Climate Impacts Relevant Data and Publications

Overview

This matrix briefly summarizes the resources from a background research of available information and documentation related to historical and projected climate impacts for Kitsap County. Findings in this document are organized by the following 11 focus areas:

- Agriculture- Food crops, ornamental crops, livestock, aquaculture, wild food harvest, timber production, urban forestry, etc.
- Cultural Resources- Archeological resources, recreation, historically significant structures and places, etc.
- Economy- Property values, shifts in business opportunities, changed energy demand due to temperature, water dependent industries, buildable lands, etc.
- **Fire-** Wildfire and wildland/urban interface, structure fires, demand on emergency response, etc.
- Geologic Hazards- Landslides, bluff erosion, storm surge, etc.
- Habitat- Sea-level rise, ocean acidification, impacts to native and cold-water species, invasive species, shifting of aquatic habitat (salmon habitat projects, eelgrass, shorelines, etc.), compression of habitat, etc.
- > Hydrology- Stream flows, flooding, changes in precipitation, etc.
- Land Use and Development- Affordable housing, open spaces, mixed-use construction, and green building.
- Local Government Finance- Insurance premiums, municipal bond ratings, tax revenue, etc.
- > Public Health- Saltwater intrusion into wells, increase in hot days, air quality impacts due to smog and wildfires, etc.
- Public Infrastructure- Roads, bridges, bridge clearances, wastewater facilities, drainage systems, etc.

Key sources of information that encompasses two or more focus areas include the following:

- State of Knowledge: Climate Change in Puget Sound, prepared by University of Washington Climate Impacts Group (CIG), 2015.
- Fifth National Climate Assessment Synthesis Report, Intergovernmental Panel on Climate Change, 2014.
- Northwest. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II, May et al. U.S. Global Change Research Program, Washington, DC. 2018.
- Port Gamble S'Klallam Tribe Climate Impacts Assessment. Port Gamble S'Klallam Natural Resources Department. 2018.
- Kitsap County Multi-Hazard Mitigation Plan. 2015.

Broad Climate Science

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
Bainbridge Island Climate Impacts	•				This report is a climate impacts assessment for the city of Bainbridge Island. It covers six key imp
Assessment	BICIA Final 28 July 2016	https://www.cakex.org/sites/default/files	201	6 Bainbridge Island	vegetation change, ocean acidification, and slope stability.
Climate Impacts Group Tribal Climate Tool	climateReport_PtGambl e_Big.LittleQuilcene	https://climate.northwestknowledge.net/	Tool released in 201	Big and Little Quilcene River 8 Basins	This tool was developed by UW CIG for Tribes in the Pacific Northwest and Great Basin. They do Tribes in this geography. The Port Gamble S'Klallam Tribe currently resides in Kitsap County in K time periods for the downscaled data was included (2010-2039, 2040-2069, and 2070-2099). Do average temperature, extreme heat days, freeze free days, heat accumulation, annual precipitat
Climate Impacts Group Tribal Climate Tool	climateReport_PtGambl e_Dosewallips	https://climate.northwestknowledge.net/	Tool released in 201	8 Dosewallips River Basin	This tool was developed by UW CIG for Tribes in the Pacific Northwest and Great Basin. They do Tribes in this geography. The Port Gamble S'Klallam Tribe currently resides in Kitsap County in K time periods for the downscaled data was included (2010-2039, 2040-2069, and 2070-2099). Do average temperature, extreme heat days, freeze free days, heat accumulation, annual precipitat
Climate Impacts Group Tribal Climate Tool	climateReport_PtGambl e_Reservation	https://climate.northwestknowledge.net/	Tool released in 201	8 Port Gamble Reservation	This tool was developed by UW CIG for Tribes in the Pacific Northwest and Great Basin. They do Tribes in this geography. The Port Gamble S'Klallam Tribe currently resides in Kitsap County in K time periods for the downscaled data was included (2010-2039, 2040-2069, and 2070-2099). Do average temperature, extreme heat days, freeze free days, heat accumulation, annual precipitat
Climate Impacts Group Tribal Climate Tool	climateReport_PtGambl e_BayWatershed	https://climate.northwestknowledge.net/	Tool released in 201	8 Port Gamble Bay Watershed	This tool was developed by UW CIG for Tribes in the Pacific Northwest and Great Basin. They do Tribes in this geography. The Port Gamble S'Klallam Tribe currently resides in Kitsap County in K time periods for the downscaled data was included (2010-2039, 2040-2069, and 2070-2099). Do average temperature, extreme heat days, freeze free days, heat accumulation, annual precipitat
Climate Impacts Group Tribal Climate Tool	CIG Tribal Tool. Port Madison Indian Reservation	https://climate.northwestknowledge.net/	Tool released in 201	Port Madison Indian 8 Reservation	This tool was developed by UW CIG for Tribes in the Pacific Northwest and Great Basin. They do Tribes in this geography. The Suquamish Tribe currently resides in Kitsap County (Chief Kitsap, tl 1700s to mid 1800s, when European contact was made). A high and a low emissions scenario w included (2010-2039, 2040-2069, and 2070-2099). Downscaled data includes: annual average to freeze free days, heat accumulation, annual precipitation, seasonal precipitation, and vegetation
Climate Impacts Group Tribal Climate Tool	CIG Tribal Tool. Suquamish Area of Interest	https://climate.northwestknowledge.net/	Tool released in 201	8 Suquamish Area of Interest	This tool was developed by UW CIG for Tribes in the Pacific Northwest and Great Basin. They do Tribes in this geography. The Suquamish Tribe currently resides in Kitsap County (Chief Kitsap, the 1700s to mid 1800s, when European contact was made). A high and a low emissions scenario w included (2010-2039, 2040-2069, and 2070-2099). Downscaled data includes: annual average to freeze free days, heat accumulation, annual precipitation, seasonal precipitation, and vegetation.
Climate Impacts Group Tribal Climate Tool	CIG Tribal Tool. Suquamish U&A Areas	https://climate.northwestknowledge.net/	1 Tool released in 2018	Suquamish Usual and 8 Accustomed Fishing Areas	This tool was developed by UW CIG for Tribes in the Pacific Northwest and Great Basin. They do Tribes in this geography. The Suquamish Tribe currently resides in Kitsap County (Chief Kitsap, tl 1700s to mid 1800s, when European contact was made). A high and a low emissions scenario w included (2010-2039, 2040-2069, and 2070-2099). Downscaled data includes: annual average to freeze free days, heat accumulation, annual precipitation, seasonal precipitation, and vegetation
Fourth National Climate Assessment, Vol. II Impacts, Risks, and Adaptation in the Northwest	May et al_NCA4_Ch24_Northw est_Full	https://nca2018.globalchange.gov/chapte	201	Northwest, though many WA state and local case 8 studies	This is Volume II of the 4th National Climate Assessment. This report expands on the Vol. I Climat impacts of climate change to socio-ecological impacts. Key conclusions of this report include: cli Northwest, specifically around fisheries, forestry, agriculture, and tourism; climate change has a communities, especially for tribal and Indigenous communities; climate change and extreme even Northwest; climate change is exacerbating the stress on the health systems and social safety ne affecting frontline communities (e.g. Tribes & Indigenous peoples, low-income communities of changes.
Hood Canal Climate Projection Summary	Hood_Canal_Climate_P rojection_Summary_M ay_2015	http://hccc.wa.gov/sites/default/files/reso	<u>c</u> 201	Hood Canal and surrounding counties and watersheds, 5 including Kitsap County	g dominant system, shift in peak stream flow to early winter from late spring, and increasing floor human resources, including impacts to salmon, shellfish, forests, invasive species and pests, agr human health, and tribal and cultural resources.
Intergovernmental Panel on Climate Change, Synthesis Report Nitrogen in Puget Sound- Interactive	IPCC_SYR_AR5_FINAL_f ull	https://www.ipcc.ch/site/assets/uploads/	201	5 International	This report gives an overview of the state of the science at an international scale. Some of its ke human activities, especially GHG emissions; the atmosphere and ocean have already warmed ar diminished; sea level has risen; climate change has already significantly impacts human and nate continued GHG emissions will drive further warming and changes in the climate. This toolkit provides brief summaries of nitrogen levels in the Puget Sound and its impacts on lo
Тооі		https://waecy.maps.arcgis.com/apps/Map	Tool released in 201	8 Puget Sound	nitrogen, nitrogen sources/pathways, river trends, and marine trends for the Puget Sound.

pacts areas: temperature, precipitation/storminess, sea level rise,

wnscaled GCMs and RCMs to localized areas of interest for various ingston. A high and a low emissions scenario was used, and three ownscaled data includes: annual average temperature, seasonal tion, seasonal precipitation, and vegetation growing seasons.

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Ite Science Special Report and links the biophysical drivers and mate change has already impacted natural resource economies in the lready impacted the wellbeing, culture, and livelihoods of Northwest ents are compromising the infrastructure and support systems of the ts in the Northwest; and climate change is disproportionately color, farmworkers), who often have a lower capacity to adapt to

air temperature, increase in extreme precipitation, shift to a rain-I and drought events. These will have consequences for natural and culture and forestry practices, infrastructure, water resources,

y conclusions include: climate change is unequivocally caused by nd will continue to do so; amounts of snow and ice cover have ural systems; extreme weather and climate events are changing; and

cal ecosystems. Additionally, it provides maps to help visualize excess

NOAA National Center for Environmental Information - Washington State	WA-screen-hi.pdf	https://statesummaries.ncics.org/downlog	2016 Washington State	This is an informational summary of the climate impacts in WA. These impacts include: increasing particularly significant, with far below average number of occurrences of extremely cold days. Un This will lead to earlier snowpack melting, shifting precipitation regimes from snow to rain, and ir projected to occur.
	BCST climato impact			
Port Gamble S'Klallam Tribe Climate	assessment report 051			
Impacts Assessment	8-FINAL	http://nr.pgst.nsn.us/wp-content/uploads	2016 Port Gamble S'Klallam Tribe	This is the climate impacts assessment for the Port Gamble S'Klallam Tribe, who has traditional ar
State of Knowledge, Climate Change in	CIG_ps-			This report gives an overview of the long-term climate trends in Puget Sound, which is consistent
Puget Sound, Section 2: How is Puget	sok_sec02_climate_201			These impacts include: warmer temperatures, longer frost-free seasons, less summer precipitation
Sound's Climate Changing	5	https://cig.uw.edu/wp-content/uploads/si	2015 Puget Sound	increase extreme heat events.
				This report looks at climate change impacts to the stormwater system in Kitsap County. Key concl
	Kitsap County_Task 700			increase at a low emissions scenario; though precipitation has had a gradual increase, the frequent
Task 700 Climate Change Assessment:	Climate Change			intensify across all emission scenarios. Both of these impacts will have significant impacts to Kitsa
Kitsap County	Assessment		2019 Kitsap County	scenarios.
				This is the 3rd National Climate Assessment, and highlights the specific biophysical climate chang
				include: streamflow and snowmelt changes are already being observed and will continue to wors
Third National Climate Assessment,				level rise, erosion, inundation, and ocean acidification pose major threats to infrastructure and ha
Climate Change Impacts in the United	NCA3_Full_Report_21_		Northwest, with some	tree die-offs in the region, with projections of shifting forest composition in the future; and multi
States - Northwest.	Northwest_LowRes	https://nca2014.globalchange.gov/	2014 specifics to Puget Sound	to future conditions.
Scientific Summary of Ocean			WA State, but specifics on	
Acidification in Washington State	WA State Ocean		Puget Sound and Hood	
Marine Waters	Acidification Summary	https://fortress.wa.gov/ecy/publications/c	2012 Canal	This report covers the scientific summary of ocean acidification impacts, historical trends, attribut

g annual temperature by 1.5°F with winter warming being Ider higher emissions scenarios will lead to unprecedented warming. Increased likelihood of springtime flooding. Wildfire frequency is also

reas in Kitsap County and their HQ in Kingston, WA.

with comparative global climate impacts driven by human causes. on, nighttime warming, increase in heavy rainfall events, and

lusions include: sea level rise has been rising and will continue to ncy of extreme rainfall events have increased and will continue to ap's stormwater systems capacity to adapt in future climate change

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e impacts in the Northwest. The key messages of this chapter en, reducing water supply for multiple competing demands; sea abitat; wildfire, insect outbreaks, tree diseases are causing massive ple agricultural impacts though there is technical capacity to adapt

tion, and drivers.

Public Health

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
Cancer Deaths and Incidence: Washington					
State, Kitsap County and Kitsap County	Cancer_Incidence_Mor	t			This report identifies the incidences of cancer rates and deaths in Kitsap County between
Regions	ality_2016	https://kitsappublichealth.org/	2016	Kitsap County	Washington state.
					This is Volume II of the Ath National Climate Assessment This second current and the Val
					impacts of climate change to socio-ecological impacts. In the Northwest change to socio-ecological impacts of the Northwest change to socio-ecological impacts.
					wellbeing. Key conclusions include: sea level rise and coastal flooding will likely lead to sal
					wildfires have led to more hospital room and emergency room visits with elderly reonle
					diseases are increasing due to expanding tick habitat and rising temperatures: extreme pr
Fourth National Climate Assessment, Vol. II	Mav et			Northwest, though many	disease: harmful algal blooms can lead to toxin accumulation in shellfish, which can poiso
Impacts, Risks, and Adaptation in the	al NCA4 Ch24 Northw	1		WA state and local case	health impacts over their lifetimes from exposure to extreme events and increased toxic
Northwest	est_Full	https://nca2018.globalchange.	2018	studies	to toxins; community wellbeing for Tribes and Indigenous peoples will likely suffer, exace
					This report is a high level synthesis of demographic and public health data for Kitsap Cour
					sources: vital records, public health program tracking, reportable illnesses, surveys, and the
	KPHD_Health_Indicator	r			Overall the natural environment indicators were statistically better in 2017 than 200. The
Kitsap County Core Public Health Indicators	S	https://kitsappublichealth.org/	2018	Kitsap County	due to an advisory for illness (algae or elevated bacteria) which rose from 5 to 25.
Increased mortality associated with extreme	-				
heat exposure in King County, Washington,			2010		This paper looked at the association between extreme heat events and increased mortalit
1980–2010.		https://link.springer.com/articl	2016	King County	day versus non-heat day.
Matamal and Child Health Convises Plack	MCHPC Indicators				I his report prepared by the Kitsap County Public Health District provides information abo
Grant (MCHPG) indicators		https://kitsappublishaalth.org/	2019	Kitson County	disease mental health and substance use indicators
State of Knowledge Climate Change in Puget	FINAL 00272018.pui	https://kitsappublichealth.org/	2018	Kitsap County	This report is a synthesis of the changes in water quality in Puget Sound, which is changing
Sound Section 7: How is Puget Sound's	•				inputs (e.g. runoff) Key conclusions as it relates to health are: harmful algal blooms will i
Water Quality Changing?	SOK Water Quality	https://cig.uw.edu/wp-content	2015	Puget Sound	in shellfish.
					This report is a synthesis of the climate impacts to human health in Puget Sound. Climate
					effects of more intense heat waves and higher flood risk, and via the indirect effects of ind
					disease dynamics, and declining air quality. Projected changes in climate are likely to have
					disproportionate effect on its most vulnerable residents (i.e., over age 65, children, home
State of Knowledge, Climate Change in Puget	t				events are expected to increase hospitalizations due to heat stress, and have the potentia
Sound, Section 13: How Will Climate Change					smoke exposure and increased occupational hazards for emergency responders. Washing
Affect Human Health?	SOK_Human Health	https://cig.uw.edu/wp-content	2015	Puget Sound	climate change may affect human health and public health infrastructure.
					This is the 3rd National Climate Assessment, and highlights the specific biophysical climate
					include: streamflow and snowmelt changes are already being observed and will continue
Third National Climate Assessment, Climate					level rise, erosion, inundation, and ocean acidification pose major threats to infrastructure
Change Impacts in the United States -	NCA3_Full_Report_21_			Northwest, with some	tree die-offs in the region, with projections of shifting forest composition in the future; ar
Northwest.	Northwest_LowRes	https://nca2014.globalchange.j	2014 specifics to Puget Sound		to future conditions.

1990 and 2013. Kitsap County has a statistically higher rate than

I Climate Science Special Report and links the biophysical drivers and ssage 4 specifically highlights climate impacts around human health and altwater intrusion of groundwater; extreme heat and cold events and and children particularly vulnerable (data from King County); infectious recipitation events are associated with Shigellosis, an infectious diarrheal on people who consume them; youth may experience cumulative mental exposures; fetal development may also be impacted by increased exposures rbating multi-generational trauma.

ty. The majority of data come from standard public health ne U.S. Census. Section IV looks at the health of Kitsap County surroundings; outliers was the average number of days a fresh water beach was closed

ty in King County to see if there was a trend in the risk of death on a heat

ut women ages 15 to 44 in Kitsap County. Each indicator is reported for incy, socioeconomic, chronic disease, access to care, communicable

g due to climate change, natural variability, and additional anthropogenic increase in magnitude and frequency, increasing bioaccumulation of toxins

change could affect human health in the Puget Sound region via the direct creasing wildfire severity, declining summer water supply, shifting infectious widespread implications for Puget Sound's population, and a less). Projected increases in the frequency and intensity of extreme heat I to reduce air quality. Increasing fire risk could affect human health via ton's state and local governments are in the early stages of identifying how

te change impacts in the Northwest. The key messages of this chapter to worsen, reducing water supply for multiple competing demands; sea re and habitat; wildfire, insect outbreaks, tree diseases are causing massive and multiple agricultural impacts though there is technical capacity to adapt

Kitsap County Climate Resiliency Assessment

Data Source Index

Economy

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
Effects of projected climate change on					The article evaluates potential changes in the amount of Pacific Northwest hydropower p
energy supply and demand in the Pacific					Energy demand, and potential changes are assessed as changes in heating degree days (H
Northwest and Washington State.			2010	Washington State	projections
EPA. 2017. Multi-Model Framework for					
Quantitative Sectoral Impacts Analysis: A					This report quantifies potential physical and economic damages to multiple U.S. sectors (
Technical Report for the Fourth National	CIRAII_TechnicalReport	f		National report with some	within U.S. regions) using a consistent set of climate and socioeconomic scenarios and as
Climate Assessment.	orNCA4_Final_	https://cfpub.epa.gov/si/si_pu	2017	statewide specifics	electricity, water resources, agriculture, and ecosystems.
Fourth National Climate Assessment, Vol. II	May et			Northwest, though many	This is Volume II of the 4th National Climate Assessment. This report expands on the Vol. impacts of climate change to socio-ecological impacts. In the Northwest chapter, Key Me economy, which includes agriculture, forestry, commercial fishing, and outdoor recreatic shifting precipitation regimes, which will likely impact outdoor recreation industries in th
Impacts, Risks, and Adaptation in the	al_NCA4_Ch24_Northw			WA state and local case	affects agriculture and timber production and product quality; wildfires; increased stream
Northwest	est_Full	https://nca2018.globalchange.j	2018	studies	commercially-important species.
Kitsap County Multi-Hazard Mitigation Plan	Kitsap Hazard Mitigation	http://citeseerx.ist.psu.edu/vie	2012	Kitsap County	This report did not explicitly include climate change consideration, however it included a from future climate change. This report mentions that Kitsap County is valued at \$28,439 at 5 different military installations, and is an important part of the County's economy. Oth manufacturing, tourism, forestry, healthcare, transportation, public utilities, wholesale, r
				• •	
Kitsap County 2017/2018 Economic Profile	County-Profile_Kitsap	http://kitsapeda.org/wp-conte	2019	Kitsap County	The report is outlines a high-level overview of the Kitsap economy while highlighting fact recent complete annual data for the region, which at the time of publication includes mo
					The CIRA II is a report on the best available science on the economic impacts of climate c 4.5.The Northwest will experience the second highest cumulative wildfire response costs associated costs being higher due to shifts in vegetation type. The Northwest will have the
Multi-Model Framework for Quantitative					scenarios, with up to \$84 million in damages under RCP8.5. Impacts to shellfish will impa
Sectoral Impacts Analysis: A Technical					under RCP8.5 and 2.1 million fishing days lost under RCP4.5 by 2090. There will be billion
Report for the Fourth National Climate	CIRAII_TechnicalReport	t		National, Northwest-specifi	ic quality, although mortality rates have no significant projected changes. Climate impacts t
Assessment	orNCA4_Final_060717		2017	conclusions	by 2090 under RCP 8.5.
					This is the 3rd National Climate Assessment, and highlights the specific biophysical climat
					include: streamtiow and snowmelt changes are already being observed and will continue
i niro National Climate Assessment, Climate				AL 11 1 11	level rise, erosion, inundation, and ocean acidification pose major threats to infrastructur
Change impacts in the United States -	NCA3_Full_Report_21_	nttps://nca2014.globalchange	201	Northwest, with some	tree die-ons in the region, with projections of shifting forest composition in the future; a
Northwest.	Northwest LowRes	.gov/	2014	specifics to Puget Sound	to future conditions.

production and changes in energy demand as a result of climate change. HDD) and cooling degree days (CDD) for both historical trends and future

nationally and

sumptions. The sectors included in this report are health, infrastructure,

I Climate Science Special Report and links the biophysical drivers and ssage1 talks about the impacts of climate change to the natural resource on and tourism. Specific challenges to the natural resource economy include: e summer and wintertime; drought conditions and pests/diseases which n temperatures and changing ocean conditions affecting salmon and other

risk assessment of various extreme events that are projected to change ,419. The military economy in Kitsap County employs about 40,000 people her business economies for the county include: fishing, construction, etail, financial, insurance, real estate, and services.

tors that may impact it. The majority of the data in this report is the most ostly 2017 data, but there also contains a mix of data from 2016 and 2018.

hange in the U.S. across multiple sectors and regions under RCP8.5 and (on order of billions of dollars) through the end of the century with some he highest damages to urban drainage from 10-year storms under all ct local economies, and there is a projection of 8.1 million fishing days lost s of dollars in damages through lost labor losses by 2090 due to poorer air to road infrastructure will be \$360 million/year by 2050 to \$950 million/year

te change impacts in the Northwest. The key messages of this chapter to worsen, reducing water supply for multiple competing demands; sea re and habitat; wildfire, insect outbreaks, tree diseases are causing massive nd multiple agricultural impacts though there is technical capacity to adapt

Cultural Resources

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
Bainbridge Island Climate Impacts					This report is a climate impacts assessment for the city of Bainbridge Island. It covers six k
Assessment	BICIA Final 28 July 2016	https://www.cakex.org/sites/d	2016	Bainbridge Island	vegetation change, ocean acidification, and slope stability.
					This is Volume II of the 4th National Climate Assessment. This report expands on the Vol.
					impacts of climate change to socio-ecological impacts. In the Northwest chapter, Key Mes
Fourth National Climate Assessment, Vol. II	May et			Northwest, though many	resources. Key conclusions from this section include: 1) climate change has already impac
Impacts, Risks, and Adaptation in the	al_NCA4_Ch24_Northw	,		WA state and local case	species critical to many livelihoods and quality of life, especially for Tribes and Indigenous
Northwest	est_Full	https://nca2018.globalchange.j	2018	studies	summer and winter recreation opportunities and continue to worsen quality of life, which
	KitsapParksMap_8x11.p)			
Kitsap Parks Map	df	https://www.kitsapgov.com/pa		 Kitsap County 	This is a map of the Kitsap County parks system. It includes 42 parks.
National Park Service, Climate change	NPS-Climate-Impacts-to)-			This document has an impacts table that describes how different manifestations of climat
Response program, Climate Change Impacts	Cultural-Resources_7-				organized by major measurable trends of climate change, such as temperature and precip
on Cultural Resources	2016.pdf	https://www.nps.gov/subjects/	2016	5 National	Archeological resource, 2) Cultural Landscapes, 3) Ethnographic resources, 4) Museum co
	PGST_climate-impact-				
Port Gamble S'Klallam Tribe Climate Impacts	assessment_report_051	L			
Assessment	8-FINAL	http://nr.pgst.nsn.us/wp-conte	2016	Port Gamble S'Klallam Tribe	This is the climate impacts assessment for the Port Gamble S'Klallam Tribe, who has tradit
					This paper examines the impacts of climate change on tribal traditional foods. The paper
The impacts of climate change on tribal	Impacts on tribal				recognizing that tribal access to traditional food resources is strongly influenced by the le
traditional foods.	traditional foods_lynn	https://www.fs.fed.us/pnw/pu	2013	8 National	the complex relationship that tribes have with places, ecological systems and species.

ey impacts areas: temperature, precipitation/storminess, sea level rise,

I Climate Science Special Report and links the biophysical drivers and ssage 2 talks specifically about climate impacts to cultural heritage and cted outdoor recreation opportunities, iconic wildlife, and habitat and s peoples; 2) climate change will exacerbate these impacts, and affect h may have implications for local economies.

te change will affect different types of cultural resources. The table is pitation. The five types of cultural resources evaluated in the table are: 1) lections, 5) Buildings and structures.

tional areas in Kitsap County and their HQ in Kingston, WA. highlights the cultural importance of traditional foods to tribal culture, gal and regulatory relationship with the federal government, and examining

Public Infrastructure

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
					This report did not explicitly include climate change consideration, however it included a
					from future climate change. General hazards include: earthquakes, which disrupt Kitsan
					events, though historically has not disrupted services; and flooding, which was identified
	Kitsan Hazard				Energy infrastructure has been a focus to mitigate risks from winter storm events already
Kitsap County Multi-Hazard Mitigation Plan	Mitigation	http://citeseerx.ist.psu.edu/vie	2015	5 Kitsap County	underground and still vulnerable to earthquakes, flooding events, sea level rise, and stor
Kitsap County sewer facilities map		https://kitcowa.maps.arcgis.co	2018	8 Kitsap County	ArcGIS map and layers of wastewater features, including structures, pipes, permits, later
				, <u>,</u>	
					This is Volume II of the 4th National Climate Assessment. This report expands on the Vol.
					impacts of climate change to socio-ecological impacts. In the Northwest chapter, key me
					systems, and services. Multiple climate stressors will affect infrastructure systems. Some
Fourth National Climate Assessment, Vol. II	May et			Northwest, though many	climate, not a future climate, in mind; storm surges and flooding can lead to failed culver
Impacts, Risks, and Adaptation in the	al_NCA4_Ch24_Northv	v		WA state and local case	emergency and social services to various communities; wildfires can place additional stre
Northwest	est_Full	https://nca2018.globalchange.g	2018	8 studies	precipitation and hydrological regimes and saltwater intrusion; and waste management t
Sewer map		https://kitcowa.maps.arcgis.co	-	- Kitsap County	Password protected.
Sewer, stormwater, and water service					
utilities		https://kitcowa.maps.arcgis.co	-	 Kitsap County 	Password protected.
State of Knowledge, Climate Change in Puget	t				
Sound, Section 8: How Will Climate Change					This report is a synthesis of the climate impacts to agriculture in Puget Sound. Specific to
Affect Agriculture?	SOK_Agriculture	http://cses.washington.edu/pic	2015	5 Puget Sound	coupled impacts of sea level rise and increased flooding.
					This report is a synthesis of the climate impacts to the built environment in Puget Sound
State of Knowledge, Climate Change in Puget	t				waves, and increased wildfires will impact transportation, wastewater and water convey
Sound, Section 12: How will Climate Change					detours. These impacts will be most pronounced in coastal or low-lying areas. Coastal inf
Affect the Built Environment?	SOK_Built Environmen	t <u>https://cig.uw.edu/wp-content</u>	2015	5 Puget Sound	and flooding from SLR. Aviation, bus, and rail services are likely to experience increases in
Stormwater infrastructure map		https://kitcowa.maps.arcgis.co	2018	8 Kitsap County	ArcGIS map and layers of stormwater infrastructure (catch basins, valves, pipes, enclosur
					This was a masters thesis that compared the climate impacts and adaptation choices of p
The Good, The Bad, and the Robust: Climate					selected sites. Key conclusions include: at the time of publication, neither the city of Brei
Change Adaptation Choices for the Port of					do not have climate scenario development yet; however, early snowmelt, air quality deg
Rotterdam, Port of San Diego, and Naval	Smith_washington_02	5		Naval Base Kitsap -	extreme rainfall, and sea level rise have been identified as risks to Navy infrastructure in
Base Kitsap - Bremerton	00_14153	https://digital.lib.washington.e	2015	5 Bremerton	(Knopp 2007) and will be underwater under high emission scenarios. Floods and storm s
Transportation map		https://kitcowa.maps.arcgis.co	2018	8 Kitsap County	ArcGIS map and layers of local and major roads in Kitsap County.
Washington State Department of	ENV-Climate-				
Transportation. Climate Impacts	VulnerabilityAssessmer	n			This climate assessment acts as a climate risk assessment model for transportation infras
Vulnerability Assessment.	t	https://www.wsdot.wa.gov/site	2011	1 Washington State	scenario planning model to create an assessment of climate vulnerability and recommen

risk assessment of various extreme events that are projected to change services and communities and the most costly for the county; winter storm as a risk in a 2008 Hazard Identification and Vulnerability Assessment. /, however, gas lines, public utilities, and the sewer system are all m surges.

als, and service areas.

I Climate Science Special Report and links the biophysical drivers and ssage 3 specifically highlights climate impacts to infrastructure, support key impacts include: most infrastructure is designed with a historical ts, leading to flooding, sinkholes, and landslides that may disrupt access of ss on electric utilities; water supplies will be impacted by shifting facilities may help mitigate anthropogenic stressors (e.g. runoff).

infrastructure, there are risks to farming and agricultural infrastructure from

Sea level rise, intense heavy rainfall events, more frequent and intense heat ance, urban centers, and energy systems through closures, delays, and rastructure will experience more frequent saltwater intrusion, corrosion, n delays or closures due to heavy rainfall and flooding. es) in Kitsap County.

orts around the U.S. The Naval Base Kitsap in Bremerton was one of the merton or the Naval Base had begun planning for climate change, and thus radation, urban heat island, wildfires, heat waves, droughts, storms, the Pacific region. Dry docks at the Naval Base Kitsap are at risk to SLR urges pose a risk to shipyard facilities.

tructure. The Washington State Department of Transportation used a dation for its assets in each region and mode across the state.

Kitsap County Climate Resiliency Assessment

Data Source Index

Land Use and Development

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
	IPCC_Land	•			
Climate Change and Land: an IPCC special	Use_Technical-				An IPCC Special Report that discusses climate change, desertification, land degradation, s
report.	Summary	https://www.ipcc.ch/srccl/	2019	International	international ecosystems.
Kitsap County Comprehensive Plan 2016-					The Kitsap County Comprehensive Plan 2016-2036 serves as the policy document that he
2036	CompPlanUpdate_2016	http://compplan.kitsapgov.con	2016	Kitsap County	such as building roads, providing land for housing, and protecting the environment.
Kitsap County Multi-Hazard Mitigation Plan	Kitsap Hazard Mitigation	http://citeseerx.ist.psu.edu/vie	2015	Kitsap County	This report did not explicitly include climate change consideration, however it included a from future climate change. This report highlights the existing city and county building ar buildings have approximately 2500 units and there are over 100,000 residential units that 20,000), mobile home units (approx. 9,500), and other types of housing units (approx. 20 Kitsap County Consolidated Plan. and very likely out of date.
					This is Volume II of the 4th National Climate Assessment. This report expands on the Vol. impacts of climate change to socio-ecological impacts. In the Northwest chapter, climate
Fourth National Climate Assessment, Vol. II	May et			Northwest, though many	infrastructure. Lower summer streamflow and higher winter flow, due to decreased wint
Impacts, Risks, and Adaptation in the	al_NCA4_Ch24_Northw	,		WA state and local case	survivability of salmonid and other freshwater species. Winter precipitation in rain, instea
Northwest	est_Full	https://nca2018.globalchange.j	2018	studies	intensity and frequency, impacting infrastructure and habitats.
Fourth National Climate Assessment, Volume II. Land Cover and Land-Use Change. In Impacts, Risks, and Adaptation in the United States.	NCA4_Ch05_LCLU_Full	https://nca2018.globalchange.j	2018	National	This is in the 4th National Climate Assessment, and highlights the specific changes in land land uses. The chapter outlines how land cover, use, condition, and management vary. The climate, and climate change impacts on land use and ecosystems.
State of Knowledge, Climate Change in Puge	t				
Sound, Section 9: How Will Climate Change	SOK_Terrestrial				Section 9 of the SOK Report provides observations and projected impacts terrestrial ecos
Affect the Terrestrial Ecosystems?	Ecosystems	http://cses.washington.edu/pic	2015	Puget Sound	species distribution, forest health and biodiversity, wildfires, and invasive species.
The Growing Threat of Urban Flooding: A	National Urban	https://cdr.umd.adu/sitas/cdr	2018	National	This report focuses attention on the widespread and costly damage caused by urban floo rainfall. Based on the results of a nationwide survey of stormwater and floodplain manag
National challenge	riooding Keport	interstresters	2018	National	wary and and revas Agiv onversity) demonstrates now droan nooding is a separate price

ustainable land management, food security, and greenhouse gas fluxes in

Ips guide decisions on services for a wide range of critical County programs,

risk assessment of various extreme events that are projected to change nd residential units in Kitsap County (page 2-11 and Table 2.2). City/County t span single family units (approx. 71,000), multi-family units (approx. 0). These numbers were from a 2008 survey and published in the 2011-2015

I Climate Science Special Report and links the biophysical drivers and impacts to hydrological regimes include impacts to salmonids and er snowpack, precipitation shifts, and heavy rainfall events, will affect the ad of snow, coupled with heavy rainfall events will increase flooding

l-use practices that change land cover, and how land cover enables specific he key messages of this chapter include: land use impacts on weather and

ystems, including changes in timing of biological events, changes in the

ding due to city landscapes that cannot absorb or otherwise manage gement professionals, the report (by researchers from the University of enomenon from coastal and river flooding.

Kitsap County Climate Resiliency Assessment

Data Source Index

Agriculture

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Descrip
Bainbridge Island Climate Impacts		· · · · · ·			This report is a climate impacts assessment for the city of Bainbridge Island. It cover
Assessment	BICIA Final 28 July 2016	https://www.cakex.org/sites/default/files,	2016	Bainbridge Island	vegetation change, ocean acidification, and slope stability.
Climate change in the Northwest:					
Implication for our Landscapes, Waters,	Chapter 6.			Northwest, though many	This report looks to asses the state of knowledge about key climate impacts and cor
and Communities. Chapter 6.	Agriculture_Climate change			WA state and local case	Chapter highlights climate impacts to the agriculture sector, vulnerabilities to project
Agriculture.	in the Northwest.	http://cses.washington.edu/db/pdf/daltor	2013	studies	mitigation.
Fourth National Climate Assessment, Vol. II. Impacts, Risks, and Adaptation in the Northwest	May et al_NCA4_Ch24_Northwest_ Full	https://pca2018.globalchange.gov/chapte	2018	Northwest, though many WA state and local case studies	This is Volume II of the 4th National Climate Assessment. This report expands on the impacts of climate change to socio-ecological impacts. In the Northwest chapter, Ke economy, which includes agriculture. Specific challenges to agriculture include: extrr timing and declining summer flows affecting irrigation and crop productivity and inco phenological characteristics of crops and shifting crop production and planting seaso viability of farmers
	Full		2018	studies	
Fourth National Climate Assessment, Volume II. Agriculture and Rural Communities. In Impacts, Risks, and Adaptation in the United States.	NCA4_Ch10_Agriculture_Ful	https://nca2018.globalchange.gov/chapte	2018	National, with some downscaled models to WA State or NW region	This is in the 4th National Climate Assessment, and highlights the specific biophysic messages of this chapter include: agricultural productivity, soil and water resources
Kitsap County Agriculture Sustainability Plan.	Kitsap County Agriculture Sustainability Situation and Analysis_2011	https://www.kitsapgov.com/BOC_p/Policy	2011	Kitsap County	This situation and analysis report addresses these queries by provide a sense of what baseline so that future development goals can be set for agriculture in Kitsap Count
Third National Climate Assessment, Climate Change Impacts in the United States - Northwest.	NCA3_Full_Report_21_Nort hwest_LowRes	https://nca2014.globalchange.gov/	2014	Northwest, though many WA state and local case studies	This is the 3rd National Climate Assessment, and highlights the specific biophysical of include: streamflow and snowmelt changes are already being observed and will con level rise, erosion, inundation, and ocean acidification pose major threats to infrastr tree die-offs in the region, with projections of shifting forest composition in the futut to future conditions.
State of Knowledge, Climate Change in Puget Sound, Section 8: How Will Climate Change Affect Agriculture?	 SOK_Agriculture	http://cses.washington.edu/picea/mauger	2015	Puget Sound	This report is a synthesis of the climate impacts to agriculture in Puget Sound. Key c production (depending on crop), exacerbate water supply challenges, changing risks saltwater intrusion. There is also risks to farming and agricultural infrastructure from

tion

rs six key impacts areas: temperature, precipitation/storminess, sea level rise,

nsequences to various sectors and communities in the Northwest United States. cted climate change, and identifies strategies and measures for adaptation and

e Vol. I Climate Science Special Report and links the biophysical drivers and ey Message1 talks about the impacts of climate change to the natural resource reme heat events (highlighting 2015 as an extreme year); shifts in snowmelt creasing tensions on water supply challenges; warmer temperatures shifting conality; decreasing quality of crop products, which is likely to affect economic

al climate change impacts in to the United States agriculture sector. The key s, health challenges, vulnerability, and adaptive capacity.

at agriculture is in Kitsap County, where agriculture stands today, and define a cy.

climate change impacts in the Northwest. The key messages of this chapter ntinue to worsen, reducing water supply for multiple competing demands; sea ructure and habitat; wildfire, insect outbreaks, tree diseases are causing massive ure; and multiple agricultural impacts though there is technical capacity to adapt

conclusions is that climate change will: lengthen growing season, shift crop s of pests and diseases, increasing winter flood risk, and increasing risk of n coupled impacts of sea level rise and increased flooding.

Local Government Finance

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
					Counties more likely to be affected by climate change pay more in underwriting fees and
					unlikely to be affected by climate change. This difference disappears when comparing sho
An inconvenient cost: the effects of climate					for long-term securities only. Higher issuance costs for climate risk counties are driven by
change on municipal bonds		https://www.sciencedirect.con	2019	National; review article	difference in issuance costs on bonds issued by climate and non-climate affected counties
					This article talks about expected future changes to the municipal bond market in response
					change risks in the future. "That's the conundrum facing the municipal bond market right
					billions in ill-fated investments in communities at the forefront of climate change. But ma
					borrow money could prevent them from making the improvements needed to strengther
Climate change could make borrowing more				National article with some	
costlier for States and Cities		https://www.pewtrusts.org/en	2019	e statewide specifics	According to PEW, WA State has \$9.2billion in municipal bond issuance.
Climate change disasters and your municipal					This article talks about how more municipal bond issuers and firms are considering climat
bonds		https://www.forbes.com/sites/	2019	National article	could lead to economic disruption, citizens leaving the geography (and the associated tax
Getting physical: Scenario analysis for	bii-physical-climate-			National with some regional	This national report shows how changes to the climate and related extreme weather even
assessing climate-related risks.	risks-april-2019	https://www.blackrock.com/us	2019	e specifics	climate risks and their implications for local GDP.
	Municipal-CC-			Massachusetts; with an	
Municipal climate change adaptation and	Adaptation-and-			expanded focus on coastal	This memorandum describes the insurance industry's involvement with climate change, o
the insurance industry.	Insurance-Industry	http://blogs.harvard.edu/envir	2012	2 municipalities	recommends potential adaptation actions that coastal municipalities can utilize.
	Evaluating-the-impact-				
	of-climate-change-on-				
Evaluating the impacts of climate change on	US-state-and-local-			National article with some	This article evaluates the United State's economic exposure and vulnerability. This piece
US state and local issuers.	issuers-	https://southeastfloridaclimate	2017	7 statewide specifics	have on states and local credit issuers.

initial yields to issue long-term municipal bonds compared to counties ort-term municipal bonds, implying the market prices climate change risks / bonds with lower credit ratings. Investor attention is a driving factor, as the s increases after the release of the 2006 Stern Review on climate change.

se to climate change. More firms are beginning to account for climate t now: If the market fails to be proactive about future risks, it could lead to aking it more expensive for governments with environmental liabilities to n their infrastructure."

te change. Not considering climate change in municipal bond issuances (base), and more maladaptive infrastructure.

nts increase the risks to investment portfolios. The report outlines physical

outlines challenges for climate change adaptation via insurance, and

discusses how to properly asses the credit impact that climate change will

Geology Hazards

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
Fourth National Climate Assessment, Vol. II Impacts, Risks, and Adaptation in the Northwest	May et al_NCA4_Ch24_Northw est_Full	https://nca2018.globalchange.j	201	Northwest, though many WA state and local case 8 studies	This is Volume II of the 4th National Climate Assessment. This report expands on the Vol. impacts of climate change to socio-ecological impacts. In the Northwest chapter, geologi mudslides, which will likely increase in frequency and intensity due to more extreme sto infrastructure (e.g. roads and highways) and access to emergency and social services. Co bluff landslides since 1914 occurring between 2009-2013. Low lying coastal areas are at r erosion, will very likely impact critical coastal infrastructure and habitats for fish and she
Kitcan County Multi Hazard Mitigation Plan	Kitsap Hazard	http://citocoory.ict.pcu.odu/vio	2011	5 Kitsan County	This report did not explicitly include climate change consideration, however it included a from future climate change. This report mentions that Kitsap County has been particular heavy rainfall events and ground saturation. There is an additional map in this report our 17). Furthermore, the report gives an overview of the geological characteristics of the Ki of a glacial drift plain. The peninsula is deeply dissected by inlets, giving the County roug (see Appendix D – Kitsap County Hazard Identification and Vulnerability Analysis – HIVA) the perimeter of Puget Sound, particularly in unsheltered bluff areas subjected to wave the subsurface: fill, younger alluvium including beach deposits, alluvium associated with and year loose oils over time, and may have hean artificially filled during pravious days.
	Witigation		201		and very loose sons over time, and may have been artificially mice during previous dever
Port Gamble S'Klallam Tribe Climate Impacts Assessment	PGST_climate-impact- assessment_report_051 8-FINAL	http://nr.pgst.nsn.us/wp-conte	201	6 Port Gamble S'Klallam Tribe	This is the climate impacts assessment for the Port Gamble S'Klallam Tribe, who has trad
Risk Report: For Kitsap County, including the					
Cities of Bremerton, Bainbridge, Port Orchard, Poulsbo, the Port Gamble S'Klallam Indian Reservation, the Suquamish Tribe,	Risk Report - Kitsap				This report identifies and discusses risk for Kitsap County and its incorporated cities, inclu reservations, the Port Gamble S'Klallam Tribe and the Suquamish Tribe, are also included
and Unincorporated Kitsap County.	County - Final	https://fortress.wa.gov/ecy/gis	201	5 Kitsap County	measures to help communities reduce their risk.
				Kitaan Caustuit (Usaa Caattila	This interactive tool provides maps of areas below different amounts of sea level rise and The tool also provides statistics of population, homes and land affected by city, county a
Summary for Kitsan County, WA		https://ss2.climatecentral.org/;	201	6 Data as a Proxy)	additional widgets to select between variables.
ouning for Risup county, whi		integat/ 352.cimatecentral.01g/1	201	o bata as a riokyj	This report gives an overview of the climate impacts in Puget Sound around specific geol
State of Knowledge, Climate Change in Puget Sound, Section 5: How Will Climate Change Affect Landslides, Erosion, and Sediment	t SOK_Landslides, Erosion, and Sediment				and increases in the frequency and intensity of heavy rainfall events will increase the fre Sediment transport will decrease during summers due to low streamflow and drier soils. continue to influence these geological processes. There are few studies published on tre
Transport?	Transport	https://cig.uw.edu/resources/s	201	5 Puget Sound	climate change.
Task 700 Climate Change Assessment Kitsap	Kitsap County_Task 700 Climate Change				This study contains current and potential impacts of climate on Kitsap County's stormwa
County	Assessment		201	9 Kitsap County	precipitation intensities.

I Climate Science Special Report and links the biophysical drivers and cal hazards were relevant across multiple key messages. Landslides and rms, are projected to alter essential habitat for aquatic species, disrupt local astal bluff landslides have shut down the Amtrak operations, with 26.7% of isk to storm surges, which coupled with large waves, high tides, and coastal lfish.

a risk assessment of various extreme events that are projected to change ily susceptible to fatal landslides and marine bluff failures that are caused by tlining vulnerable areas within the county (Exhibit 2.5 in the report, page 2tsap County, which is: "The Kitsap Peninsula area is geologically the remnant hly 33 miles of freshwater waterfront, and 210 miles of salt-water coastline . Landslide and marine bluff failures are relatively common in the low hills on cutting (Young et al, 1993). Four main geologic units have been identified in the Vashon Glacier, and basaltic bedrock. Low areas have filled with peat lopment. (Dames & Moore 1997)."

itional areas in Kitsap County and their HQ in Kingston, WA.

iding Bainbridge, Bremerton, Port Orchard, and Poulsbo. Two tribal . The Risk Report has highlights risk related to natural hazards and identifies

I flooding, down to neighborhood scale, matched with area timelines of risk. nd state, plus links to factsheets, data downloads, action plans, and has

logic hazards, such as landslides. Warmer temperatures, declining snowpack, equency of landslides and the rate of erosion and sediment transport. . Human modification of landscapes and natural climate variability will ends in landslides, and even fewer that have correlated these trends to

ter system from sea level rise as well as current and projected trends in

Hydrology and Hydrogeology

	07				
Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
					This is Volume II of the 4th National Climate Assessment. This report expands on the Vol
					impacts of climate change to socio-ecological impacts. In the Northwest change to socio-ecological impacts.
Fourth National Climate Assessment, Vol. II	Mayet			Northwest though many	infractive to war summer streamflow and higher winter flow, due to decreased win
Impacts Risks and Adaptation in the	al NCA4 Ch24 Northw			WA state and local case	survivability of salmonid and other freshwater species. Winter precipitation in rain inste
Northwest	est Full	https://nca2018.globalchange.u	2018	8 studies	intensity and frequency, impacting infrastructure and habitats.
				Port Gamble S'Klallam Tribe	
				Further reports for King	The tool provides information on the projected changes, as well as comparisons with ob
How will heavy rains change in western				County, Everett, and	and return frequencies. The tool includes three visualizations for precipitation: (1) Perce
Washington?		https://cig.uw.edu/our-work/a	2018	8 Thurston County.	Validation.
	Elsner_Implication of				
	21st Century Climate				
	Change for the				This publication highlights the sensitivities to climate change of hydrologic regimes in W
Implications of 21st Century Climate Change	Hydrology of			Washington State, specific	scenarios. Watersheds west of the Cascades will have virtually no snow water equivalen
for the Hydrology of Washington State	Washington State		2009	9 Puget Sound conclusions	shift the snowmelt watershed basins to mixed snow-rain watershed basins. Annual runc
Interactive Sea Level Pice Data Visualizations		https://cig.uw.odu/our.work/a	2019	9 Kitsan County	This model shows downsceled SLP visualizations down to the Kitsan County scale, with a
Interactive Sea Lever Rise Data Visualizations	,		2010	o Kilsap County	This report did not explicitly include climate change consideration, however it included
	Kitsan Hazard				from future climate change. This report includes a flood bazard and floodway map from
Kitsan County Multi-Hazard Mitigation Plan	Mitigation	http://citeseery.ist.psu.edu/vie	2011	5 Kitsan County	areas
	MitiBation		201		This is an informational summary of the climate impacts in WA. These impacts include: i
					particularly significant, with far below average number of occurrences of extremely cold
NOAA National Center for Environmental					This will lead to earlier snowpack melting, shifting precipitation regimes from snow to ra
Information - Washington State	WA-screen-hi.pdf	https://statesummaries.ncics.o	2010	6 Washington State	projected to occur.
	·			0	
NOAA Relative Sea Level Trend		https://tidesandcurrents.noaa.	2019	9 Seattle	The graph shows the monthly average sea level for Seattle, WA. The long-term linear tre
	Miller et al_Projected				
Projected Sea Level Rise for Washington	SLR for Washington			Washington State, specific	
State	State	https://cig.uw.edu/wp-content	2018	8 Puget Sound conclusions	This report provides an updated set of absolute and relative sea level rise projections ou
State of Knowledge, Climate Change in Puge	t CIG_ps-				This report gives an overview of the long-term climate trends in Puget Sound, which is c
Sound, Section 2: How is Puget Sound's	sok_sec02_climate_201				These impacts include: warmer temperatures, longer frost-free seasons, less summer pr
Climate Changing	5	https://cig.uw.edu/wp-content	201	5 Puget Sound	increase extreme heat events.
State of Knowledge, Climate Change in Puge	•				
Sound, Section 3: How Will Climate Change	•				
Affect the Water Cycle?	SOK Water Cycle	http://cses.washington.edu/pic	201	5 Puget Sound	Section 3 of the SOK Report provides observations and projected impacts on hydrology.
State of Knowledge, Climate Change in Puge	t				
Sound, Section 4: How Will Climate Change					
Affect the Sea Level?	SOK_Sea Level Rise	https://cig.uw.edu/wp-content	201	5 Puget Sound	Section 4 of the SOK Report provides observations and projected impacts on sea level, s
				Kitsap County* (Uses Seattle	2
Surging Seas- Risk Finder		https://riskfinder.climatecentra	2010	6 Data as a Proxy)	This online tool provides summaries and visualizations on the trends and projections for
	Kitsap County_Task 700				
	Climate Change				This study contains current and potential impacts of climate on Kitsap County's stormwa
Task 700 Climate Change Assessment	Assessment		2019	9 Kitsap County	precipitation intensities.
					This is the 3rd National Climate Assessment, and highlights the specific biophysical climate
					include: streamflow and snowmelt changes are already being observed and will continu
Third National Climate Assessment, Climate				AL 11 A 11	level rise, erosion, inundation, and ocean acidification pose major threats to infrastructu
Change Impacts in the United States -	NCA3_Full_Report_21_			Northwest, with some	tree ale-otts in the region, with projections of shifting forest composition in the future; a
Northwest.	Northwest_LowRes	https://nca2014.globalchange.	2014	4 specifics to Puget Sound	to future conditions.

. I Climate Science Special Report and links the biophysical drivers and e impacts to hydrological regimes include impacts to salmonids and ter snowpack, precipitation shifts, and heavy rainfall events, will affect the ad of snow, coupled with heavy rainfall events will increase flooding

servations for a number of precipitation durations, seasons, future decades, ent Changes, (2) Intensity-Duration-Frequency Curves, and (3) Model

A and the PNW using two climate models and the A1B and B1 emissions by April 1 by the 2080s, which will impact seasonal streamflow timing and if will also steadily increase to 4-6% by the 2080s.

even further downscaled projections along most of the County's coastline. a risk assessment of various extreme events that are projected to change FEMA (2007) as well as multiple references to the flood risks of low-lying

ncreasing annual temperature by 1.5°F with winter warming being I days. Under higher emissions scenarios will lead to unprecedented warming. ain, and increased likelihood of springtime flooding. Wildfire frequency is also

nd is also shown, including its 95% confidence interval.

to 2150 for Washington State.

onsistent with comparative global climate impacts driven by human causes. ecipitation, nighttime warming, increase in heavy rainfall events, and

snow, streamflow, water resources, and infrastructure.

corminess, and vertical land motion.

SLR and flooding in Kitsap County.

ter system from sea level rise as well as current and projected trends in

ate change impacts in the Northwest. The key messages of this chapter e to worsen, reducing water supply for multiple competing demands; sea are and habitat; wildfire, insect outbreaks, tree diseases are causing massive and multiple agricultural impacts though there is technical capacity to adapt

Habitat

Dublication or Data Course	Fileneme	Lis monthe la	Dublication Voor	Coorrentie Coorre	Description
Publication or Data Source	Filename	нурегііпк	Publication Year	Geographic Scope	Description
Painbridge Island Climate Impacts					This report is a climate impacts assessment for the situ of Dainbridge Island. It source situ
Association Climate Impacts	DICIA Final 29 July 2016		2016	Dainbridge Island	This report is a climate impacts assessment for the city of Bainbridge Island. It covers six i
Assessment	BICIA FINAI 28 JULY 2016	https://www.cakex.org/sites/d	2016	Bainbridge Island	vegetation change, ocean acidification, and slope stability. There is a section that looks a
					This report outlines a restauction vision of the David Comble Forest Havidage David in Kitean
					Inis report outlines a restoration vision of the Port Gamble Forest Heritage Park in Kitsap
					enhance forest wildlife habitat, diversity plant species, recognize the connection betwee
					consider that human park users are part of the system. This forest restoration program n
Forest Stewardship Plan for the Ecological	ForestStewardshipPlan_	-			Forest Stewardship Plan: 1) Enhance natural forest ecosystem complexity and health, 2)
Restoration of Port Gamble Forest Heritage	EcologicalRestoration_P				biologically, socially and economically self -sustaining, 4) Provide safe, reasonable and ap
Park	GFHP_2016.pdf	https://www.kitsapgov.com/pa	2016	Kitsap County	such as thinning, to support the restoration of various 'resource categories', such as weth
					This is Volume II of the 4th National Climate Assessment. This report expands on the Vol.
					impacts of climate change to socio-ecological impacts. In the Northwest chapter, climate
					impacts from sea level rise, storm surge, and extreme storm events will decrease essenti
					summer streamflow, lower winter snowpack, and additional anthropogenic stressors (e.g
Fourth National Climate Assessment, Vol. II	May et			Northwest, though many	wildfires will very likely impact native cold water species, like salmon or bull trout, poten
Impacts, Risks, and Adaptation in the	al_NCA4_Ch24_Northw			WA state and local case	acidification will likely shift geographic ranges of some species due to habitat suitability.
Northwest	est_Full	https://nca2018.globalchange.j	2018	studies	prevalence, posing multiple challenges for native species and habitat quality. Much of th
	—				
	PGST climate-impact-				
Port Gamble S'Klallam Tribe Climate Impacts	assessment report 051				
Assessment	8-FINAI	http://nr.pgst.nsn.us/wp-conte	2016	Port Gamble S'Klallam Tribe	This is the climate impacts assessment for the Port Gamble S'Klallam Tribe, who has tradi
Preparing Washington State Parks for	0.1.1.12				
Climate Impacts: A Climate Change				WA State but specifics on	This report identifies climate change impacts that are anticipated to create new challeng
Vulnerability Assessment for Washington	W/A-Parks-V/ulnerability-			Puget Sound and Kitsan	many State Parks staff are already adjusting to climate change-related impacts such as se
State Darks	Accordment	https://sig.uu.adu/uup.contont	2017	County forest species	and water cumply reliability
	Assessment	Inteps.//cig.uw.edu/wp-content	2017	county forest species.	Breigetiges for two local sites in Kitsan County, Broyided as a downloadable event spread
Relative See Lovel Rise Projections		BELDrojections, Lat 47 CN, Long	2019		Projections for two local sites in Ritsap county. Provided as a downloadable excel spread
Relative Sea Level Rise Projections		RSLProjections Lat47.6N Long	2018		Tow greenhouse gas scenario (KCP 4.5), and (3) KSLK projections for a high greenhouse ga
				WA State, but specifics on	
Scientific Summary of Ocean Acidification in	WA State Ocean			Puget Sound and Hood	
Washington State Marine Waters	Acidification Summary	https://fortress.wa.gov/ecy/pu	2012	Canal	This report covers the scientific summary of ocean acidification impacts, historical trends
State of Knowledge, Climate Change in Puget	t				
Sound, Section 4: How Will Climate Change					
Affect the Sea Level?	SOK_Sea Level Rise	https://cig.uw.edu/wp-content	2015	Puget Sound	Section 4 of the SOK Report provides observations and projected impacts on sea level, st
State of Kennel des Oliverte Change in Durat					
State of Knowledge, Climate Change in Puget					
Sound, Section 9: How Will Climate Change	SOK_Terrestrial				Section 9 of the SOK Report provides observations and projected impacts terrestrial ecos
Affect the Terrestrial Ecosystems?	Ecosystems	http://cses.washington.edu/pic	2015	Puget Sound	species distribution, forest health and biodiversity, wildfires, and invasive species.
State of Knowledge, Climate Change in Puget	t				
Sound, Section 10: How Will Climate Change	SOK_Freshwater				Section 10 of the SOK Report provides observations and projected impacts on freshwater
Affect the Freshwater Ecosystems?	Ecosystems	https://cig.uw.edu/wp-content	2015	Puget Sound	species health and biodiversity.
State of Knowledge, Climate Change in Puget	t				
Sound, Section 11: How Will Climate Change	SOK_Marine				Section 11 of the SOK Report provides observations and projected impacts on marine eco
Affect Marine Ecosystems in Puget Sound?	Ecosystems	https://cig.uw.edu/wp-content	2015	Puget Sound	species health and biodiversity.
	Kitsap County_Task 700				
Task 700 Climate Change Assessment Kitsap	Climate Change				This study contains current and potential impacts of climate on Kitsap County's stormwat
County	Assessment		2019	Kitsap County	precipitation intensities.
					This is the 3rd National Climate Assessment, and highlights the specific biophysical climat
					include: streamflow and snowmelt changes are already being observed and will continue
Third National Climate Assessment, Climate					level rise, erosion, inundation, and ocean acidification pose major threats to infrastructur
Change Impacts in the United States -	NCA3_Full_Report_21			Northwest, with some	tree die-offs in the region, with projections of shifting forest composition in the future; a
Northwest.	Northwest LowRes	https://nca2014.globalchange.u	2014	specifics to Puget Sound	to future conditions.

key impacts areas: temperature, precipitation/storminess, sea level rise, the vegetation changes.

County. The ecosystem approach identified will be to: Work with nature, n all plants, fungi, and animals, protect water as a vital resource, and eeds to meet four goals, established in the 2012 Kitsap County Integrated Protect and enhance soil, water quality, and fish and wildlife habitat, 3) Be propriate public access to County forestlands. The report outlines strategies, and areas. The timeline for the plan goes to 2023.

I Climate Science Special Report and links the biophysical drivers and impacts to habitat were highlighted throughout the chapter. Compounding al habitat for shellfish and fish. Warmer stream temperatures, lower g. runoff) coupled with riparian habitat loss or quality degradation from tially leading to local extirpations. Warmer ocean temperatures and ocean Invasive species, both in terrestrial and marine systems, will likely increase in is habitat loss is also associated with substantial economic consequences.

tional areas in Kitsap County and their HQ in Kingston, WA.

es for State Parks and exacerbate existing threats. The report revealed that a level rise and changes in snowpack, flood risk, wildfire risk, tree health,

sheet which contains three tabs: (1) an overview, (2) RSLR projections for a as scenario (RCP 8.5).

, attribution, and drivers.

orminess, and vertical land motion.

ystems, including changes in timing of biological events, changes in the

ecosystems, including changes in temperature, water temperatures, and

osystems, including changes in water temperature, ocean acidification, and

ter system from sea level rise as well as current and projected trends in

te change impacts in the Northwest. The key messages of this chapter to worsen, reducing water supply for multiple competing demands; sea re and habitat; wildfire, insect outbreaks, tree diseases are causing massive nd multiple agricultural impacts though there is technical capacity to adapt Fire

Publication or Data Source	Filename	Hyperlink	Publication Year	Geographic Scope	Description
		https://www.bifd.org/pdfs/C			This plan does not specifically discuss climate change. It identifies communities at risk, pr
Bainbridge Island Community Wildfire	rp_burn_cwpp_bainbri	WPP%20Bainbridge%20Island.		Kitsap County, Bainbridge	structural ignitability. It is intended to be used to develop risk assessment and prioritize n
Protection Plan	dgeIsland.pdf	<u>pdf</u>	2010) Island	areas, Kitsap County has the seventh highest existing risk catastrophic losses in the event
					This is Volume II of the 4th National Climate Assessment. This report expands on the Vol
					impacts of climate change to socio-ecological impacts. In the Northwest changer, fire was
					include: drought conditions, changing precipitation regimes, and pest/diseases increase v
					NW interior: freshwater bull trout are sensitive to wildfires: impacts to foraging patterns of
Fourth National Climate Assessment, Vol. II	Mav et			Northwest, though many	outdoor recreation and decreased demand for recreation businesses: place additional str
Impacts, Risks, and Adaptation in the	al NCA4 Ch24 Northw	1		WA state and local case	impacts to public health, especially persons with existing chronic respiratory diseases or in
Northwest	est Full	https://nca2018.globalchange.j	2018	3 studies	(e.g. Boise) due to dangerous air quality levels; and wildfires in 2015 burned 1.6 million at
					This is an informational summary of the climate impacts in WA. These impacts include: in
					particularly significant, with far below average number of occurrences of extremely cold of
NOAA National Center for Environmental					This will lead to earlier snowpack melting, shifting precipitation regimes from snow to rai
Information - Washington State	WA-screen-hi.pdf	https://statesummaries.ncics.o	2016	5 Washington State	projected to occur.
					This summary outlines the themes from the December 2018 Managing Western Washing
	FINAL-Managing-	https://nwcasc.uw.edu/wp-			identified during three workshop were: 1) Fire plays an important ecological and cultural
	Western-Washington-	<u>content/uploads/sites/23/201</u>			higher than most people realize, and we may need more outreach to effectively commun
	Wildfire-Risk-in-a-	9/04/Managing-Western-			action, 3) Wildland fire is fundamentally different east and west of the Cascades,
Managing Western Washington Wildfire Risk	Changing-Climate-	Washington-Wildfire-Risk-in-a-			and we may need different management strategies to cope with westside fire moving for
in a Changing Climate, Workshop Summary	12.5.19.pdf	Changing-Climate-1.pdf	2018	3 Western Washington	climate change and population growth. 5) Collaboration will be critical to deal with increa
					This is the 3rd National Climate Assessment, and highlights the specific biophysical climate
					include: streamflow and snowmelt changes are already being observed and will continue
Third National Climate Assessment, Climate					level rise, erosion, inundation, and ocean acidification pose major threats to infrastructur
Change Impacts in the United States -	NCA3_Full_Report_21_	https://nca2014.globalchange		National report with some	tree die-offs in the region, with projections of shifting forest composition in the future; an
Northwest.	Northwest_LowRes	.gov/	2014	4 statewide specifics	to future conditions.

rioritizes hazardous fuel treatments, and recommends ways to reduce nitigation projects. With the increasing in Wildlife-Urban Interface (WUI) tof a major wildfire in Washington

I Climate Science Special Report and links the biophysical drivers and s touched upon multiple times. Key considerations and risks around fires wildfire risk for NW forests; wildfires are changing forest composition in the of game species, like elk and deer; degrade air quality and opportunity for ress on infrastructure and support systems, such as utilities and highways; increasing risk for acute respiratory illnesses; closing schools in some regions arces in WA and OR.

creasing annual temperature by 1.5°F with winter warming being days. Under higher emissions scenarios will lead to unprecedented warming. n, and increased likelihood of springtime flooding. Wildfire frequency is also

ston Wildfire Risk in a Changing Climate Workshop. The five key themes role west of the Cascades, 2) Wildfire risk on the west of the Cascades is nicate this growing risk in order for individuals and communities to take

rward, 4) The risk of wildfire west of the Cascades will likely increase with asing wildfire risk in a changing climate.

te change impacts in the Northwest. The key messages of this chapter to worsen, reducing water supply for multiple competing demands; sea re and habitat; wildfire, insect outbreaks, tree diseases are causing massive nd multiple agricultural impacts though there is technical capacity to adapt