

The Canadian  
Academy of  
Engineering

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L'Académie  
canadienne  
du génie

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# CAE Introduction and Approach to Net-zero

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Executive Director  
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# Mission



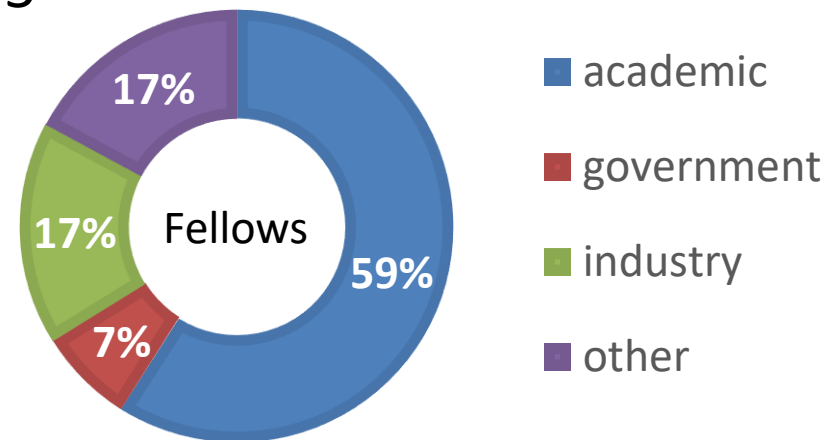
The mission of The Canadian Academy of Engineering is to:

1. Recognize and honour outstanding engineering achievements and service to the profession
2. Contribute to the prosperity, well-being and security of Canadians through:
  - leadership in the responsible and sustainable application of scientific and engineering knowledge;
  - providing strategic advice to decision makers
  - helping to shape the future of engineering.

# Overview



- Founded in 1987, spun off from the RSC
- Not-for-profit, charity
- 869 Fellows – 101 women (12%), 768 men (88%)
- 80% licensed engineers
- 50 new Fellows and 2 International Fellows per year
- Founding Academy of the Canadian Council of Academies (CCA), 2005
- Member of the International Council of Academies of Engineering and Technological Sciences (CAETS)
- Member PAGSE Board



# Priorities & Programs



The CAE Strategic Plan identifies 4 priorities:

- Sustainability
  - ESG, SDG
- Engagement
  - EDI: Women, Indigenous
  - Federal, Provincial, Municipal
  - Other engineering organizations and non-profits
- Digital Transformation
- Productivity & Innovation

The Programs Committee has identified 6 program areas:

1. Net-zero/Climate Change
2. Digital Economy
3. Large Infrastructure Projects
4. Waste – recycling and regeneration
5. Pandemic Preparedness
6. Water – Ocean Engineering and Fresh Water Systems

# Nomination & Election of Fellows



- 5 Categories – Active, International, Honorary, Emeritus and 90+
- 4 Criteria:
  - Outstanding Creative Activities in Applied Science and/or Engineering Practice
  - Leadership and Entrepreneurial Activities
  - Strategic Thinking, Collaboration and Reflection
  - Impact on Peer Groups and Society
- Nominator - an Active Fellow; 2 seconders may be Emeritus
- Nomination process July 30 – October 31. Selection Committee meets in January – Election in March – Announced June
- Typically 130 – 140 nominees, up to 50 Active and usually 2 International candidates selected.

# CAE Approach to Net-zero 2050



- Engineering Perspective
  - Energy
  - Transportation
  - Industry
  - Commercial and Residential
- Double electricity capacity. Effective carbon capture.
- Funding, approvals, skills, materials, infrastructure, prototypes, legacy, maintenance, project and program management
- Paths to success, risk mitigation
- Schedule and budget to completion – 29 years counting down
- International collaboration, competition, opportunity, leadership

# Recent Seminars & Conferences



- Nuclear Fission & Fusion: Widening the Path to Net-zero
- Future Perspectives of Engineering Education and the Pandemic
- Choosing Canada's Automotive Future
- Net Zero & Industrial Activity in Canada's Oceans
- Mentoring Women in Engineering
- Net-zero Emission Panel
- 2<sup>nd</sup> Richard Marceau Energy Symposium
- Roadmap to Resilient Ultra-low Energy Built Environment with Deep Integration of Renewables
- Northern Infrastructure Corridor
- Response to Report on Canada's Resilient Recovery
- CAE Energy Program – An Introduction
- Trottier Energy Futures Project

# Ultra-low Energy Resilient Building



October 16, 2020 – Concordia University, Centre for Zero Energy Building Studies

- “Roadmap to Resilient Ultra-low Energy Built Environment with Deep Integration of Renewables in 2050”
- Welcome by Gina Cody, FCAE; Graham Carr; Yves Beauchamp, FCAE
- Co-chairs: Andreas Athienitis, FCAE, Andrew Pape-Salman, FCAE
- 18 papers – Net-zero building codes, self-sufficient buildings

October 12, 2021 – seminar

Spring, 2022 – Victoria, B.C.

- Collaborating to change building practices

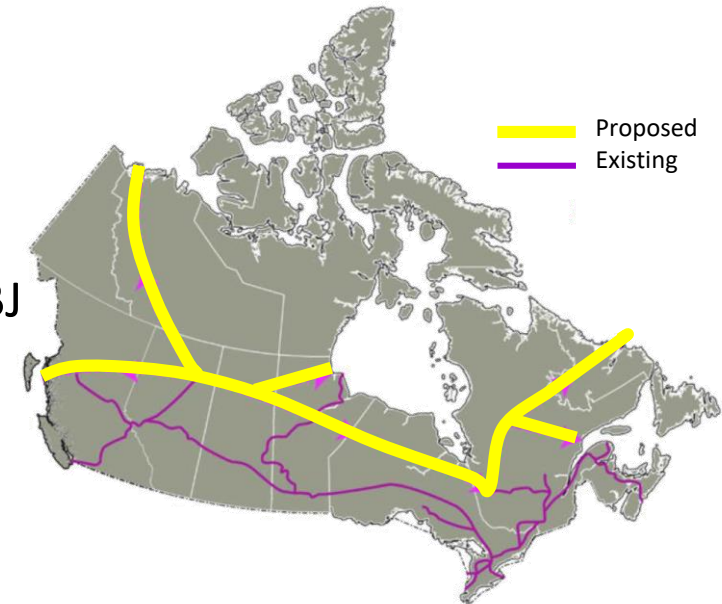




# Northern Infrastructure Corridor



- Seminar building on the Senate report *National Corridor, Enhancing and Facilitating Commerce and Internal Trade*
- Keynote John McDougall, FCAE.
- Panel discussion:
  - Dr. Axel Meisen, FCAE;
  - Réal Laporte, FCAE, former president SEBJ
  - Marshall Kern, Bowman Centre for Sustainable Development.



# Scholarships

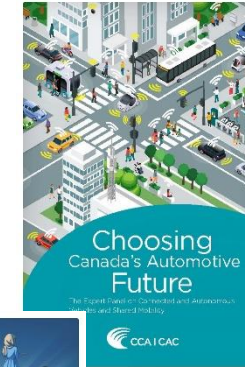


- Nation Building Scholarships (New)
  - Net-zero/Climate Change
  - Northern Infrastructure
- William Belfry Scholarship (mobility)
- Bruce Aubin Award (aeronautics)

# Recent Reports from the CCA

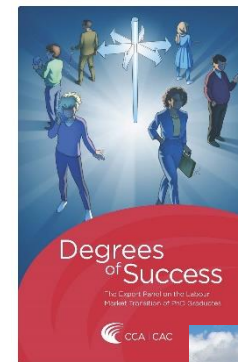
## Choosing Canada's Automotive Future

- Jeannette Montufar (Chair)
- Peter Frise



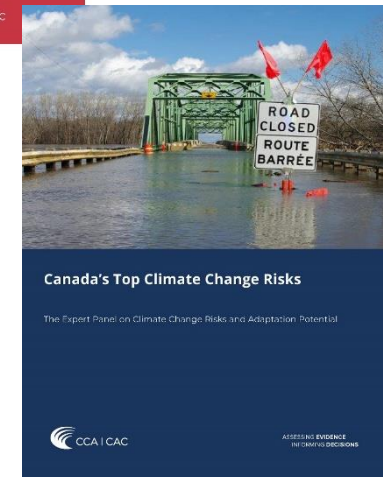
## Degrees of Success

- Elizabeth Cannon (Chair)
- Jay Doering



## Canada's Top Climate Change Risks

- John Leggat (Chair)
- Darrel Danyluk



# CAETS - International



- 36 national engineering academies
- Advise governments and international organizations;
- Contribute to the strengthening of engineering to promote sustainable economic growth and social welfare;
- Provide an international forum for discussion and communication of engineering and technological issues;
- Foster cooperative international engineering for development of programs of bilateral and multilateral interest;
- Encourage improvement of engineering education and practice internationally.



- Educate and inform federal Parliamentarians, decision makers and other leaders on Canadian research and innovation for economic development, and society as a whole
- 20 national organizations in Science and Engineering, representing over 50,000 individual scientists and engineers from academia, industry, and public service
- Formed in June 1995 to represent the Canadian science and engineering community
- PAGSE became a non-profit organization in 2020.

# QUESTIONS?