



HALIFAX

Roadmap to Stormwater and Coastal Resilience

Smart Climate Resilience for Atlantic Canada
September 28th, 2023

Meet our Team

Halifax Regional
Municipality

Planning and
Development

Engineering and
Building Standards

Resilient Infrastructure
Standards



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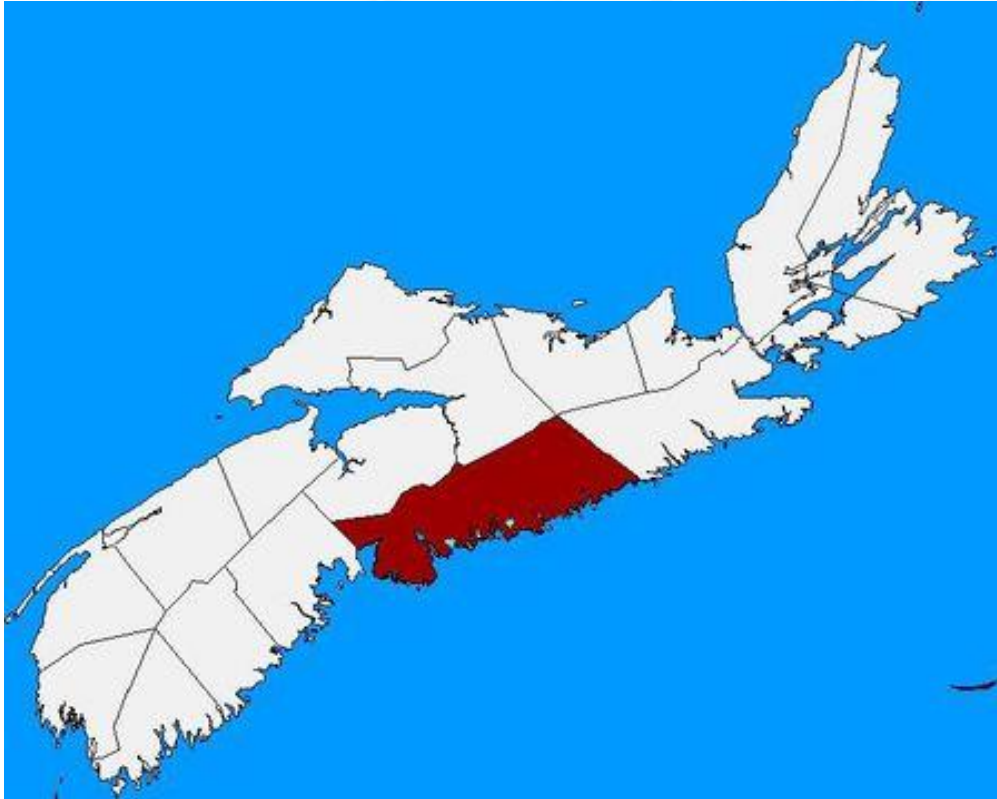
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About the Halifax Regional Municipality



- 5,490km² area
 - Similar land area to PEI
- ~400km of coastline
- 2022 population of 480,582 (over 45% of Nova Scotia)
- Rapidly growing (>4% last year)

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Setting

Natural setting:

- Coastal municipality
- Over 1,000 lakes
- 20 rivers

Built setting:

- Spread out suburban and rural areas
- Aging infrastructure
- Highly urbanized core

Responsibility

- NSECC : wetlands and waterbodies
- Halifax Water: water, wastewater, and stormwater assets
- HRM: development, overland flow routes



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Climate Hazards and Impacts



- Overland and stormwater flooding
- Coastal flooding
- Erosion
- Heat waves
- Property damage
- Loss of trees
- And more

Progression of Top hazards emerging over time (Report Climate Risk and Nova Scotia's Well-being):

- Flooding for the 2030's;
- Wildfire for the 2050's
- Extreme heat and harm to food production for the 2080's

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Long Story of Flooding



1956



2014



1971



2023

Our Goals

Resiliency

Strengthen the community's ability to absorb and recover from shocks and stresses

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Our Goals

Resilient Infrastructure

Strengthening the ability for structures and facilities to withstand, adapt to changing conditions, and recover positively from shocks and stresses

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Our challenges

Data Gaps

Social Vulnerabilities

Variable Risk

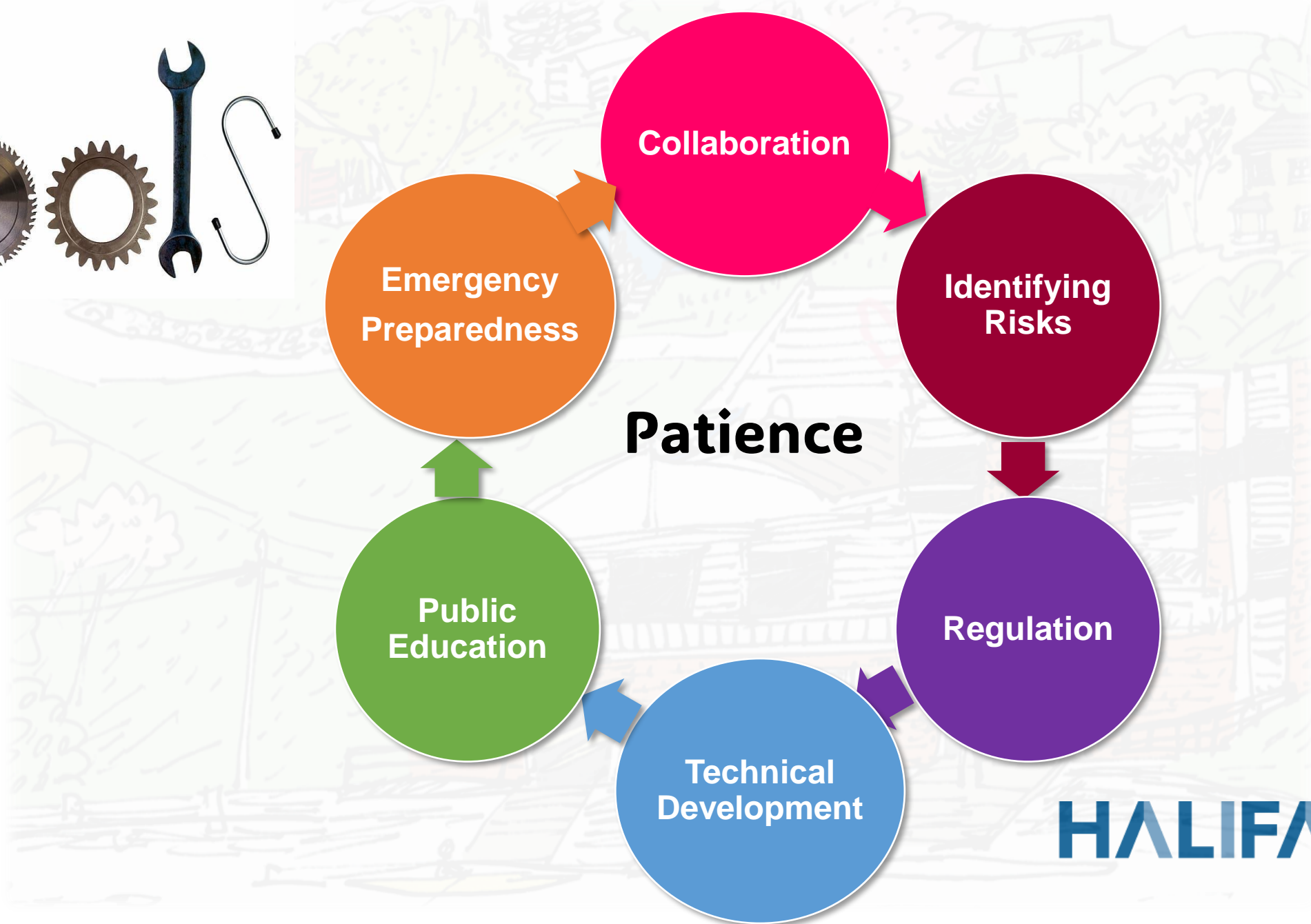
Historical Settling Patterns

Legacy Standards and Traditional Benchmarks

Limited Resources



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Roadmap to Building Stormwater Resilience



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Green
Infrastructure
Standards



Regional Plan
Updates



Collaboration
through working
groups



Identification of
hazards and risk
mitigation



Education and
Inclusion

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Halif**ACT** / Acting on
Climate
Together

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Regional Plan



Gives us the policy framework
to do what we need

Chapter 2: Planning for Growth in our Region

- Regional Settlement Pattern
- Land Use Designations
- Water Service Areas

Chapter 6: Protecting the Environment and Acting on Climate

- Watersheds as a unit of planning
- Development agreements
- Naturalization and Municipal Natural Assets Management
- Watershed Management
- Riparian Areas and Wetlands
- Resiliency and Adaptation
- Stormwater and Flooding
- Floodplains
- Coastal Protection
- Protecting Infrastructure

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What does all this mean?

- Balance pre-post development flows
- Maintain existing drainage patterns
- Only for new MICI sites:
 - Retain first 10 mm on site
 - 80% TSS removal for quality
- Distributed management preferred to end-of-pipe solutions

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Green Infrastructure Standards Under Development

Nature Based Solutions:

- Standard details for bioswales and rain gardens in the Right of Way
- Naturalized stormwater ponds



Stormwater and Flooding Hazards and Risk Identification

Sackville River Flood Mitigation

GI Pilot Projects
(Prince Albert Road,
Spring Garden)

HRM Flood Hazard Mapping

Pleasant Street at Mount Hope Ave Flood Mitigation

Hwy 2 Fall River – Flood Mitigation

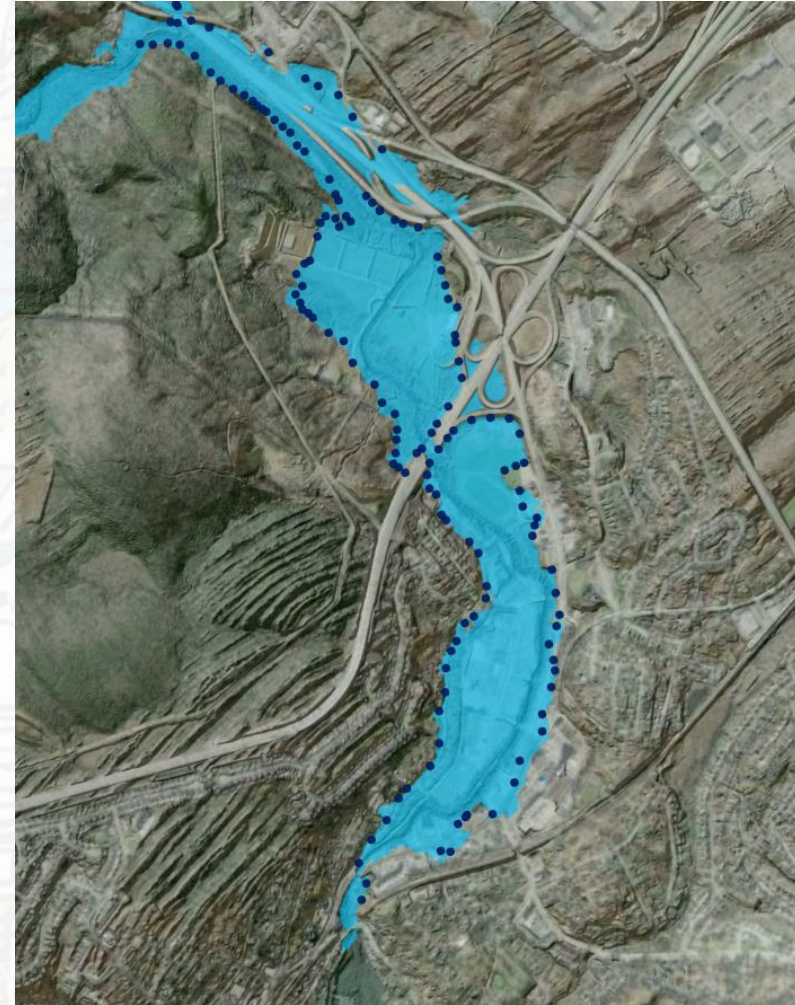
Limiting development in flood plains

HRM Flooding Risk Delineation



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Sackville River Floodline Delineation



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Coastal Hazards and Risk Identification

Flood Hazard Mapping

Shore Road Project
(nature-based coastal erosion prevention)

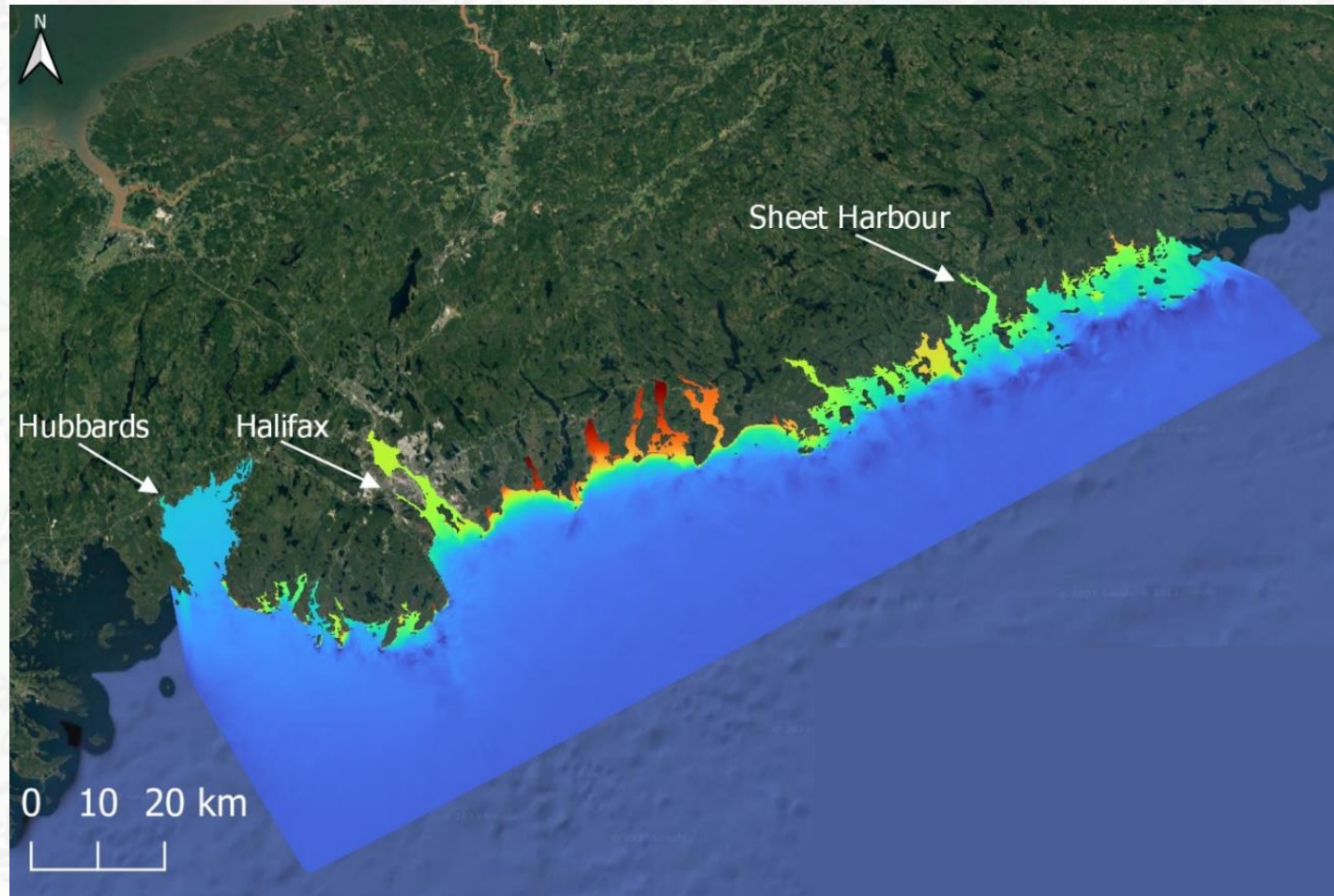
Extreme Water Levels

Wave Runup Study

Data Collection

Coastal setbacks for new development

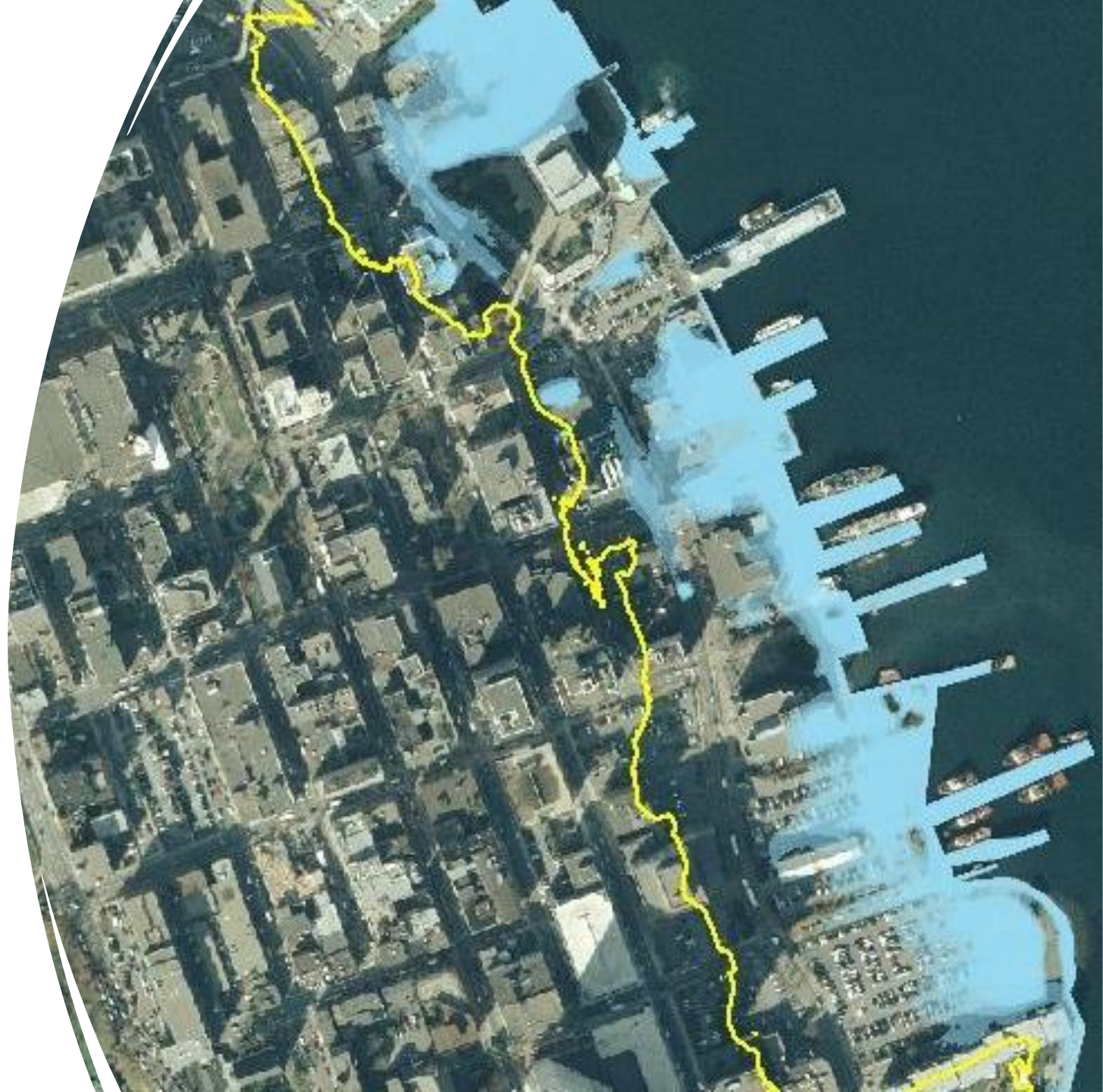
Coastal Flood map Delineation



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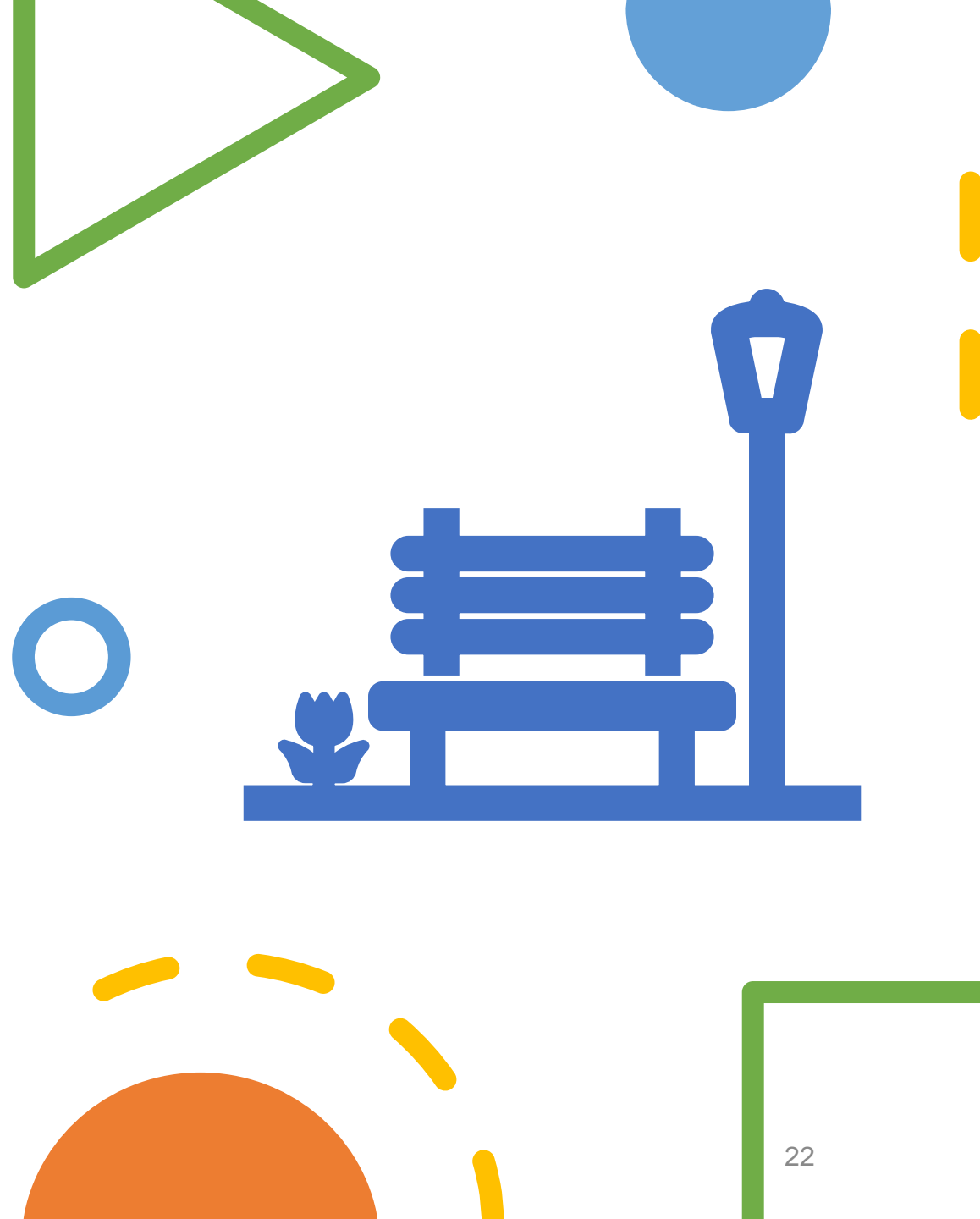
Coastal Resiliency and Adaptation

- Coastal setbacks
- Wave runup study
- Nature based solutions



Community-Led Climate Action

- A program to facilitate the co-creation of tangible climate resiliency projects together with rural and urban communities across HRM
- Projects to be chosen by and led by the host communities with HRM supporting via:
 - Assistance in grant and funding application writing
 - Liaison with corporate and community funding partners
 - Provision of a project “startup” fund
 - Project management services



Next Steps



Develop a coastal-specific adaptation strategy with coastal communities



Develop a holistic, integrated, and climate-informed stormwater management plan and program



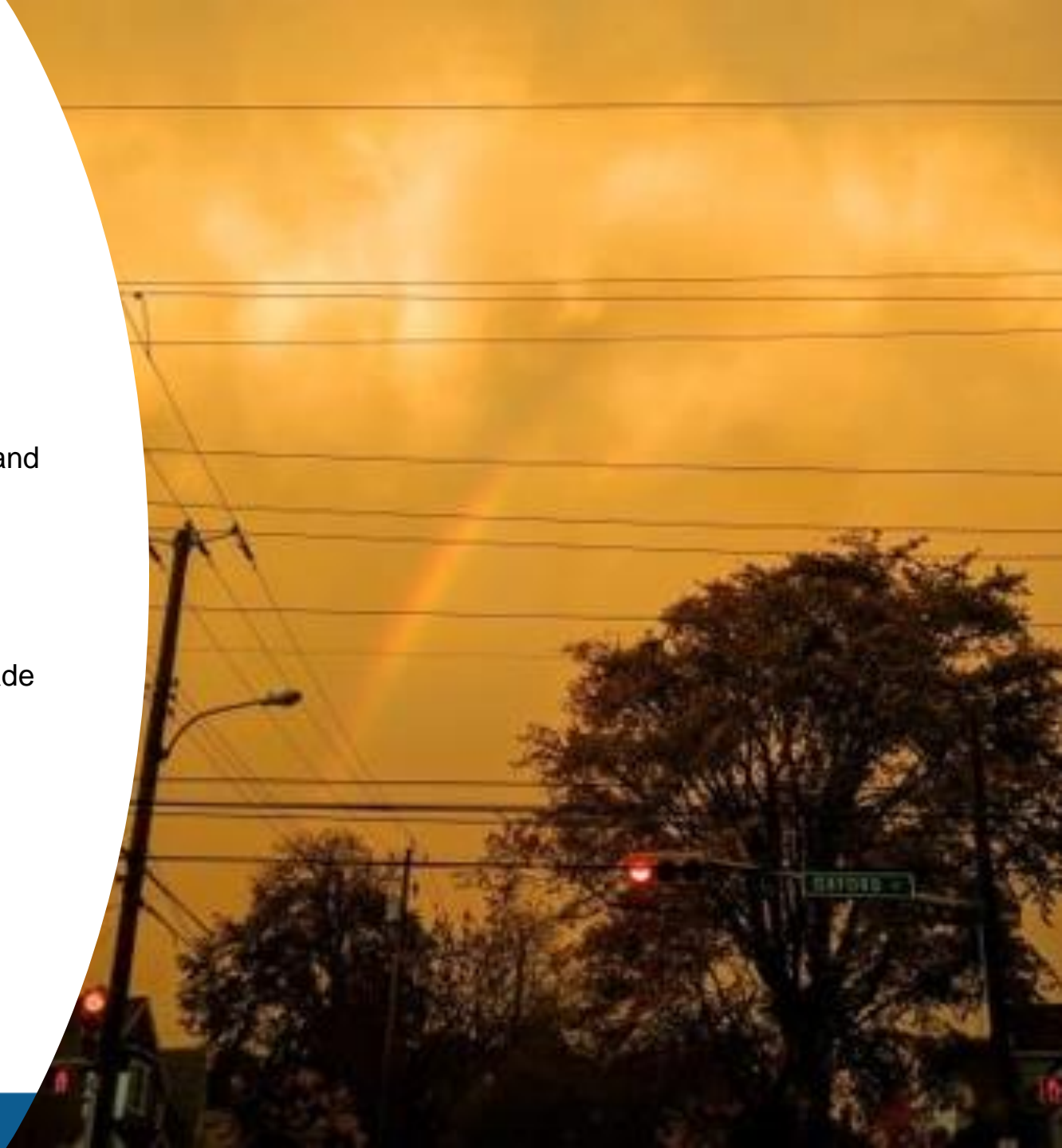
Develop or update codes and design standards for new municipal and private infrastructure that reflect future climate impacts



Targeted resilient infrastructure upgrade projects



Support the development of a region-wide naturalization program



What can you share?



What is your local governing body doing to adapt to a changing climate?



Do you have infrastructure resiliency standards?



Do you have green infrastructure standards?



Do you have any warnings or cautionary tales?



Thank You

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