



Title: Engineering a Broader Vision

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Current Situation

In the early 1960s, less than 10% of medical doctors and lawyers were women. Today, universities are graduating approximately equal numbers of men and women with degrees in law, business, biosciences and education. Unfortunately, the percentage of women graduating from engineering school still lags behind. The number of engineers in Canada that were women was about 0.5% in the 60's. In 1994, the number of women graduating from engineering schools had since risen to between 10-20% [1]. How far have we come since then?

Today women make up about 15% of professional members of Engineers and Geoscientists British Columbia. This number has not significantly changed in 24 years. What's going on? Is engineering and geoscience inherently less interesting to women?

History of Division

The Women in Engineering and Geoscience Division was formerly called the Division for the Advancement of Women in Engineering and Geoscience (DAWEG). DAWEG started in September of 1991 and held its first AGM on October 5, 1991. The Division outlined 2 main initiatives; (1) to educate and promote engineering and science to young women and (2) to retain and reduce attrition among women that were currently working

in an engineering or geoscience role. DAWEG carried out many mentoring, advocacy, outreach, and social programs to support these initiatives.

The DAWEG Mentoring program was positively received and recognized by both the Globe and Mail and National Research Council of the United States. The program was initially created in collaboration with the University of British Columbia and then Simon Fraser University with its guidelines eventually utilized by other Engineers and Geoscientists BC regional branch committees and companies including BC Hydro.

DAWEG's Advocacy Program also supported projects including a study focusing on work options and a road map to assist with information including the Engineers and Geoscientists BC registration process, employment, and professional advice.

Additionally, the School Interaction program was developed as an outreach initiative to educate younger women about the opportunities and lifelong values in pursuing a career in engineering and geoscience. This was accomplished through the help of volunteers and collaboration with the provincial Ministry of Advanced Education, Training and Technology and the Association for the Promotion and Advancement of Science Education.

The rebranding of DAWEG in 2017 to Women In Engineering and Geoscience Division provided an opportunity for a new generation of women to lead the group into the future with a fresh start and opportunity to develop initiatives to support future generations.



The first Annual General Meeting for the newly branded division was held on April 19, 2018. A call was put out to all members about the opportunity to guide the Division into the future with the new name, look and mandate. Thirty candidates stepped up initially, and in the end 12 members were voted to the Executive Board (Table 1 & Figure 1). Executives were matched based on the role that best fit their strengths and areas of interest.

New Mission and Strategic Goals

Women in Engineering and Geoscience Division has developed an updated Strategic Plan that will guide efforts for the next 1 to 2 years. Our vision is for a community that encourages and promotes women at all levels in Engineering and Geoscience. This Vision will be accomplished through:

- (1) Connecting and communicating with members through networking, professional development, and social events;
- (2) Expanding and strengthening the Division's network;
- (3) Strengthening governance and increasing advocacy.

Since the Division's formation in April 2018, Women in Engineering and Geoscience Division executives have been building a strategic plan and reaching out to expand our network among sponsors and other groups with similar interests and goals.

Table 1 Women in Engineering and Geoscience Division's elected executive for 2018-2019

Role	Member Name and Title
Chair	Selina Tribe, Ph.D., P.Geo.
Vice Chair	Michelle McLarty, P.Eng.
Secretary	Meghan Lui, EIT
Treasurer	Jaclyn Bowman, P.Eng.
30 By 30 Representative	Bridget Cassidy, P.Eng.
Communications Coordinator	Sarah Prior, EIT
Outreach Coordinator	Katherine Miller, EIT
Sponsorship Coordinator	Kati Tamashiro, P.Eng.
Events Coordinator	Krupal Pal, Ph.D., P.Eng.
Events Coordinator	Golara Javadi, EIT
Victoria Events Coordinator	Bridget Cassidy, P.Eng.
Volunteer Coordinator	Katherine Miller, EIT
Retention Coordinator	Michelle McLarty, P.Eng.
Student Liaison	Karla Herrera, EIT
Member at Large	Donna Denny, P.Eng.



Figure 1. Women in Engineering Executive (from left to right): Selina Tribe, Ph.D., P.Geol., Chair; Karla Herrera, EIT, Student Liaison; Sarah Prior, EIT, Communications Coordinator; Krupal Pal, Ph.D., P.Eng., Events Coordinator; Jaclyn Bowman, P.Eng., Treasurer; Katherine Miller, EIT, Outreach Coordinator and Volunteer Coordinator; Meghan Lui, EIT, Secretary; Bridget Cassidy, P.Eng., Victoria Events Coordinator and 30 By 30 Contact; Golara Javadi, EIT, Events Coordinator.

Professional Development Initiatives

Engineers and Geoscientists are trained in gathering data, solving problems, and can contribute much to strategic direction and governance

on boards of corporations, organizations and non-profit groups. With experience, many Professional Engineers and Geoscientists can branch out from strictly technical positions and take on leadership roles in upper management as executives, c-suite and directors.

For engineers and geoscientists currently looking to gain and develop their professional experience, Women in Engineering and Geoscience Division will be organizing professional development courses. In 2019, the Division is planning to bring in Eli Mina, a well-known and respected Registered Parliamentarian to teach on meeting protocol and parliamentary procedure. This type of training will help attendees become competent and knowledgeable leaders of meetings; to understand the roles of chair, secretary, treasurer; and to implement shared decision-making to accomplish business. This includes making decisions by voting on motions.

Networking Initiatives

Social events, talks, breakfast meetings, and other types of meet-ups either in person or online are a great way to connect with other members and expand your network. Enlarging your social network is beneficial at all stages of your career. Women in Engineering and Geoscience Division believes strongly that providing opportunities for members to interact, whether during a technical talk, career workshop, or social event, is vital for helping women feel more connected and empowered in their career choices.



The Division has plans for panels and keynote speakers hosting women in the engineering and geoscience profession to share their experiences. “It’s essential to feature more women on panels and as speakers to combat the inherent biases that many have that engineers are male.” Says Krupal Pal, Ph.D., P.Eng, Division Events Coordinator. “I was to give a keynote speech at a conference and entered a room of engineers with a group of male colleagues, the other men in the room ignored me while they shook my colleague’s hands. It wasn’t until after I gave the speech that I was approached by others to talk, and always with comments on how young I look, or what a surprise that I am an engineer. These comments show the unconscious biases of the speakers, it’s draining to deal with frequently, even today.” says Dr. Krupal Pal.

In order to counteract these types of inherent biases, the Division supports efforts to obtain 50% women on panels, as presenters, keynote speakers, award recipients, council members, and in other areas of professional life.

30 By 30 Action Plan and Our Role

Thirty percent is the magic number. This is the percentage of women in organizations, workplaces, boards, and politics that marks the threshold for new policies, behaviours, and procedures to take hold that benefit not only women but all stakeholders.

The Division is working with Engineers and Geoscientists BC and Engineers Canada to support the 30 By 30 initiative. This includes planning events to support a variety of target audiences including high

school and college students, as well as women that may be planning to return to school or switch professions.

In addition to reaching out to our target demographics, the Division must also consider educating existing career professionals, both men and women, to facilitate change and become role models to encourage the movement of qualified women in engineering and geosciences.

Ultimately, the Women in Engineering and Geoscience Division goal is to aid in creating a supportive community of women that are in, or may seek positions in, engineering and geosciences. This is the first and most important step in initiating the 30 By 30 action plan.

Outreach and Volunteer Initiatives

The Division will expand and strengthen its network with STEM and similar groups across industries, across the province, and nationally. Katherine Miller, EIT, Division Outreach Coordinator, is an experienced organizer of panel events, speed networking events and other assemblies within the consulting engineering industry. Additionally, Katherine Miller has been reaching out to work with other groups, such as Girl Guides’ Career Awareness Programs.

The Division coordinates volunteer events at schools, and talks to women in science and engineering groups at BCIT, SFU, and UBC, to name but a few of the groups. “We are expanding our connections to post secondary institutions in order to attract women to the profession and get them to licensing”, says Karla Herrera, EIT, Division Student Liaison.



Donna Denny, P.Eng. (Figure 2), is currently Executive Member at Large and has previously participated with DAWEG in the past as Outreach Coordinator. In this capacity she advocated for and led the communication between elementary school and science program administrators in the Fraser Valley.



Figure 2. Donna Denny, P.Eng., Women in Engineering and Geoscience Division Executive, Member at Large

As the Victoria Events Coordinator, Bridget Cassidy, P.Eng., has had great success in past years planning special events in Victoria for DAWEG, including the International Women in Engineering Day Breakfast she organized in June of this year. There are several other events Bridget Cassidy has planned for the year including a Beginner Golf Tour, Wine and Chocolate Evening, and a Paintball event. Attendance and attraction for the Victoria events are continuously growing and gaining popularity, and as such, she continues to set a great example of the Division's vision and goals.

New Retention Program

Vice-Chair, Michelle McLarty, P.Eng. (Figure 3), had an interesting journey to becoming a Professional Engineer. "I started in chemical engineering and never needed my designation, until recently. Being with the association is new to me, and after working 20 years as an engineer, I have joined up. Now my colleagues treat me with more respect, they listen to what I have to say. There's a perception that I've made it or joined the club."



Figure 3. Michelle McLarty, P.Eng, Vice-Chair and Retention Coordinator, standing in front of a large diameter tank on site in Germany.

Michelle McLarty is also the Retention Coordinator, “Once I obtained my P.Eng., I didn’t have any women peers. I noticed very few women in senior roles in the organizations I worked with.” The observation led McLarty ultimately to join the Division board, and to focus on retaining women in the professions.

“Retention means keeping women in their career, even through maternity and family. Our industry has a problem losing women because of (1) the workplace culture, (2) issues around child care, family and elder care, the duties of which still fall predominantly on women, and (3) the impression that taking breaks from the career track to have children, for example, is seen as detrimental. “

Issues of unconscious bias also seep in. This bias affects men and women both. Educating both, and understanding how this bias can impact hiring processes, promotions, and the general workplace atmosphere will help those impacted, specifically minority groups, feel more inclusive in their positions.

Free Membership Promotion for 2019

Membership dues for DAWEG have always been \$10.00 annually for association members and free for association students. Funding helps the group promote and plan events to help in supporting division initiatives. DAWEG has always had the least expensive membership fee, compared to other divisions. “The price is low because we don’t believe our members need to be charged extra for being a woman”, says Bridget Cassidy, P.Eng., Victoria Events Coordinator.

For 2019, Women in Engineering and Geoscience Division will offer free membership to every member of Engineers and Geoscientists BC. “We want to grow membership and demonstrate our value as a Division”, says Dr. Selina Tribe, P.Geo., Chair of the Division, “Men are welcome too, and can benefit. We see the Division as bridging the technical side and the



teamwork side of engineering (and geoscience). Everyone benefits from more diversity and a broader network.”

Communications

The Women in Engineering and Geoscience Division has been diligently working on putting together a new website that will be used as a means to keep our members up to date on upcoming events, current and interesting news in the technology world that impact our profession, and an introduction to our new team of executive members. Communications Coordinator, Sarah Prior, EIT, will be leading these efforts and acting as a voice for our division through the website.

A Broader Vision

With the Division rebranding and new name comes the opportunity to reorient toward wider goals that include, not just advancement of women within the professions, but advancement of women and girls potentially seeking a career in engineering or geoscience throughout the province. Having a broader mandate, to work for change on public policy issues affecting women and girls across BC, has been identified in past membership surveys as being a worthy expansion of our mandate.

Conclusion

“Over time, so much has changed yet so much is the same. I am proud of the women who stepped up to take the division into the future.” says Dr. Selina Tribe. P.Ge.

Given that other sectors of previously male dominated fields are moving to or have achieved upwards of 50% women, it’s surprising that the engineering and geoscience fields have not yet met this milestone. The Women in Engineering and Geoscience Division is building a plan that will create connections for women in the professions, attract new women to the professions, and keep them in the professions. Will use our network and platform to work for wider changes in society to benefit girls and women across the province.

References

[1] J. Barnard and K. Levine, “DAWEG,” *The BC PROFESSIONAL ENGINEER*, pp.8-9, Oct. 1994.