjects involving litigation filed by tribes related to land use planning are natural resource use and environmental issues. With respect to forest cover, the disputes have largely been between tribes and the Bureau of Indian Affairs and state land management entities (Zaferatos, 2020), an indication that the GMA and county-level planning have not been substantially responsible for declines in canopy cover occurring outside of UGAs (see also Appendix E). Meanwhile, within-UGA decreases in canopy cover have been comparatively lower and generally the result of new residential development. It is uncertain whether greater tribal participation in planning could result in changes to this trajectory.

Co-management or tribe-led land restoration projects can be outlined in an MOU agreement. For example, the Nooksack restoration project, which is being spearheaded by the Lummi Nation, established a first-of-its-kind tribally owned wetland mitigation bank, which issues credits to offset other developmental impacts to wetlands in the area. As of late 2019, the bank covered 1,965 acres on three sites (Lummi Nation, 2019). Compared to VSPs and other restoration projects reviewed in Chapter 2, this project represents a substantial contribution to environmental restoration and indicates that greater tribal government participation may lead to further enhancements.

Overall, this modification is rated **"moderate-high"** for canopy cover because of the potential for increased VSP participation and tribal inclusion in protecting and enhancing additional riparian buffer areas, with the caveat that substantive action on some lands will require direct involvement of state and federal land management entities.

Impervious Surface

Impervious surface is more under the direct control of municipalities and counties and is a critical issue for protecting and maintaining salmonid habitat. However, current MOU strategies and state-level agreements like the Millennium Accord reinforce the notion that treaty issues are mainly related to hunting and fishing rights in natural areas, and the city is often elided by these agreements with the implicit assumption that it is a non-tribal space (see Nejad et al., 2020). Consequently, it is unclear whether MOUs will be able to directly address tribal concerns in areas where impervious surfaces are the most concentrated.

While impervious surface is a general concern for city-relevant environmental stressors like wastewater discharge, soil stability, and groundwater recharge, tribes also have a particular interest in maintaining shellfish beds that are impacted by runoff. It is true that shellfish can be collected by anyone, but, given the cultural ties of many tribes in the area to shellfish harvesting and the guarantees in treaty, it is reasonable to conclude that native peoples are more significantly affected by water pollution on this dimension. Thus, while impervious surfaces and their management should be something addressed by MOUs, there is no extant policy structure mandating, or – more importantly – facilitating their inclusion. Therefore, we rate this modification as **"neutral"** on impervious surfaces with respect to both per-capita coverage and total coverage, but it is still possible that MOUs could be a major vector for improvement if tribes and counties directly target impervious surface in their agreements. In this case, we anticipate the local improvement in per-capita coverage in rural areas, and some net reduction in total coverage.

CONSENSUS POTENTIAL 

Installing formal but flexible collaboration agreements between tribes and counties is generally received well by stakeholders. There is broad recognition that tribes have not sufficiently been recognized in the GMA as planning partners and many stakeholders agree that growth management would benefit from more formal intergovernmental collaboration procedures (Zaferatos, 2020, p. 168). According to responses from two surveys of county and tribal planning offices in Washington, both counties and tribes showed support for a cooperative intergovernmental planning procedure such as MOUs (Ibid, p. 203). One prohibitive factor is the lack of staff capacity to construct such an agreement, not the lack of willingness to enter into collaboration (Ibid, p. 44). Potential supportive stakeholders that could mitigate this burden via their networks that the WWU report referenced were the Washington State Departments of both Ecology and Commerce, PSP, and the Office of Indian Affairs (Ibid, p. 168).

All suggested provisions in the UW report related to improving collaboration between tribal governments and counties received a positive score on the Likert scale (Tovar et al., 2021). These scores give direct insight on stakeholder support for tribal collaboration procedures. With a Likert score of 1.50 (on a scale from -3 to 3), the addition of a collaboration and coordination goal to the GMA that includes tribal governments is the most broadly supported tribal provision. This goal also has no commentary objections from any participating stakeholder group, indicating consensus (Ibid, p. 99). Other provisions for tribal collaboration in the UW report received slightly lower, but still positive, scores between 0.14 and 0.93 (likely because they would mandate more specific, restrictive processes).

MOUs are a flexible tool that can be adapted depending on the specific collaboration needs between different counties and tribes and they have a higher likelihood of establishing a consensual process than state-prescribed collaboration procedures, because counties are more likely to support the former (Zaferatos, 2020, p. 44 and p. 203). Therefore, this policy option receives a score of **"moderate-high"** on the consensus potential criterion.

7.2 Policy Alternatives Ranking

While our two chosen alternatives have their own respective strengths and weaknesses (as presented in our matrix and in our analysis), they are both improvements over the status quo (Figure 7.4). The current growth management framework received low marks for nearly all our chosen criteria. If we convert the status quo to our ranking system, it receives a score of **-3.5**.

Our first alternative, including EJ definitions and planning goals in the GMA, scored highly for EJ factors and impervious surfaces, but lower than our second alternative for most other criteria. This policy modification is highly specific, and it is thus more challenging to apply to criteria such as collaboration and coordination potential. If we convert the EJ policy modification to our ranking system, it receives a score of **1.**

Our second alternative, installing an MOU requirement in the GMA, scored highly for collaboration and consensus potential, as well as for addressing canopy cover concerns and health risks. There is apprehension about how deliberative community engagement might evolve, but otherwise this alternative policy scores well across our chosen criteria. If we convert the MOU policy modification to our ranking system, it receives a score of **2.5** and is our highest ranked alternative.

The differences between the policy alternatives are not as substantial as the differences between the alternatives and the status quo; therefore, it is clear that GMA modifications are prudent. It is also important to note that our two alternatives are not mutually exclusive and can be simultaneously implemented for a more robust GMA modification.

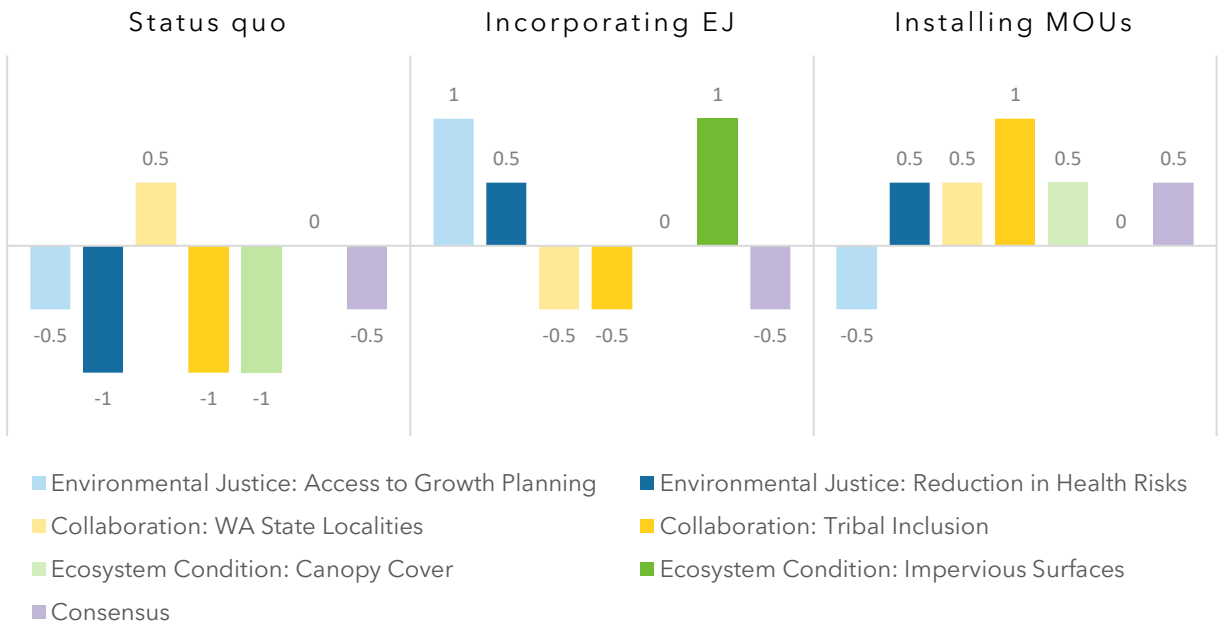


Figure 7.4: *Policy Alternatives by Criteria Ranking*

8 Recommendations

8.1 Summary of Findings

As our literature review and analyses have shown, there is potential to extend the integration of EJ concepts and more formal tribal participation considerations into Washington's growth management framework.

The EJ spatial analysis identified that health disparities are a current challenge in our analyzed counties (except Island County). King and Pierce Counties experience the highest EJ concerns. In contrast, only King and Thurston Counties include specific policies to combat EJ concerns that result from development in their CPs.

The tribal collaboration analysis identified that counties generally appear to be receptive to collaborating with tribes and recognize them as valid partners. However, formal agreements on decision-making processes or other forms of concrete collaboration efforts are rarer and vary vastly across counties.

In general, counties recognize the need to organize development growth and land cover in a way that minimize the effect on sensitive natural areas. All six counties acknowledge the importance of protecting forests and limiting increases in impervious surface. Despite limited, disparate references to specific policies that would address these goals, current spatial trends show that counties have been mostly successful at limiting the rate of impervious surface expansions. Forests and wetlands affected by development have seen less favorable trends, although those findings varied greatly across counties.

There is a general consensus that the GMA needs a comprehensive overhaul. However, a lack of consensus on how such significant reforms should look has resulted in the perpetuation of the status quo or piecemeal changes (Murphy et al., 2019; Tovar et al., 2021). The attempt by Tovar et al. (2021) to reach broad consensus for comprehensive GMA changes through substantial stakeholder engagement was unsuccessful; however, certain proposed changes or additions to specific provisions garnered significant support. This leads us to conclude that a piecemeal approach might be more realistically achieved in the current stakeholder environment. Both of our analyzed policy alternatives follow this sentiment. The potential for a successful adoption of piecemeal approaches to GMA updates is also highlighted by two bills in the 2021 legislative session. These bills would introduce salmon recovery (HB 1117) and climate change (HB 1099) goals and policies to the GMA. Each of these legislative proposals address one specific current concern that has been missing from growth management considerations.

Based on our findings and with the consensus-building potential of a piece-by-piece approach in mind, we present our recommendations below. The recommendations are organized by topic area, consistent with the rest of the report, followed by one final general recommendation which we believe to be essential during the implementation and consensus-building process of GMA reforms. While we suggest that PSP implement all recommendations, they are independent and can be adopted individually.

8.2 Environmental Justice Recommendations

The results of our analysis show that even if the goals of the GMA are being met, the outcomes still produce EHD. We saw within the EHD index that environmental health burdens fall disproportionately on the overburdened communities in all Puget Sound UGAs. This could be related to the rapid increase of environmental indicators associated with reduced quality of life (low canopy cover and high impervious surface coverage) occurring more in high-concern areas than they are in other areas. Although our spatial analysis shows that there are high EHD and vulnerability concerns within the central Puget Sound region, our analysis found that EJ is not a concept that has been integrated consistently across county-level growth planning. Without substantive policy changes, we expect this trend to continue.

PSP is currently working towards advancing EJ across the Puget Sound region and it is in its interest to support this inclusion to Washington's growth management framework. Therefore, **we recommend that PSP support legislation that includes the proposed EJ definition and planning goals into the GMA.**

These additions would create a shared definition of EJ, as recommended by the EJTF, from which counties will adopt in their growth planning measures. Adopting such a definition in the GMA was our first alternative in the policy analysis (see Chapter 7). This would add the following to the GMA:

> Planning goals: Environmental justice. Promote environmental justice. Develop and apply fair land use and environmental policy based on respect and justice for all peoples and seek to eliminate environmental and health disparities. (Tovar et al., 2021, p. 165)
>
> Definitions: "Environmental justice" means the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. This includes using an intersectional lens to address disproportionate environmental and health impacts by prioritizing highly impacted populations, equitably distributing resources and benefits, and eliminating harm. (Tovar et al., 2021, p. 165)

With PSP's mission to oversee the restoration of environmental health to the Puget Sound, along with PSP's existing human well-being indicators, PSP is on track to play a significant role in the imminent integration of EJ principles into regional environmentalism. Therefore, **we recommend that PSP embrace the following action items:**

- **Adopt the proposed EJ definition to use throughout the Partnership.** PSP's 2020-2024 Science Work Plan states intent to enhance collaboration and develop a deeper partnership with EJ organizations (PSP, 2021). This definition is already recommended for use by state agencies, and PSP can lead in implementing these concepts within the agency and stakeholder groups.
- **Integrate an EJ measure as a Vital Sign under the "vibrant quality of life" recovery goal.** PSP can use the readily available data from the EHD map and other regional EJ and equity measures to effectively, quantitatively measure EJ components, including specific EJ related disparities. As a backbone agency, PSP has the opportunity to leverage its influence to decrease outstanding EJ related disparities. Furthermore, as EJ becomes a more critical area of concern in future planning, this intentional measurement tracker can further support PSP's ongoing alternative scenario planning. With the integration of a new Vital Sign, PSP can provide the data and technical expertise to support these new collaborations by tracking EJ measures and improvements over time. Additionally, as PSP continues to coordinate with EJ work groups, they can reinforce the need for EJ consideration across their stakeholder groups.
- **Obtain stakeholder consultation on specific vital sign measurement proposals.** Especially as PSP is looking to develop new relationships with EJ organizations, there should be a significant consideration to organizational alignment. As a regional partnership, PSP can work with WSAC and other stakeholders who have voiced concerns about standardized EJ concepts and bring them in to the larger conversation around protecting the health of the region.

Implementation Considerations: An effective EJ measure will need to be identified that is both valuable to PSP and its stakeholders, as well as reliably measurable. For example, PSP could directly adopt EHD map measurements, consulting with the Washington State Department of Health with any questions about their data set. Another option could be to supplement one of the existing measures (e.g., air quality) with a disparity index relative to census tracts or other community boundaries. Finally, PSP should identify specific focus areas based on the EJ measures where PSP could effectively prioritize mitigation projects.

8.3 Tribal Inclusion Recommendations

While the hands-off approach toward native territories in the GMA was designed to respect the autonomy of sovereign tribal nations, it has separated tribes from

planning decisions that impact their land and culturally significant sites. The current public participation requirement in comprehensive planning (that counties and cities must provide early and continuous public involvement in planning under the GMA) has reduced the ability for tribes to offer meaningful input via their platform as a co-equal governing agency.

Our policy analysis on installing MOU agreements between counties and tribes in Chapter 7 yielded promising results across our chosen criteria. The establishment of the MOU between Snohomish County and the Tulalip Tribe provides an example of a path toward more meaningful collaboration that can be modeled and expanded throughout the Puget Sound region. **We recommend that PSP work with its tribal partners to endorse a GMA modification formalizing tribal participation via a MOU.** Contingent on tribal agreement, prior informed consent and formal approval-seeking by counties should be prioritized in MOU agreements.

To promote land justice, Lane (2006) identifies three "roles of planning" that are important for improving the impact of tribal participation in growth management planning. These roles are:

1. "[P]rotecting [tribal] interests by engaging with the planning activities of the state,"
2. "[U]sing planning to help [tribal] acquisition of lands through legal land claim processes," and
3. "[U]sing community-based planning to help realize community development goals."

These roles of planning can be seen in the MOU agreement between Snohomish County and the Tulalip Tribe. To promote sound stewardship on the boundary lands between Snohomish County and the Tulalip Reservation, the MOU:

1. Protects tribal interests by establishing a workgroup between staff from the Tribe and the County to develop a work plan for implementing the MOU and to coordinate planning goals,
2. Uses planning to reduce inconsistencies between the tribal comprehensive land use plan (distinct from the GMA CP requirement) and the Snohomish County CP, and
3. Uses community engagement planning practices via resource-sharing agreements and the workgroup between the Tulalip Tribe and Snohomish County.

MOU arrangements between tribes and planning counties (such as the one between the Tulalip Tribe and Snohomish County) can serve as a commitment to coordinating consistent land-use planning and regulation. While tribes are an integral stakeholder in PSP's restoration work, other regional planning actors must continue to refine their intent and clarify their actions on tribal engagement and inclusion. PSP should support such formalized collaboration platforms because they

serve PSP's mission to advance a collective approach to recovery in the Puget Sound. This GMA modification recommendation is one step that the state can take to codify their tribal collaboration efforts as the region continues to grow.

Implementation Considerations: PSP can support this recommendation by leveraging their collaborative governance platform to connect counties and tribes in a type of workgroup structure (e.g., the workgroup between Snohomish County and the Tulalip Tribe). The formal engagement processes that MOUs require may present a structural burden to tribes lacking adequate staff or liaison capacity. This may explain the current absence of formal agreements, despite their resounding approval among tribal communities (Zaferatos, 2020). If PSP incentivizes counties to initiate drafting an agreement, this may help ease this burden,

It should also be noted that prior revision suggestions to the GMA have focused only on federally recognized tribes, which has problematic implications for non-recognized tribes living in the Puget Sound area. PSP should encourage counties to coordinate with non-recognized tribes as well.

8.4 Ecosystem Condition Recommendations

The GMA was established with an ostensible goal of supporting the statutory protection of shorelines and wildlife habitats laid out in predecessor policies like SEPA and SMA. However, in practice, the GMA presented planners with a series of conflicting goals, omitting clear steps to determine priorities and balance development interests with natural areas preservation. The result is an uncertain picture regarding how natural areas are preserved, with the GHMB producing an extensive but understudied body of work in attempting to resolve disagreements between landowners and conservation authorities. There are several clear examples of the law not functioning as intended, including continued urban sprawl and permit speculation. At the landscape scale, development has been contained to UGAs, but net ecosystem decline continues as many proposed restoration projects remain in limbo.

It is, however, debatable as to whether the GMA is even the appropriate venue for litigating issues of habitat restoration or whether these challenges are currently being addressed by state and federal agencies that specifically manage them as part of their purview. The GMA does not offer specific requirements to rebuild disturbed or degraded habitat, and because the GMA considers both natural resource areas and habitat to be "critical areas," it offers few tools for addressing situations when priorities for these areas conflict. Meanwhile, the difficulty in balancing conservation and restoration objectives with economic development and population expansion has been no small source of consternation for planners, as the WSAC makes clear in their statement on the recent legislative proposal to make net ecological gain a goal of the GMA:

> This bill also incorporates a new standard of net ecological gain. It would throw out the old standard that requires planning, development regulations – ultimately projects – do no harm to the environment. It would replace it with a new standard that improvement must be achieved, not just projects do no harm. Improvements, or gains, would be required for salmon recovery and restoration as well as for other ecological considerations… The cost to achieve [these objectives] will likely be in the hundreds of millions for counties alone. Add to that the cost to GMA cities, and it is likely billions. (WSAC, 2021)

Negotiating these challenges and successfully implementing them in an environment of chronic underfunding remains a major policy dilemma. PSP could play one or more of several roles in addressing it:

- **Find opportunities to expand/extend negative easements:** Wright's (2020) report details the extensive array of already-extant state and federal programs that may be currently underutilized by counties and cities. PSP can use its policy expertise to increase uptake of these funding sources. King County's implementation of the TDR program may be useful as a model for other counties as urbanization expands outside of the Seattle-Tacoma metropolitan area.
- **Consolidate state and local conservation activities**: Our analysis identified processes related to conservation planning were documented in multiple areas, and the level of coordination between state, county, city, and local governments is difficult to reliably determine. Consolidating these materials into concise reports to planning authorities may result in better land-use decision-making.
- **Support the use of decision support frameworks:** The absence of clear prioritization in the GMA goals leaves planners without a consistent method to resolve conflicts. Building a robust decision guidance structure could help resolve this challenge. One example is the Decision Support Framework developed by the EPA (Ecosystem Services Research Program, 2009). Originally constructed in the early 2000's to address issues of water pollution in coastal North Carolina and Florida, the framework intended to provide a method for evaluating the impacts of their decisions and weigh the value of ecosystem services against human development objectives. It is not clear from the available material on the project how extensively the framework was implemented or whether it met its proposed objectives, but the concept may be worth revisiting to assist counties in making more informed planning decisions.
- **Make the PSP Vital Signs more relevant to planners:** Currently, PSP focuses solely on the amount of population growth occurring in the UGAs, not the distribution of that growth. Consequently, urban planners who attempt to use the Vital Signs might not be able to derive useful principles of planning or targets; the increasing availability of targets or modeling approaches may provide an alternative avenue to promoting low-impact development and

identifying tangible steps that can be taken to reshape the urban and peri-urban environments to improve environmental sustainability. PSP can collaborate with WSAC and other urban planning stakeholders to effectively communicate relevant Vital Signs.

- **Encourage greater uptake of novel planning strategies:** Recent work in modeling (see Appendix E) and urban ecology (see Alberti, 2008) indicate that urban compactness might not be a desirable strategy; instead, a diversity of development types and fine-scale heterogeneity may better integrate cities into their environments. PSP can improve understanding and uptake of these planning strategies by disseminating literature and involving local experts in planning processes.
- **Assess policy implementation at the permit level:** The CPs lay out a vision that is ultimately fulfilled in the quotidian operations of processing and approving permits for development as well as negotiating municipality-landowner conflicts in venues like the GMHB. Further research is needed to understand how permitting authorities understand and implement CPs through their work; as identified by Hoch (2007) among others, unresolved tensions between policymakers, planning authorities, and implementing agents can result in failure to meet objectives. WSAC's extensive critical commentary on the GMA and its proposed revisions indicate that these tensions are likely present and may be permeating down to the "street-level bureaucracies" (Lipsky, 2010) whose decisions directly impact the Puget Sound area.

Implementation Considerations: It is important to remember that even though the shortcomings in the GMA with respect to the environment are present in the legislation in the first place due to the difficulty in reconciling the diversity of interests embodied in the Act. If net ecosystem gain in the area is made a priority, innovative approaches will be needed in order to integrate the area's growing human population into the Puget Sound's landscape.

Additional development, especially of higher-density housing, will help prevent the expansion of development into rural areas, but it can come at the expense of impervious surface and canopy coverage, which can continue to impact water quality despite upstream improvements. Inadequate distribution of urban greenspace can lead to "gentrified sustainability" (Abel & White, 2015) or "green gentrification" (Ngom, Gosselin, & Blais, 2016) as wealthier people relocate to neighborhoods with more greenspace, forcing the poor into overdeveloped neighborhoods.

8.5 General Structural Recommendation

This more general recommendation addresses the distribution of the growth management planning burden under the GMA, as identified throughout this report. Counties, through the creation and implementation of CPs and other growth management planning documents, are the primary implementers of the GMA. While the Washington State Legislature decides over changes to the GMA framework, counties carry the responsibilities and the financial burden of implementing these updates. Thus, to achieve broader consensus among state and local jurisdictions going forward with any of our proposed changes to the GMA, **we recommend that PSP leverage its role as a nexus of state and local organizations to improve county planners' access to information and state funding** to support the successful implementation of GMA updates.

The relevance of this recommendation is illustrated by several specific examples where local jurisdictions highlight the disproportionate planning burden as an issue. In their feedback on the policy suggestions in the Ruckelshaus report, the WSAC frequently cited absence of funding for counties as a barrier to implementation of suggested GMA changes (Tovar et al., 2021). Likewise, in WSAC's commentary on the three new proposed legislative amendments to the GMA, the complexity and potential cost of implementing these additional planning criteria were heavily emphasized (WSAC, 2021). Commentators on the GMA have noted that it provided some funding for county and city planning departments in the initial implementation period, but did not provide any ongoing support (Dubicki, 2020). The job of planning departments has only increased in complexity with each successive revision to the GMA, making some small planning offices responsible for making hundreds of different recommendations. This issue highlights one of the key weaknesses with the decentralized Washington GMA compared to Oregon's more centralized version: the latter provides a source of direct state support for counties after the development of the initial plan, while the former – ostensibly in the name of providing autonomy – effectively leaves the planning entities to deal with challenges on their own. If left unaddressed, the disproportionate planning burden could become an obstacle to the successful implementation of our EJ, tribal collaboration, and ecosystem recommendations within counties.

Implementation Considerations: PSP, in its role as a backbone state agency, has the ability to either advocate for additional funding for counties by the state or ensuring more timely and comprehensive access to experts by planning departments. This would help to shift the labor and financial burden of developing and implementing new planning goals, and it provides an opportunity for subject matter experts to draft more comprehensive, regional suggestions. To ensure more effective and timely access to information, it will be important for PSP to develop an understanding of how county planners access, understand, and use BAS and where there might be opportunity for additional support.

9 Conclusion: 30 Years of Urban Planning the Puget Sound

In both the popular imagination and law, the city is a monolith – an unecological, physically compartmentalized, and settler-colonial dominated space. The GMA's attempt to maintain the character of the Puget Sound cityscape as an entity distinct from its rural environs has paradoxically resulted in both excessive compaction in (or of) vulnerable communities and sprawl as single-family zoning continues to spread at the UGA fringes.

In a similar manner, the GMA has compartmentalized the concerns of the tribal peoples who still have rights to urban areas. The GMA ostensibly acknowledged the sovereignty of tribes by exempting reservations from planning requirements. However, this decision implies a tacit expectation that urbanized land must be ceded entirely to the state and county governments. Scholars studying the intersection of indigenous rights and urban planning have frequently noted that planning tends to reinforce, rather than dismantle, the socio-legal construction of the city as a settler-occupied space. From this angle, impacts on native territories are of secondary concern and tribal participation in planning processes often does not extend beyond mere acknowledgement (Bouvier and Walker, 2020; Nejad et al., 2019; Porter, 2017).

The twin needs for greater physical and cultural heterogeneity to be embodied in the built environment should be viewed as coupled processes that can synergistically achieve greater sustainability. Research by UW Urban Ecologist Marina Alberti and her collaborators has shown that heterogeneities in density, height, and distribution of construction while prioritizing interconnected natural spaces can lead to the greatest species diversity (Alberti, 2008; Robinson, Newell & Marzluff, 2005). Areas of high impervious surface coverage, if properly buffered by porous surfaces, can reduce the impact of stormwater on a city's physical surroundings (see Appendix F).

Simultaneously, devotion to what Nejad et al. (2020) termed "Eurocentric spatial order" can reduce or eliminate "Indigenous cultural visibility" (Ibid. p. 435). Indigenous "placemaking" (Ibid.) is defined as process that centers indigenous art, architecture, and public expression in the urban landscape. Indigenous placemaking is a process that opposes the consolidation of private control over urban land and the culturally erosive processes of gentrification and cementing the presence of Indigenous people as permanent and enduring rather than ephemeral.

Our analysis contributes to the findings by Tovar et al. (2021), Murphy et al. (2019), and Zaferatos (2020) that the GMA contributes to systemic issues in urban design by failing to address EJ concerns that result from development and by only encouraging, rather than requiring, tribal inclusion and ecosystem recovery conditions. Our prospective policy analysis provides insights of how two policy

alternatives could improve the outcomes on a set of cross-sectional criteria. Finally, our recommendations to PSP are a culmination of analyses resulting in original suggestions and ideas derived from existing literature.

We note that while Puget Sound counties are on a positive trajectory with respect to physical indicators, it is unlikely that the status quo will produce the EJ, tribal inclusion, and ecosystem outcomes necessary to support a healthy and diverse population and long-term environmental sustainability. The recommendations presented in this report aim to ensure that the process of rethinking growth planning in Washington addresses these PSP goals.

Development is a complex process involving numerous individual actors, and the implications of even small decisions may take decades to fully play out. As our understanding of the importance of previously neglected areas like wetlands has rapidly grown, planners, conservationists, and governments have been forced to contend with an increasingly complicated decision-scape regarding the allocation of scarce funding to substantial areas while attempting to balance the diverse needs of their residents. This is no small undertaking, and we recognize the efforts of researchers, practitioners, and activists in restoring and protecting our natural areas. We are optimistic that recent work developing new tools and a greater understanding of the relationship between the built environment and its surroundings can lead to transformative changes in future urban planning.

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Appendices

Appendix A: The Principles of Environmental Justice

WE, THE PEOPLE OF COLOR, gathered together at this multinational People of Color Environmental Leadership Summit, to begin to build a national and international movement of all peoples of color to fight the destruction and taking of our lands and communities, do hereby re-establish our spiritual interdependence to the sacredness of our Mother Earth; to respect and celebrate each of our cultures, languages and beliefs about the natural world and our roles in healing ourselves; to ensure environmental justice; to promote economic alternatives which would contribute to the development of environmentally safe livelihoods; and, to secure our political, economic and cultural liberation that has been denied for over 500 years of colonization and oppression, resulting in the poisoning of our communities and land and the genocide of our peoples, do affirm and adopt these Principles of Environmental Justice:

The Principles of Environmental Justice (EJ)

1) **Environmental Justice** affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.

2) **Environmental Justice** demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.

3) **Environmental Justice** mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.

4) **Environmental Justice** calls for universal protection from nuclear testing, extraction, production and disposal of toxic/hazardous wastes and poisons and nuclear testing that threaten the fundamental right to clean air, land, water, and food.

5) **Environmental Justice** affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.

6) **Environmental Justice** demands the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.

7) **Environmental Justice** demands the right to participate as equal partners at every level of decision-making, including needs assessment, planning, implementation, enforcement and evaluation.

8) **Environmental Justice** affirms the right of all workers to a safe and healthy work environment without being forced to choose between an unsafe livelihood and unemployment. It also affirms the right of those who work at home to be free from environmental hazards.

9) **Environmental Justice** protects the right of victims of environmental injustice to receive full compensation and reparations for damages as well as quality health care.

10) **Environmental Justice** considers governmental acts of environmental injustice a violation of international law, the Universal Declaration On Human Rights, and the United Nations Convention on Genocide.

11) **Environmental Justice** must recognize a special legal and natural relationship of Native Peoples to the U.S. government through treaties, agreements, compacts, and covenants affirming sovereignty and self-determination.

12) **Environmental Justice** affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and provided fair access for all to the full range of resources.

13) **Environmental Justice** calls for the strict enforcement of principles of informed consent, and a halt to the testing of experimental reproductive and medical procedures and vaccinations on people of color.

14) **Environmental Justice** opposes the destructive operations of multi-national corporations.

15) **Environmental Justice** opposes military occupation, repression and exploitation of lands, peoples and cultures, and other life forms.

16) **Environmental Justice** calls for the education of present and future generations which emphasizes social and environmental issues, based on our experience and an appreciation of our diverse cultural perspectives.

17) **Environmental Justice** requires that we, as individuals, make personal and consumer choices to consume as little of Mother Earth's resources and to produce as little waste as possible; and make the conscious decision to challenge and reprioritize our lifestyles to ensure the health of the natural world for present and future generations.

More info on environmental justice and environmental racism can be found online at www.ejnet.org/ej/

Delegates to the First National People of Color Environmental Leadership Summit held on October 24-27, 1991, in Washington DC, drafted and adopted these 17 principles of Environmental Justice. Since then, the Principles have served as a defining document for the growing grassroots movement for environmental justice.

Appendix B : Content Analysis Codebook

Theme	Subtheme	Definition/Context	Keyword(s)	Code #	Coding Instructions
Environmental Justice	Environmental Justice Concept	Idea that people should neither be burdened disproportionately by negative environmental externalities nor receive fewer environmental benefits. Important to know if EJ is already a recognized concept	"environmental justice"	1.1	Code 0 if no keyword results Code 1 if keywords mentioned Code 2 if keywords mentioned in specific tool / process (includes working with Equity Office, Equity tool kit, etc.)
	Recognition of Disparities	Institutional and structual racism/classism plays an implicit role in disparities and the need for EJ	"Inequit"	1.2	Code 0 if no keyword results Code 1 if keywords mentioned Code 2 if keywords mentioned in specific tool / process (includes working with Equity Office, Equity tool kit, etc.)
	Health disparity impacts (Wastewater discharge, solid waste discharge, ...)	Environmental Justice outcomes are often measured by disproportionate health outcomes.	"disproportionate"	1.3	Code 0 if no keyword results Code 1 if keywords mentioned Code 2 if keywords mention when there is a specifc limit or a policy process
Tribal Inclusion	Collaboration with Tribes and other jurisdictions	Tribes should be included in cross-jurisdictional collaboration efforts	"Native American" "tribe" "tribal"	2.1	Code 0 if no keyword results Code 1 if keywords mentioned Code 2 if keywords mentioned in participation processes (includes comments, participation including other parties, feedback)
	Tribe specific collaboration	Cultural practices/ways of knowing are critical to human wellbeing and historical connection to Puget Sound land and resources. Only if not mentioned in the same sentence with other jurisdictions.	"Native American" "tribe" "tribal"	2.2	Code 0 if no keyword results Code 1 if keywords mentioned Code 2 if keywords mentioned in specific collaboration processes/ or limits set on development based on tribal priorities
Land Cover	Critical Habitats	Ultimate goal of preserving "ecologically important lands" in part through designation and protection of critical areas	"habitat restoration" "habitat protection"	3.1	Code 0 if keywords nonexistent Code 1 if keywords mentioned Code 2 if keywords mentioned in specific target/policy tool
	Forest Cover & Development	Promote growth in UGAs in order to preserve land cover elsewhere; create access to nature to balance developing areas. Forests are a vital part of the habitat ecoystem	"conversion" (only in relation to forest lands)	3.2	Code 0 if no keyword results Code 1 if keywords mentioned Code 2 if keywords mentioned in specific limit on conversion / policy tool
	Limitation of impervious surfaces and water quality	Condition of the fresh/marine water that is vital to people, fish, and wildlife populations. Increased impervious surfaces lead to habitat fragmentation + increase stormwater runoff that decreases water quality	"impervious surface"	3.3	Code 0 if no keyword results Code 1 if keywords mentioned Code 2 if keywords mentioned in specific limits / policy tools

Appendix C: MOU Template[13]

Appendix 2

Agreement Template for Coordinated Planning for Indian Reservations

MEMORANDUM OF UNDERSTANDING FOR ESTABLISHING A COORDINATED PROCESS FOR DEVELOPING COMPREHENSIVE PLANS FOR INDIAN RESERVATIONS

This Memorandum of Understanding is made and entered into by and between the _____ Indian Tribe, a federally recognized Indian Tribe organized pursuant to Section 16 of the Indian Reorganization Act of 1934 ("Tribe") and _____ County, a political subdivision of the State of Washington ("County"). The Tribe and County (collectively referred to as "governments") hereby acknowledge and agree as follows:

1. **Mutual Points of Understanding**

a. In order to alleviate the potential conflict that could result from the concurrent application of two inconsistent regulatory programs within the boundaries of the reservation, the Parties agree to initiate a coordinated comprehensive land-use-planning process for land areas contained within the boundaries of the reservation.

b. The Tribe and the County will be implementing separate comprehensive land-use-policy programs under their separate powers and authorities that regulate land-use activities on the reservation.

c. The Tribe has assumed regulatory jurisdiction for all lands within the exterior boundaries of its reservation, regardless of ownership type, and the County has assumed partial regulatory jurisdiction for those lands held in fee title lying within the exterior boundaries of that reservation.

d. The Parties recognize the need for due-process representation of all residents of the reservation.

e. The coordinated comprehensive planning effort is not intended

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[13] Retrieved from Zaferatos, 2020, pp. 180-184.

to limit or transfer any degree of jurisdiction held by either or any of the Parties, nor is it to be interpreted or misconstrued as a recognition of jurisdiction by one party over another.

f. It is in the interest of the residents of the region, the County, and the Indian reservation, that a coordinated regional planning process be established in which the Tribe and County cooperate and share resources in the development of a common comprehensive land-use plan.

g. In order to implement a coordinated regional planning process, the parties recognize that voluntary cooperation and an attitude of good faith toward the joint planning process is a prerequisite for successful coordinated planning.

2. Strategic Activities for Coordinated Planning

The Parties further recognize and have identified the following strategic activities that should be completed in order to bring about a successful coordinated comprehensive planning process:

a. The Tribe and the County mutually recognize the benefits of establishing a long-term, government-to-government planning and regulatory relationship in order to jointly commence a process for the update of the Tribal and County Comprehensive Land-Use Plans; of formulating a single synthesized Comprehensive Plan; and of investigating alternative methods for the administration of the land-use plan and other land-use-related regulatory codes for those land areas lying within the exterior boundaries of the Tribe's reservation.

b. The Tribe and the County recognize the benefits of actively pursuing future joint-planning studies that address regional concerns to both the County and the Tribe.

c. The Tribe and the County recognize that an Advisory Planning Board should be appointed, representing both the Tribe and the County, for the purposes of initiating a coordinated comprehensive planning update process and for the purposes of identifying and updating requirements to both the County plan and the Tribe plan in an effort to attain compatibility between the plans.

d. The Tribe and the County recognize that in order to facilitate a coordinated comprehensive planning process for the reservation, the County should modify its existing Comprehensive Plan and designate those land areas within the reservation as a new

"reservation subarea" with its own distinct goals and objectives.

e. The Tribe and the County recognize that an operational and organizational strategy for jointly administering a land-use policy should be established that will consider: (1) the jurisdictional claims to land-use regulation by both parties and (2) each government's concern with respect to fair and adequate representation of all people residing on the reservation. This proposed organizational strategy outlines a procedure for implementing the provisions of mutually agreed upon Comprehensive Land-Use plans.

3. The Planning Process

Pursuant to this Memorandum of Understanding, the Tribe and the County acknowledge their commitment to pursue a process leading toward the coordination of land-use-planning and regulatory activities on that Tribe's reservation and have identified the following three major elements of a program to commence that process:

3.1 Commitment for Coordinated Planning

a. The Tribe and the County may consider entering into a Sphere of Influence Agreement as an interim measure of land-use coordination while the planning process is under way.

b. The Tribe and the County may formulate an Advisory Planning Board representing the Tribe and the County, which shall oversee the implementation of a joint comprehensive planning process.

c. Both the County and the Tribe will consider the provision of professional staff support to the Advisory Planning Board to facilitate the process of updating both Tribal and County Comprehensive Plans.

d. The Advisory Planning Board may initiate review and drafting of the plan document and present recommendations to the County and Tribal Planning Commissions for public review and adoption by their respective governing bodies.

3.2 Composition of the Advisory Planning Board

a. The composition of the Advisory Planning Board will provide for equal representation and appointment by the Tribe and County and may include a neutral facilitator who can also act as the board chair. For example, the Advisory Board may comprise nine (9) members, with appointments made mutually by the Tribe and the County. The positions on the board could be filled as follows: a representative

of the County's and the Tribe's Planning Commissions (two positions); the planning directors of the respective governments (two positions); two positions appointed at-large and nominated by the County; two positions appointed at-large and nominated by the Tribe; and a neutral facilitator that also serves as the board's chairperson (one position).

b. The board will serve at the discretion of and shall make its recommendations to the Tribe and the County.

c. The board will complete its assigned tasks and responsibilities within the one-year (1-year) anniversary of its members' appointments.

3.3 Operational Procedures

a. In order to administer an updated Comprehensive Land-Use Plan and subsequent regulatory codes, an administrative procedure should be developed by the Advisory Planning Board that outlines procedures for joint administration of the plan and associated regulations.

b. The Advisory Planning Board would serve as a representative board making recommendations to each government's Planning Commission regarding land-use activities on the reservation.

c. The Advisory Planning Board should investigate alternatives for the resolution of any disputes, if any, between the Tribe and County in the implementation of the plan and regulatory codes on the reservation and should make recommendations on such procedures to each government's governing bodies.

4. Term of Memorandum of Understanding

This Memorandum of Understanding shall commence on the date that it is approved by both the Tribe and County and shall remain in effect for a period of eighteen (18) months. Either party may terminate this Memorandum of Understanding provided written notification of such intent to terminate is transmitted to the other party(ies) within thirty (30) days of actual termination. It is anticipated by the parties that following the term of this agreement, a subsequent agreement shall be drafted and approved whereby the parties will mutually agree on methods to offer administration and maintenance of a coordinated land-use policy.

5. Jurisdiction

Nothing in this agreement shall limit or waive the regulatory authority

or jurisdiction of either party. IN WITNESS WHEREOF, this Memorandum of Understanding serves to document an understanding between the _____ Tribe and _____ County with respect to establishing a coordinated regional land-use-planning process by and between the parties, and the parties hereto have executed the Memorandum of Understanding on the day and year of the last signature below:

_____ County Board of Commissioners

_____

_____

_____

_____ Indian Tribe

_____

_____

_____

Appendix D: Content Analysis Findings per Keyword

Environmental Justice Keywords

Table D1 *"Environmental Justice" Keyword Count*

Jurisdiction	CPs 2004-2007			Current CPs 2016-2020		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	0	0	608 (2016)	0	0
King	241 (2004)	0	0	619 (2020)	9	0
Kitsap	349 (2006)	0	0	166 (2016)	0	0
Pierce	192 (2004)	0	0	382 (2019)	0	0
Snohomish	296 (2005)	0	0	293 (2016)	0	0
Thurston	348 (2004)	0	0	411 (2019)	1	0

Table D2 *"inequit" Keyword Count*

Jurisdiction	*CPs 2004-2007*			*Current CPs 2016-2020*		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	0	0	608 (2016)	0	0
King	241 (2004)	1	0	619 (2020)	16	3
Kitsap	349 (2006)	0	0	166 (2016)	0	0
Pierce	192 (2004)	0	0	382 (2019)	0	0
Snohomish	296 (2005)	0	0	293 (2016)	0	0
Thurston	348 (2004)	0	0	411 (2019)	1	0

Table D3 *"disproportionate" Keyword Count*

Jurisdiction	CPs 2004-2007			Current CPs 2016-2020		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	1	0	608 (2016)	0	0
King	241 (2004)	3	0	619 (2020)	7	0
Kitsap	349 (2006)	0	0	166 (2016)	0	0
Pierce	192 (2004)	1	0	382 (2019)	1	0
Snohomish	296 (2005)	0	0	293 (2016)	0	0
Thurston	348 (2004)	0	0	411 (2019)	10	2

Tribal Inclusion Keyword Findings

Table D4 *General Stakeholder Collaboration Keyword Counts for "Native American," "tribe," and "tribal"*

Jurisdiction	2004-2007 CPs			2016-2020 CPs		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	21	2	608 (2016)	20	2
King	241 (2004)	35	12	619 (2020)	81	6
Kitsap	349 (2006)	74	4	166 (2016)	37	6
Pierce	192 (2004)	9	3	382 (2019)	8	4
Thurston	348 (2004)	45	4	411 (2019)	55	4
Snohomish	296 (2005)	56	7	293 (2016)	54	6

Table D5: *Tribal-Specific Collaboration Keyword Counts for "Native American," "tribe," and "tribal"*

Jurisdiction	2004-2007 CPs			2016-2020 CPs		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	16	6	608 (2016)	8	0
King	241 (2004)	7	3	619 (2020)	36	4
Kitsap	349 (2006)	12	3	166 (2016)	11	0
Pierce	192 (2004)	1	0	382 (2019)	1	1
Thurston	348 (2004)	35[14]	3	411 (2019)	40	4
Snohomish	296 (2005)	32	6	293 (2016)	28	4

Ecosystem Keyword Findings

Table D6 *"habitat protection" and "habitat restoration" keyword count*

Jurisdiction	*CPs 2004-2007*			*Current CPs 2016-2020*		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	0	0	608 (2016)	5	1
King	241 (2004)	9	2	619 (2020)	34	4
Kitsap	349 (2006)	14	4	166 (2016)	4	2
Pierce	192 (2004)	4	2	382 (2019)	2	0
Thurston	348 (2004)	7	1	411 (2019)	4	0
Snohomish	296 (2005)	5	2	293 (2016)	7	2

[14] The true count is 39, but 4 mentions are "non-Native American" and thus were not counted.

Table D7 *"conversion" keyword count*

Jurisdiction	CPs 2004-2007			Current CPs 2016-2020		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	2	0	608 (2016)	0	0
King	241 (2004)	7	2	619 (2020)	29	5
Kitsap	349 (2006)	2	0	166 (2016)	0	0
Pierce	192 (2004)	3	1	382 (2019)	1	0
Thurston	348 (2004)	7	2	411 (2019)	8	2
Snohomish	296 (2005)	3	1	293 (2016)	2	1

Table D8 *"impervious surface" keyword count*

Jurisdiction	CPs 2004-2007			Current CPs 2016-2020		
	Page number (year)	Simple Count	Process/ Policy Count	Page number (year)	Simple Count	Process/ Policy Count
Island	185 (2007)	5	0	608 (2016)	6	0
King	241 (2004)	27	8	619 (2020)	30	5
Kitsap	349 (2006)	12	3	166 (2016)	2	1
Pierce	192 (2004)	3	2	382 (2019)	2	1
Thurston	348 (2004)	3	0	411 (2019)	8	0
Snohomish	296 (2005)	7	3	293 (2016)	6	3

Appendix E: Additional GIS output

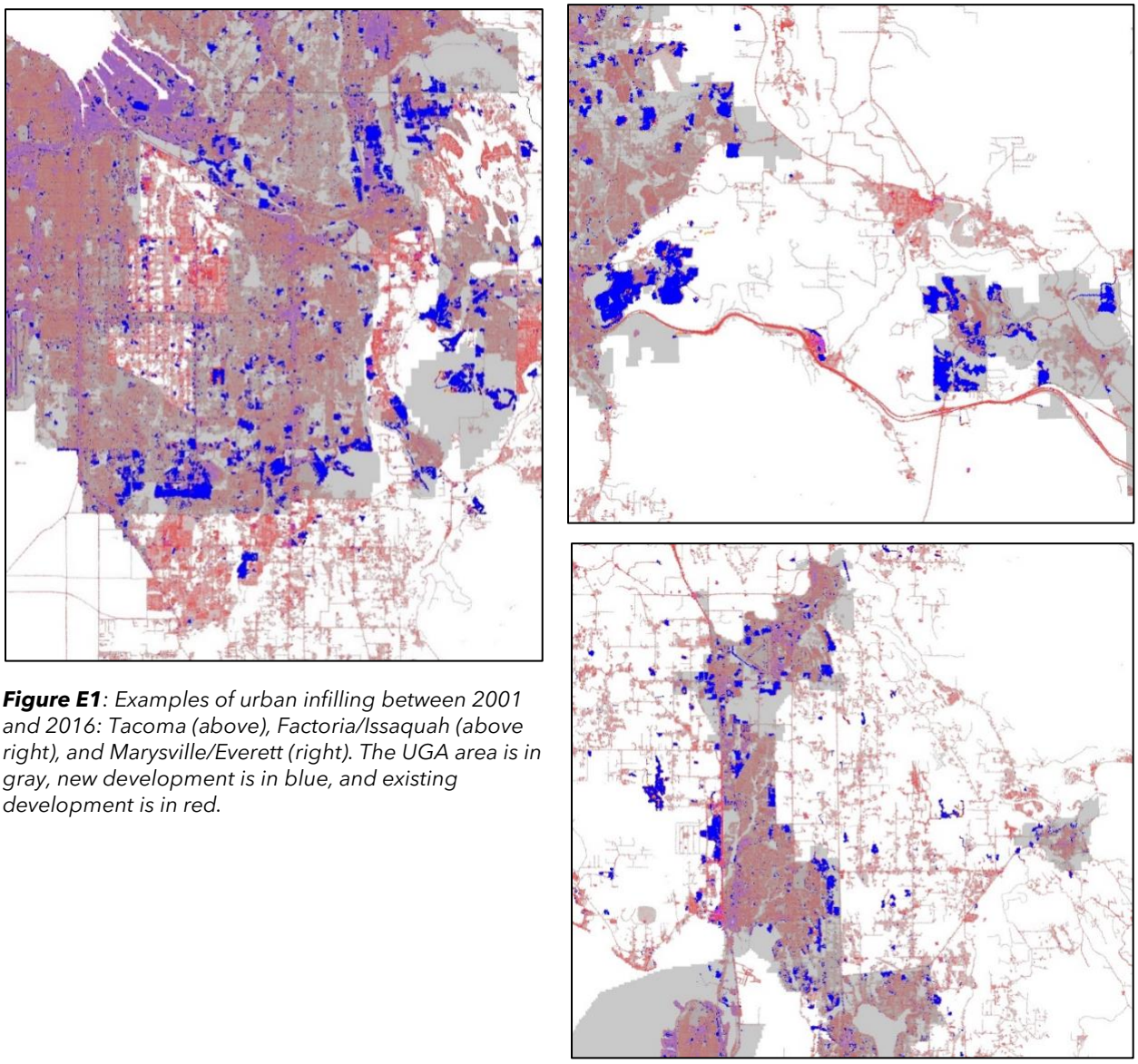


Figure E1: *Examples of urban infilling between 2001 and 2016: Tacoma (above), Factoria/Issaquah (above right), and Marysville/Everett (right). The UGA area is in gray, new development is in blue, and existing development is in red.*

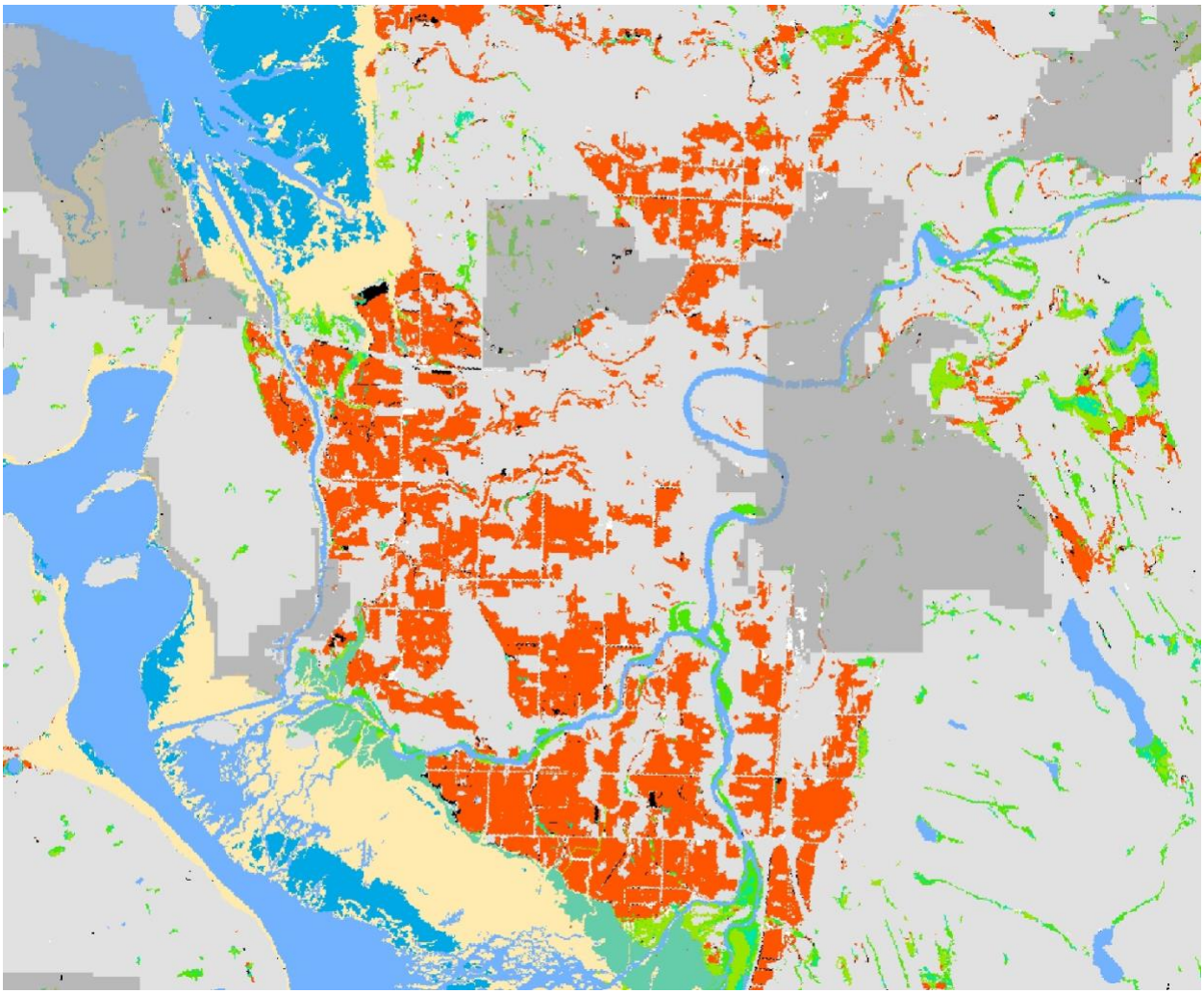


***Figure E2**: Output from the Washington State Department of Ecology's modeled wetland inventory, with UGA areas in dark gray. Areas classified as "potentially disturbed wetlands" are highlighted in red, with losses occurring between 2001 and 2016 in black. The potentially disturbed wetlands in this image are largely all farmland, illustrating the difficulties in simultaneously aiming for net ecosystem gain while also preserving rural character and food production. Also note that the UGA areas, despite being situated within the farmed areas, have relatively little wetlands of any classification. This outcome is likely a result of topography changes that accompanied urban development and illustrates that spatial approaches to assessing wetland disturbance will over-emphasize rural disturbance.*

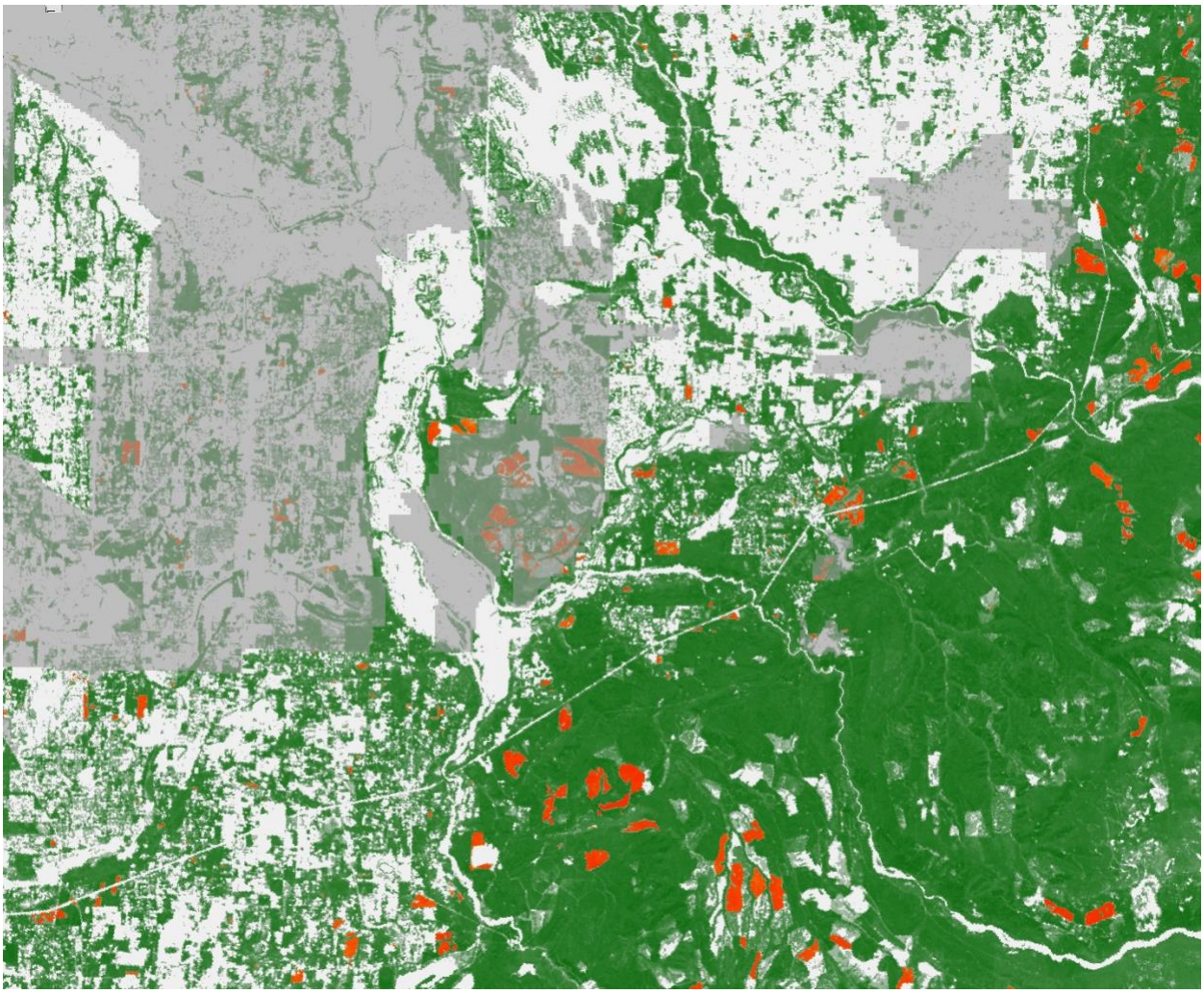


***Figure E3**: Change in canopy cover between 2011 and 2016 for the area around Ortig (south of Tacoma), with UGA area indicated in gray. The results indicate that the majority of canopy cover lost was in areas owned by private timber companies (south and west of the UGA areas), while several tracts within the UGA (center) were converted by development. These findings indicate the need for use consideration when assessing canopy changes in an area, something addressed by the HRCD dataset but not necessarily the NLCD canopy cover dataset.*

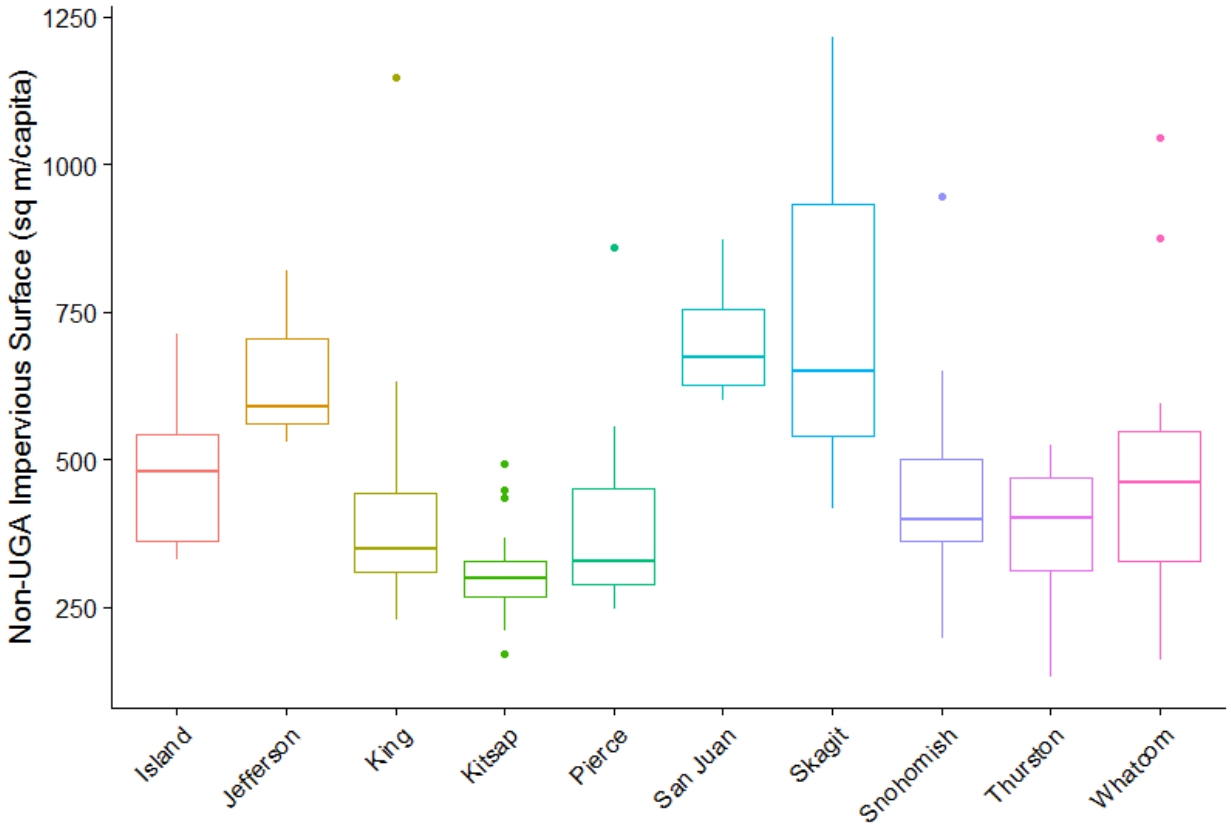
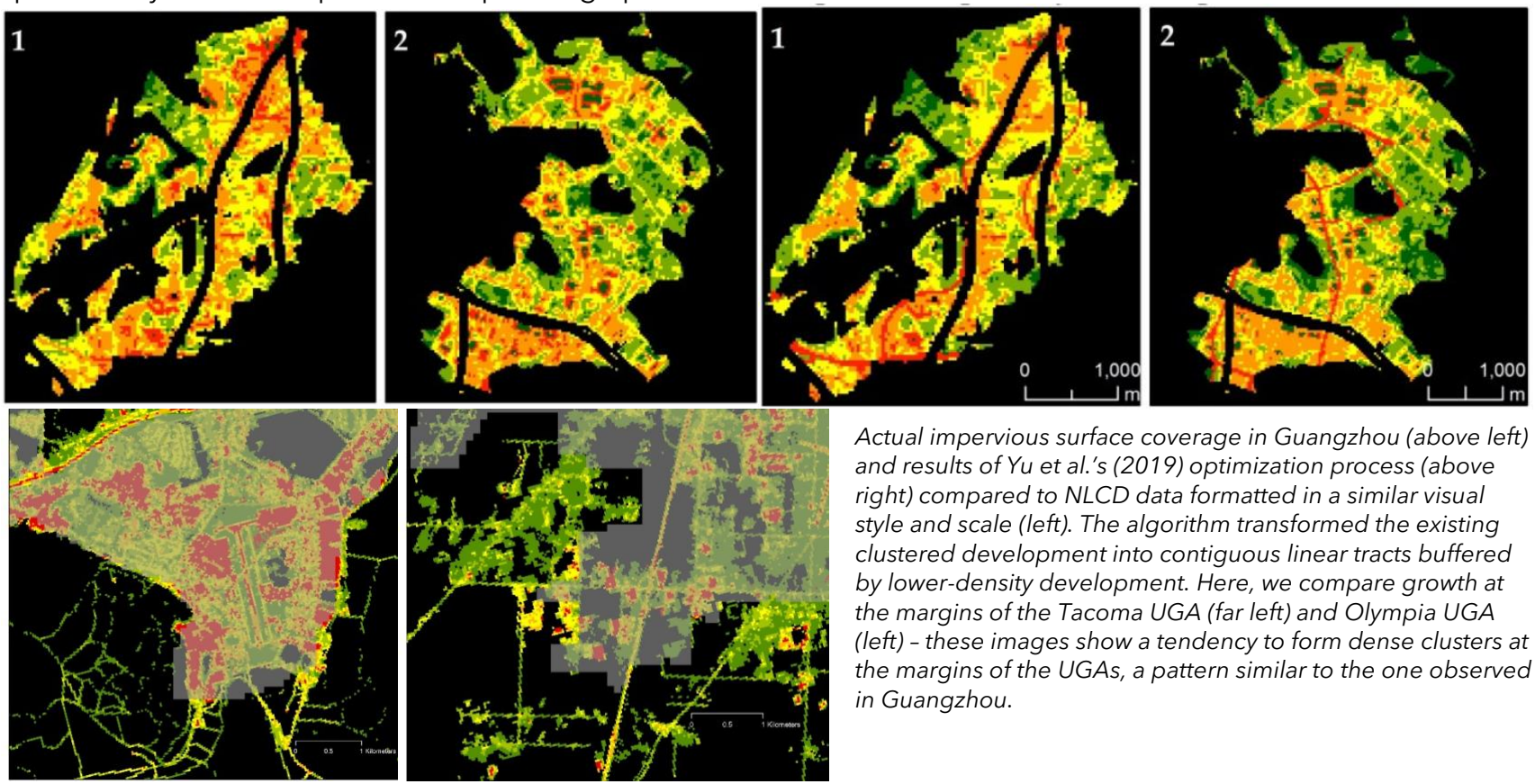


Figure E4: *Comparison of relative distribution of impervious surface across rural census tracts for the broader Puget Sound region. The distribution indicates significant differences in rural development philosophies across counties, with San Juan, Skagit, and Jefferson counties showing a tendency to have higher relative impervious surface coverage. An ANOVA with Fisher's LSD suggested that this variation was not statistically significant, however.*

Appendix F: Case Study of Impervious Surface Modeling in Guangzhou, China

Guangzhou is the largest city in southern China. Between 1973 and 2013 total urban area ballooned from 20 to 2248 sq. km. High rainfall combined with the city's proximity to the Pearl River meant that this rapid growth posed a significant challenge for soil stability. Using an optimization algorithm, Yu et al. (2019) demonstrated that optimal minimization of stormwater runoff involved linearizing high-density tracts and surrounding them with lower density development. These findings suggest that that landscape diversity – rather than concentration – might be the key to minimizing the environmental impact of urbanization (see Alberti 2008). These methods pave the way for sophisticated spatial analysis and computer-aided planning optimization.



Actual impervious surface coverage in Guangzhou (above left) and results of Yu et al.'s (2019) optimization process (above right) compared to NLCD data formatted in a similar visual style and scale (left). The algorithm transformed the existing clustered development into contiguous linear tracts buffered by lower-density development. Here, we compare growth at the margins of the Tacoma UGA (far left) and Olympia UGA (left) – these images show a tendency to form dense clusters at the margins of the UGAs, a pattern similar to the one observed in Guangzhou.