

Building Climate Resilience: Incorporating Climate Change into Public Infrastructure Planning and Design

Location: Holiday Inn, 180 Portugal Cove Road, St. John's, NL
Date: 8-9 March, 2018
Time: 8:30 – 5:00 (both days)*
Registration: To register, email main@pegnl.ca or call (709) 753-7714, ext. 0.
Cost: \$75.00

Overview [Detailed Agenda on Pages 2-6]

<u>Day 1: Thursday 8 March 2018</u>	<u>Day 2: Friday 9 March 2018</u>
08.00 Arrival and Registration	08.30 Review of Day 1, Overview of Day 2
08.30 Welcome and Introductions	09.00 Climate Projections and Impacts and Implications for Infrastructure in Newfoundland and Labrador
09.00 Legal Imperative for Taking Account of Climate Change: Professional Responsibilities and Legal Liability	10.15 Refreshment Break and Networking
10.15 Refreshment Break and Networking	10.45 Provincial Data, Tools and Resources to Improve Decision-Making in a Changing Climate
10.35 Discussion on Legal Framework and Professional Responsibility	12.15 Lunch
11.05 Policy and Planning Imperative for Integrating Climate Risk and Vulnerability into Infrastructure	13.00 Principles of Asset Management, Risk Assessment and the PIEVC Engineering Protocol
12.30 Lunch	14.00 Newfoundland and Labrador Case Studies and Examples of Integrating Climate Change into Infrastructure
13.15 Understanding the Science of Climate Change and Projections	15.00 Refreshment Break and Networking
14.45 Refreshment Break and Networking	15.30 Discussion on Climate Risk and Vulnerability
15.00 From Climate Projections to Infrastructure Design: Uncertainty and Applications	16.00 Participant Input and Next Steps
16.30 Feedback from Participants on Day 1	16.55 Closing Remarks
17.00 End of Day 1	17.00 End of Day 2 and Workshop

* If you are only able to attend one day of the workshop, please indicate this upon registration. Food and refreshments will be provided, please advise of any dietary restrictions.



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Target Audience:

Provincial and municipal engineers and planners, Chief Administrative Officers, engineering and planning consultants and policy and administrative staff involved in policy, planning, procurement, design, construction, operation, maintenance and management of public infrastructure in Newfoundland and Labrador (NL).

Overview:

This two-day workshop is organized into four modules that will provide engineers, planners, policy-makers and other municipal participants involved in planning public infrastructure with climate information, policies and practices as well as an introduction to practical tools to plan and procure climate resilient infrastructure in NL. This will include application to the many small communities throughout the province where capacity to adapt to climate change is often limited.

There will be small group discussions to support active learning and encourage a two-way dialogue.

The workshop is eligible for continuing professional development hours recognized by Professional Engineers and Geoscientists Newfoundland & Labrador (PEGNL) and potentially other professional bodies. Participants should check with their professional body as necessary to confirm this. A Certificate of Completion will be issued to all participants who finish the course, participate in the small group exercises and complete the course evaluation.

Learning Outcomes:

This workshop will help participants:

- To explain the legal, policy, scientific and ethical imperative and rationale for action to integrate climate considerations into design and construction of infrastructure and planning;
- To understand what is involved in integrating climate change considerations in their work and how it might impact their practice;
- To learn about what existing tools and resources are available to support their work, including resources developed specifically for NL; and
- To provide feedback on tools, resources and next steps to the Provincial Government, PEGNL and Engineers Canada.

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Annotated Draft Agenda

Day 1: Thursday 8 March 2018

Day 1 Objectives:

1. Enhance your understanding of legal requirements and professional obligation to incorporate climate change considerations into infrastructure decisions, as well as policy and planning drivers.
2. Improve your ability to build infrastructure resilient to climate change, through increasing your understanding of climate science and integrating climate change projections into practice.

Day 1 Learning Outcomes:

- To be able to explain the legal and policy imperatives and professional obligations to consider climate change.
- To understand the professional responsibilities, duty of care and legal liabilities associated with not considering future climate in planning, design, construction, operation and maintenance of public infrastructure.
- To be able to describe the current and evolving provincial and municipal policies concerning climate change adaptation as it applies to resilient infrastructure.
- To understand the basics of climate change science and the genesis of lingering climate skepticism.
- To be able to describe how future climate information is produced and how to use apply it to planning and design.
- To recognize how to factor adaptation measures into engineering work.

08.00 Arrival and Registration at Holiday Inn

08.30 Welcome and Introductions

Jackie Janes, Assistant Deputy Minister, Climate Change Branch, Department of Municipal Affairs and Environment, Government of Newfoundland and Labrador
David Lapp, P. Eng., Practice Lead, Globalization and Sustainable Development, Engineers Canada

- Provide the background and objectives of this workshop and subsequent phases to integrate climate consideration into public infrastructure investments in NL
- Invite participants to introduce themselves and outline their learning objectives
- Overview and definition of key terms

Module 1 – The Legal and Policy Imperative for Integrating Climate Considerations into Practice and Decision-Making

09.00 Legal Framework for Climate Adaptation: Professional Responsibilities and Legal Liability

Ryan Zizzo, P. Eng., Technical Director, Zizzo Strategy

- Legislative / Regulatory liability (explicit and implicit responsibilities)
- Common law provisions

- Role of design professionals and potential for negligence
- Design professionals' professional responsibility
- Corporate implications from climate change - where do engineers and other professionals fit in

10.15 **Refreshment Break and Networking**

10.35 **Small Group Discussion on Legal Framework and Professional Responsibility**

11.06 **Policy and Planning Landscape for Climate Risk and Vulnerability**

Richard Harvey, M.Eng., Wood Group (formerly Amec Foster Wheeler)

- Existing and emerging national and provincial policy and initiatives
- Provincial and municipal regulatory frameworks and requirements for infrastructure planning, design and construction
- Role of public procurement
- NL climate adaptation planning process and considerations
- National and provincial codes, standards and related instruments – what they are and how to apply to local infrastructure
- Case studies from both Newfoundland and Labrador

12.05 **Small Group Discussion on Policy and Planning Requirements**

12.30 **Lunch**

Module 2 - The Scientific and Professional Rationale and Approach to Consider Extreme Weather and Changing Climate for Public Infrastructure

13.15 **Climate Data and Information to Support Infrastructure Design Specification in NL**

Joel Finnis, Associate Professor, Memorial University, Faculty of Geography

- Climate change science
- Lingering climate change skepticism

14.15 **Question and Answer Session**

14.45 **Refreshment Break and Networking**

15.00 **From Climate Projections to Infrastructure Design: Uncertainty and Applications**

Joe Daraio, P.Eng., Assistant Professor, Memorial University, Faculty of Engineering and Applied Science

- Overview of climate change projections, downscaling and application to engineering design
- Analysis and propagation of uncertainty and model limitations
- Principles and best practices for application of models to design of public water infrastructure

16.00 **Question and Answer Session**

16.30 Feedback from Participants on Day 1

Jackie Janes, Assistant Deputy Minister, Climate Change Branch, Department of Municipal Affairs and Environment, Government of Newfoundland and Labrador
David Lapp, P. Eng., Practice Lead, Globalization and Sustainable Development, Engineers Canada

17.00 End of Day 1

Day 2: Friday 9 March 2018

Day 2 Objectives:

1. Enhance your understanding of the implications of climate change on infrastructure in NL and the tools and resources available to improve decision-making.
2. Understand the principles of climate risk and vulnerability assessment to public infrastructure and enhance your ability to apply these principles and integrate climate adaptation into your practice, including the application of provincial data, tools and resources.

Day 2 Learning Outcomes:

- To be able to describe how the province is being impacted by climate change and the implications for infrastructure.
- To be able to describe the availability and application of NL provincial data sets to support planning and design of climate-resilient infrastructure.
- To be able to apply principles of climate risk and vulnerability assessment to public infrastructure.
- To be more confident about planning for the full design and operating life of public infrastructure given climate considerations.
- To be able to explain the benefits of using multi-disciplinary and multi-stakeholder teams.

08.30 Review of Day 1 and Introduction of Day 2

Jackie Janes, Assistant Deputy Minister, Climate Change Branch, Department of Municipal Affairs and Environment, Government of Newfoundland and Labrador
David Lapp, P. Eng., Practice Lead, Globalization and Sustainable Development, Engineers Canada

Module 3 – NL Tools and Resources for Climate Resilient Infrastructure

09.00 Climate Projections and Impacts: Implications for Infrastructure in Newfoundland and Labrador

Joe Daraio, P.Eng., Assistant Professor, Memorial University, Faculty of Engineering and Applied Science

- Review current trends and anticipated changes in climate extremes and normals for NL to 2050
- To consider the implications of projected changes for infrastructure in the province

09.45 Questions and Answers

10.15 **Refreshment Break and Networking**

10.45 **Provincial Data, Tools and Resources to Improve Decision Making in a Changing Climate**

Gerald Crane, Director of Research and Evidence, Climate Change Branch, Government of Newfoundland and Labrador

- Climate change IDF curves
- Climate flood risk mapping
- Coastal erosion monitoring data
- Sea-level rise
- Climate portal

11.45 **Small Group Discussion**

12.15 **Lunch**

Module 4 – Climate Risk and Vulnerability Assessment: A Key Tool to Inform Climate Adaptation

13.00 **Principles of Asset Management, Risk Assessment and the PIEVC Engineering Protocol**

David Lapp, P. Eng., Practice Lead, Globalization and Sustainable Development, Engineers Canada

- Material draws on overview elements from Infrastructure Resilience Professional (IRP) certification material from 3 modules (Risk Assessment, Asset Management and PIEVC)

14.00 **NL Case Studies and Examples of Integrating Climate Change into Infrastructure**

David Lapp, P. Eng., Practice Lead, Globalization and Sustainable Development, Engineers Canada

Richard Harvey, M.Eng., Wood Group (formerly Amec Foster Wheeler)

- Introduction to three public infrastructures selected as case studies/examples for climate consideration
- Infrastructure description and supporting climate and environmental data

15.00 **Refreshment Break and Networking**

15.30 **Small Group Discussion**

16.00 **Input and Feedback from Participants on Next Steps**

16.55 **Closing Remarks**

Jackie Janes, Assistant Deputy Minister, Climate Change Branch, Department of Municipal Affairs and Environment, Government of Newfoundland and Labrador

David Lapp, P. Eng., Practice Lead, Globalization and Sustainable Development, Engineers Canada

17.00 **End of Day 2 and Workshop**