

# Stormwater Integrated Resource Planning (SIRP) SIRP –SECURE Update

August 27<sup>th</sup> 2021  
Utility Committee Update

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# Today's Topics

Feb 2020 – Utility Committee request - That Administration work with EPCOR to provide a more detailed update to Utility Committee on Home Adaptation Strategies and Programs as part of the SECURE theme in the Stormwater Integrated Resource Plan, along with some analysis that these strategies and programs may have on insurance rates for Edmonton homeowners

## Presentation Structure

- Update on the SIRP SECURE Activities
- Insurance Industry Impacts Assessment
- IBC Update – Federal Task Force Engagement

# SIRP Flood Mitigation Strategies – 5 Major Themes

## **SLOW.**

We slow the entry of stormwater into the drainage network by absorbing it in green infrastructure and holding it in ponds, creating space in the collection system during storm events.

- Ponds (\$470M), Low Impact Development (\$420 - 570M)

## **MOVE.**

We move excess water safely away from areas at risk, quickly and efficiently.

- Tunnels, Trunks and Sewer Separation (\$300M)

## **SECURE.**

We help secure individual properties in higher risk areas against sewer backups, overland flooding and river flooding.

- Enhanced Flood Proofing (\$60M), Outfalls and Control Gates (\$30M), Inflow and Infiltration Reduction (\$100M)



## **PREDICT.**

We predict and manage the movement of stormwater through smart sensors and technologies that integrate into the collection system.

- Monitoring and Controls (\$70M)

## **RESPOND.**

We respond through the fast rollout of flood barriers, traffic diversions and public communications to protect life, safety and property.

- Emergency Response Equipment (\$45M)

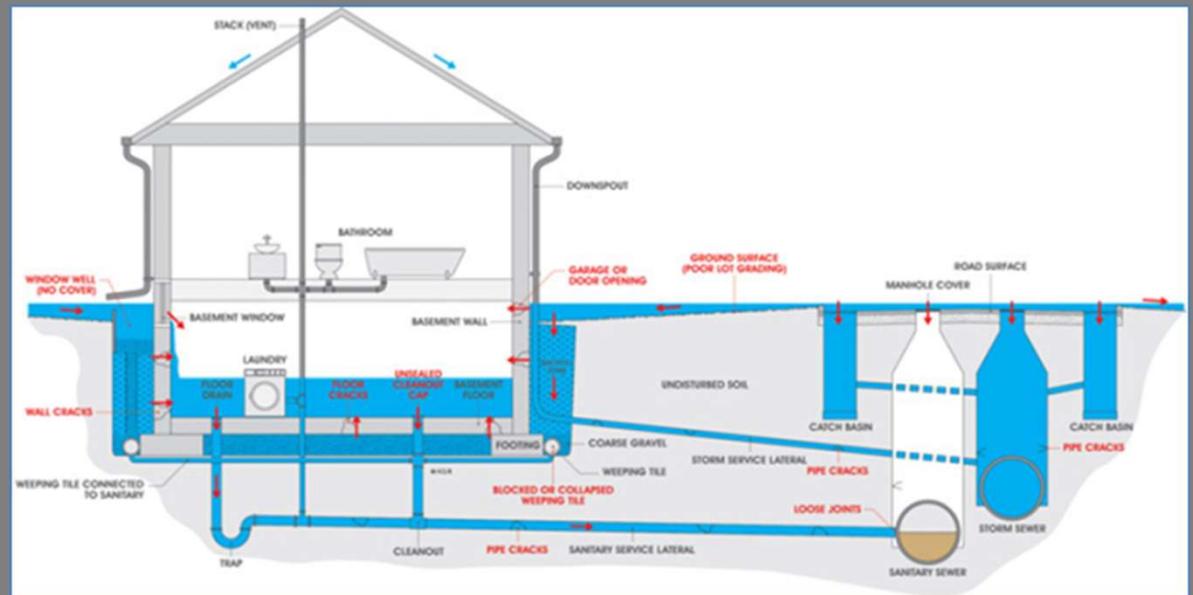
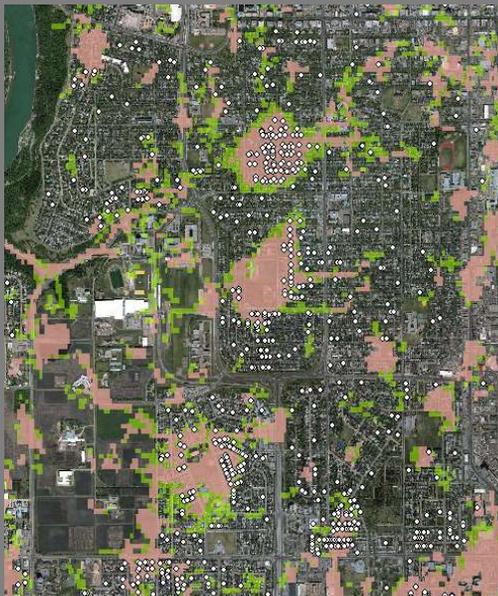
# SIRP – SECURE Driver

## Increased Risk of Basement Flooding due to Surface Ponding

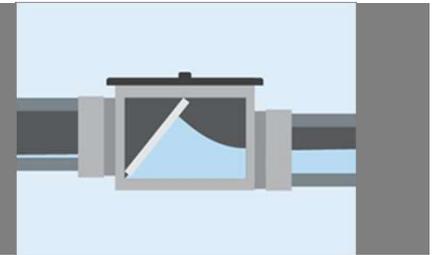
Multiple Paths for Water to Enter Home

- Inflow \ Infiltration to Sanitary line
- Foundation Walls and Foundation Drains
- Window wells

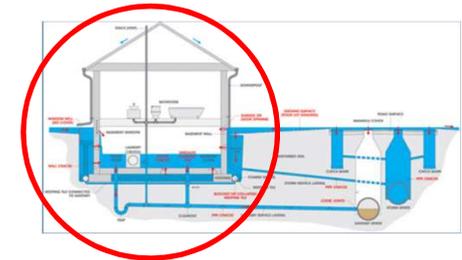
Strong Correlation of locations of Predicted ponding locations and historical basement flooding records



# SECURE –Building Flood Proofing



- Inspection team increased from 3 to 6 inspectors
- ICCA Flood Inspection Certification Training Completed
- Home Owners report format updated to ICCA guidelines
- Social Media \ Community League Newsletters
- Backwater Valve Uptake Public Engagement Review



Full Flood Inspections completed	2017	2018	2019	2020	Up to July 2021
Flood Prevention Inspections in homes (single family, duplex)	540	271	565	530	743
Total number of Backwater Valve Subsidies paid	414	171	335	358	161

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It only takes one Alberta storm to end up with water in your basement. Sign up today for a free Flood Prevention Home Check Up.

FORM ON FACEBOOK  
**Flood Prevention Home Check Up**  
Book a free inspection

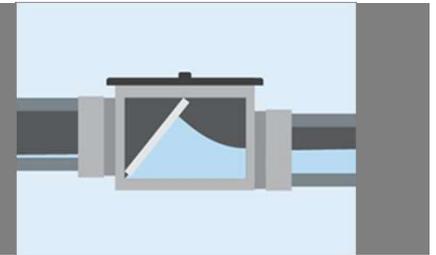
[SIGN UP](#)

## 10 Ways to Prevent Home Basement Floods



Source: Home Flood Protection Program, Intact Centre on Climate Adaptation, University of Waterloo

# Most Common Flood Home Risks

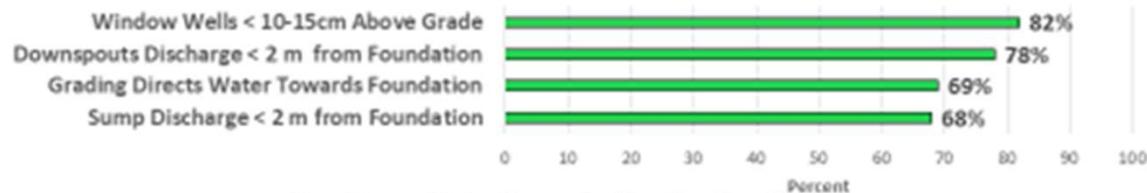


## RESEARCH IDENTIFIES MOST COMMON HOME FLOOD RISKS

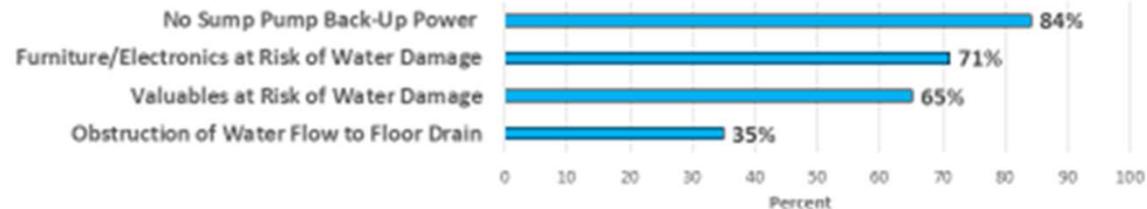
**INTACT CENTRE**  
ON CLIMATE ADAPTATION

5

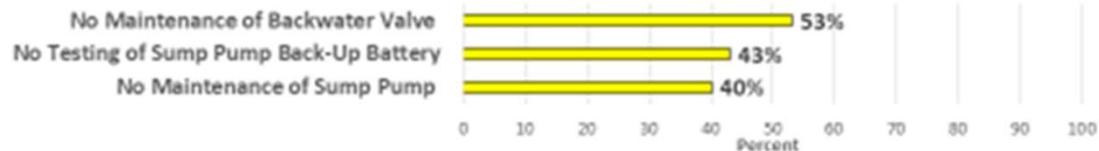
### Top Flood Risks Recorded Outside the Home



### Top Flood Risks Recorded Inside the Home



### Top Self-Reported Maintenance Flood Risks Inside the Home



# SECURE – Maintenance Rehabilitation & Inflow\Infiltration Reduction

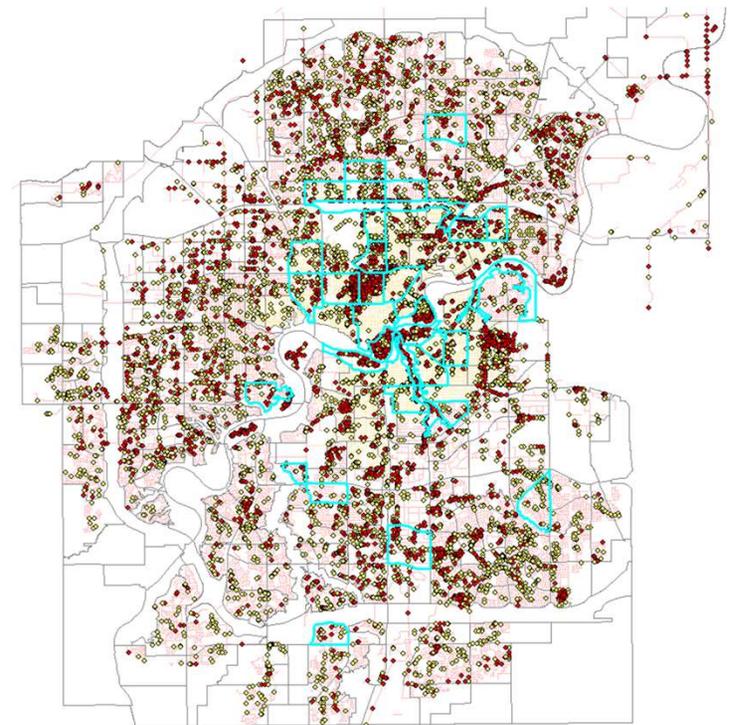
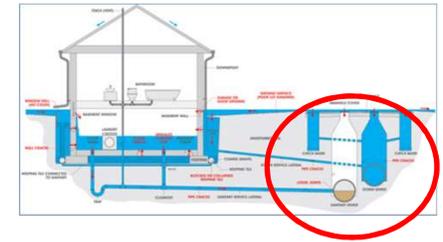


Higher risk to properties adjacent to topographic sag locations

Inflow \ Infiltration Reduction Program includes:

- Modified Manhole Covers
- Manhole Barrel Lining
- Sanitary Sewer Lining\Repairs

9000 manhole and topographical sag locations identified for the program



# Inflow / Infiltration Testing program

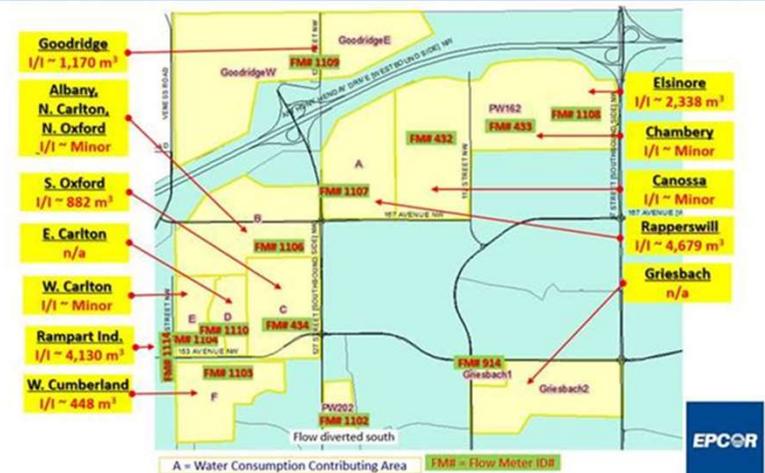
In addition to the focus on topographic sag areas a program systematically reviewing the sanitary network was initiated to identify sources of inflow and infiltration into the system

Smoke testing and flow metering was installed in northeast Edmonton in 2020 and neighbourhoods with high I/I identified.

## Overall Summary: Suspected I / I

Rainfall Event : **May 21-22, 2020**

(~2 mm/hr low intensity, ~24 hour long duration City Wide)



I/I rates vary significantly between adjacent neighbourhoods additional investigations underway to confirm sources in neighbourhoods with high rates of I/I

### Potential sources

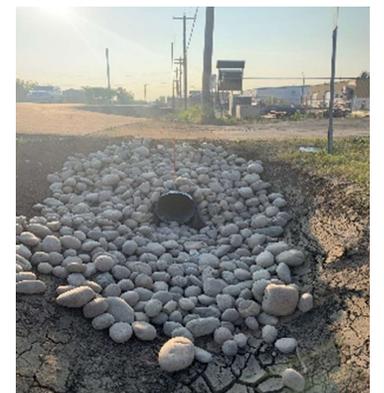
- Interconnections between Storm and Sanitary drainage pipes
- downspouts or sump pumps connected direct to sanitary sewers
- High groundwater levels entering pipes through cracks
- Poor lot grading and foundation drains connected to sanitary system

# SECURE – Ditches and Swales Maintenance and Repairs

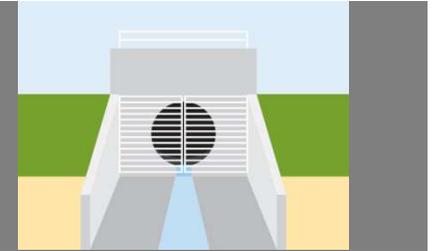
COVID-19 restrictions shifted focus to Overland Drainage Flood Mitigation

- Developed a formal maintenance procedure for Ditches and Swales
- 1700 of the 4000 culverts inspected and repaired
- 436 culverts that were not previously known to the utility were added to inspection schedule
- 2.7 km of ditches were repaired
- Coordinated with City IIS teams

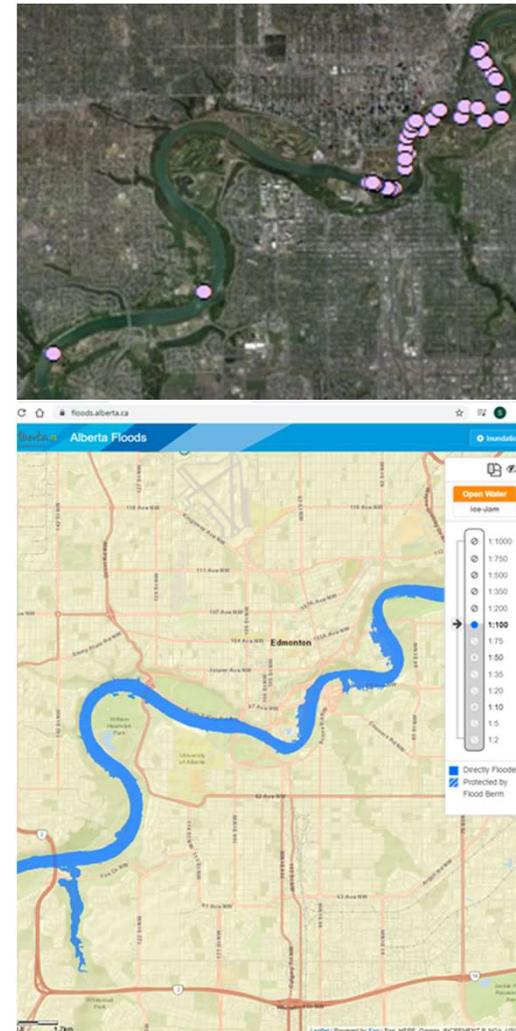
Mistatim – Before and After



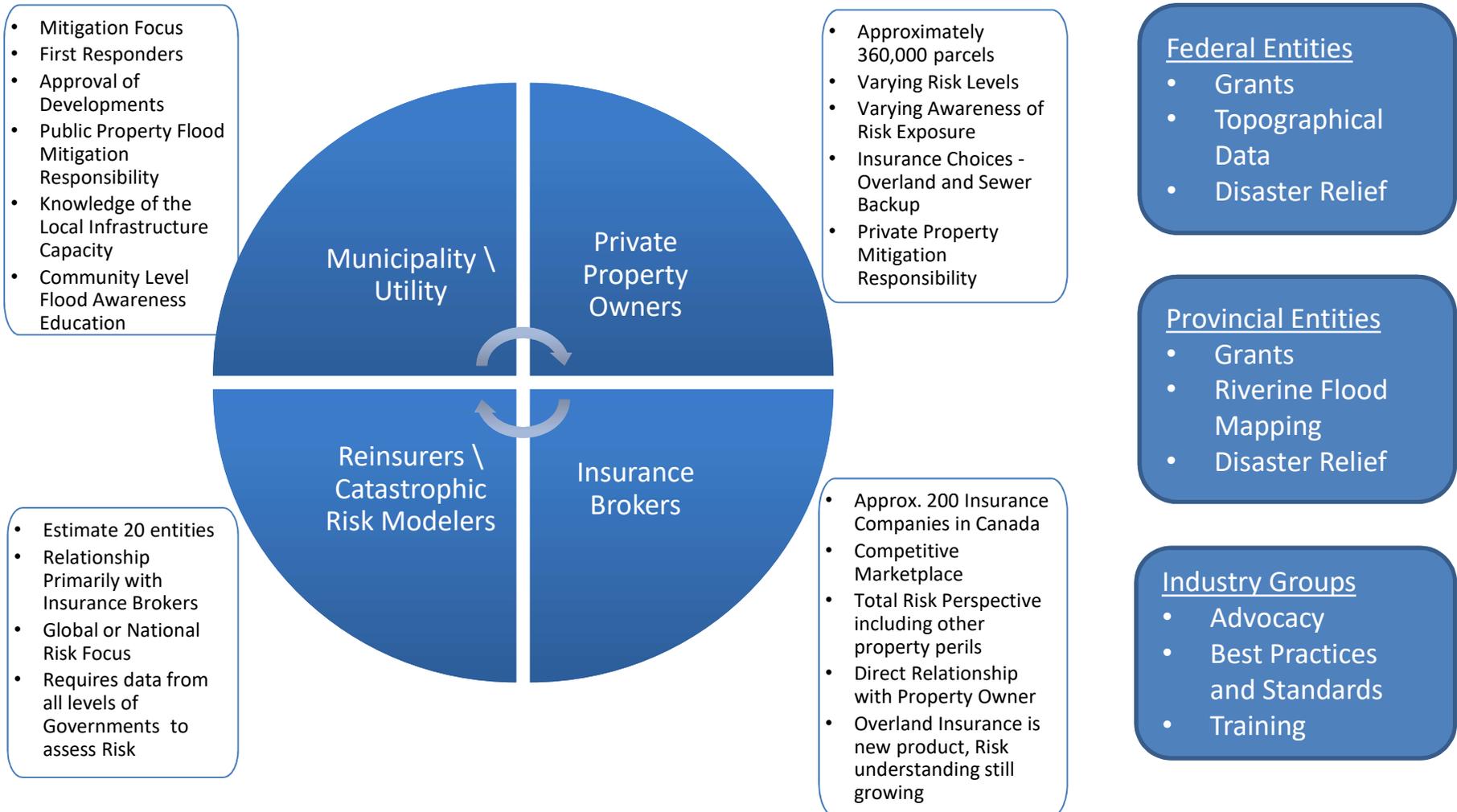
# SECURE – Riverine Flooding Risks



- Automatic Gates and Controls at 31 locations to protect property and increase response times to both open and close gates- initial 6 in design phase
- Reverse Driveway and catch basin connection review completed for overland flow paths to enter pipes and homes if river tops bank
- Flood proofing outreach in planning phase for all river valley residential properties to rebuild awareness and confirm backwater valves maintenance requirements
- Coordination with City of Edmonton River Valley initiatives – Touch the Water, Ribbon of Green and EPCOR Water Treatment Plant and Electrical Substation flood mitigation initiatives
- Aligned with SIRP-RESPOND



# Insurance - Multiple Entities in the Conversation



# Disaster Relief Funding Eligibility – Alberta Recent Changes

Effective 2021 – the Government of Alberta has introduced the following changes to the Provincial Disaster Relief Eligibility:

- A 90:10 cost sharing agreement, meaning that local municipalities and private sector applicants are responsible for 10% of eligible disaster costs
- A \$500K funding cap per homeowner application
- A one time limit on disaster financial assistance per property

EPCOR and City Administration will continue to work together to advance measures that improve community flood resilience and resilience of City assets, including building awareness to property owners of the impacts of these recent changes

# Insurance Scenarios

Two Scenarios Tested with Multiple Insurance Entities:

Scenario 1 – Individual Home Owner Completes Individual Property based Flood Proofing as Recommended after a Certified Flood Proofing Inspection

Scenario 2 – EPCOR completes installation of a community scale (e.g. dry pond) flood mitigation investment that reduces risks to multiple properties in the neighbourhood



## Three Pathways of Communication

### Pathway 1 - Individual Property Flood Risk Reduction

this pathway reflects the individual actions that a property owner can take to reduce the risk of flooding and share this information with their insurance broker.



### Pathway 2 - Overall Community risk assessment –

this pathway considers the overall programs that a community is implementing to reduce the risk of flooding in their community.



### Pathway 3 – High Risk Properties

Impact of municipal investments at a community scale to reduce neighbourhood risk for highest risk locations. These investments include the addition of dry ponds, LID, additional storm trunks and outfall gates that protect a group of properties however due to their configuration and operational set up are not easily validated through a mechanism such as a home flood inspection.

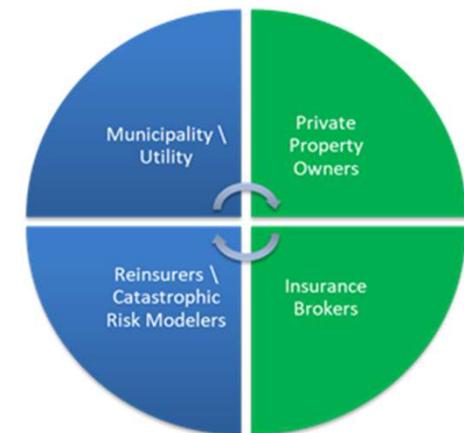


# Pathway 1 - Individual Home Flood Proofing – Potential Insurance Credits

Flood Proofing Interventions that are potentially eligible for Insurance Discounts	Estimated Cost Range for Home Owner to Implement	Potential for Subsidy Offered by Municipality
Extend Eaves trough Downspouts	\$25-\$50 per downspout	N
Disconnect downspouts and capping weeper pipes	\$100 -\$250 per downspout	Y
Flood Alarms on Fixtures	\$25-150 per location	N
<b>Install Backwater Valve</b>	<b>\$750-1250</b>	<b>Y</b>
Clean Out Backwater Valve	\$0 DIY - \$100	N
Install Alarm on Backwater Valve	\$75-150	N
Seasonal Backwater Valve Maintenance Check by Plumber	\$100-250	N
Replace Sump Pump	\$350-700 (2-7 year life expectancy)	Y
Install submersible Sump pump and Well	\$1500+	Y
Install Sump Pump Back-up Battery	\$500-\$1500	Y
Install Sump Pump Back-up Generator	\$5000+	N
Install Sump Pump Alarm	\$75-\$150	Y
Seasonal Sump Pump Maintenance Check by Plumber	\$100-\$150	N
Seasonal Water main shutoff valve Check by Plumber	\$100-250	N

University of Waterloo Research

Edmonton programs currently provide \$800/property for installation of backwater valve for properties built prior to 1989

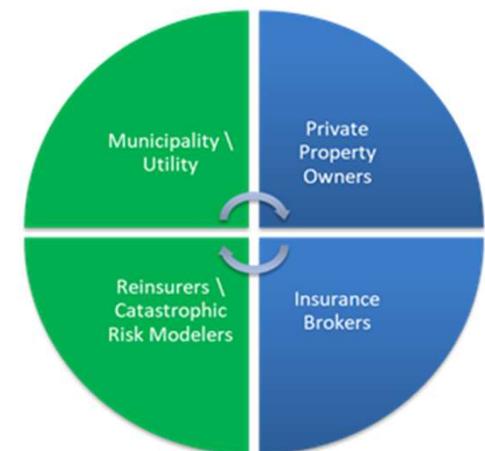
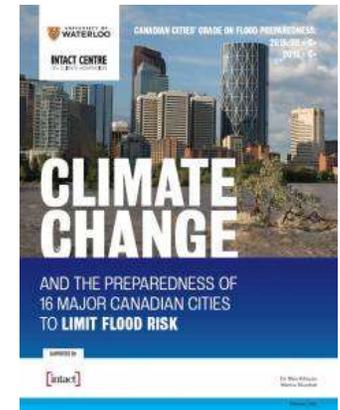


Based on I/I testing programs we expect to recommend additional subsidies for the next PBR

# Pathway 2 – Overall Community Risk Assessment

## Focus on Building Awareness in Insurance Community on SIRP

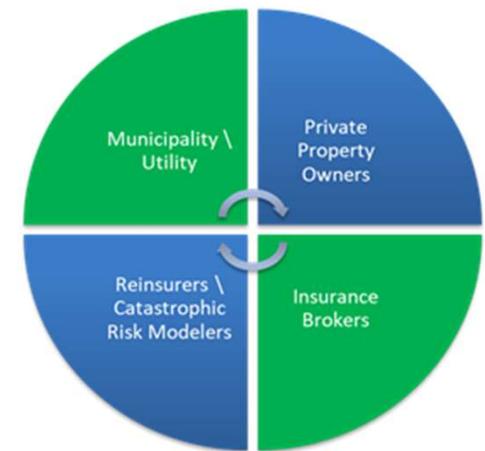
- National Recognition of our Programs
- Industry Presentations – Other Utilities\Municipalities and for the Insurance Sector entities
- Standards development participation – CSA, ICCA and ICLR
- Methodology Shared on EPCOR Webpages [www.epcor.com\Floodmitigation](http://www.epcor.com\Floodmitigation)
- Participation in Federal Government – Disaster Resiliency and Security Advisory Panel as part of Canada's National Adaptation Strategy



# Pathway 3 - High Risk Property Impacts

## Pathway forward still not clear

- Insurers are still developing understanding of these risks
- Lack of standardized approaches or communication channels between entities
- Climate change uncertainties make the risk valuation difficult to quantify
- Data gaps exist to support more robust risk analysis
- No entity to support sharing of data between groups
- Federal topographical maps resolution needs upgrading
- Risk of insurers pulling back from supporting these properties

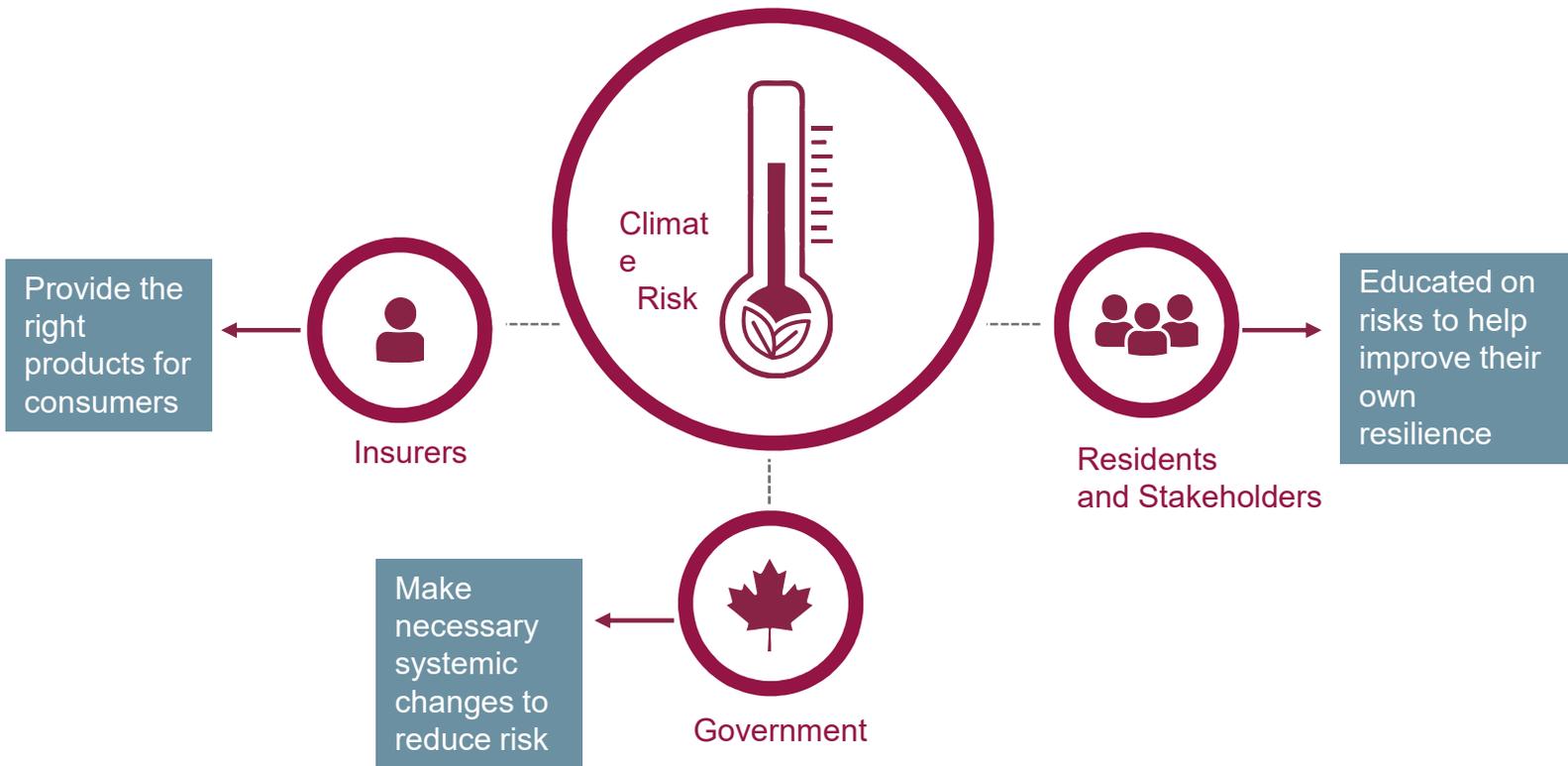


## Multiple Initiatives to Close the Gap

- National Roundtable on Flood Proofing
- Federal Task Force on Flood Insurance and Relocation
- CWN/IBC Research initiatives to support discussions
- SIRP methodology prioritizes these properties for flood mitigation

EPCOR is engaged with these multiple initiatives

# We need a collaborative approach

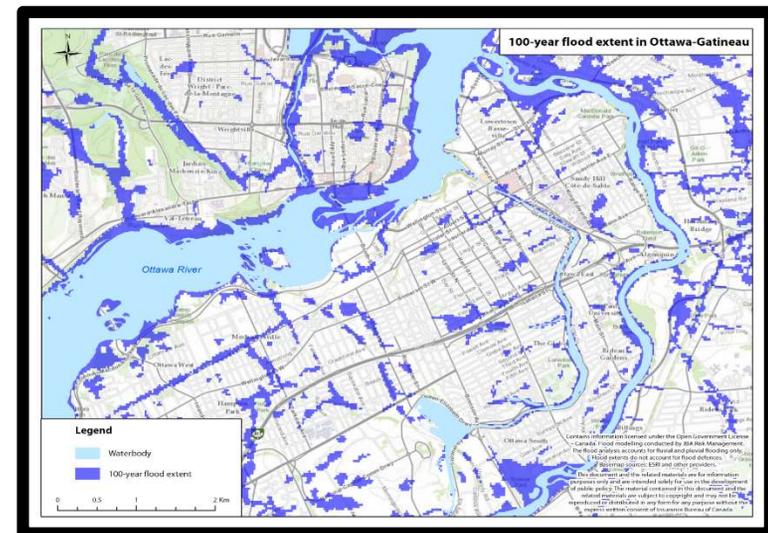


# National Action Plan on Flood

**Education:** Invest in launching a robust consumer flood portal based on accurate flood mapping and reliable information.

## Governments at all levels should:

- Invest in improving the quality of terrain data that is the foundation of flood mapping
- Collaborate with **insurers, realtors** and **mortgage lenders** to ensure flood portals maximize consumer engagement



# National Action Plan on Flood

## **Relocation and Protection**

Move homes away from areas that repeatedly flood and develop affordable insurance protection for properties in high-risk flood zones. This can be achieved by:

- Providing government financial assistance to relocate those at highest risk of repeat flooding
- Targeting priority infrastructure investments in the highest-risk areas to protect as many people as possible
- Developing high-risk insurance pools for residents in high-risk areas

# Next Steps

- EPCOR and City of Edmonton will continue to engage with Insurance Sector entities including IBC and with the Federal Government initiatives
- River Valley neighborhoods priority focus in the coming months for Flood proofing outreach
- Continue to coordinate with City of Edmonton Administration on implementation of the overall SIRP Strategy
- Additional Customer subsidy reviews will be included in development of PBR application for 2024

# Questions

