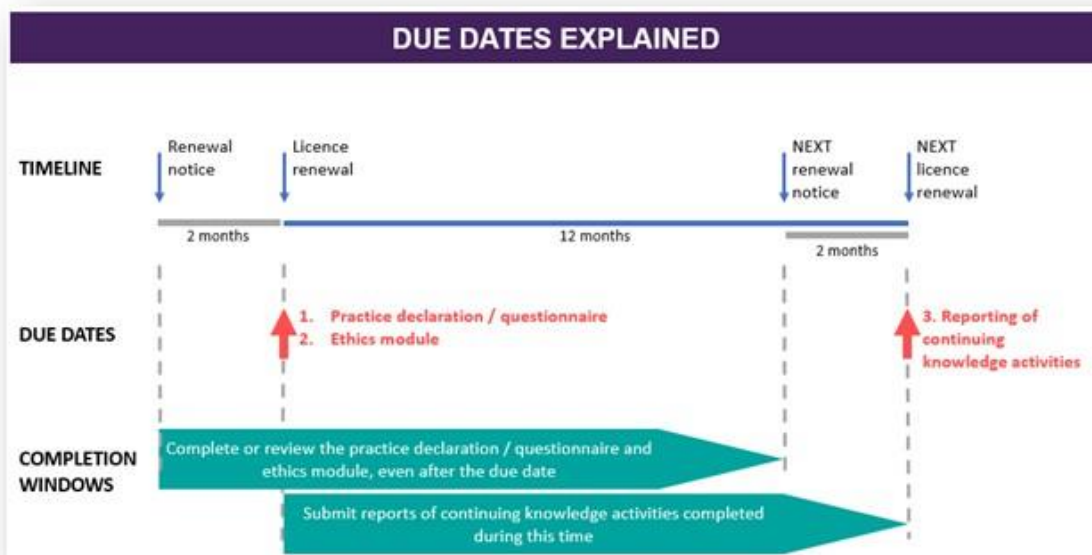




## Report on Year 1 of the PEAK Program

On April 30, 2018 the PEAK program completed its first year of operation. This report provides a summary of the actions taken since the program began and of the results achieved.

A more comprehensive document is being prepared that provides complete information on the PEAK program including its development history, design principles and specifications, business practice rules, lessons learned and a description of how the program is intended to support PEO's regulatory mandate. This document is intended to be the authoritative guide to the program and should be available this fall.



The PEAK program went live on March 31, 2017. The first group of licence holders asked to participate were those sent fee renewal notices on April 1, 2017. Since renewal notices are sent out approximately 60 days prior to the date of licence expiry, these notices went to licence holders with May 31, 2017 licence renewals. Consequently, the first full year of PEAK participation and data collection covered the period of April 01, 2017 to April 30, 2018.

Licence holders are asked to complete the practice declaration and practice evaluation questionnaire prior to their renewal date, though they may complete these elements at any time during the following 12 months. However, these elements will be shown as INCOMPLETE for those who do not complete these elements by their fee renewal date.

Since program participants have a year to report continuing knowledge activities, the first reporting cycle will be completed on April 30, 2019. At this time, only one renewal cycle group (May 31, 2017 – May 31, 2018) has completed the full 12-month reporting cycle.

PEO has engaged in an active and continuing communications campaign regarding the program. By May 31, 2018 PEO staff have provided 59 presentations about the PEAK program to Chapters, engineering firms, technical associations and other interested parties. Staff have also responded to over 1,000 on-line or phone inquiries about the program.

## What is PEAK?

The primary function of a professional regulatory association is quality assurance of the professional services provided by its licence holders. There are five mechanisms through which this is achieved.

First, a regulatory body is responsible for licensing only those who have the appropriate qualifications. To do so, the regulatory body must set the minimum standards for entry into the profession such as academic qualifications, experience requirements, and evidence of good character. The regulatory body then assesses applicants to ensure that they have met these qualification standards before they are licensed to practice.

A regulatory body must also set expectations of proper professional behaviour through guidelines, standards and code of ethics. Anyone who holds a licence to practice a profession is expected to comply with the rules governing that profession. For a self-regulated profession, it is the regulatory association that defines the rules that set out the basic standards of skilled and ethical practice.

The regulatory body is also the authority that enforces those rules. So, a professional association is expected to receive and deal with complaints against practitioners and to discipline those that do not comply with the ethical and technical standards of the profession.

The regulatory body must also protect the public, and the profession, from people who falsely claim to be professional engineers or who illegally practice by taking enforcement actions.

Finally, it is not enough to deal with the bad actors within the profession. A professional regulatory body should also ensure that all licence holders continue to be competent to provide quality services throughout their careers. Most regulators accomplish this by setting requirements for continuing professional development, conducting practice reviews, regularly monitoring the actions of the regulated professionals, and assessing public perceptions of the profession.

Almost all professional regulatory bodies recognize that a combination of mandatory professional development and practice reviews is the most appropriate means of meeting the regulatory goal of assuring the public that licence holders continue to maintain their professional engineering competence. Unlike the complaints and discipline process, continuing professional development and practice reviews are proactive mechanisms intended to inform licence holders of best practices adopted by other professionals and alert them when they may not be compliant with the practices of their more competent colleagues.

Unlike the continuing professional development programs mandated by other professional regulatory bodies, the PEAK program doesn't assume all licence holders have the same need for continuous maintenance and upgrading of skills and knowledge. For example, practitioners moving their practice into a different area of engineering or practitioners who have a senior level of responsibility for engineering work likely require more continuing knowledge than a practitioner who has been in the same role for many years. On the other hand, practitioners who work in environments where their work output is

subject to stringent quality management procedures will not need to take action as individuals to maintain the quality of their professional engineering services.

Rather than mandate that all practitioners conform to the same competence maintenance requirements, the PEAK program recommends a specific number of hours a practitioner should commit to continuing knowledge activities during the 12 months following the fee renewal date based on the information collected through the practice evaluation questionnaire. This questionnaire acts like a practice review carried out by licence holders themselves using questions like those that would be asked by an auditor. This questionnaire provides an indication of whether practitioners have adopted and are using best professional practices. Those who have adopted best practices that contribute to risk mitigation and control of the quality of professional engineering services are rewarded with reductions in their recommendation regarding the number of hours they should commit to continuing knowledge activities.

The gamification aspect of the program, that is, the fact that recommended hours of continuing knowledge activity is reduced when best practices are employed, is intended to encourage practitioners to adopt best practices that may be appropriate to their workplace.

PEAK uses PEO's directory of licence holders to inform the public whether licence holders (professional engineers and limited licence holders) participated in the PEAK program for the current licence year. PEAK posts information such as whether licence holders are currently practising professional engineering in Ontario and which PEAK program elements they have completed.

In summary, PEAK is a multi-faceted program that

- encourages practitioners to take steps to maintain their competency
- informs practitioners of the best practices for maintaining high quality of professional services
- facilitates practitioners' reflection on the state of their practice environment
- publicizes practitioners' commitment to the ensuring public trust in the profession, and
- collects information that is of vital importance to PEO.

## Results So Far

As of April 30, 2018, 27,283 licence holders (33% of total licence renewals) completed at least the first element of the PEAK program, the practice declaration. According to the declarations, 76% of PEO licence holders are practising professional engineering. Approximately 93% of these practitioners have completed the practice evaluation questionnaire and received a recommendation for the number of hours they should commit to continuing knowledge activities over the next 12 months. Of those receiving a recommendation, 23% have reported some continuing knowledge activities. Since program participants have a year to report continuing knowledge activities, the first reporting cycle will be completed on April 30, 2019. At this time only one renewal cycle group (May 31, 2017 – May 31, 2018) has completed the full 12-month reporting cycle. These basic statistics for the first year of PEAK are summarized in the following table:

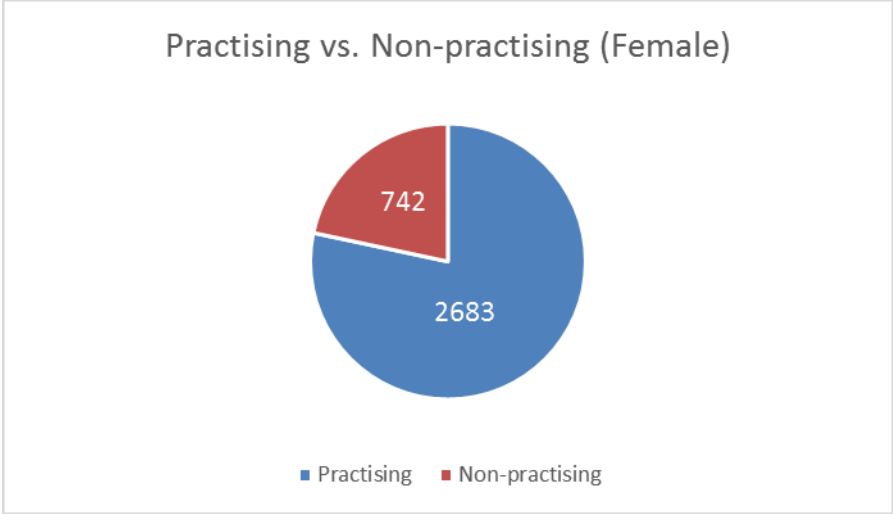
	<b>YEAR 1 P.Eng.s and LLs – by numbers –</b>	<b>YEAR 1 P.Eng.s and LLs – by percentages –</b>
Licences renewed (P.Engs and LLs)	82,139	-
Declared a practice status	27,283	33% of renewals
Practising	20,884	76.5% of all declarations
Completed Questionnaire	19,311	92.5% of practising
Reporting Activities	4,502	23% of full questionnaire
Non-practising	6,399	23.5% of all declarations
Completed Ethics Module	16,813	61.5% of all declarations

The numbers for Cycle 1 (from March 31, 2017 to April 30, 2018)

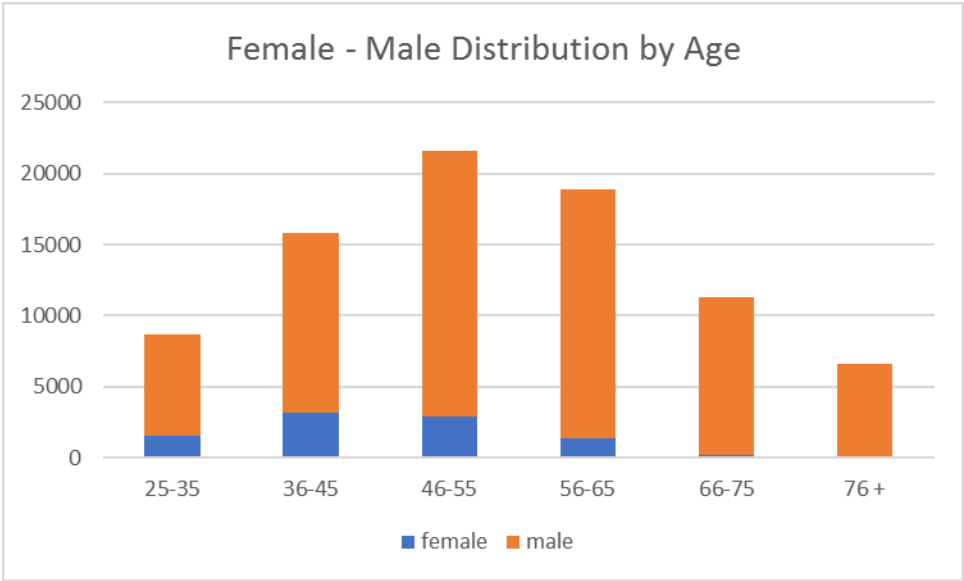
Since the data from the PEAK program is collected in Aptify as part of the record for each licence holder the data can be parsed in various ways. For instance, the following data was obtained by accessing the gender and age records for all licence holders who had participated in the program.

<b>Female Licence Holders Stats</b> By the end of April 30, 2018		<b>Female Participation Stats</b> March 31, 2017 to April 30, 2018	
<b>AGE Range</b>	<b>Female Total</b>	<b>Total Participated</b>	<b>Participation Rate</b>
25 - 35	1581	636	0.40
36 - 45	3135	1209	0.39
46 - 55	2856	1120	0.39
56 - 65	1394	414	0.30
66 - 75	205	36	0.18
76 and above	69	10	0.14
<b>Total</b>	<b>9240</b>	<b>3425</b>	<b>0.37</b>

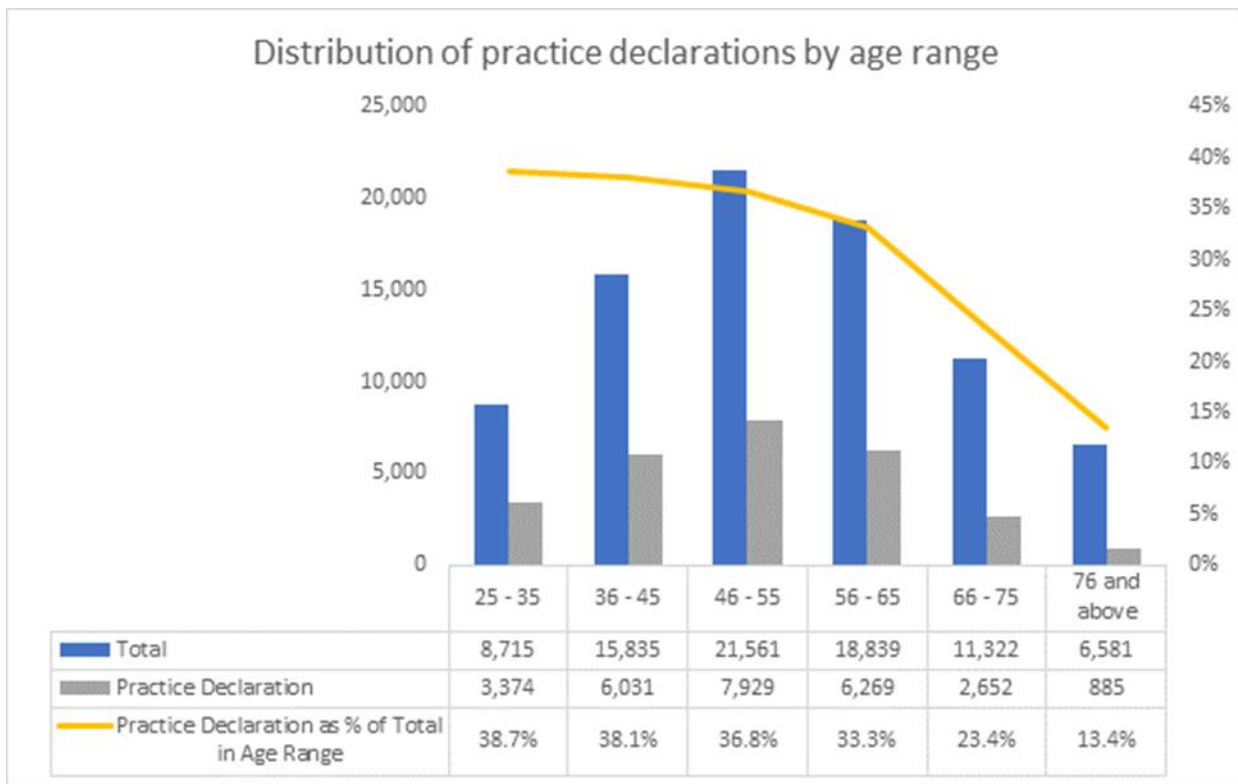
Combining this information with the responses to the PEAK practice declaration, the percentage of practising female licence holders was found to be 72.3%.



The demographics survey associated with the practice declaration and the practice evaluation questionnaire collected data on twenty-two pieces of information. This data can be readily cross-indexed with data available through Aptify. For instance, from Aptify we can obtain the distribution of all licence holders by age group and gender.



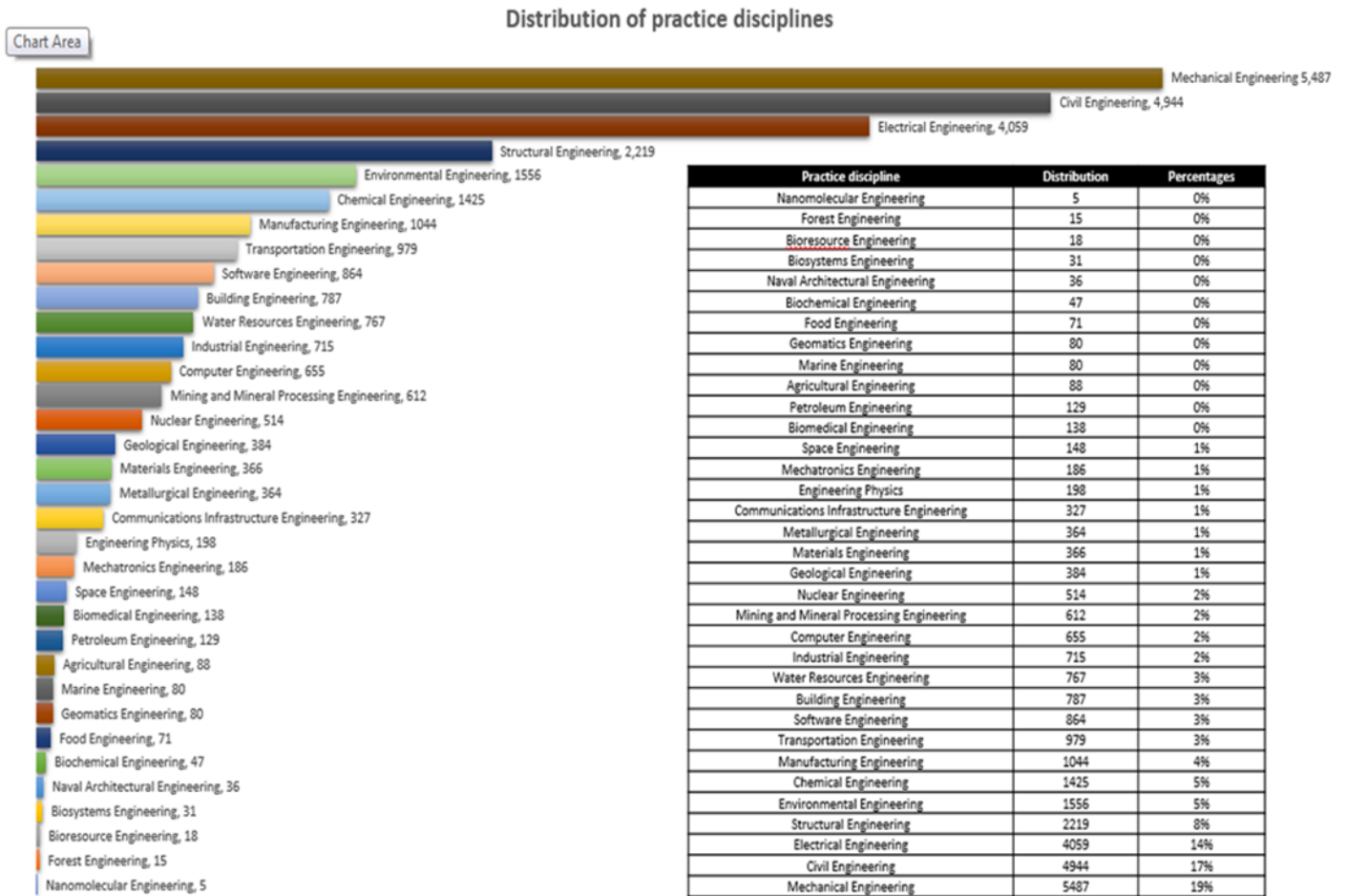
Combining this data with data collected through the PEAK program we can find participation in the program as a function of age group. [Note: participation in the program is defined as completion of at least the first element, the practice declaration]



As further evidence of the type of data that is being provided by the PEAK program see the information on the number of licence holders engaged in practice in each of the disciplines provided in the chart below. The information presented here refers to practitioners' actual area or discipline of practice rather than the academic discipline that is recorded in the Aptify registry data. This provides a more accurate record of the actual capabilities of the engineering profession in Ontario. For instance, according to the practitioner's directory, which searches through academic disciplines listed in the registry, there are no practitioners in nanomolecular engineering. However, according to the self-described practice disciplines reported through the PEAK program there are five practitioners in this area. Similarly, the practitioner's directory reports that there are 605 software engineers, but according to the PEAK program there are at least 865 (and this is from a sample of less than a third of all PEO licence holders). Though we have not done the analysis yet, it is possible to use the registry data and the PEAK data to determine the number of practitioners who have migrated from one area of engineering to another over their career. Using the information collected through PEAK we are also able to provide data on the number of practitioners who practice in one, two, or more disciplines.

This type of information is crucially important to Council and to other parties including the provincial government. For instance, during the inquiry following the Algo Mall collapse, the provincial government requested data from PEO regarding the number of practising structural engineers in Ontario, data which PEO could not provide. The information is extremely important for PEO policy purposes. For instance, the Professional Standards Committee often wants to know how many practitioners practice in a particular area of engineering in order to determine whether resources should be committed to producing a particular standard or guideline. This information would also be very helpful in finding subject matter

experts who are practicing in specific engineering disciplines. For instance, when the PSC sends out a guideline for public consultation, they could target the request for comments directly to practitioners in the appropriate discipline rather than relying on a general e-blast or a notice in *Engineering Dimensions*.



## Validation

All data collection processes that allow the population to decide for themselves whether to participate can be subject to self-selection bias or non-response bias. Though it seems reasonable that the greater the participation rate the less chance of such bias occurring, there is no generally accepted agreement on how large the sample must be in order to eliminate self-selection bias. Some studies have argued that at least an 80% participation rate is required, while others have shown that self-selection bias is eliminated with participation rates as low as 20%. Self-selection bias seems to depend a variety of issues including the sensitivity of the participant to the issue being studied and the benefits to be gained from participation in the survey.

Self-selection bias may be an issue to consider in relying on PEAK collected data. Concern has been raised that practising licence holders are more likely to participate in the program and, for instance, that this is

biasing the data regarding the ratio between practising and non-practising. PEO staff have taken some steps to test the accuracy of the data by comparing PEAK collected data with data collected in other ways.

The chart above (“Distribution of practice declarations by age range”) suggests that practitioners who are most likely to be retired and therefore non-practising are less likely to participate in the PEAK program. Therefore, it is likely that the PEAK program under-reports the number of non-practising licence holders. Though it is currently not possible to accurately determine the amount of this under-reportage we can estimate the extent of any discrepancy. PEAK indicates 23.5% of licence holders are not practising. From Aptify data, the number of licence holders statutorily prohibited from practising – those who are on fee remission – is known to be 18.9% of members. Other licence holders would be classified as non-practising if they are practising in another profession or are employed in a non-engineering position such as business management or teaching. Information of this kind is not available through Aptify, which is why the data made available through the PEAK program is important. However, if the PEAK data is accurate, the difference between the PEAK value for non-practising and the known number of fee remission licence holders allows for approximately 4.6% of the membership (approximately 3800) to be employed but not practising engineering. Some may think that this number is low, however, that could be based on an inaccurate perception of practice status. The PEAK program has been diligent in educating licence holders that they are practising if the work they do is covered by the definition in the *Professional Engineers Act*. Practising status is not dependent on employment by a Certificate of Authorization firm or using one’s seal. However, the number of practising licence holders will not be accurately known until either a validation study is undertaken or there is a much higher PEAK participation rate.

## Benefits of the PEAK Program

The PEAK program has shown itself to be beneficial to both the association and to individual licence holders.

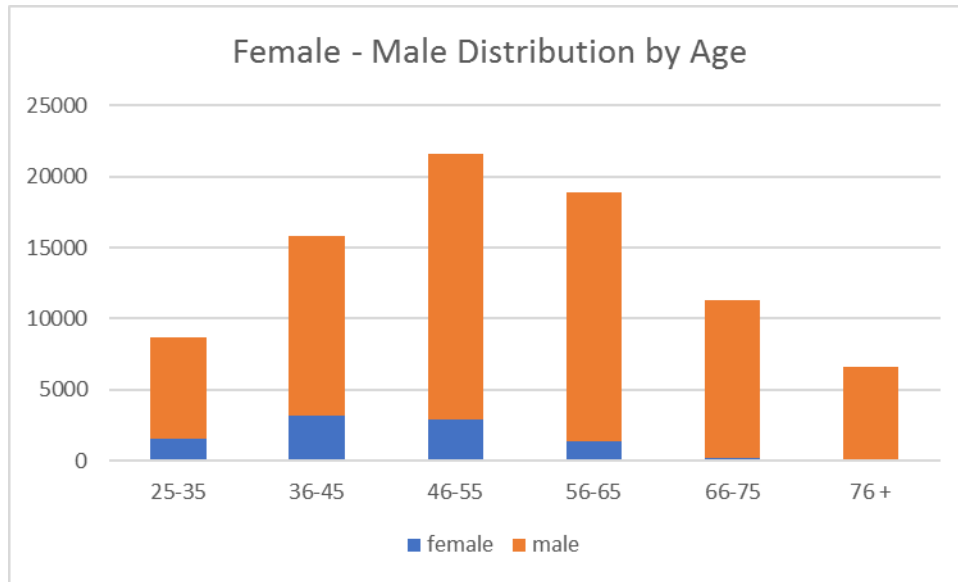
Participation in the various PEAK program elements is publicly reported in the practitioner directory. Some engineering firms have reported to PEO that they are including this information in their marketing materials as it demonstrates their commitment to ongoing professional development. One firm suggested that participation in the program could be included as part of performance reviews within engineering organizations since it provides the firm with both objective criteria for review of individual practitioners and good public relations for the firm.

Information is crucial to making knowledgeable and appropriate regulatory policy decisions. In the past there was little post-licensure contact with licence holders and no organized effort by PEO to collect data from and about them. In the past PEO could not readily gather data about licence holders, engineering practice, or the world of engineering in Ontario. Data needed to be gathered by market research firms conducting telephone interviews on small samples. The PEAK program is an essential and less expensive tool to address this information shortfall.

Through the questionnaire, PEO collects much needed data about the practice of professional engineering in Ontario, data that has never been accurately acquired before. For instance, we are learning how many licence holders practice in each of the recognized disciplines of engineering. We are learning how many licence holders practice in 1, 2 or more disciplines. We are collecting data about the distribution of practitioners by age and years of practice, information that will enable PEO to determine if the professional cadre, as a whole, is getting older, a fact that has implications for both PEO policy and the profession’s ability to provide the engineering services needed in Ontario.



Gathering and analyzing information is a fundamental to the creating good policy within PEO. For instance, looking at the distribution of male and female licence holders in each age range, it is easy to observe that PEO may encounter a future problem due to the demographics of licence holders. The data confirms perception that young engineers are not seeking licensure.



The largest cohort (26%) of licence holders are in the 46-55 age range and 44% of all PEO licence holders are over 55 years old. It is not likely that engineers obtain a licence to practice professional engineering in mid- to late-career. Therefore, there is little likelihood that the number currently in the 25-35 year-old cohort will increase with time. These age-related facts are important pieces of data. For instance, this data provides an indication that membership numbers and revenue may drop significantly in the future as current licence holders retire, die or resign.

The data also confirms that licensure does not seem to be important for younger engineers, especially when this data is compared with the fact that the number of engineering degrees conferred has been steadily increasing.

The type of information that is most useful to PEO is information about the current status of practitioners. Unfortunately, PEO has not had an ongoing connection to its licence holders. Information is collected only during the admissions process and, except for collection of the annual fee, there is no post-licensure contact with licence holders and no updating of information.

## Year 2 Program Improvements and Planned Activities

At its November 2017 meeting, Council approved a budget that included \$272,750 for year 2 operation of the PEAK program to April 30, 2019. This amount covers the cost charged by the external vendor (VocalMeet) for server hosting, course development, user fees, technical support and platform upgrades.

During the 2nd year many refinements have been made to the program. Staff conducted surveys of those who had completed the various elements of the program to get user reactions and identify impediments and concerns that might be reducing the number of program completions. The information obtained has been used to design and implement program upgrades.

A new ethics module was introduced on April 2, 2018. PEO and VocalMeet (the ethics module provider) have developed an integrated platform that will allow single-sign-on for users (previously a separate registration was required when entering the VocalMeet site). The questionnaire for practising licence holders is not changing. However, a survey will be added for non-practising licence holders to learn why they are not practising and whether they intend to return to practice.

During 2018-19, staff will focus communication and promotion efforts on firms employing professional engineers. Several large consulting firms reported that they found the PEAK program to be a useful marketing tool since there was a public record of participation by their employees in continuing knowledge activities. PEO efforts to increase member participation in the program will focus on communicating benefits such as these to Certificate of Authorization holding firms.

Many chapters offer seminars and other activities that have a technical education component. Some chapters have been advertising these events as PEAK compliant or have awarded PEAK certificates. A policy on Chapter Event Advertising has been prepared that will address concerns that have been raised about chapter events being identified as PEAK compliant or PEAK certified.

As noted above, the data collected through the PEAK program may be subjected to self-selection bias. Consequently, at this time, that data must be used judiciously for policy decision purposes or in communications to the public or government. For this reason, PEO should conduct a validation project such as a small but scientifically accurate telephone survey of those who are currently program non-participants in order to assess the validity of the data currently collected.

## Recommendations

The PEAK program commenced only one year ago and has succeeded in providing PEO with useful data as noted in this report. However, given that a full operational cycle, including the associated CKA reporting cycle, of the program is not complete, it would be premature to consider the question of mandatory rollout now. Therefore, no recommendation is being made about the referendum question.

The only recommendation being made is to continue with the project through Year 3, to improve the program and communication efforts, to improve the data collection processes, and to consistently apply the collected data to policy decisions within PEO.

## Council Actions

Council is being asked to decide on continuation of the program into year 3 (2019-2020). This would require the extension of the hosting contract with the vendor, VocalMeet, and development of a third ethics module. The estimated cost for VocalMeet provided services is \$300,000 which will be included in the 2019 operational budget. The budget may also include for future validation studies, as well as specific program communications and engagement projects intended to improve participation rates.