

Increasing Aboriginal representation in Engineering

**APEGGA Business Plan
July 2010**



The document is produced to forward APEGGA's objectives in this area and to align with the national strategy.

GOAL

To increase the participation of Aboriginal people in the professional engineering workforce to 2% by 2030. This represents an increase from less than 100 to 1200 (in 2010 numbers).

OPPORTUNITIES AND CHALLENGES

Societal Interest

- There will continue to be a huge cost to society if it does not better integrate persons of indigenous origin into mainstream Canada
- Indigenous persons often suffer from:
 - Higher unemployment than the mainstream
 - Higher poverty levels than the mainstream
 - Lower education levels than the mainstream
- They have the fastest growing under-25 demographic
- Access to engineering services rooted in indigenous knowledge for projects directed at improving quality-of-life infrastructure in communities will enhance the opportunity to meet the challenges

Professional Interest

- The profession has an altruistic interest in protecting the public interest which, in this case, could be broadly interpreted as per the societal interests listed above.
- There are long-term skills shortages in most jurisdictions and short-term skills shortages in some, which will worsen with the retirement of the baby boomers.
- There is stiff competition from other professions that indigenous persons are more familiar with, e.g. law, medicine, teaching, social work.
- There is stiff competition from some jurisdictions who are heavily promoting the trades.
- The constituent members don't have the money or volunteer and staff support necessary to mount an effective program alone.
- Constituent members are typically wary of investing in a community that has housing, health, education, and social problems that are well beyond our profession's abilities to resolve.

Indigenous Groups Interest

- Community leaders want a better standard of living for their people and their communities
- There are very few indigenous youth going into science and engineering because there is a:
 - Lack of awareness of the engineering career opportunities
 - Lack of awareness of the contributions of engineering to society
 - Inadequate basic education in math and science to qualify
 - Lack of community/parent/elder understanding of the importance of education. However, many understand that education is "their New White Buffalo"
 - Lack of role models
 - Lack of strong mentoring and support network

- Apparent conflict between a western science-based culture and a culture based on indigenous knowledge
- Limited understanding of the indigenous cultures often makes representatives of the constituent members uncomfortable about going into the indigenous communities and gaining a better understanding.

Education

- Many indigenous communities, particularly in remote areas, have poor access to high quality education that enables their students to meet the prerequisites for engineering.
- Many communities lack the facilities and teachers to provide the math and science focus starting in grade 5.
- Even in urban areas, where the education standards are high, the K-12 educational system is failing indigenous students by not providing sufficient appropriate perspective.
- The limited spaces available for engineering students mean that the competition to get in is stiff.
- Many persons of indigenous origin realize at a later stage in life that education is important. They need opportunities as mature students to enter engineering.

Community

- All indigenous groups are not the same. We must understand the differences and realize that one solution does not fit all:
 - On-reserve versus off-reserve members
 - Status versus non-status members
 - Differences between nations and tribes
 - Métis
 - Inuit
- There is a strong tie to and a preference for working in their community but the opportunities for engineering careers are limited in many/most communities. However, over 50 percent of status members currently live off reserve.
- There is reluctance to relocate from the small community to the “big city” and a fear/realization that they may not be able to return or even be welcomed back into their communities

MEASURES OF SUCCESS

- The true measure is the percentage and actual increase of indigenous persons in the profession. It will be difficult to measure success because statistics are limited because indigenous persons do not have to and, at times, are even reluctant to declare their origin.

VALUES/BELIEFS

- Indigenous persons have what it takes to become engineers and geoscientists.
- Indigenous persons will enrich the quality of engineering and provide fresh perspectives on the resolution of engineering problems.
- The profession will welcome more indigenous persons, although some training in their issues will be needed.

- The profession cannot address the issues of housing, health, education and poverty. The profession can address interest in the math and sciences, the pursuit of engineering and geosciences as viable careers and members' understanding of the indigenous values and beliefs.
- The profession does not have the resources to address this opportunity independently and effectively from coast to coast to coast.
- The profession can only address this opportunity in jurisdictions that have identified it as a priority.
- This initiative will be successful only with the commitment from and involvement of the engineering profession, indigenous communities, industry associations, academia, engineering organizations and both the federal and provincial governments.
- This is a long-term project. It will be successful only if it is affordable and sustainable by Engineers Canada and the constituent members and, by extension, the other parties above.
- The outcomes must be measurable.
- The program must be attractive to learners of indigenous origin.
- The program might be enhanced by partnering with other professions who have had more success in attracting persons of indigenous origin.
- The program might be enhanced if the tools were available in the classrooms.

STRATEGY

- Work at both the provincial and national levels.
- The national and provincial bodies liaise and form formal partnerships/understandings with national and provincial indigenous-focused (or like-minded) organizations respectively.
- Focus on K–12 outreach, support during university and improving member awareness of indigenous issues.
- Continue to put members of all types in front of and/or in mentoring relationships with Aboriginal students.
- The national body, or a constituent member with the expertise and resources, facilitates and coordinates the development of the career material and the constituent members deliver the message using the material and involving their members of indigenous and non-indigenous origin.
- Seek industrial and governmental financial support for the outreach and university programs.

ACTIONS

APEGGA will:

Nationally

- Support national initiatives that complement the APEGGA program if there is no cost to the constituent associations. Financial support from the federal government and private corporations is expected.
 - Agreements between Engineers Canada and the Assembly of First Nations, the Inuit Tapiriit Kanatami and the Metis Nation of Canada.
 - Partnerships between Engineers Canada and other national Aboriginal or Aboriginal-serving organizations

- Development of promotional outreach materials for the constituent members. These materials will outline career opportunities, the contributions of engineering to society, the required prerequisites to enter university, the sources of funding support available
- Develop outreach materials for all constituent members with the financial support of Engineers Canada through a funding agreement.
- Participate in the creation of a compendium of national initiatives to be loaded on the Engineers Canada site under a new Aboriginal section that have fostered or may foster the meeting of the strategic goal.

Within Alberta

- Hire an Aboriginal Affairs Coordinator from the Aboriginal community
- Continue with an Aboriginal Affairs Advisory Committee, made up of at least half Aboriginal members. Have the Committee meet more frequently.
- Provide the opportunity for Aboriginal members to self-identify through application forms and the on-line member service portal
- Seek appointment of an Aboriginal person as a public member on Council
- Encourage Aboriginal members to seek higher profile volunteer positions within APEGGA
- Engage school authorities and seek to sign memorandae of agreements with the four large Edmonton and Calgary school boards to ensure we have access to their students
- Update the APEGGA K-12 outreach website and develop a specific portion of that site for Aboriginal youth with appropriate links to other organizations
- Upgrade promotional and career brochures
- Put members of all types in front of Aboriginal students
- Identify high potential students by interacting with all interested students in K - 12 in Calgary and Edmonton schools with high Aboriginal populations. Then provide mentoring for those high potential students. Further investigate the need for similar support for University students and/or the use of 3rd and 4th year students as mentors.
- Continue to conduct science nights, fairs and olympics throughout the province through the 10 APEGGA branches although they will not be specific to the Aboriginal community
- Hire O. Hudson to speak to at-risk insecure kids to give them the confidence to tackle a career in our professions, as he has done with at-risk black kids in the US. He has been hired to talk to our members about mentoring and has already spent a day at an aboriginal school with rave reviews.
- Enhance sponsorships of summer camps in Aboriginal communities throughout the province delivered by the First Nations Technical Service Advisory Group, Discover-E and Minds in Motion and provide travel grant money for Edm and Calg students in the mentoring program who have been referred to these summer camps.
- Continue to participate in career fairs throughout the province although they may not be specific to the Aboriginal community.

- Recognize excellence in indigenous school teachers and support their professional development as part of our province-wide “School is Cool” program. Ensure all Aboriginal schools are on the circulation list for promotional material. Currently 20 x \$2000 prizes are awarded annually across the province through the Branches. There is an additional \$24,000 to support teacher PD programming, which in 2010 was awarded to the Alberta Science Literacy Association for non-Aboriginal specific programming. Opportunities in the Aboriginal communities will be evaluated.
- Consider the production of literature that will support teachers in their efforts to introduce their students to our professions.
- The APEGGA Education Foundation (AEF) to continue to provide scholarships or bursaries through endowments at the three degree granting institutions and directly through AEF, with an emphasis on bursaries. AEF is currently committed to disbursing \$127,000 in scholarships and bursaries and \$45,000 for outreach annually
- Continue to raise the awareness of individual professional engineers to indigenous issues, although the initial series of articles has run its course.
- Begun in 2010, expand our efforts to engage permit-holding companies to finance and provide volunteers
- Continue to recruit volunteers and consider more extensive training of the volunteers using a manual from Alberta Education, *Our Words, Our Ways - Teaching First Nations, Metis and Inuit Learners* published in 2005 and hire Lionel Laroche as an instructor on cultural differences. He has been hired to talk to IEGs, staff and members about cultural differences to rave reviews.
- Enhance level of interaction with Treaties 6, 7 and 8 now that the national agreement is signed with AFN, try to make a connection with the Metis Nation of Alberta and expand our efforts to connect with Aboriginal bands through pow-wows
- In conjunction with APEGGA's initiative to increase the numbers and percentage of women in the profession, work with the Alberta Government to increase the capacity to produce graduate engineers and geoscientists. This discussion will also involve Northern Lights College taking a bigger role in upgrading northern Alberta kids and mature students in the maths and sciences.