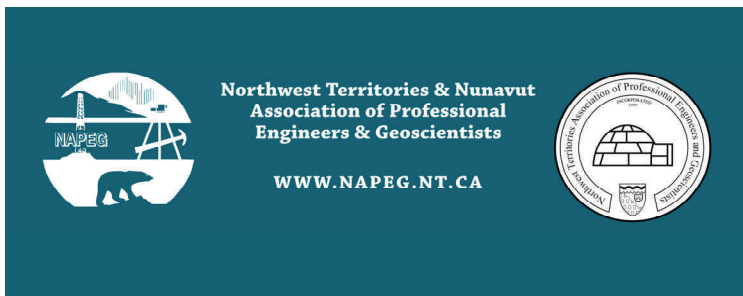


How Will Climate Change Affect Civil Infrastructure in the Northwest Territories and Nunavut?

A professional development opportunity presented by:



WORKSHOP

Monday, November 15, 2010
Katimavik A
The Explorer Hotel
4825-49 Avenue
Yellowknife, NT
8:30 a.m. to 5:00 p.m.

The PIEVC Protocol will be an essential tool for individuals involved in the design, operation, maintenance and management of infrastructure. The workshop will provide the tools for assessment of the climate change challenges facing current and future infrastructure and provide you with the techniques you need to meet current and future challenging issues regarding climate change affects on infrastructure.

Don't miss this unique opportunity to be introduced to the **Public Infrastructure Engineering Vulnerability Committee (PIEVC) Engineering Protocol for Climate Change Vulnerability Assessment.**

WORKSHOP ABSTRACT

How Will Climate Change Affect Civil Infrastructure in the Northwest Territories and Nunavut?

The PIEVC Protocol is a step-by-step process to assess the impacts of climate change on infrastructure. Information developed through this assessment process will assist consultants, owners and operators to effectively incorporate climate change adaptation into design, development and management of existing and planned infrastructure. This protocol has been successfully utilized to assess four categories of infrastructure:

1. Buildings
2. Roads and associated structures
3. Storm water and wastewater treatment and collection systems
4. Water resource systems and other water management infrastructure

The Protocol describes a step-by-step process of risk assessment and engineering analysis for evaluating the impact of climate change on infrastructure. The observations, conclusions and recommendations derived from the application of this protocol provide a framework to support effective decision-making about infrastructure operation, maintenance, planning and development.

A great deal of information may be available to describe the infrastructure and the climate in a particular region. The protocol sets out a procedure to sift through the data to develop an understanding of how climate and infrastructure interact to create vulnerability.

Not all climate and infrastructure data is necessary to complete the protocol.

This one day workshop will provide engineers and geoscientists in the Northwest Territories and Nunavut with information about future climate change and impacts in Canada's North. It will focus on a standardized methodology to estimate the risks imposed by climate change on infrastructure.

Engineers Canada, in partnership with Natural Resources Canada, has developed and tested the PIEVC Engineering Protocol, which is a structured procedure using standard risk assessment methodologies to assess and fully document the vulnerability of infrastructure to the impacts of future climate change. Two facilitated group sessions will demonstrate the steps in the Protocol through hands-on, small group exercises to define the infrastructure components and climate parameters and to undertake a qualitative risk assessment using completed case studies to illustrate real life applications.

This workshop will be of interest to engineers and geoscientists who are involved in the pre-design, design, operation, maintenance and management of infrastructure and who, now and in the future, need to consider climate change for these activities for new infrastructure or for rehabilitating or retrofitting existing infrastructure.

The workshop will include a morning coffee break and lunch. Coffee will be available throughout the afternoon sessions. Copies of presentation materials will be provided.

Educational Objectives

Upon completion of the Workshop, participants should:

- Have a basic understanding of risk assessment processes as they pertain to infrastructure response to climate change
- Have hands-on experience with the application of climate change risk assessment to a real-world example
- Recognize the benefits of a multi-faceted team to address the complexities of climate change

WORKSHOP AGENDA

How Will Climate Change Affect Civil Infrastructure in the Northwest Territories and Nunavut?

8:30	Registration
8:45	Welcome and Opening Remarks
8:55	Background on the PIEVC Project David Lapp, P.Eng. – Engineers Canada
9:10	Climate Change for Engineering Decisions in Canada's North Heather Auld, Environment Canada
9:30	Impacts of Climate Change in the Northwest Territories Steve Kokelj, Indian and Northern Affairs Canada and Daniel Riseborough, Geological Survey of Canada
10:20	Coffee Break and Networking
10:40	Principles of Risk Assessment Joel Nodelman, P.Eng.
11:10	Climate Change and Infrastructure Risk Assessment The PIEVC Engineering Protocol – Principles and Benefits Joel Nodelman, P.Eng., Nodelcorp Consulting Inc.
11:40	Infrastructure Component and Climate Parameter Matrix Definition Introduction – J. O'Driscoll, P.Eng.
12:00	Lunch and Networking
12:45	Infrastructure Component and Climate Parameter Matrix Definition Small Group Discussion – J. O'Driscoll, P.Eng.
1:30	Group De-Brief – J. O'Driscoll, P.Eng.
1:45	Applications of the PIEVC Protocol to Infrastructures – The Process and Results Case Study #1: TRCA G. Lord Ross and Claireville Dam Assessment Don Hayley, P.Eng., Toronto and Region Conservation Authority Case Study #2: GNWT Highway 3 Infrastructure Assessment Greg Cousineau, GNWT Department of Transportation Case Study #3: Portage-la-Prairie MB, Water Collection and Treatment Case Study - Jeff O'Driscoll, P.Eng. Genivar Case Study #4: GNWT Thermosyphon Buildings Assessment Sukhi Cheema, P.Eng., GNWT Public Works and Services
2:45	Risk Assessment Matrix Completion Introduction and Small Group Discussion – J. O'Driscoll, P.Eng.
4:00	Risk Assessment Matrix Completion Plenary De-Brief – J. O'Driscoll, P.Eng.
4:30	Outcomes and Benefits of Climate Risk Assessment – The Owners Perspective A Panel Discussion
5:00	Closing Remarks NAPEG David Lapp, P.Eng. - Engineers Canada

WORKSHOP SPEAKERS

How Will Climate Change Affect Civil Infrastructure in the Northwest Territories and Nunavut?

J. (Joel) Nodelman, P.Eng. - President, Nodelcorp Consulting Inc., Edmonton, AB. He has been actively engaged in the ongoing Engineers Canada work on engineering assessment of the vulnerability of Canadian infrastructure to climate change; initially in his role of Chair of the Engineers Canada Environment Committee, followed by day-to-day project coordination as part of the Engineers Canada Vulnerability Committee Secretariat and finally as a technical advisor to seven case studies conducted under the auspices of the Engineers Canada initiative. Since 2007 he has had a central role in the drafting and ongoing refinement of the PIEVC Engineering Protocol for assessing the engineering vulnerability of public infrastructure to climate change.

J. O'Driscoll, P.Eng. - Manager, Water Technology Group, Genivar – Winnipeg Manitoba.

Jeff O'Driscoll is a civil engineer with 17 years experience in municipal and general engineering project development, design and construction. His primary experience has been related to design, construction management and contract administration related to water and wastewater supply and collection, treatment and distribution. Jeff was the consultant Project Manager for the Portage-la-Prairie Water Treatment System PIEVC Case Study.

Donald R. Haley, P.Eng. - Senior Project Manager, Engineering, Ecology Division Toronto and Region Conservation, Toronto, Ontario. Donald has worked in the field of water Resources at both the province and the authority dealing with issues around flood forecasting and warning, flood protection, watershed management and planning, storm water management, urban flooding and climate change. Donald participated on the Water and Wastewater group in the development of the PIEVC protocol and continues to sit on this standing committee. Donald has 33 years of experience since graduating with a bachelor's degree in Civil Engineering from the University of Guelph.

S, Cheema, P.Eng. - Director of Design and Technical Services, Department of Public Works and Services, Government of the Northwest Territories – Yellowknife, NWT. Sukhi Cheema has over 28 years of experience in design and construction of municipal infrastructure including energy conservation projects in the North. He is the author of several technical papers on design and construction of water and sewage systems in the permafrost areas of the Northwest Territories and Nunavut. He served as the Project manager for the GNWT Thermosyphons and Buildings Infrastructure Assessment Case Study for the Public Infrastructure Engineering Vulnerability Committee (PIEVC). He holds a bachelor's degree in Applied Science, a bachelor's degree in Civil Engineering, and a master's degree in Municipal Engineering from the University of Cincinnati.

Heather Auld - Associate Director, Adaptation Impacts and Research, Environment Canada – Toronto, Ontario. Heather has a master's degree in meteorology and is a professional meteorologist and researcher developing new science to identify infrastructure and community vulnerability thresholds and linking this integrated science to weather warnings, emergency preparedness and disaster mitigation and adaptation planning programs as well as reviews of national infrastructure codes and standards from a climate and extremes perspective.

WORKSHOP SPEAKERS

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D. Lapp, P.Eng. - Manager, Professional Practice, Engineers Canada. David graduated with a bachelor's degree in geological engineering from the University of Toronto in 1978. He is a professional engineer, registered in Ontario and has been part of the Secretariat to the Canadian Engineering Qualifications Board since 1997. His current work focuses on environment and sustainability issues as they relate to the practice of engineering. He has worked in the area of climate change adaptation and engineering since 2001, implementing a national action plan on climate change impact and adaptation including a long-term project to evaluate the engineering vulnerability of public infrastructure to the impacts of climate change. Since 2007, David provides the Secretariat for the World Federation of Engineering Organizations Standing Committee on Engineering and the Environment, chaired by Engineers Canada.

S.V. Kokelj, PhD. - Environmental Scientist, Renewable Resources and Environment, INAC. Steve is one of Canada's few northern based scientists. Over the past 10 years he has conducted studies on permafrost and terrain conditions in the NWT and has authored over 30 scientific papers on this work. He has worked closely with regulators, industry and northern communities and communicated research results to these groups through a variety of venues. He is an adjunct Professor of Geography and Carleton University, a member of the Canadian National Committee of the International Permafrost Association and an Associate Member in the Network of Expertise on Transportation and Infrastructure in Permafrost Regions.

Greg Cousineau - Senior Transportation Planner, Department of Transportation - Government of the Northwest Territories- Greg Cousineau has lived in the NWT for more than 30 years and has been an employee of the Government of the Northwest Territories for more than 20. He is a surveyor by trade and has spent much of his career managing community, highway and airport construction projects. He has worked the last ten years in the Planning, Policy and Environment Division of the Department of Transportation where he is currently responsible for managing climate change adaptation Research and Development with funding under the federal government's Building Canada Plan.

Dan Riseborough – Permafrost Scientist, Geological Survey of Canada, Natural Resources Canada. An early user of numerical models to evaluate permafrost sensitivity to climate change, Dan was co-author of the first paper published on permafrost and climate change with his long-time collaborator, Dr. Michael Smith. He also contributed to the Terrestrial Cryosphere chapter in the first IPCC assessment report, to the document on Climate Change Impacts on Permafrost Engineering Design, developed for Environment Canada, and to the development and evaluation of a simple analytical model of the permafrost-climate relationship. Recent work has included 2-D simulations of combined disturbance and climate change effects around northern infrastructure, and spatial modelling of permafrost distribution under current and projected climatic conditions.

REGISTRATION FORM



Adapting infrastructure
to a changing climate
PIEVC CVIIP
PUBLIC INFRASTRUCTURE
ENGINEERING VULNERABILITY COMMITTEE
LE COMITÉ SUR LA VULNÉRABILITÉ DE L'INGÉNIERIE
DES INFRASTRUCTURES PUBLIQUES

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Katimavik A - The Explorer Hotel, Yellowknife, NT

8:30 a.m. to 5:00 p.m.

REGISTRATION: \$100.00 (includes workshop material, lunch and beverage)

Information to be used for name tag.

Name: (please include your professional designation)	
Title	
Business Name:	
Business Address:	
Tel:	
Email:	

**Method of
Payment:**

Cheque enclosed (payable to NAPEG)

Credit Card Payment

Card Number and Expiry Date:

Registration Deadline: Friday, November 5, 2010

Please Send Registration Form and Payment to:

NAPEG

201, 4817 - 49 Street

Yellowknife, NT X1A 3S7

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