Partnering to Adapt for Climate Change

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Location of Swinomish Indian Reservation
Tribal Leadership issued a proclamation recognizing potential significant impacts to the human and natural systems on the future of the Swinomish Community, Reservation homeland, and U&A areas. It is the responsibility of the Tribal Senate to provide for the well-being of the SITC, as well as attend to the well-being of those resources; natural systems and human systems that provide crucial support for the Community and Reservation.
Swinomish Climate Change Initiative

- 2-Year, $400,000 project (80% federal, 20% tribal)
- CIG/ King County: Preparing for Climate Change Guidebook for Local, Regional, & State Governments
- Partners: UW-Climate Impacts Group, Town of La Conner, Skagit Co., Shelter Bay Community
Assessing Climate Impacts

Comprehensive effort aimed at assessing and responding to the negative impacts of climate change on community members, tribal land, and regional ecosystem.

Impact assessment
- Data review/analysis
- Risk analysis
- Policy Scoping (intergovernmental)
- Vulnerability assessment
- Risk zone mapping /inventory
Community Outreach And Inclusion

Process: “This work entails establishment of an *honorable engagement* process for the Swinomish community by raising awareness of climate impacts on the tribal community, and it opens a pathway for community input to inform and guide policy and decisions about how the tribe will adapt and prepare to deal with the impacts of climate change.”
Climate Adaptation Action Plan

Phase 2 – Action Plan (2010):
- Adaptation Goals
- Review strategies, criteria, and priorities
- Assess requirements (coordination/funding)
- Develop/prioritize recommendations
Potential Sea Level Rise, Puget Sound

(CIG 2006)
Sea Level Rise Scenarios, Low-lying Areas

CURRENT CONDITIONS

100-YEAR PROJECTION (50 YEARS ACCELERATED)

MLHW (accelerated)

MLHW (conservative)

MLLW (accelerated)

MLLW (conservative)
Inundation Risk Zones – Sea Level Rise & Tidal Surge
Access Routes to Fidalgo Island and Swinomish Reservation
## Climate Impacts to Transportation

<table>
<thead>
<tr>
<th>Transportation Element</th>
<th>Potential Impacts</th>
<th>Vulnerability (impact level)</th>
<th>Estimated Risk</th>
<th>Potential Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access/ Circulation</td>
<td>Inundation of access routes, travel disruption, isolation from mainland (long-term impact)</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Higher, more frequent storm/ tidal surges, road closures, restriction of access (short term duration events)</td>
<td>Medium-High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Road System Integrity</td>
<td>Flood damage from storm/tidal surge, higher temperatures</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Bridges</td>
<td>Erosion of bridge footings from higher tides/ storm surges</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Deterioration of bridge structures from increased or prolonged heat</td>
<td>High</td>
<td>Medium-High</td>
<td>High</td>
</tr>
<tr>
<td>Marine Transport Facilities</td>
<td>Inundation of marine facilities and ports from gradual sea level rise, higher tides</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>
Adaptation Goals:
- A transportation network should be provided that will adequately satisfy the requirements for everyday access, tourism, and emergency vehicle access and evacuation in a safe and effective manner, while protecting and restoring coastal and natural resources.
- Road and utility construction should be prohibited from areas subject to excessive erosion and/or accretion.

Adaptation Strategies:

8.4.1.1 Build/raise dikes

Description: Build dikes or raise the elevation of existing dikes protecting roads located in the inundation risk zone, particularly low lying roads and bridge approaches.

Required Authority/ Capacity: The Tribe owns existing dikes on the north end of the Reservation, but lacks an established dike program; protection of off-Reservation access routes requires inter-jurisdictional coordination and substantial funding.

Potential Partners/Coordination: Diking District (off-Reservation fee lands), Town of LaConner, US Army Corps of Engineers (USACE).

Timeframe for Implementation: Short term strategy, 3 to 10 years.
Priority: HIGH (with consideration of other options, possibly as a short term strategy)

8.4.1.2 Raise road level

Description: Raise elevation of roads in the inundation risk zone that are highly vulnerable to inundation from sea level rise and/or high tidal storm surges. Raising road elevation would maintain the existing routes and access to the Reservation.

Required Authority/ Capacity: Owners: Tribe, Skagit County, Washington State Department of Transportation (WSDOT). The Tribe has limited capacity; requiring assistance from outside sources for planning, construction, and funding.

Potential Partners/Coordination: Depending on road ownership, Skagit County and/or WSDOT.

Timeframe for Implementation: Long term strategy, greater than 10 years.
Priority: HIGH (with consideration of other options)

8.4.1.3 Relocate route

Description: Relocation of routes within the inundation risk zone for better long-term protection of low-lying roads from inundation and of coastal resources from adverse impacts related to such routes.

Required Authority/ Capacity: Owners: Tribe, Skagit County, WSDOT. The Tribe has limited capacity; requiring assistance from outside sources for planning, construction, and funding.

Potential Partners/Coordination: Depending on road ownership, Skagit County and/or WSDOT.

Timeframe for Implementation: Long term strategy, greater than 10 years.
Priority: HIGH (with consideration of other options)
Regional access preservation ($$$$$)
Dike maintenance/repair ($$$+)
Coastal zone protection ($$$?)
Local emergency planning ($)
Significant Regional Issues

- Short-term threat to connectivity, mobility (storm/surge)
- Long-term risk, potential isolation from mainland (sea level rise)
- Collective population of ~ 45,000 potentially affected
- Impacted communities – Swinomish, LaConner, Anacortes, Oak Harbor, Coupeville, etc.
- Impacted facilities – ferry terminals, services, refineries, Whidbey NAS
Transportation Planning – Actions

- Identify/refine adaptation needs; (e.g., Access Corridor Preservation)
- Build partnerships with local agencies and communities
- Work with local jurisdictions and WSDOT to prioritize potential projects
- Identify funding opportunities and contributions
Ongoing Adaptation Efforts

- Coastal Climate Impacts to First Foods, Cultural Sites, and Tribal Community Health and Well-being. Dept of Community Health, USGS, SRSC.
- Shoreline and Beach Enhancement – Olympia oyster restoration in Similk Bay. Fisheries Dept and Dept of Environmental Protection.
- Code Updates – Zoning, Building, and Shorelines and Sensitive Areas. Dept of Environmental Protection.
- Forestry Management Planning – landscape eco-system approach and CO2 Bank Feasibility Study. Dept of Planning and Ecotrust
Thank You

More information and complete copies of reports are available on Swinomish Climate Change web site:

www.swinomish-nsn.gov/climate_change/project/reports.html

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