

# The Making of a Resilient Coastal City



Interview with  
Katie McPherson

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Vancouver's beautiful location amid the ocean and mountains, along with the friendliness and balanced lifestyle of the West Coast has often ranked as one of the best cities to call home. However, the city's long term attractiveness could be undermined by climate change and the risk of earthquakes, flooding, water shortages, fires, an opioid crisis and housing affordability. The Insurance Bureau of Canada has estimated the cost of damage from a major earthquake could be as high as \$75 billion, impacting the city and the nation for years.

With the potential for all these future threats, the City of Vancouver applied and was granted membership in the 100 Resilient Cities network in 2016. I had the privilege of interviewing Vancouver's Chief Resilience Officer, Katie McPherson, who gave some wonderful insights into what is on the top of Vancouver's list of things to tackle. She is leading a team, partnering with academia and engaging with local, provincial and federal stakeholders and partners to ensure Vancouver is resilient now and in the future.

Her very engaging answers to my questions follow below.

## WHAT ARE VANCOUVER'S 3 SIGNIFICANT THREATS AND STRESSES?

It's always a challenge to name only three - you can start off with one and it blossoms into a hundred.

Earthquakes and the impact on buildings and infrastructure is the first. Experts tell us we have a 30% chance of experiencing a catastrophic earthquake within the next 50 years. That's compounded by the state of our infrastructure. In the past, we didn't have a lot of knowledge of our earthquake risk, up until the 70s we didn't even know earthquakes happened here. The building code has improved significantly over time, and while the City of Vancouver has a program in place to mitigate risk to civic facilities

and city-owned infrastructure, many privately owned buildings remain at risk. Further, the building code today addresses life-safety, so structures that meet it won't fall down, but that doesn't necessarily mean they will be inhabitable after an earthquake.

Climate change is next. I know that this can be all encompassing but as a coastal city it affects us directly in many different ways. Just last week we had flooding every day on most of our major streets because of heavier than normal rain. We expect this kind of extreme weather to continue in the future and to be more frequent. Additionally, other climate impacts include sea level rise which is significant for us. Climate change will impact precipitation and snow-pack which will have serious implications for our water supply that comes from the Northshore. In terms of stresses social inequity is the most prominent theme in our work so far. This is being driven by a lack of affordable housing and a growing income gap. While Vancouver has a strong and diverse economy, not everyone is able to engage in it and a number of people have expressed concern about the changing nature of work and how and if they will have opportunities here in the future.

Our shocks are and will be exacerbated by these stresses. Being able to recover from acute events like earthquakes and thrive through more frequent flooding, relies heavily on the day-to-day strength of our community and the level to which people are able to access support and resources to prepare, respond and recover.

## HAS THERE BEEN SIGNIFICANT RISE IN SEA LEVELS IN VANCOUVER?

As part of our Climate Change Adaptation Strategy, the City's Sustainability team recently released a Coastal Flood Risk Assessment that looks at the areas at risk and timing of potential impacts. A lot of this kicked off in 2012, when a storm surge combined with a king tide resulted in significant flooding in areas that had previously never been affected.

We saw damage to Kitsilano pool, many parks and beaches, and the sea wall. Most of what we have been seeing in terms of coastal impacts is associated with high tide events. The projections show the minimum we will be looking at is one meter of sea level rise over the next hundred years. This would impact about 13 km<sup>2</sup> of City property –almost three times the size of Stanley Park and includes high value recreational areas, coastal infrastructure, as well as putting



pressure on sensitive ecological systems in the inter-tidal zone. A metre is quite significant and we have changed building standards to accommodate this. The bad news is that the likelihood of it only being a metre is low. We know climate projections have exceeded the best case scenario in many places. We are planning for a metre but, we need to continue to do a lot to mitigate climate change.

### **WHAT ARE SOME OF THE STRATEGIES THAT FOCUS ON THESE KEY STRESSES AND THREATS? EARTHQUAKES ARE MORE OF A WEST COAST THREAT, WHILE LACK OF AFFORDABLE HOUSING SEEMS TO BE SOMETHING THAT VANCOUVER AND TORONTO SHARE.**

In 2013 the city developed an Earthquake Preparedness Strategy and that helped create a number of options. Over the last few years that work was led by the Office of Emergency Management and included internal and external stakeholders. We've advanced a lot over the last few years and made significant progress in hardening our city infrastructure (like sewers and bridges), and increasing our volunteer capacity which is critical in the event of an earthquake.

The next phase of this work will focus on privately owned buildings. We recently hired Micah Hilt, former Deputy Chief Resilience Officer for San Francisco who was instrumental in their earthquake mitigation efforts. He will be leading the seismic policy work for the City and will work closely with Natural Resources Canada, the Province of BC, and with the Structural Engineering Association in BC and academic partners. It's a big challenge in the context of housing affordability because while we know we absolutely need to make sure that our buildings can withstand an earthquake, it's costly and difficult. The challenge lies in finding affordable solutions and making sure they work for our most vulnerable population. That is a huge part of the work.

### **THAT SOUNDS COMPLEX - HOW DO YOU ACHIEVE BOTH OF THOSE OBJECTIVES?**

It is, and much of this work falls outside the jurisdiction and capacity of the City. We are relying heavily on partners to enhance our technical understanding of the risk – social, physical and economic. We continue to work with the Province and the Federal government on this, and we will be doing significant stakeholder consultation to explore a wide range of options to develop and implement a comprehensive program. We have some great examples to look to as well, like San Francisco, LA, and Seattle who

are also part of the 100 Resilient Cities network. Closer to home, Victoria is also doing some really great work. We are learning from local and international experts. We will be looking at all kinds of options and working to prioritize buildings based on risk to lives, the role of those facilities in the community, and creating a criteria for recoverability that will guide this work.

Our Resilient Neighbourhoods Program is also very important. On one hand, there is a lot of work that needs to be done in terms of strengthening our infrastructure and recognize that the capacity of our communities to withstand these events and recover is linked to how prepared individuals and families are.

We also recognize there is strength in our communities and lots of experience with resilience that we can draw on. The Resilient Neighbourhoods Program will be co-developed and piloted in 4 neighbourhoods starting this year. We will be supporting community based organizations that will lead their neighbourhoods in the development of Local Resilience Action Plans. This will start with mapping hazards, and social and physical assets within their community, hosting community dialogues around local strengths, vulnerabilities, and concerns in the event of a crisis, and empowering people to work together to find ways to build community capacity to become more resilient. We want to empower our neighbourhoods with the information and tools they need to be able to work together in the event of an earthquake or a snowstorm. To do this we need to learn from and respond to the unique needs of the people who live and work in these neighbourhoods every day.

Vancouver's downtown east side is at the forefront of the opioid crisis. The opportunity we have after a disaster or crisis, is to learn from those responses. Although we are in the throws of a horrendous crisis, we have seen incredible action from the community to take care of each other. Learning from our community and the way they come together and respond to crisis is important in forming our strategy moving forward so that we really leverage that capacity and knowledge.

The Resilient Neighbourhoods Program is intended to help us learn and build on that capacity and encourage people to understand their role in not only the outcome of a crisis but also in the solution for a crisis. We have already surpassed the number of overdose deaths that we had in 2016, at the same time we've seen the community step



up and take action on the street while our health authority and first responders are working very hard. We know right now we are doing good response work, but response is not prevention, it's expensive and it doesn't address the root causes - across Canada there is a critical need to move that up to the front end and work on prevention.

### **WHAT PARTNERS ARE YOU WORKING WITH AS PART OF THE 100RC?**

We are in the very early stages of our Resilience Strategy. We started working on this in May and we spent most of the summer engaging internally to assess and determine where we should be focusing our efforts. We have benefited greatly from our partnership with AECOM. They are a strategy partner that has helped us draft our engagement strategy, assisted with the development and execution of the Agenda Setting Workshop, and is working with us to analyze data from a wide range of sources.

In addition to AECOM, we've had some great input and support from our local universities. Our academic community is one of the greatest local capacities the City can draw on. We are working with a group called the Global Network for Advanced Management (GNAM) through the University of British Columbia. GNAM is a platform partner with 100 Resilient Cities. Right now there is a talented team of graduate students providing research support to the City's Green Infrastructure Team that will be directly incorporated into our evaluation and options for our Rainwater Management Strategy. They are also supporting us in establishing metrics to measure success in our Resilient Neighbourhoods Program. We are very lucky to have this group of international students working with us.

We've also established a great partnership with Simon Fraser University (SFU) and their Public Square Program. **SFU's vision** is to be Canada's leading community-engaged research university and we are thrilled to be able to partner with them to host community dialogue on a range of issues. We really value those partnerships both now and moving forward. We are very lucky.

### **VANCOUVER IS BUILDING ITS OWN RESILIENCE STRATEGY BUT HOW DOES THAT TRICKLE DOWN TO THE OTHER CITIES IN BC THAT ARE EXPERIENCING THEIR OWN STRESSES AND THREATS?**

Vancouver is not an island. We are actually one of twenty-three municipalities in metro Vancouver and the City

is located on the traditional territory of the Musqueam, Squamish and Tsleil-Waututh Nations. Choices we make affect our neighbouring municipalities and local First Nations. Vancouver has been a regional leader, particularly in the work that has been done on climate adaptation, and we see this work being championed in neighbouring municipalities. One of the important things we need to remember as a city is that resilience cannot just be implemented within our borders. This year for example, there were wildfires all summer in the interior, while the fires themselves did not directly affect Vancouver, the smoke from the fires did. Our region, which is celebrated for our clean air and has set stringent targets towards this, had no control over the smoke. This is an important reminder of the need for ongoing climate and risk mitigation, and of the need to understand regional and global risks that will affect our city.

A second example occurred earlier this year when we had an unprecedented amount of snow. At one point all the major highways leading into the Lower Mainland were closed off. Increasingly as an urban area, we need to recognize our relationships particularly with the rural areas. While we are focusing on Vancouver, it's in our best interest to ensure that other communities surrounding the city are resilient. We have a mutually dependent relationship. Hundreds of thousands of people commute into Vancouver every day for work, in addition to visitors. Even if you are not a resident of Vancouver but work here, you are a key contributor to our economy. Whether you live in Richmond, Surrey or Burnaby we really need to make sure each city is resilient by sharing what we learn and working towards a resilient region.

### **WHAT IS THE PLAN FOR A RESILIENT VANCOUVER AFTER THIS TWO YEAR ROCKEFELLER INITIATIVE ENDS?**

Part of my job as we develop the strategy will be articulating that. Our Resilience Strategy isn't just a two year initiative. The 100 Resilient Cities grant will end, but in my opinion a successful strategy is one that is in itself resilient. Right now we are working with a wide range of partners and departments. We are working to infuse resilience from the ground up in our operations. In addition to having a resilience strategy, the extent to which we can influence others to integrate resilience thinking into their work, will be the legacy of this Program. An example would be our Planning and Sustainability Group that is launching a major initiative - CityCore 2050. They are incorporating the Resilience Framework to guide visioning for what



our city will look like in 2050. That is an example of the City's commitment to integrate resilience planning into all of our work.

**YOU'VE TOUCHED ON THE FACT THAT THE CITY'S SEISMIC POLICY LEAD IS COMING FROM SAN FRAN, AND THAT YOU HAVE LEARNED FROM OTHER COASTAL CITIES, SO THIS QUESTION WILL LEAD RIGHT INTO EXPANDING ON THAT. WHAT HAS BEEN THE GREATEST BENEFIT IN WORKING WITH OTHER GLOBAL CITIES THAT ARE PART OF THE 100 RC?**

I am going to divide my answer in two parts.

One of the greatest things so far has been the Team Canada relationship. Montreal, Toronto and Calgary are all part of the 100RC program and we make a point of having monthly check-ins. Montreal's Chief Resilience Officer, Louise has been phenomenal as she is a couple of years ahead of us. Everyone has been very supportive. It has been great to connect with other Canadian cities as we think about how we can collaborate on issues that are affecting us locally. An example we discussed is one of affordable housing, it's not just Vancouver facing this, but Toronto as well.

We have opportunities to talk about our shared challenges but also how we can leverage our work to be able to make an impact on a national scale. Our relationship is really strong and its growing, and I think that is one of the greatest benefits so far of the 100RC.

With respect to international cities, we have a lot in common with San Francisco and we work with them regularly on a number of fronts including emergency management and seismic resilience. LA is another city that we look to on that end. Our Mayor signed a Memorandum of Understanding with the Mayor of Seattle when we were first accepted into the 100RC program and we've been working with and learning from them, especially the work they're doing around equity. Our cities will face similar challenges in the future, so this will continue to be an important relationship.

We are seeing opportunities to work with cities with similar issues and cities we may not have otherwise reached out too. A great example is Athens. Athens is a city we haven't connected with in the past, but through this program we learned about the work they're doing around immigration, and particularly support for refugees.

In Vancouver we have an initiative called the Vancouver –Immigration Partnership, and although our experience is certainly not the same, we have the opportunity to learn a lot from their experiences. We've begun the conversation and are looking forward to continuing it. Immigrants make up a significant percentage of our population and there is certainly potential for an increase in the future with climate refugees. Learning now from the work that Athens is doing is going to be really important for us.

Through the support of 100RC, Katie McPherson's Resilience team is developing a Resilience Strategy that is not only city wide but is looking to ensure lessons learned may be shared with its neighbouring cities in British Columbia. Importing ideas that have served other coastal cities like San Francisco, LA and Seattle is giving Vancouver the leverage it needs to learn from cities that share similar seismic and climate challenges. Working with global cities, partners, academia, Vancouver is leveraging information that will ensure the infrastructure and systems they establish can persist, adapt, and grow no matter what kinds of chronic stresses and acute shocks Vancouver may experience.

*A warm thank you to Katie McPherson for this interview.*

Katie McPherson has recently been appointed to the role of Chief Resilience Officer for the City of Vancouver. In this new capacity, she is responsible for facilitating the development of a Resilience Strategy in collaboration with local and regional stakeholders, and through a partnership with 100 Resilient Cities – Pioneered by the Rockefeller Foundation. Previous to this, Katie served as Manager of Community Resilience with Vancouver's Office of Emergency Management, leading complex risk assessment, planning, response and recovery initiatives for hazards ranging from earthquakes to oil spills.

Her interest in resilience is rooted in her experience as a volunteer responding to the 2004 Indian Ocean Tsunami in Thailand and has grown through leadership positions in the public, private and non-profit sectors spanning the fields of Emergency Management, Community Development, Climate Adaptation, and Disaster Recovery. She is passionate about connecting citizens to big ideas, and empowering communities to take action on global issues. She holds a Master's Degree in Disaster and Emergency Management from York University, and a BA in International Development and History from Dalhousie University. ■