Case Study 1 - Food Design Lab Findings Report

CRITICAL INFRASTRUCTURE SECTOR OF FOCUS: FOOD

RISC DESIGN LAB 1

- 1 Full day workshop (1000h-1600h)
- 29 Internal City of Calgary Food Sector Critical Infrastructure components (physical assets, strategic processes, and operational people).
- University of Calgary partners (methodology development, facilitation, follow-up analysis)
- Local Scale Authority & Lead for Food Sector: City of Calgary Food Resilience Team & their partners (part of Climate & Environment)

FACILITATION

- City of Calgary Food Resilience Strategy team (stewards for Calgary's efforts to strengthen the local food system functioning),
- Urban Alliance University of Calgary team – Civil 570: Project Management (Dr. Estacio Pereira, Group 7: Neighbourhood Food Infrastructure Index)
- Enterprise Risk and Issue Management: Provided strategic coordination for supporting & enabling resources.

Risk Implementation Skills Collective

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EXECUTIVE SUMMARY

The first Risk Implementation Skills Collective (RISC) Design Lab focused on the local critical infrastructure of Food. The design lab incorporated twenty-nine diverse subject matter experts (SMEs), community operators, and identified intersecting disciplines. The City of Calgary's Enterprise Risk and Issue Management (ERIM) team supported with planning, coordination, and the delivery of the design lab. The key output of focus with this design lab for ERIM was to bolster risk analytics capacity for the food system's critical infrastructure, at the scale needed to foster local resilience. The locally relevant context and players' understanding of the system was incorporated to dictate the goals and key tangible outputs of this workshop.

With a focus on infrastructure and socioeconomic attributes of communities, the goals identified by the local experts leading this infrastructure's development were to:

- **Identify indicators that contribute to food resilience at the community level (completed in advance of the Design Lab, by the Civil Engineering students).**
- **Appropriately weight them in an overall measure of food resilience (completed in the Design Lab workshop, by the SMEs who participated).**

This work involved City of Calgary's Food Resilience Team, University of Calgary students from both the Schulich School of Engineering and the Geography department and incorporated cross-corporate input from relevant internal partners across The City of Calgary service lines. ERIM's approach helps the organization find and take advantage of opportunities to support good governance and contributes to defensible decisions.

WHAT IS A DESIGN LAB? A design lab is a forum where participants examine a problem through an experimental lens. The lab delivery is structured and informed by many experts, specifically sector operators and authorities for the local scale decision-making. The goal of this forum is to create a safe space for multi-disciplinary professionals to practice outside of a negotiation and explore problem-solving opportunities while gaining a greater systemic awareness of each other's needs and functional contributions to the desired outcomes.

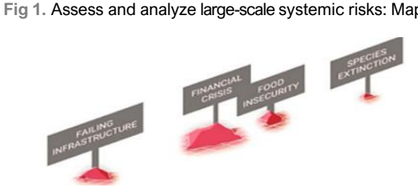
FINDINGS

Subject matter expertise was synthesized into a single weighting for each food system asset that indicated its significance to understanding and measuring neighbourhood-level food system resilience. This output later facilitated the development of an index tool to measure the experience of food resilience at the individual scale within these communities.

TANGIABLE OUTPUTS

1. Leverage preset decision-making rules to incorporate unique details with targeted follow up captured in relative scoring for designated indicators, with relevant related details.
2. Discover learnings for future coordination amongst participants in a complex, interdisciplinary environment.
3. Advancing analytics and capabilities for effective risk-informed decisions, as well as contributing to advancing The City of Calgary's risk maturity.
4. Strengthen and expand networks for local Food Resilience conversations, which remove siloes and barriers for relevant decision-makers and connect them with the abilities and insights of the keepers of local wisdom.

Fig 1. Assess and analyze large-scale systemic risks: Mapping a journey of increasing risk exposure that may be influenced by various risk drivers over time (Source: UNDRR 2019)



Awareness of trends, indicators, and catalyst events that may point to a pending crisis, or possible acute disruptions…

Understand the relevant hazard risks, systemic vulnerabilities and exposures applicable…

Identify the possible risk drivers that can increase the trend of the exposure in the system assessed.

LOCAL STRATEGY FOR FOOD RESILIENCE

Fig. 2 – The guiding vision for how systemic food resilience is to manifest at the local scale is stewarded via this strategic initiative (Source: *Council approved City of Calgary Food Resilience Strategy*).

FOOD SECTOR CRITICAL INFRASTRUCTURE

Critical infrastructure incorporates the people and processes associated with providing food to communities. Think of these systems as the organs that enable the fundamental needs of modern Canadian societies to meet basic needs, survive, and thrive.

Public Safety Canada has defined the Food Sector functional umbrella to include the following key services:

- **Production*** (Agriculture, aquaculture, marine harvesting).
- **Processing*** (Agricultural product collection, storage, and processing),
- **Agriculture** (fertilizer, extraction, processing, potash).
- **Distribution** (Food and Beverage distribution).
- **Preparation** (Food and beverage processing).
- **Consumption** (Retailers, Restaurants, and Emergency Food Access),
- **Waste Management & Recovery*** (Landfills, Composting).

**Due to the manufacturing strategies of most companies involving international partnerships, a great deal of food for most must be imported from many external, often international, interdependent supply chains.*

Key Food Sector Interdependencies where failures may yield cascading impacts:
Transportation, IT/Communications, Water, Energy

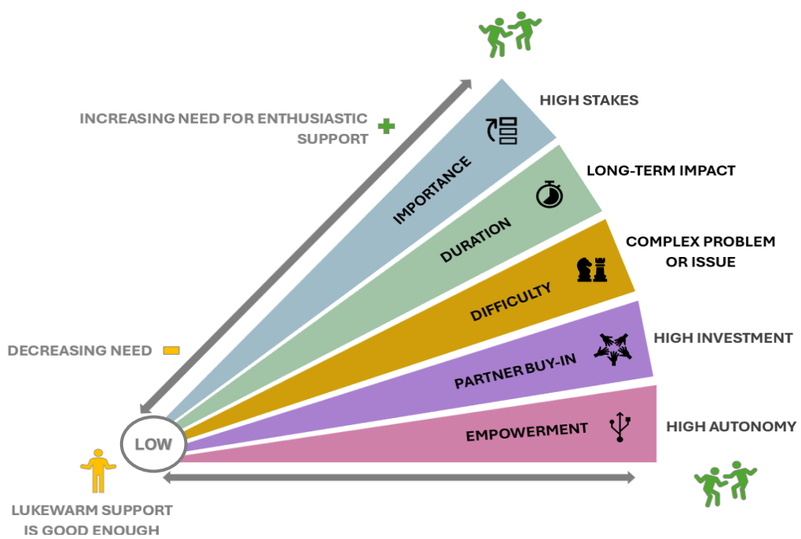
Key Critical Infrastructure Sectors with strong dependencies:
Safety, Government, Health

LAYING THE GROUNDWORK

To prepare for **RISC's Design Lab (1)**, ERIM undertook a layered process of engagement with partners in key areas of focus from early Spring (2023) to Fall (2024). This collaboration explored key foundational metrics and interdisciplinary limitations that required additional research and analysis. Key outputs of these preparatory collaborations included:

- ☑ Students from the Fall 2024 Geography Department's **Political Ecology** course contributed research focused to current context and priorities identified by the Food Sector operators. Their findings informed aspects of this report and the coordination of decisions. Sector specific learnings were circulated to relevant operators and internal decision makers to implement where, when and if deemed applicable.
- ☑ Students from the Fall 2024 Schulich School of Engineering's **Civil Engineering course,** connected with the Food Resilience Team. This class went on to develop the design lab methodology, facilitate the delivery, and complete the follow-up analysis within their scope. This student's research was led with direction from the Food Resilience team, along with their academic resources.
- ☑ The conversations of the Design Lab 1 Workshop began with the goal of supporting a multi-disciplinary perspective of Calgary's local Food critical infrastructure.
- ☑ Those who participated in engagement were able to offer their insights for the rigor needed to develop key indicators for Climate & Environment's Community Food Index.
- ☑ Identify the needs of the local Food Sector critical infrastructure system via coordination with relevant internal policies, priorities, and those leading the Food Resilience work.

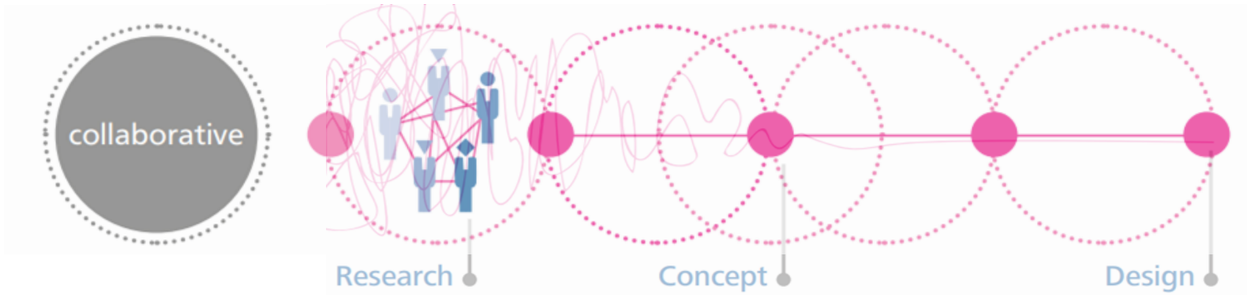
Fig. 3 Knowing the required level of support that is needed from system participants and decision-makers' input to enact sustainable change *(Source: Facilitator's Guide to Participatory Decision-Making, Kaner, S., 2007)*



QUICK WINS & KEY TAKEAWAYS

Risk analytics and capabilities are complex. Stick to the fundamentals of risk talks to keep participants focused on the problem at hand. **Risk practices require agreement on what is most important and what is not** (i.e., what we are willing to lose, or accept as unknown)**.**

Fig 4. Projects that require collaboration and the organization of complex ideas into a designed solution, whether for an asset, a process, or operations (Source: *A practical guide to design thinking – A collection of methods to re-think social change, Moritz Gekler, 2019, p. 18-21)*



The practice of risk is dynamic, as the surrounding world is always in flux. Dynamic systems are like a living organism, and using this lens of risk can help filter out noise and focus our attention on the problem at hand. It is important to be mindful that people instinctively tend to be uncomfortable. The topic could be more vulnerable to misunderstandings, miscommunications, misinformation, and even negative psychosocial impacts for participants if not navigated with the right controls and supports in place. **To start, these observations from this work may save you some unnecessary pain points in complex work:**

- ★ Facilitators who are mindful of the nature of how our biases and lived experiences may affect how we respond in certain conversations, as well as under stress will not only receive help from increased trust but gain better engagement overall.
- ★ Try to incorporate play, loose structure, curiosity, and accessible communication as reframing the topic.
- ★ Use a scenario, analogy, or story to help people think about risk in application, and ground in something familiar. This less conceptual, and more practical relationship can help people engage more constructively across disciplines.
- ★ Establish common terms, and the limits of the workshop discourse. Lean into these tools to focus complex topics and garner coordinated decision-making on the things that matter most.

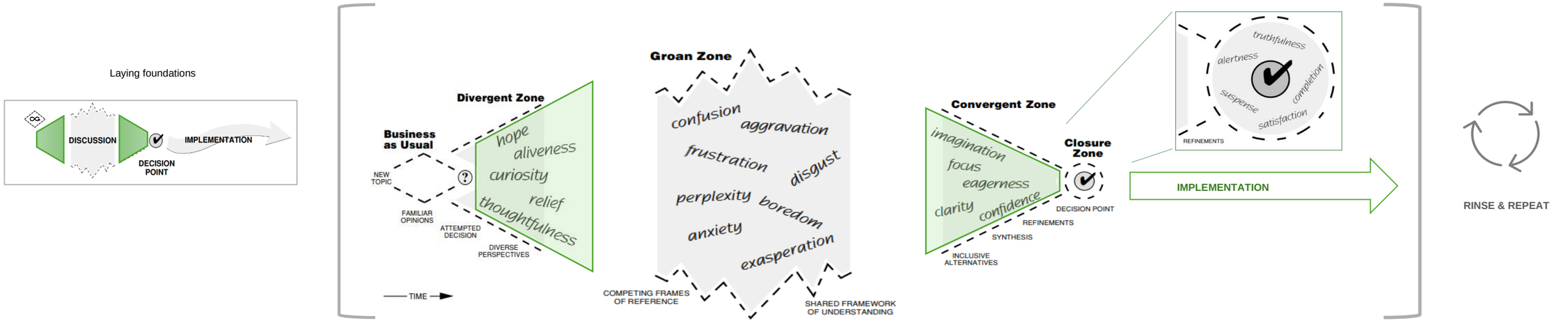
Do not forget to establish a baseline for participants to work from when discussing options. Decision Rules are vital in complex facilitation. Below are handy 'rules of thumb' to help those tackling the work to leverage for their initiatives:

- ☑ Trust with diverse participants strengthens if rules are set up, openly, in advance and are easy to understand.
- ☑ Metrics incorporate more specific local context for the system.
- ☑ Effective baseline understanding of the requirements for local system resilience.
- ☑ Subject Matter Experts may need to do deep dives. Have a way to receive focused 1:1 follow-up for iterative calibration of the dataset and/or system understanding.
- ☑ Identify the specific limits and responsibilities within your sphere of influence.
- ☑ Know what aspect of the sector infrastructure assets and processes that are typically involved that you wish to better understand. This will be helpful for aligning priorities amongst partners' complex needs and limited resources.

LIMITATIONS & IMPLICATIONS FOR PRACTICE

BEST SUITED FOR... complex and systemic problem-solving for local urban environments where there are multiple types of processes, functions, pieces, owners, and authorities coordinated, and diverse wisdoms understood collectively. Practically, this means focusing on building analytics tools and tactical understanding. These tools can then be implemented for more effective complex, multi-variable decision frameworks that identify existing process improvements that manifest this kind of infrastructure.

Fig 5. Developing Inclusive Solutions that can stand the test of time and change whilst maintaining trust across partnerships *(Source: Facilitator's Guide to Participatory Decision-Making, Kaner, S., 2007)*



1. **AVOID PITFALLS WITH A QUICK CHECK-IN** Knowing what lies ahead can help organizations adjust and look for supports at strategic junctions in any problem-solving process. If this approach is appealing, be mindful of the following before diving in:
   - **Resource intensive,** in time, people, technical skillsets, and logistical coordination administration and coordination.
   - **Data literacy and logic models** are understandable, used, and built uniquely. There are often already tools that your organization may have built to offload this.
   - **Highly technical,** facilitation and analytics development must go slow to go fast for the data is used both effectively, and sustainably.
2. **STRESS-TESTING & VALIDATION FOR YOUR NEEDS must be able to use the data and measures effectively when moving from concept to reality.** Remember that the tools will need refinement to perform in the way desired to meet minimum expectations.
3. **WHO IS AT THE TABLE AND ARE ALL THOSE NEEDED IN THE SEATS?** If there are not pre-existing channels or networks for the working group tackling this type of complex systemic risk exposure, then be mindful to account for these limitations and/or more resource intensive areas of focus. **Building the relationships with diverse groups and experts can take time.** Try to lean on existing partnerships and connections within your network to encourage diverse and inclusive range for your specific needs.

TIPS TO AVOID PITFALLS…

- Plan for your engagement to match the size of the system and area of focus (i.e., where the implementation will happen – who owns this?), frequency of engagement.
- There is high trust for participants to feel safe to be candid.
- Are there security or information risks that are applicable with a diverse audience who may not know well each other?
- If those that engage with you are outside of the organization, then be mindful to connect with legal, records, and IT experts that manage your organization to help make sure the policies for the team and partners are all set.
- Access and/or use, as well as facilitating peer to peer engagement.
- Consider psychological safety, and specific accessibility and equity considerations for diverse audiences to feel mutually understood.

STRENGTHS & WHEN TO APPLY THIS APPROACH

A COHESIVE FRAMEWORK can be useful for creating a common language and meaning for diverse peoples and disciplines working within a complex, interconnected, and interdependent problem. This approach lends well to a collective and cohesive baseline that partners can use to orient their resources, priorities, and operations with greater systemic awareness. Intersectional nuance allows greater resilience across the system by strategically bolstering key elements. Iterative and multi-partner engagement allows for the opportunity to calibrate and tune our risk analytics through informed triaging and prioritization. The chosen problem for each design lab is determined based on operators' experiences using and working within the Food Sector in Calgary, and how that improve things for all involved.

EXPLORING HOW TO GO ABOUT CATEGORIZING & MEASURING

- A component of a system can be measured in many ways because it may be serving multiple functions in a system.
- Multiple perspectives of gains that may exist are vital for deciding how to measure the attributes. Do not forget the wisdom of communities.
- Engage the users, and they will engage with you – remember that innovation moves at the speed of trust. Finding pathways or common priorities fosters agreement and action faster.
- Learn which levers are accessible to influence nudges for the change needed to help adapt.
- Weighting qualities of an asset, process, or operator within our urban systems indirectly highlights the trade-offs partners are most concerned about. Listen closely.
- Drivers remain consistent in the face of uncertainties.
- Misinformation, and increasingly complex interconnections are significant barriers and root causes for inefficiencies across planning, building, operating, and using the Food system.
- It is vital to understand that to say yes to something is also saying no to something else. Do we know and understand what that tradeoff may look like? Are we happy with the outcome, does it deliver on commitments?
- The public and our partners look at what we do to know if our words carry meaning. A stronger rapport ensures less miscommunications, and implicit trust in difficult moments can weather any storm.
- "No" is not a dirty word, it is the key to innovation, trust, and integrity – when applied mindfully, and predictably.

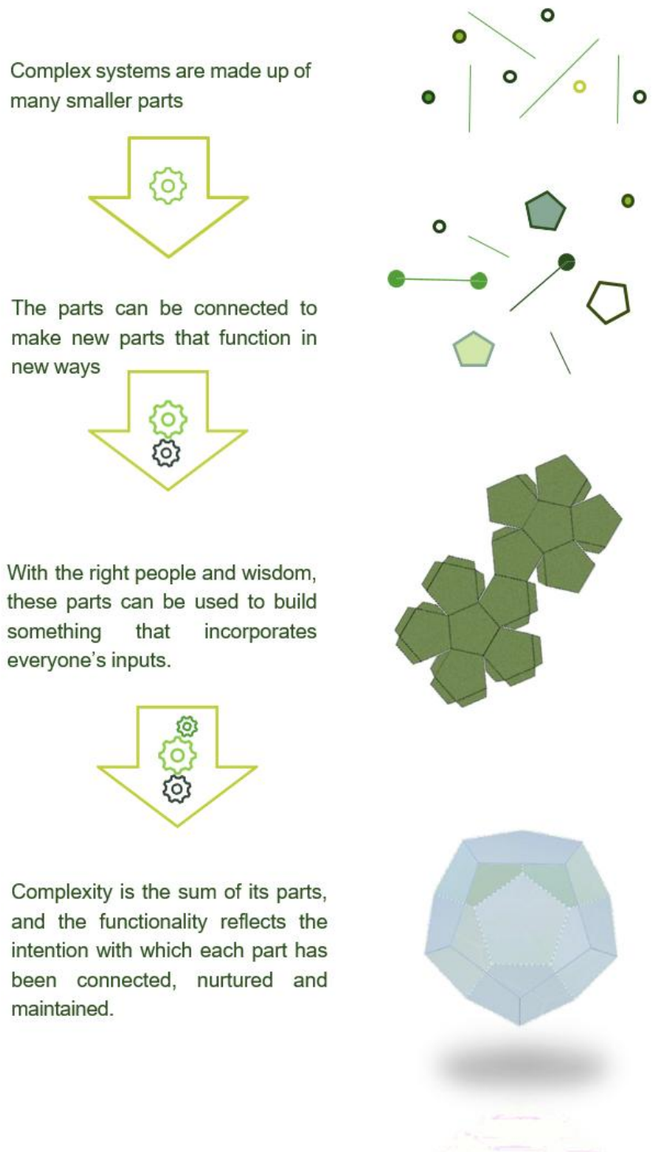
NAVIGATE DIVERSE SCALES OF DECISION-MAKING If working with infrastructure that involves urban, community, neighbourhood, and parcel or individual site scales, in conjunction with strategic, operational planning, and tactical application of technical attributes.

- *Participants hear how diverse disciplines consider infrastructure components.*
- *Better systemic understanding fostered in the audience for how the asset, process, personnel, and decisions made around resources occur to meet diverse needs or functions.*
- *The result creates the experiences of the end user. Design with many perspectives for how to best deliver the desired results for the end user, operator, and decision-makers that work to build and maintain sustainably reliable quality of life in the urban environment.*

WE ARE CREATURES OF STORY, NOT NUMBERS OR PURELY FUNCTIONAL SYSTEMS. People's stories tell us much about diverse users' experiences, about where we can co-create meaning, and belonging, within an urban environment. Modern urban ecosystems are a complex conversation that requires different variables considered together.

To change how a system is manifesting outputs If you do not know where to start, remember that how the end user is sharing their experience of the interface with the infrastructure. The qualities and nature of user's stories, including those that may **build, operate,** and **maintain** the system's components (i.e., people, process, and physical asset) have nuggets of wisdom shared.

Fig 6. Using risk to ground in our common priorities and see how we can all contribute in diverse ways to solving a common problem.



REFERENCES & ACKNOWLEDGEMENTS

RISK LENSES & METHODOLOGIES

- PAR Model (Wisner et al. 2004)
- OECD/DAC Better Criteria for Better Evaluation (Revised)
- ISO-31000
- RIMS Risk Maturity Model, RISC will focus on the *Analytics, and Capabilities* pillars.
- Strategic Foresight & Resilience Principles

GUIDING LITERATURE

- Risk Framework (ISO-31000).
- City of Calgary Open Data portal, and Urban Alliance resources.
- Canada's 2030 Agenda National Strategy – Moving Forward Together (SDGs)
- A practical guide to design thinking – A collection of methods to re-think social change, Moritz Gekler, 2019

LOCAL SCALE SCOPING & PARAMETERS

- Federal, Provincial and Local Authorities & Policies (FRS)
- City of Calgary Internal Service Lines & Risk Owners
- Indices and analytics tools rooted in local context, and specific pressures.
- Calgary Critical Infrastructure Network

URBAN ALLIANCE CONTRIBUTORS

I. University of Calgary Urban Alliance Coordinators
II. University of Calgary Students & Academic Experts
III. Geography Department - Geography 526: Political Ecology (Prof. Aaron Williams) Fall '24 Class final research projects:

Project 1 - Food Production: Storytelling to enable risk governance at the local scale.

Project 2 - Moving Theory into Implementation: Mitigating Food Insecurity in Calgary's Low-Income and Suburban Food Deserts and Fostering Resilient Communities.

Project 3 - Assessing Public Perceptions Surrounding Municipal Water Infrastructure Improvements in Calgary.

Project 4 - Calgary Transportation: Effectively Moving Theory into Implementation Using Collective Intelligence & Risk Governance.

Project 5 - Collaboration and Transparency for Governance Strategies to Strengthen Food Resilience in Calgary.

Project 6 - Water Scorecard: What methods can we use to grade the individual sectors of Calgary's Water infrastructure system, how can we identify the sectors within this system with the highest risk potential, and what improvements?

IV. Schulich School of Engineering - Civil 570: Project Management (Prof. Estacio Pereira),
Group 7: Neighborhood Food Infrastructure Index Student Capstone Team. **Click **here** to check out the 2024 Design Fair, displaying their work for industry and academic peers to learn from.*

CITY OF CALGARY

- Food Resilience Team (*Please see the **Food Resilience Strategy team's** webpage for more details for the internal experts engaged). Development of supporting methodology, facilitation, and analysis was done with Climate & Environment's guidance and engagement, alongside the Council approved City of Calgary **Food Resilience Strategy**.*
- Customer Services and Communications,
- Resilience,
- Corporate Analytics & Innovation Team
- Performance, Measures, and Budgets,
- Enterprise Risk Management,

… To our amazing participants, drawing from disciplines and services across the organization – **thank you all.** Work like this cannot happen without your wisdom and willingness to participate in these types of events and processes.