

## CLIMATE CHANGE: A PUBLIC CONCERN



Changing climate and more extreme weather is exposing Canada's infrastructure to impacts it was not originally designed to withstand. This exposure may reduce its useable lifespan and as well as expose Canadians to disruptions to their lives and daily routines. Extreme weather events can increase risks to public health, safety, the environment and result in economic losses from infrastructure change and destruction. Engineers have a professional responsibility to minimize such disruptions and reduce risks by designing, building and maintaining resilient infrastructure that adapts to the impacts of a changing climate and extreme weather events.

### WHAT IS THE ENGINEERING PROFESSION DOING?

Engineers have traditionally relied upon historical data to design long-lasting, safe and reliable infrastructure, but now must adjust and/or develop new design and operational practices to accommodate increased uncertainties of the changing climate. As a first step, engineers must evaluate the vulnerability of Canada's infrastructure to the impacts of current and future climate. The findings of these assessments inform an ongoing review of infrastructure design, operation and maintenance codes, standards, procedures and engineering practices. They will also contribute evidence for the review and adjustment of government policies and regulations at all three levels of government in Canada.

### PUBLIC INFRASTRUCTURE ENGINEERING VULNERABILITY COMMITTEE (PIEVC)

Engineers Canada and its partners established the PIEVC in August 2005. Co-funded by Natural Resources Canada (NRCan) between 2005 and 2012, PIEVC is a major initiative of the Canadian Engineering profession involving all three levels of government and non-governmental organizations. Its mandate is to look broadly and systematically at infrastructure vulnerability to climate change from an engineering perspective. Its initial work resulted in the First National Engineering Vulnerability Assessment, published in April 2008.

Work has continued with additional case studies and refinements to the vulnerability assessment process. This work, has added additional knowledge and experience in assessing the engineering vulnerability of infrastructures to changing climate.

### INFRASTRUCTURE CLIMATE VULNERABILITY ASSESSMENT

Between 2005 and 2011 the focus was on four categories of public infrastructure:

**Buildings; Roads and Associated Structures; Storm water and Wastewater Systems; and Water Resources.** The

assessments have been expanded to other types of infrastructure including electrical distribution, airports and public housing. The assessment uses the PIEVC Engineering Protocol, which is a formalized process that guides infrastructure professionals to assess current and future climate risks. The process is applied to individual infrastructures such as buildings or infrastructure systems such as potable water supply. It is designed by engineers for engineers, working with other professionals, including climate scientists, to document current and future climate risks to infrastructure.