KENAI CHANGE

CLIMATE CHANGE IN OUR BACKYARD

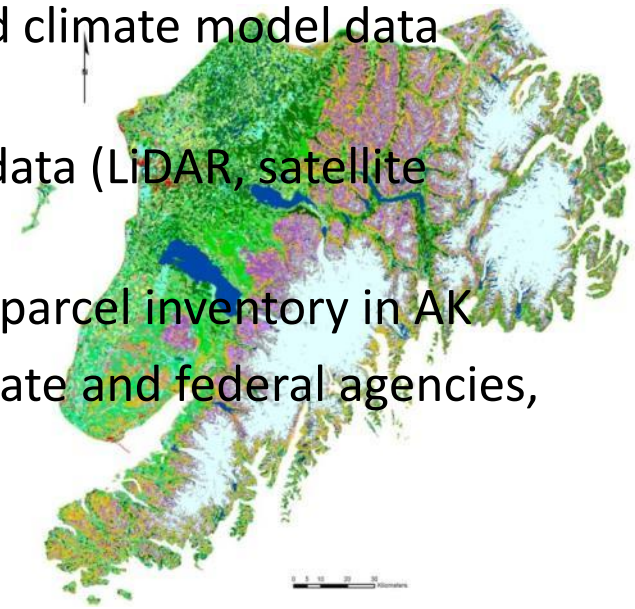
The Kenai Peninsula is Already Changing!

Since the 1950s:

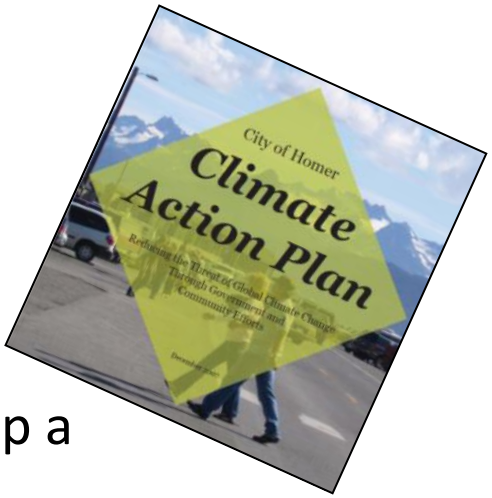
- Loss of alpine: treeline has risen 1m/year in the Kenai Mountains
- Wetlands have decreased 6-11% per decade in surface area
- Harding Icefield has decreased 5% in surface area and 21m in average elevation
- Spruce bark beetle outbreak
- Available water for vegetation has declined 55%
- Spring, grass-fed wildfire
- Changes to wildlife distributions and habitat quality

Data rich environment

- ✓ Climate change effects are better documented (and more dramatic) on the Kenai Peninsula than most places in U.S.
- ✓ Solid efforts to forecast future scenarios at local levels (vegetation/biomes, salmon streams, sea level rise)
- ✓ Alaska was among the first to have down-scaled climate model data available statewide (SNAP)
- ✓ Kenai Peninsula has rich spatial and ecological data (LiDAR, satellite imagery, vegetation, species richness)
- ✓ Kenai Peninsula Borough maintains best online parcel inventory in AK
- ✓ Enormous planning capacity with many local, state and federal agencies, and NGOs present

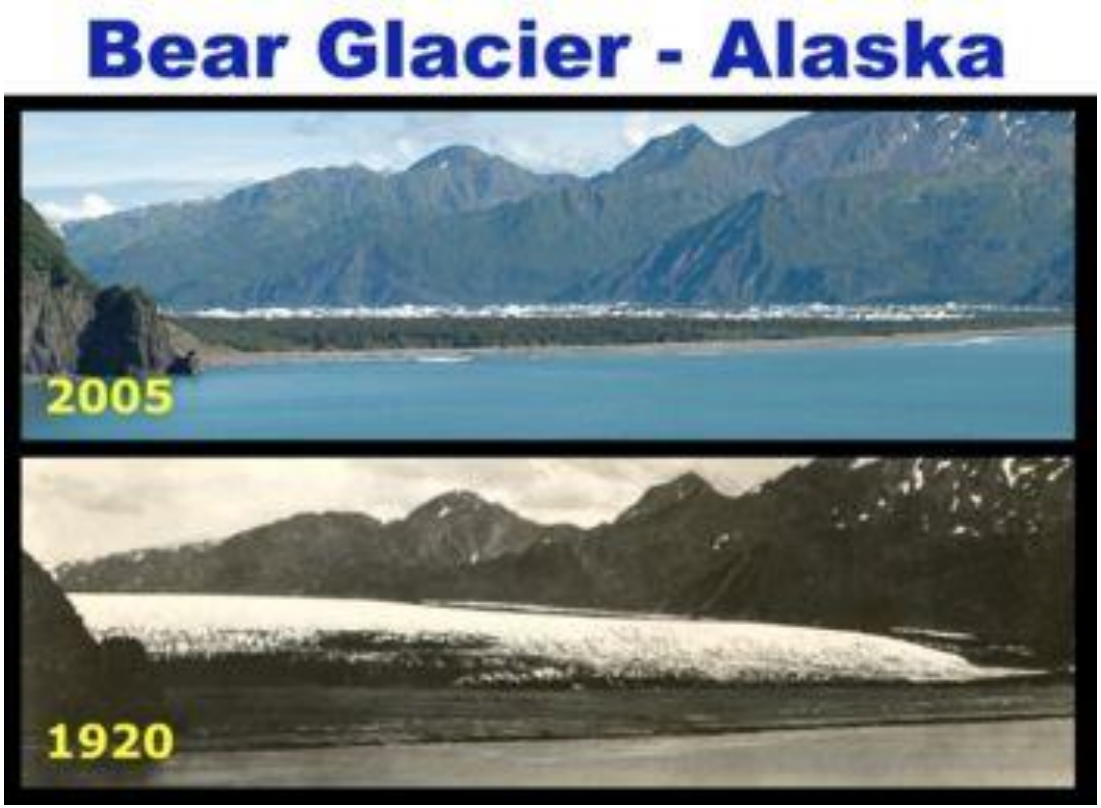


History: Climate-related efforts



- ✓ City of Homer: Climate Action Plan (2007)
- ✓ KPB's Resolution 2007-069: requests Mayor to develop a Climate Change Impact Plan (2008)
- ✓ Chugach National Forest & UAA: *Classrooms for Climate* symposium (2011)
- ✓ Case study: *National Fish, Wildlife and Plants Climate Adaptation Strategy* (2012)
- ✓ Kenai Fjords National Park :C*limate Change Scenarios Planning* workshop (2011-12)
- ✓ Kenai National Wildlife Refuge: *Climate Friendly Refuge* workshop (2012)
- ✓ Community dialogues: Center for Mediation, Kenai Peninsula College, Kenai Resilience

Despite good participation,
<u>none</u> of these efforts have resulted
in tangible outcomes towards adaptation or
long-term strategies for community resilience.



Perceived barriers

- ✓ Uncertainty in future climate trajectories
- ✓ Unclear linkage between economic hardship and climate change
- ✓ Reluctance to accept deviation from “natural” processes
- ✓ Absence of a singular body to develop an adaptation approach across jurisdictional boundaries

Barriers are solvable

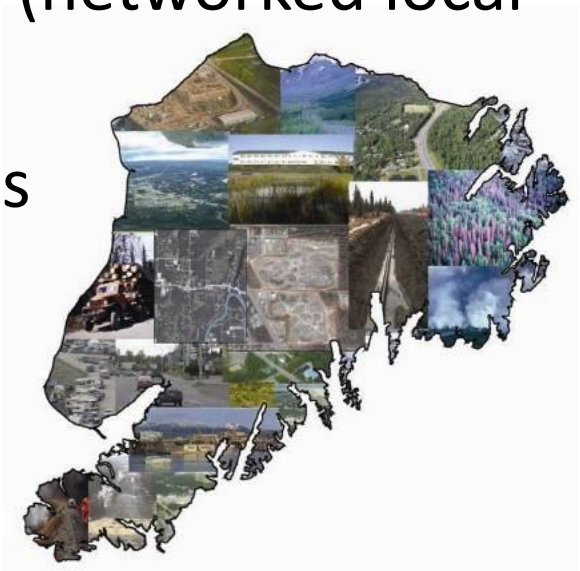
- ✓ We have the information to frame solutions
- ✓ Communities and economies on the Kenai Peninsula will be better off

Why we need an adaptation plan…

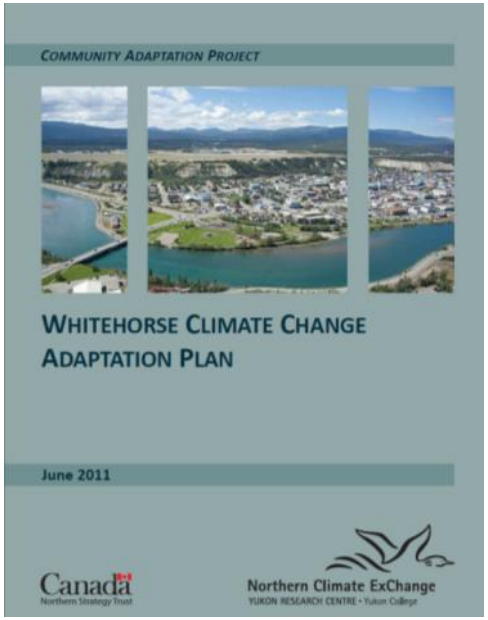
- ✓ Adaptation ≠ Mitigation (NOT giving up, rather planning for resilient future)
- ✓ Climate change knows no boundaries
- ✓ Strategic at landscape scale
- ✓ Networked local adaptation
- ✓ Climate adaptation plan considers climate change a <u>directional</u> driver
- ✓ Goal is to reduce catastrophic economic and ecological futures
- ✓ And maybe orchestrate a rosy future

Adaptation Plans need to envision the desired future

- ✓ No right or wrong way to adapt to climate change — only different futures with different risks
- ✓ Focus on shared community values (networked local adaptation)
- ✓ Add word cloud summarizing values



Whitehorse's Adaptation Plan



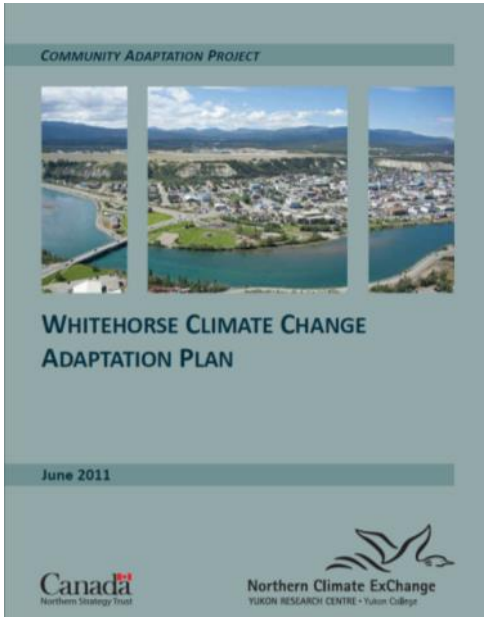
<u>The Vision</u>

The community of Whitehorse is preparing for climate change, including variability and uncertainty, by building capacity, knowledge, resilience and partnerships. Adaptation proactively enhances the sustainable well-being of the community.

- Core community values were identified to guide planning
- Process included community engagement

Whitehorse's Adaptation Plan

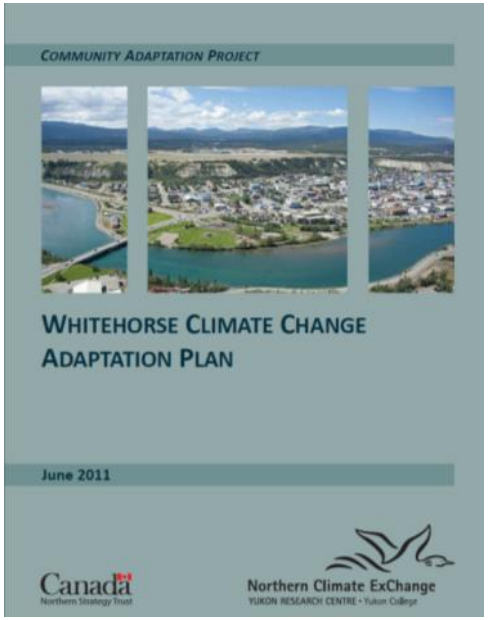
- Scenarios of different future conditions used



	Scenario 1 City of Wilderness Some growth, some climate change	Scenario 2 City of People Lots of growth, some climate change	Scenario 3 City of Mettle Some growth, lots of climate change	Scenario 4 City of Crossroads Lots of growth, lots of climate change
Whitehorse	• + 6,000 people by 2030, + 12,000 people by 2050	• + 12,000 people by 2030, + 25,000 people by 2050 • growth in all areas of the city (mixed density)	• + 6,000 people by 2030, + 12,000 people by 2050 • forced densification across the city, especially in the downtown core	• + 12,000 people by 2030, + 25,000 people by 2050 • growth mostly downtown • higher turnover of population by 2050
Economy	• public sector continues to dominate • overall economic uncertainty has increased • increased taxation	• ratio of government to population normalizes • increased % of population employed by resource, service, commercial & industrial sectors • cost of living rises modestly • Whitehorse becomes even more of a hub for communities	• median income declines • private sector growth has remained sporadic and opportunistic • cost of living increases • private sector growth characterized by green industry	• mega-projects sparked growth in the private sector • increased taxation • median income decline • issues outstrip any possible benefits from an improved economy of scale
Climate	• + 1°C by 2030 and + 2°C by 2050 • winters will see more change with warming and variable snow	• + 1°C by 2030 and + 2°C by 2050 • winters will see more change with warming and an increase in snow (several cm)	• + 2°C by 2030 and + 4°C by 2050 • winters will see more change with warming and an increase in snow (10 cm)	• + 2°C by 2030 and + 4°C by 2050 • winters will see more change with warming and an increase in snow (10 cm)

Whitehorse's Adaptation Plan

- Risks and opportunities from future change were identified for **hazards, infrastructure, environmental change, food security, and energy security** and linked to implementable actions



Community Climate Change Opportunities

	Sector/Consequences	Level of Impact	Likelihood	Adaptive Capacity	Priority
O.1	Food Security				
	Longer growing season; likely an opportunity for agriculture.	H	M	M	High
O.2	Infrastructure				
	Increased need for Whitehorse to serve as a hub due to infrastructure expansion.	H	M	M	High
O.3	Food Security				
	Whitehorse emerges as a hub, supplying food to outlying communities through local agriculture.	H	L	L	High
O.4	Energy Security				
	Gas pipeline mega-project may bring energy opportunity.	H	L	L	High
O.5	Food Security				
	Increased yields, but concerns about variable precipitation.	M	M	M	Med
O.6	Energy Security				
	Warmer winters reduce heating load (*e.g.*, +2°C in winter = 5-10% reduction in heating costs).	L	H	H	Med

Suggested Adaptations to Support Opportunities

Adaptations	Addresses	Fit	Win-win	Community Capacity	Priority
Re-open the railway corridor and repair the old link into the downtown.	O2; I2, 4, 9, 10, 12	M	L	L	Low
Install communication infrastructure to facilitate people working from home.	O2; I4	L	L	L	Low
Revisit Skagway as a transportation node.	O2, 3; F5; I9	L	L	L	Low
Learn from other circumpolar countries.	O2; I3	H	L	M	High
Support recycling as a growth industry.	O2-4; F5, 9	L	L	L	Low
Create a strategy to capitalize on the potential increased need for Whitehorse to serve as a hub – incorporate trickle-down effect to communities (if Whitehorse cannot supply them, then they become vulnerable).	O1, 3, 5; F5, 6, 8, 9	M	L	M	High
Use agriculture to build soil.	O3; I4; F5, 9	H	L	H	High
Continue to expand on education opportunities for regional agriculture.	O1, 3; F9	H	L	M	High

Quality Adaptation Plans Can

- Create a shared vision of acceptable (and unacceptable) future conditions based on the core values and identity of the community
- Democratize future choices via meaningful community involvement
- Allows for good planning in uncertain conditions
- Increases the capacity of a community to respond to and shape change

Proposed trajectory moving forward (SMALL)- DM

Note: I am proposing to make 2 word clouds.

The first addresses what people are already doing to respond to climate change.

The second asks why people live on the KP now and what they hope their grandchildren will have here in the future.

Which one goes here? I am guessing the second goes on slide 9.

Moving forward with a smarter and bolder approach to climate adaptation…

Build upon existing science, and current efforts of individuals and communities, by moving towards a more cohesive regional strategy (networked community adaptation guided by a KPB plan?)