

New research supports the work of PEO in governing the profession. The results are in from a Professional Profile questionnaire mailed to members over the past year.

What are the top job functions of Ontario's professional engineers? What are their areas of expertise? Do their jobs require a P.Eng. licence? Are they taking courses or attending conferences to keep up-to-date in their areas of practice?

In an effort to capture information on the professional practice and professional development activities of its members, PEO introduced a Professional Profile survey in 2002, and the results have been tabulated. The voluntary survey, developed by a PEO task group, comprises 10 questions on area of practice and job function and professional development activities. It was distributed to Ontario P.Engs with their licence fee renewal notices for a year, starting in May 2002.

Of the roughly 65,000 surveyed, a total of 14,497 responded, yielding a response rate of approximately 22 per cent. Although Council was disappointed in the number of respondents, that percentage is in line with the 22.5 per cent response rate of Ontario licensees to a recent survey of professional engineers

across Canada conducted by EKOS Research Associates Inc. for the Canadian Council of Professional Engineers (CCPE). (See "Satisfaction Guaranteed," page 34, for the results of the national survey, also conducted in 2002.)

In May 2003, PEO sent a reminder to all those who had not yet replied to the questionnaire and for whom PEO had email addresses, urging them to respond. The questionnaire has not been fielded since then, but there are plans to enable members to provide and update their information via the PEO website.

Through the collection of information on its members, PEO hopes to better understand their practice situations and qualifications, to better position it to assist government in formulating legislation relating to engineering practice. By staying abreast of what licensees are doing, PEO hopes to be able to be ahead of major changes in practice, and have good statistical data that will enable it to respond to such government questions as: How many engineers work in X area? What percentage of the membership specializes in Y? Or what do your members do to remain current in their fields?



# EYE ON THE PROFESSION

## Profiling Engineering

“Much of this information is vital to know in order to meet our obligation if we are to regulate the profession,” says CCPE President Gordon Sterling, P.Eng., a PEO past president who chaired the task force that developed the Professional Profile questionnaire. “We need to know licensees’ areas of expertise, to enable us to raise public awareness of what engineers do. And we need members to declare to their professional body what they are doing to keep up in their professional development, so that we can demonstrate to the public the currency of a P.Eng. licence.”

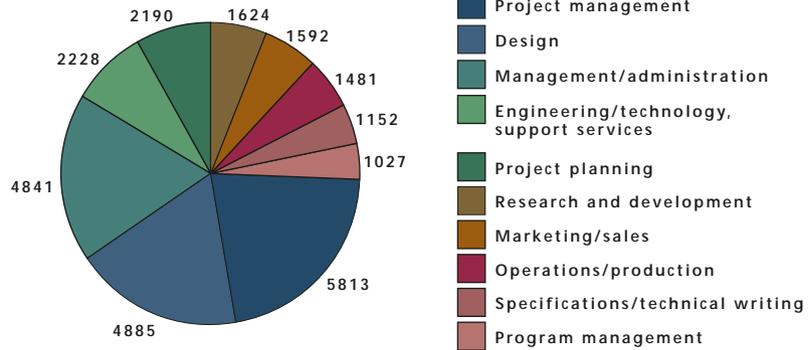
Although it was PEO Council’s wish that participation in the survey be voluntary, Sterling says that he would have liked to have seen mandatory participation in the survey, like the national Census, so that PEO could have gathered full data on licensees’ practice and continuing development. All the individual personal information collected will remain confidential and will be used by PEO only in the aggregate to identify trends and quote percentages where required.

“It’s important for PEO to get an accurate handle on the make up and practice profile of the membership to allow us to communicate better with members—and with the public,” says Sterling.

### Employment status

Over 74 per cent of respondents indicated that they are employees, about 14 per cent said they are self-employed, about 10 per cent are retired, 2 per cent are not working. With self-employment generally on the rise in Canada, the increase in this category over the results of a survey six years ago reflects the trend in many professions, he says.

According to the national CCPE survey, 97 per cent of professional engineers in Canada were employed in 2002, a rate far higher than the national employment rate for all occupations. The CCPE survey was not sent to retired P.Engs. Total income levels of professional engineers across Canada



**Job function:** the chart shows the top 10 job functions and the total hours spent in each function by the respondents.

were also high compared to other occupations, and Ontario engineers had the fourth highest incomes of engineers across Canada, according to the CCPE survey.

### Workin’ it

While the Professional Profile did not solicit salary information and job satisfaction (given the Ontario profession’s extensive annual salary surveys, now administered by the Ontario Society of Professional Engineers), the questionnaire asked for up to three areas of job function and the percentage of time spent working in each.

Project management was identified as the No. 1 job function, showing the large numbers of professional engineers who are working in engineering and have managerial responsibilities, or who have moved into other fields, Sterling comments. He says the breakdown of job functions also demonstrates the opportunities for career advancement with many respondents reporting high-level job responsibilities in management. Project planning and marketing/sales were also reported among the most common job functions, reflecting the trend toward developing the “softer skills” of communications and team-building. The CCPE survey also demonstrated the importance of non-technical skills with 40 per cent of the respondents

across Canada citing management/administration as their primary job function.

### Public duty

About 61 per cent of PEO members reported that their work concerns the safeguarding of life, health, property or the public welfare, while 82 per cent report applying engineering principles in their work, 48 per cent of the time on average.

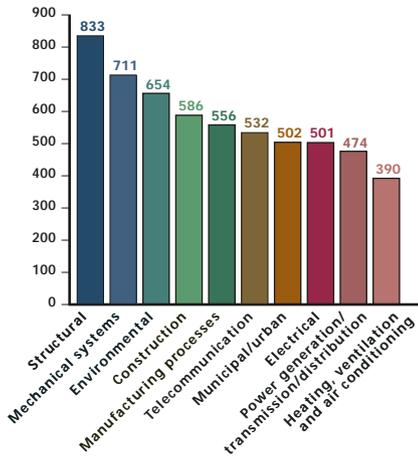
Asked whether they should be licensed professional engineers to do the work they do, almost 60 per cent of respondents said “yes.” Yet, only 40 per cent reported that their employers require them to be P.Engs.

“This finding highlights the misperception of some employers that engineering work in industry doesn’t require licensure,” says Sterling. “But if the work is designing, composing, evaluating, advising, reporting, directing or supervising, concerns the safeguarding of life, health, property or the public welfare, and requires the application of engineering principles, it requires a P.Eng. to take responsibility for it, except for a very narrow exception involving your employer’s process machinery and equipment of a non-structural nature.”

### Engineering expertise

Of the respondents working in engineering, the top 10 areas of expertise

B Y K A R E N H A W T H O R N E



**Expert opinion:** The graph shows the top 10 areas of expertise among respondents to the Professional Profile questionnaire and the numbers of respondents reporting each area. Similarly, the CCPE survey showed that mechanical, civil and electrical/electronics engineering are still the predominant engineering fields in Canada.

were in more traditional areas, such as structural, mechanical systems, and environmental engineering.

### Industry and sector

The industries and employment sectors reported by Professional Profile respondents were widely distributed, with the most commonly reported industry and sector—offices of engineers/engineering consultants—reported by only 14 per cent of them. Government was the next most common industry, reported by 6 per cent, followed by electrical and electronic products at almost 6 per cent, electric power systems at 5.7 per cent, building, developing and general constructing at 4.4 per cent, transportation equipment at 3.8 per cent, fabricated metal products (except machinery and transportation equipment) at 3 per cent, machinery (except electrical) at 2.7 per cent, education at 2.7 per cent and management consulting services at 2.4 per cent.

That almost half of the respondents didn't identify themselves in the top 10 reported industries speaks to the issues of specialization, emerging fields, engineers moving into other fields and an increasing number of retired engineers, says Sterling. "These results demonstrate the versatility of an engineering education and the pride and value of the licence. There's a saying: 'Once an engineer, always an engineer,'" says Sterling.

"These results demonstrate that there is certainly a high value placed on the P.Eng. in a wide variety of industries and employment sectors."

### Keeping current

Participation in professional development is hard to measure, according to Sterling, because taking courses and attending conferences doesn't guarantee professional competence. Professional development often happens right on the job, he says, and engineers are bound by a Code of Ethics to keep current in their engineering practice.

"I'm convinced that all working engineers continue to learn on-the-job," he says, while smaller numbers take courses. "But it's hard to take formal courses when you're working long days, 12 months a year."

Although most of the engineering licensing bodies across Canada have introduced some form of professional development reporting for licensees, PEO has a history of debate on the issue (see Historical Backdrop sidebar).

PEO's Professional Profile questionnaire asked how much time respondents spent practising professional engineering over the past year, and found about 1009 hours reported on average; respondents reported 72 hours spent in formal study, such as college and technical society courses. Respondents reported about 192 hours spent in informal, self-directed study, such as reading journals and attending seminars.

Respondents clocked about 268 hours on average contributing to engineering knowledge through making presentations, mentoring, and serving on technical committees.

### Professional membership

A large number of respondents reported membership in other professional bodies, pointing to their pride in the profession and sense of professionalism.

The Ontario Society of Professional Engineers (the Society), established as the advocacy body for the profession in Ontario in 2000, was among the 10 most common other professional bodies to which respondents reported belonging, with roughly 38 per cent of them indicating they are members. About 44 per cent reported belonging to the Institute of Electrical and Electronics Engineers in the U.S., 42 per cent to the Canadian Society of Professional Engineers, and 38 per cent to the Canadian Society for Civil Engineering.

About 25 per cent said they are affiliated with the Institute of Electrical and Electronics Engineers in Canada, while about 36 per cent belong to the American Society of Mechanical Engineers, 40 per cent to the Canadian Institute of Mining and Metallurgy, 38 per cent to the Society of Automotive Engineers in the U.S., about 25 per cent to the American Society of Heating, Refrigeration and Air Conditioning Engineers, and 35 per cent to the American Society of Civil Engineers. ❖

## Historical backdrop

PEO first proposed a Professional Excellence Program (PEP) for professional development reporting in 1997. The initiative was shelved by Council in April 1998 for one year of workshops and focus groups under a special task force that concluded:

"There is a trend for government to deregulate and shift the responsibility of regulation to the private sector. It follows that PEO must find ways to assure the public that its members are competent."

However, given the broad diversity of engineering disciplines, the task group also called it "impractical and perhaps even impossible for PEO to monitor and evaluate members' competency."

In the end, the task force concluded that record keeping and reporting of professional development activities does not measure competence, and spearheaded a revamping of the initiative as a voluntary program to collect information on members' practice profile and professional development for statistical purposes. The revamped program was subsequently approved by Council.

PEO introduced the Professional Profile questionnaire in 2002.