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Whatcom County Council Climate Change and Hazard Mitigation Planning Internship

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COLLEGE OF THE ENVIRONMENT



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Climate Change and Hazard Mitigation Planning: Whatcom County’s Progress and Possibilities

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September 2022

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Purpose

This report is intended to act as a checkpoint for Whatcom County's progress in climate resilience and hazard mitigation planning. Inspired by work in Rebekah Paci-Green's Disaster Risk Reduction courses, I aim to speak to the value of climate resilience as a lens for hazard mitigation in Whatcom County specifically. I will identify Whatcom County's goals concerning climate, climate change, and natural hazard mitigation, then highlight the County's progress in these fields. Natural hazard planning is complex and highly important for protecting Whatcom County's population and environment, and I hope this report may shed light on areas where we may improve our planning processes and goals.

Background

Whatcom County is vulnerable to many natural hazards. Significant threat is posed to populated portions of the county by earthquakes, riverine flooding, geologic hazards, severe storms, tsunamis, volcanoes, and wildland fires. Less critical hazards include avalanches, coastal flooding/tidal overflow, dam failure, and drought (Whatcom HMP, 2021).

A hazard mitigation plan "identifies types of natural hazards that impact a jurisdiction, assesses each jurisdiction's vulnerability to those hazards, and formulates mitigation strategies that will lessen the severity of natural disasters by protecting human life and property" (Whatcom Sheriff's Office, 2021). These plans are required by the Federal Emergency Management Agency (FEMA) in order to receive federal emergency grants and are updated at least every 5 years to reflect new knowledge and priorities.

Whatcom County's most recent Natural Hazard Mitigation Plan was approved and published in 2021. It identifies and explains major hazard threats for the entirety of Whatcom County, then considers individual jurisdiction profiles and mitigation plans for incorporated areas. Cities may also have their own mitigation plans, such as [Bellingham's Comprehensive Emergency Management Plan \(2018\)](#), but these are subordinate to the County's plan and act as guidelines only for larger jurisdictions. These are not the same as the plans required for federal funding.

Role of Climate Change in Hazard Mitigation Planning

Climate change refers to "long-term shifts in temperature and weather patterns", according to the United Nations, which can be attributed to natural or human-caused shifts. Since the industrial revolution in the 1800s, the global climate has shifted significantly, almost all of which can be traced to human imposition on the planet. A key example of such shifts is global warming, caused by human activity intensifying the earth's greenhouse effect (NASA, n.d.). The effects of global warming include disrupted weather patterns, crop viability, sea level, species health, and more. These effects are what "climate change" encompasses.

Many natural hazards are dependent on patterns of temperature and precipitation, such as landslide, drought, and sea level rise. Future hazards are becoming less predictable as climate change alters such patterns, meaning our preparation and responses need to be flexible and resilient for what we may not see coming. Climate change itself is not a natural hazard to be

mitigated; rather, climate change creates and influences future hazards. In order to mitigate detrimental effects, we need to be aware that hazards will be changing in years to come.

FEMA has various Hazard Mitigation Assistance (HMA) grants available for jurisdictions that have complete HMPs and apply for such funds. As of 2022, [FEMA does not require](#) climate change to be included in hazard mitigation plans in order to receive HMA grants. They have, however, created various standards, resources, and tools to encourage implementing climate change resilience into HMPs. One tool is the [National Risk Index](#) which not only includes risk assessments for 18 natural hazards across the country, but also includes social vulnerability and community resilience metrics.

Resilience is defined by FEMA as “the ability to adapt to changing conditions and rapidly recover from disruptions due to emergencies”; climate change is one rapidly changing condition, leading to less-predictable patterns of hazards (FEMA, 2015). Incorporating resilience into hazard mitigation attempts to decrease the impact of a hazard, ideally avoiding a disaster scenario altogether. This differs from traditional hazard planning which typically focuses on response and recovery.

Case Studies: Barnstable County, MA and King County, WA

Whatcom County has some inspiration in progressive climate action plans from similar counties. Barnstable County, MA and King County, WA offer guidance in such action as they take different yet effective routes to join climate resilience and hazard mitigation.

At 1,709 square miles and 213,000 residents, Barnstable County, MA is just slightly smaller than Whatcom. The county started incorporating climate change into hazard mitigation planning in 2009 by creating a process where jurisdictions had a dedicated “point person” to participate in county-level workshops and meetings. The county’s fundamental action was dedicating a regional workshop to understanding risks associated with climate change (Higbee, 2014). This way, every County official understood the risks and realities of climate change and how it may affect their field. A secondary effort to incorporate climate change county-wide was to invite stakeholders from more fields to participate in the 2013 HMP planning cycle, including the board of health, natural resources, public works, and more. Doing so “elevated the discussion” as more expertise and knowledge was present to craft mitigation plans (Higbee, 2014). Barnstable County also utilized FEMA grants to create hazard mitigation plans for five local jurisdictions. Their focus on interdisciplinary education and collaboration created more well-rounded solutions and better prepared individuals countywide.

King County, WA has recently taken strides towards a more climate-resilient future. In June of 2022, the county’s public affairs team reported on the county’s progress on the Extreme Heat Mitigation Strategy funded by FEMA grant funds. A 3-day heat wave in June of 2021, the deadliest climate event in King County to date, confirmed the necessity of adequate heat mitigation strategies (Public Affairs, 2022). On June 23, 2021, just 2 days before the heat wave began, King County published results from a 2020 heat mapping project showing that hotter summers are harming the community intensely and inequitably; specifically, that urban areas are up to 20 degrees hotter due to land use and land cover (Constantine, 2021). The Extreme Heat

Mitigation Strategy “will identify actions needed to enhance the region’s immediate response to extreme heat while adapting the built environment so that people and property are better prepared for more prolonged, hazardous heat waves” predicted by climate scientists (Public Affairs, 2022). The Extreme Heat Mitigation Strategy is part of the county’s 2020 Strategic Climate Action Plan (SCAP) and the 2020 King County Regional Hazard Mitigation Plan. The 2020 SCAP names mainstreaming climate action a “key objective” and highlights such action by incorporating climate decisions into daily processes through new methods and guidelines (King County Climate Action Team, 2020). King County, like Whatcom, has struggled to implement collaborative planning, but have rapidly advanced such work in recent years.

Whatcom County’s Current Mitigation Plan and Related Plans

Whatcom County’s current [Natural Hazards Mitigation Plan](#) contains a general county plan as well as information for individual jurisdictions and unincorporated areas, all within Section 3: *Jurisdiction Profiles and Mitigation Action Plans*. The county profile mentions “climate” only four times, all of which referring to predicted future precipitation levels as they relate to drought hazards. Sections centered on other hazards affected by climate change, including tsunami and landslide, do not mention such vulnerability. Bellingham’s jurisdiction profile mentions climate change relating to sea level rise and wildfire risk but defers most information to City programs and plans.

One major obstacle in hazard mitigation is that ideas, proposals, research, and implementation are all incredibly time consuming. Because of the nature of the work, many hazard mitigation actions are out of date by the time they are implemented. Climate change only exacerbates this delay, as it creates less predictability in the patterns of hazards as well as disrupts the availability of accurate data. For this reason, hazard mitigation benefits from progressive, long-term strategies rather than short-term recovery plans.

Whatcom County’s Comprehensive Plan was adopted in 2016 and includes an entire chapter on the environment, written to create guidelines for human development that does not “ultimately overrun the very assets that brought most of us here” (Whatcom Planning and Development Services, 2016). Chapter 10 rests upon the Growth Management Act (GMA) Planning Goal 10 which obligates Whatcom County to “protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water” (Whatcom Planning and Development Services, 2016). The *Environment* chapter of the Comprehensive Plan sets environmental health at the forefront of the County’s priorities.

Chapter 10 of the Comprehensive Plan includes a section dedicated to the issue of climate change, citing its potential hazardous impacts to economy, natural resources, ecosystem function, human health, and infrastructure (Whatcom Planning and Development Services, 2016). As part of the effort to protect these sectors from such hazards, this section concludes with Goal 10D of the Comprehensive Plan, which is to “strengthen the sustainability of Whatcom County’s economy, natural environment, and built communities by responding and adapting to the impacts of climate change” (Whatcom Planning and Development Services, 2016). Ten policies are outlined to support goal 10D, focusing on tangible sustainability actions.

Policy 10D-1 identifies that climate change related risks may affect emergency management and encourages the County to “1. Study the resilience of its natural and built environments to the potential impacts of climate change; 2. Identify the relative vulnerability of these sectors to climate change; and, 3. Examine the adaptive capacity of these sectors to cope with or mitigate climate change and take advantage of any beneficial opportunities” (Whatcom Planning and Development Services, 2016). This policy goal is meaningful because it necessitates future thinking in terms of hazard mitigation. Additionally, it highlights the interdependence between natural and built environments.

The 2007 Whatcom County Climate Protection and Energy Conservation Action Plan focused on reducing greenhouse gas emissions. This plan morphed over time into the [Climate Action Plan](#), developed by the Climate Impact Advisory Committee. Most recently published in 2021, this 202-page plan attempts to address the multifaceted, long-term impacts of climate change (Satpal Sidhu, 2021). The first major goal of the Climate Action Plan is to create an Office of Climate Action to “exercise leadership” concerning climate leadership and coordination, data and information, and community engagement (Climate Impact Advisory Committee, 2021). This office would report to the County Council and Executive. As of September 2022, this office has not been established and interviews for a Climate Action Manager are in progress.

The 2021 Climate Action Plan discusses hazard mitigation more than previous climate plans. It is addressed in Strategy 5.2: “Incorporate climate change change projections into future Natural Hazards Mitigation plans” (Climate Impact Advisory Committee, 2021). The Committee writes that “it is not only important to look at past and current levels of hazards, but it is also important to look at future levels of these hazards when planning new roads and bridge infrastructure that is expected to last for 30 or 40 years” (Climate Impact Advisory Committee, 2021). This is the type of future thinking that the Comprehensive Plan encourages and that is necessary for adequate hazard mitigation. Mitigation is discussed throughout the document, especially as it relates to human and climate resilience. The plan highlights resilient management of floodplains, wildfires and wildfire zones, and ecosystems specifically, as well as calling for climate change risk to be incorporated into “all aspects of the County Comprehensive Plan” (Climate Impact Advisory Committee, 2021).

Most recently, the County Council passed Resolution AB2022-251, “Establishing priorities for Whatcom County’s 2025 Comprehensive Plan update” (Galloway and Frazey, 2022). Introduced in April and passed in August, this resolution establishes climate resilience and equity as a primary lens through which to write and view the Comprehensive Plan. This resolution is highly detailed, calling attention to specific chapters of the Comprehensive Plan and directly stating what resilience actions can be implemented. Point number 8 within the resolution calls to “more thoroughly consider impacts of climate change, equity, and economic security in relation to natural hazards mitigation and emergency response” and provides four specific chapters in which hazard mitigation may be relevant (Galloway and Frazey, 2022). These chapters are Land Use, Environment, Shoreline, and Capital Facilities. Providing such diverse and specific examples within the resolution creates a solid foundation for Comprehensive Plan developers to emulate.

Whatcom County’s Future

Whatcom County has built the foundation for a climate resilient community in the Climate Action Plan and Resolution AB2022-251. In order to move forward and incorporate the standards set in these strategies, Whatcom can focus on collaboration with diverse stakeholders. Bringing representatives from multiple fields opens the door for peer education, which is highly valuable for planning purposes as well as strengthening community relationships.

Barnstable County, MA successfully connected multiple stakeholders in the climate change conversation by dedicating a regional workshop to climate change risk specifically. Such a meeting could be held in Whatcom during a specified County Council meeting and/or related committee meetings, including (but not limited to) the Business and Commerce Committee, Climate Impact Advisory Committee, or the Planning Commission. Such a workshop would invite all Council members and the Executive along with representatives from each county committee and commission. This workshop may take place outside of normal working hours to be accessible to all necessary parties. These council and committee members would provide valuable input and then be able to communicate new knowledge back to businesses and community members. Ideally, Barnstable County's "point person" system may be utilized so more individuals can be a part of the conversation with County elected officials.

The Whatcom County Natural Hazards Mitigation Plan requires significant updates to adequately address climate change risks. As noted previously, "climate" is only mentioned when referring to drought risk. While drought is a real risk in Whatcom County, climate change affects other hazards that pose a more significant threat, including landslide and erosion, liquefaction, severe storms, extreme heat, sea level rise, flood, and wildfire. Risk assessments for such hazards should contain a climate section to assess how climate change may change social or natural vulnerabilities. Understanding that risk projections and GIS mapping may need to be updated more frequently based on rapidly changing climate projections is one necessary aspect of such assessments.

The Critical Facilities Rank Assessment is another section of the Natural Hazards Mitigation Plan (NHMP) that can be used to account for climate change. This section currently lists Whatcom's critical facilities and their vulnerability rank based on exposure to hazards, where those ranking higher are more vulnerable. Based on Resolution AB2022-251's recommendation for "establishing and maintaining County Resilience Centers during emergencies or disasters", the NHMP can locate least vulnerable and most accessible areas that may serve as emergency shelters or staging areas. Schools are one strong option, as most of the public schools listed on the risk assessment rank between 0.1 and 0.2, indicating low to moderate vulnerability, and are designed to house up to hundreds of individuals across the county. Other possible facilities include emergency coordination centers and fire stations. Creating safe areas for those seeking refuge can save lives during flood, sea level rise, tsunami, and wildfire events.

Hazard mitigation techniques should be long-term, maintainable, and mutually beneficial to nature and people. FEMA recommends and offers plenty of examples of [Nature-Based Solutions](#) which utilize natural features and/or processes in the built environment. Many of these are also eligible for non-emergency federal funding. FEMA divides these solutions into three categories: watershed or landscape-scale, neighborhood or site-scale, and coastal. Landscape-scale requires long-term planning for projects such as greenways, whereas site-scale can often be implemented

within a city block for projects like permeable pavement installation (FEMA, 2021). Coastal practices stabilize the shoreline specifically—an increasingly important venture as sea levels rise dramatically.

The future of Whatcom County’s hazard mitigation planning relies on interdisciplinary, pre-disaster solutions that protect residents and the planet. In order to accomplish the goals laid out in the Comprehensive Plan and Climate Action Plan, the county needs to make aggressive moves toward resilience in the coming years—potentially before the next NHMP official update.

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