

## Insurance Industry Responds to Climate Change with MRAT

**“An extreme weather event that would occur every 50 years, is now happening once every five to seven years, depending on where you are in the country.”** This statement from the Director of Research at the Insurance Bureau of Canada (IBC), highlights the impact of climate change on property and the insurance industry. **In 2013 insurable losses surpassed \$3 billion** for the first time in Canadian history. More than half of those claims, \$1.7 billion, were related directly to water damage. While British Columbia (BC) has largely avoided the damage experienced in many other provinces, it needs to prepare as flood events are forecast to occur with higher frequency in the future.

IBC is responding by tackling one problem associated with climate change using the Municipal Risk Assessment Tool (MRAT). This tool, the only one of its kind in the world, is being tested in three pilot project cities: Hamilton, Ontario, Fredericton, New Brunswick, and Coquitlam, BC. MRAT developed by the IBC with the assistance of federal funding, uses a combination of data from climate models, past climate events, municipal infrastructure data, and insurance claims data to map the areas of a city that are most vulnerable to flooding caused by storm-related sewer backups. With this data cities can make the necessary investments and improvements in advance, avoiding complications caused by extreme weather events.

Coquitlam working in partnership with IBC has revealed some interesting data. Average temperatures in the province have risen between 1 to 1.5 degrees Celsius since 1950, and are expected to rise another 1.5 degrees Celsius by 2050.

Rainfall in Coastal British Columbia has increased by 30% since 1950 and will likely increase another 10% between now and 2050. The benefits of MRAT for Coquitlam itself are numerous and include improved capabilities for forecasting and preparing for future extreme weather events, prioritizing infrastructure repairs and leveraging federal infrastructure funding. This keeps its citizens and their property safe and dry, and limits disruptions to business and the community.

In 2012 the Federation of Canadian Municipalities estimated the replacement cost for Canada’s sewer and storm water infrastructure at **\$55 billion**. City engineers can prioritize and plan infrastructure repairs based on MRAT maps which identify high risk areas for flooding. Municipalities can use this tool to provide convincing data to the federal government on investment priorities in municipal infrastructure. MRAT benefits insurers by providing accurate flood risk information which can be used for the development of new insurance products. MRAT has already influenced changes in municipal policy. New developments in Coquitlam which are near the Fraser River must now be setback further and one metre higher than previous municipal standards.

Canada is the only G8 country where homeowner insurance for overland flood damage is not available. The average payout per case by the province, to victims of flooding in Southern Alberta in 2013 was a mere \$13,000. **As MRAT and its benefits roll out, owners at risk should add an endorsement to their property insurance policy for Above Ground Water and Sewers Coverage protecting themselves from water damage caused by sewer backup.**



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## The Geothermal Energy Opportunity

Geothermal energy is generated and stored within the earth. 11.7 Gigawatts (GW) of geothermal capacity generating enough electricity for 6 million US homes was online worldwide in 2013. Geothermal heat and electric power offers **a potential economic benefit to Canada estimated at \$86 billion dollars US and 9,000 permanent jobs** according to the Canadian Geothermal Energy Association (CANGEA).

Geothermal energy is considered as a renewable and sustainable form of energy as the earth's heat content is 100 billion times more than current global power consumption. It also has a small environmental footprint, is very scalable and provides a steady stream of uninterrupted electricity unlike the intermittent power provided by wind, solar and hydro dams in drought conditions. The United States is the largest supplier of geothermal electric power in the world. Mexico is the fourth largest supplier of geothermal electric power in the world. The industry is growing at a rate of 4-5% annually with over 700 geothermal projects (**30GW**) under development in 76 countries. Canada, which has known geothermal assets, has not developed one successful geothermal power project.

This inertia might be explained by the fact that Canada has been awash in low cost energy sources, be it hydro-electricity, coal or gas; combined with a lack of entrepreneurship and investment by governments, government agencies and large utilities alike, in a highly regulated energy arena. The landscape however, is changing. The low hanging fruit has been picked, and the carbon chickens are coming home to roost. Traditional energy projects are becoming larger and significantly more expensive, especially in light of climate change, and new emerging technologies. **The fact that the USEIA has projected that the levelized cost of electricity (LCOE) for**

**new geothermal power plants coming on stream in 2020 will be less than 5 cents per kilowatt hour, less than for either coal or natural gas generated electricity should be getting more attention.**

In the United States the costs and benefits have been weighed. The Department of Energy Geothermal Technologies Office manages 175 projects that leverage more than \$400 million in federal and private sector investment. **Currently there are 40 plants in California producing 7% of the state's electricity.** Geothermal Power generation is not just confined to "Ring of Fire" regions. Emerging technology: Enhanced Geothermal Systems can tap 4 to 10 km deep dry rock formations widening the scope of its use. The US Department of Energy estimates that this can provide **100 GW** of economically viable electric capacity, more than 10% of current total US electrical capacity.

It is in the best interest of our communities to seriously consider developing geothermal power stations. **BC Hydro's Site C hydro-electric project is currently estimated to cost \$8.3 billion, producing electricity at a cost of 6 cents per kilowatt hour. According to CANGEA chair Alison Thompson on Feb 4, 2015 "If the BC Government treats geothermal energy as a priority, not an afterthought, geothermal will provide firm energy beginning in 2018 at a lower cost than Site C and in a manner that benefits ratepayers, taxpayers, First Nations, the economy and the environment not to mention having a carbon footprint that is lower than Site C."** Geothermal energy has been overlooked in the past, however there is ever increasing evidence indicating that it is a smarter, competitive, and more sustainable source of energy in our low carbon future.

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When we can be of service, please contact Chris at **604-328-7253** or at **[chris@biocentric.ca](mailto:chris@biocentric.ca)**