Step-by-step guide for the preparation and implementation of an individual continuing professional development plan
Notice

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About this Engineers Canada paper

This national Engineers Canada paper was prepared by the Canadian Engineering Qualifications Board (CEQB) and provides guidance to regulators in consultation with them. Readers are encouraged to consult their regulators’ related engineering acts, regulations and bylaws in conjunction with this Engineers Canada paper.

About Engineers Canada

Engineers Canada is the national organization of the provincial and territorial associations that regulate the practice of engineering in Canada and license the country’s 295,000 members of the engineering profession.

About the Canadian Engineering Qualifications Board

CEQB is a committee of the Engineers Canada Board and is a volunteer-based organization that provides national leadership and recommendations to regulators on the practice of engineering in Canada. CEQB develops guidelines and Engineers Canada papers for regulators and the public that enable the assessment of engineering qualifications, facilitate the mobility of engineers, and foster excellence in engineering practice and regulation.

Foreword

This document was prepared by Engineers Canada on behalf of its constituent members that regulate the profession of engineering in Canada. It is written to help you, as an individual engineer, to plan and implement continuing professional development activities that will:

» Meet your professional obligation to maintain and enhance your knowledge, skills and abilities (competence) as stated in your constituent member Code of Ethics;
» Move your career forward;
» Increase your competence level in strategic areas;
» Help you better understand your own needs and interests;
» Do all of these things simply and easily; and
» Using this example to do it right and save time and effort.

Continuing professional development is a key strategy to maintain and further develop your competence as outlined in the engineer’s Code of Ethics as well as meeting the requirements of continuing professional development/continuing competence programs of your constituent member. Where such programs are mandatory, you must refer and adhere to the specific program requirements of the constituent member(s) of which you are registered, not just the reporting activities.

Executive summary

The Code of Ethics of each regulator requires individual engineers to take responsibility for maintaining and developing their competence to perform engineering within their scopes of practice. Continuing professional development offers a structured approach for an engineer to fulfill this responsibility.

This document provides a tool for engineers to plan their continuing professional development. It includes the information and guidance for continuing professional development planning focusing on the following topics:

» Identifying the skills needed as an engineer;
Use of this document is entirely voluntary – it is not required nor will any regulator inspect it. It is a tool to provide a structured approach to planning continuing professional development and may be adopted in whole or in part – whatever works most effectively for individual circumstances. This document assumes that engineers do not have a formalized plan so that an initial continuing professional development plan is required. Creation of the initial plan includes:

- reviewing the scope of practice;
- self-assessment of competencies, skills and knowledge;
- identifying and prioritizing learning needs;
- planning and selecting activities to address learning needs; and
- ongoing recording of continuing professional development activities and work accomplishments.

Forms and instructions to support these steps are provided in appendices to the main document and the forms are also compiled into a separate volume for ease of access and use.

Engineers should feel free to use the parts of the forms that they find useful and applicable to their continuing professional development planning, because this guide is intended for use by a broad range of practitioners and it is anticipated that some parts or lines will not be applicable to individuals’ practice and needs.

There is an additional volume that includes examples of completed forms for early, mid-career and later career engineers. Figure 2 on page 14 illustrates seven steps for the complete process. Each step is detailed in subsequent sections and appendices.

Creating the initial continuing professional development plan involves self-assessment of the engineer’s skills, knowledge and competencies, which should be done as objectively as possible. Once the initial continuing professional development plan has been developed, periodic updating will be easily done by keeping a record of the work and professional development activities in the intervening time. If the job or scope of practice changes or is likely to change, it is recommended that engineers start their review closer to the initial steps to ensure the plan reflects changing circumstances.

There is one other important requirement for effective continuing professional development – recording of activities. Many regulators require reporting of continuing professional development and provide forms to do so. Other regulators require their members/licensees to keep records of their continuing professional development and supporting documentation for inspection or audit and provide similar recording forms. By regularly recording continuing professional development activities and filing the documentation, engineers should be able to quickly and easily report to their regulator with a minimum of effort.

1 Introduction

The National guideline on continuing professional development and continuing competence for engineers encourages engineers to recognize the importance of continuing professional development and to take ownership of their professional and personal development. Establishing a continuing professional development plan that takes into account current knowledge skills and professional experience, personal career intentions, changes in industry, technology, society and the profession as well as employer’s business objectives and opportunities is a good practice regardless of whether or not the regulator has a voluntary or mandatory program for continuing professional development.

This example provides suggestions to help engineers prepare, implement and maintain a continuing professional development plan. It includes suggestions and forms for them to:

- review and describe their scope of practice;
- evaluate current levels of competencies, knowledge and skills; and
- complete an initial continuing professional development plan and update it.

Several regulators provide guidance for continuing professional development planning. Engineers are urged to consult the websites for the jurisdictions in which they are registered to review the requirements of their continuing professional
development program(s). Note that for some regulators, reporting of continuing professional development is mandatory or subject to audit. Reporting forms and instructions are available through their websites and these must be used. Most regulators also list and publicize continuing professional development offerings on their websites.

Completion of an individual continuing professional development plan will not necessarily bring the engineer into compliance with the legal requirements in any regulatory jurisdiction. Moreover, compliance with the requirements of a mandatory continuing professional development program in one jurisdiction does not guarantee compliance for mandatory programs in other jurisdictions.

This document serves as a reference for engineers registered with regulators that do not have mandatory programs nor detailed continuing professional development planning documentation. All 12 regulators of Engineers Canada have endorsed this publication to serve as a resource for their members.

1.1 Profile of an engineer

Most engineers, like other professionals, use a combination of skills during their career. In this document five ‘practice areas’ are used:

- technical;
- management;
- communication;
- business; and
- professional.

Initially, the primary practice areas required are technical, along with the written, oral and graphic (communications) skills required to write reports and basic professional/ethical skills. Later, an engineer will often need to expand their skills into non-technical areas such as management and business. It is unlikely that a diploma, undergraduate or graduate program can provide training in all the skills required during the lifetime of an individual’s career. Most diploma and undergraduate educational programs concentrate on development of technical skills. Traditionally, the development of management and business skills is left to the individual to develop on an ‘as-required’ basis. Unfortunately too many engineers perceive these skills as ‘low priority’, resulting in the perpetuation of poor management and business practices in the profession.

Examples of skills (practice elements) within each practice area are:

Technical

- Identify applicable regulations, codes, and standards.
- Define and assess problems, develop options and recommend and implement solutions. Apply theory, processes, materials and operations.
- Analyze technical risks and offer solutions to mitigate them.
- Apply engineering knowledge to design.
- Apply of testing principles, procedures and reporting.
- Apply local environmental regulations and sustainability principles.

Management

- Manage part or all of one or more complex engineering projects and/or ongoing engineering operations.
- Project management including scope and quality management as well as planning and allocation of resources.
- Project budgeting and financing.
- Personnel management (recruiting, performance evaluation, time management, team building, motivation, etc.).

Communications

- Oral communication to other engineers, clients, management, public, other professionals, technical support staff, etc.
- Substantive written communication (reports, opinions, letters, memos etc.) to other engineers, clients, management, public, other professionals, technical support staff etc.
- Appropriate use of communications technology (telephone, video-and-teleconferencing, email, text messaging, etc.).

Business

- Apply principles of budgeting, financing, and technology.
- Apply business practices, including QA, contract administration, procurement, business risk identification and
1.2 What is continuing professional development?

Continuing professional development is a continuous, cyclical process of professional development that involves planning, self-evaluation, doing, recording and reviewing. Following these planning and action steps will increase effectiveness and competence. Figure 1 below graphically illustrates the process that runs in a continuous cycle throughout the career of an engineer.

Figure 1 - Continuing professional development process
(Source: Association of Professional Engineers and Geoscientists of Manitoba)

Early in an individual’s career professional development is focused on the need to acquire the competencies required to qualify as an engineer (P.Eng.). These involve acquiring the knowledge, skills and work experience necessary to satisfy the requirements for licensure. It is also a period when the good habits of a conscientious professional – of maintaining and developing competence are embedded.

Continuing professional development encompasses the planned acquisition of knowledge, experience and skills and the development of personal qualities necessary for the execution of professional and technical duties throughout the professional life following licensure. It encompasses both technical and non-technical skills and refers to activities which:

- contribute towards fulfilling those career objectives to maintain and expand abilities to perform current and future job-related tasks and responsibilities;
- have a formal or informal structure, and may include on-the-job training, professional practice, reading, volunteering, etc.;
- require active participation;
- extend professional knowledge, skills, abilities and judgement; and,
- advance professional excellence.

Continuing professional development is undertaken and managed by the individual engineer. It demonstrates to the profession and the public that engineers are taking appropriate steps to maintain their level of competence.

1.3 Needs and benefits of continuing professional development

In today’s rapidly changing technological world, it is no longer possible for engineers to rely solely on their initial engineering degree and on-the-job experience to provide professional advice and services. Through the Code of Ethics, an engineer is obligated to continually update and improve his/her competencies to offer engineering services that serve the public interest. There is the personal need for an engineer to regularly update and improve his/her knowledge as well as develop and refine skills to maximize his/her potential for lifetime employability as well as increase adaptability and flexibility in a rapidly changing labour marketplace.

The regulators of engineering in Canada who serve the public interest view their responsibility for the registration and licensing of engineers to extend beyond assessing member qualifications for initial registration and licensing. It is now common for the engineering profession and other self-regulating professions to view this responsibility to include promoting and assuring the continuing competence of their members. Most regulators in Canada operate some form of continuing competence and/or continuing professional development program within the framework described in the national guideline.

Competence is not permanent; it must be continually reviewed in light of evolving science and engineering practice as well as increasingly stringent professional standards and public expectations. The regulators, the engineer, and to a certain extent the employer, all share the responsibility in ensuring that professional competence is maintained. Engineers are best able to assess their professional development needs and pursue these in a professional manner.

In addition to meeting professional obligations, there are a number of personal and career-oriented reasons for you to reap the benefits of thorough planning and implementation of your professional development:

- Understanding future needs
In the 21st century, engineers are responsible for their own careers and have to make decisions about where to go next. They must be able to adapt to sudden career changes whether they result from new opportunities or redundancy. These realities strengthen the case for assessing future needs and planning how to gain the competence to meet them.

Understanding business needs

With the pace of technical change, businesses need people who are familiar with the latest technology or have the capability to bring themselves up to speed very quickly. Acquiring the relevant skills will give you a head start in the challenge of change when it comes. Alternatively, there may be a new technology that is of particular interest and the desire to create the opportunity for a move in that direction.

Understanding career and job goals

Engineers need to consider the needs of their current employer and potential future employers as well as job goals. Knowing where to be working this year, next year and in five years will improve creating or taking advantage of career opportunities through acquiring the corresponding skills and knowledge in a structured manner.

Considering personal goals

Engineers also need to consider personal goals related to family, community and other interests. How much time is available to undertake career-related development outside of the workplace? Will non-work activities affect career path? Will the employer provide support and what would be the nature of such support? The decision may be to seek academic qualification or professional recognition outside of the workplace. Continuing professional development provides benefits to engineers, the engineering profession and the public:

Benefits to engineers

- Maintain and increase the level of technical competence and effectiveness to fulfill professional responsibilities to the public.
- Identify and develop new areas of expertise and extend the range of engineering skills to enhance advancement potential.
- Enhance the ability to fulfill professional responsibilities for the employer or client.
- Increase awareness of the trends and directions in engineering practice and society.
- Ensure professional standards demanded by professional bodies and clients are maintained.
- Help, influence and lead others by example.
- Recognize opportunities to make career changes and be confident of future employability.

Pursuing continuing professional development and maintaining competence provides engineers with practice mobility throughout the country as well as internationally. Numerous organizations that regulate engineering in Europe and North America have mandatory continuing professional development programs that require regular reporting.

Benefits to the engineering profession

- Adding to the body of knowledge and expertise.
- Ensuring that the profession remains dynamic and responds to constant change.
- Enhancing the public image of the profession.

Benefits to the public interest

- Skilled, professional and ethical service.
- Demonstrated technical competence.
- Application of up-to-date knowledge of codes and engineering practice.

2 Continuing professional development planning and implementation process

The process of planning and implementing a continuing professional development program can be divided into seven steps as illustrated in Figure 2. The relevant sections or appendices that provide descriptions, forms and guidance to complete the steps may be accessed electronically by clicking on the stated location for the documentation. The following sections describe the five steps to prepare a continuing professional development plan, plus the two steps required to record and update continuing professional development activities.

For most steps in the process, forms and guides are provided in the appendices and in a second, separate volume (Part 2)
that has blanks of all the forms in one place. Examples of completed forms for early, mid-career and late-career engineers are provided in a third separate volume (Part 3). Engineers are advised to consult the website(s) of the regulator in which they are registered and, for mandatory programs, use forms provided by them. Some regulators operating voluntary programs also provide forms. In absence of such forms, engineers are encouraged to use some or all of the forms provided in this document.

2.1 Preparing the initial continuing professional development plan

Preparing a continuing professional development plan for the first time (“the Initial Continuing Professional Development Plan”) includes defining the scope of practice as learning needs as they relate to current duties or career aspirations.

Ideally such planning should be initiated at an early stage in the engineer’s career i.e. following graduation from an accredited undergraduate engineering program, but prior to meeting the requirements for licensure (the Engineer-in-Training period). However, the methodology is useful for engineers at various stages of their career. It also is a useful tool for international engineering graduates educated in other countries, which are seeking or recently achieving licensure. The steps in the preparation of the initial continuing professional development plan from Figure 2 include:

» Step 1 - Reviewing scope of practice (Details on page 15, form in Appendix A).
» Step 2 - Self-assessment of competencies, strengths and learning needs (Details on page 15, forms in Appendix B, Part A, B and C).
» Step 3 - Setting goals and objectives (Details on page 18).
» Step 4 - Decisions on methods and continuing professional development opportunities (Details on page 21).
» Step 5 - Documenting the initial continuing professional development plan (Details on page 23, form in Appendix C).

Step 1 – Reviewing the scope of practice

Prior to any continuing professional development planning, engineers should have a clear understanding of their current scope of practice. A well-defined scope of practice will enable them to more accurately evaluate their competencies and learning needs.

The scope of practice should be flexible. A narrowly defined or restrictive scope can impede continuing professional development. Recommended sources of information to consult for defining the scope of practice include:

» The current job description for the current position. This should be augmented by written performance review.
» A list of responsibilities from past positions with the current and previous employers. Past work and accomplishments would normally expand the scope of practice beyond what is being done in the current position.
» A list of outside activities (e.g. volunteer, process or business related) that have been undertaken over the past several years.

When there is a significant change in employment status or a significant change in duties or responsibilities, the engineer should return to his/her scope of practice and review, and possibly modify, it in light of changed circumstances. This is covered later in Section 2.3 “Updating the continuing professional development plan”.

Appendix A provides additional instructions, including a form and checklist to review the scope of practice.

Step 2 - Self-assessment of competence, strengths and learning needs

Competence is one measuring stick that can be effectively used for assessing skills and knowledge. However, having a good grasp of the knowledge and theory behind a subject does not guarantee the ability to turn that into a competent performance. Many organizations now use competence to measure and improve employee development. Job descriptions are the basic definition of knowledge, skills and judgement that are required for a given role.

Competence may be defined as the ability to perform activities to the standards required in employment and to continue to be registered as an engineer, using an appropriate mix of knowledge, skill and judgement. All three aspects need to be present if an engineer is to be effective in the workplace. Maintaining and improving competence requires that engineers increase not only their knowledge, but also understanding the application of said knowledge; the skill in applying it; and the judgement to apply it correctly to ensure the public interest.

Practice “areas” for competence assessment includes technical, management, communication, business and professional (refer to Section 1.1). The latter four categories may be grouped together as “non-technical” skills. Improving non-technical skills should be considered an equally important goal and will enhance the way engineers can demonstrate a wider range of competencies.

Each practice area includes a number of “elements” that can be used to judge strengths and limitations within a given area. The elements can be defined in such a way that engineers in all disciplines and areas of practice can apply them. Self-assessment of these competency elements using the forms and instructions contained in this example (Appendix B) can provide a more precise and detailed understanding of strengths and learning needs.
Self-assessment of competence should be undertaken in three areas:

» Overall practice review (Part A).
» Review of competence levels for engineering-related practice elements that are defined within the scope of practice (Part B).
» Review of non-engineering and non-technical skills, tasks and responsibilities that are an integral part of engineering work (Part C).

Forms to undertake self-assessment of the three areas are provided in Appendix B and compiled in a separate volume. Where competency standards exist, e.g. company-based, industry or professional standards, engineers are advised to use them as the benchmarks. Appendix B includes a guide to filling out Part A, B and C of the Self-Assessment Form. This exercise is a critical step that will enable to analyse strengths and learning needs to meet required or desired levels of competency. It is a useful input to deciding where to concentrate continuing professional development efforts.

Engineers will have different competences at varying levels of expertise in different areas. Some may need to be developed to a very high level while others are not so important or relevant. To maintain a given competency level to perform tasks or activities in a scope of practice, engineers will need to use their knowledge and skills regularly or slowly lose proficiency.

Other techniques of self-assessment

Other techniques for self-assessment include a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis. Engineers are often required to undertake a SWOT analysis of a project or other aspect to be most likely successful and identify areas where more work is required. Identifying opportunities will help ensure that engineers are ready to take advantage of them. Awareness of possible threats will give a chance to take action to minimize any negative consequences.

If an engineer is working for an employer, the human resources department may be able to arrange for psychometric tests to pinpoint strengths and weaknesses in skills and knowledge. Talking to a supervisor or a mentor may help identify possible opportunities and threats.

Step 3 - Setting goals and objectives

Setting of career goals and objectives requires regular reviews. An annual review is suggested. The distinction between a goal and an objective is that:

» a goal is a generalized statement of purpose that usually requires several years to achieve; while
» an objective is more specific and usually of shorter duration. Objectives are used to specify the details of how and when a goal will be achieved.

To formulate career goals and objectives, engineers should consider a number of questions, which include, but are not limited to the following:

Goals

» What do I want to achieve and when?
» What is my future career path – technical or management track? Timing of a switch (to management track if desired)?
» Do I work for an employer or in business for myself? Timing of such a switch?
» Employment sector(s) of interest (government, industry, consulting, non-government organization, non-profit organization, etc.) now and in the future?

Some examples of goals might include completing an MBA, developing a technical speciality within a discipline, maintaining competency in a particular area due to changes in technology, etc. Goals should be set for short, medium and longer timeframes. In planning for the short and long term engineers should consider the following:

» potential for adverse impact on the public;
» nature and extent of change (scientific, technological, organizational, regulatory, business, etc.); and,
» personal goals.

Shorter-term goals would normally be set for the coming year, and include one or more specific objectives towards meeting that goal. These should include milestones and deadlines to work towards. It is strongly recommended that engineers define no more than four to six goals and objectives at any given time.

For the medium term (2-5 years ahead), the goals should be defined similar to short-term goals. However, the defined objectives to meet such goals would normally be less specific and perhaps incomplete since the employment situation may not be known that far ahead.

Longer-term goals may be just ideas or visions for the future with no defined objectives.
The following are examples of short, medium and long-term goals:

- **Short** – “To work on the design of concrete structures in discontinuous permafrost”
- **Medium** – “Become the Chief Engineer in the department in the next five years”
- **Long-term** – “To become a recognized expert in the design of wind power systems”

**Objectives**

- Objectives are specific and of short-term duration.
- What are my current interests and abilities?
- What are my desired new skills and knowledge to experience in the next year, next 2-5 years?
- What are the types of job experience and assignments I want to experience in the next year, the next 2-5 years?
- Timing of my career changes or the type of work.
- Career goals and objectives should be flexible and subject to change as circumstances and opportunities dictate. They should be periodically reviewed (at least once per year) to determine if they still apply or are relevant to your future career.
- Such reviews will enable you to adjust your continuing professional development plan and optimize personal efforts and resources towards continuing professional development to meet changing circumstances.
- Once the Initial Continuing Professional Development Plan is developed, subsequent Updating of the Continuing Professional Development Plan (Section 2.3) would normally involve a review of the past development period, deleting actions completed and adding new ones for the next period.

**Step 4 - Decisions on continuing professional development priorities and methods**

For those areas of practice where engineers have identified a learning need, a process to compile those needs into a priority list is the next step. Which priorities are to be tackled first, and how, becomes the key to a plan that will work. Questions to prioritize an engineer’s list of learning needs include:

- What Continuing Professional Development opportunities are available to address individual learning needs in terms of availability, time, location and cost that best matches with my objectives?
- Will addressing the learning need contribute to meeting my short, medium or long-term goals and objectives?
- Will my employer/supervisor and family support my needs and objectives for continuing professional development?

Other personal or individualized criteria could be added to the list, including other considerations. All of these are suggested as ways to examine and analyse how learning needs should be fulfilled.

As noted before it is highly recommended to keep a current list of learning needs to be addressed in the short term to three or four objectives within a year, unless there is time, resources and inclination to pursue continuing professional development more vigorously.

An important consideration in selecting strategies and methods is the time an engineer has available for such pursuits. Job, family and volunteer responsibilities need careful consideration to come up with a realistic continuing professional development plan that balances these various factors.

There are many available methods of continuing professional development. Most regulators encourage or require their members to use a combination of methods so that no one method is relied upon. Types of continuing professional development include:

- **Professional practice**: Technical work in the area of practice is known to be a significant factor contributing to competency. Opportunities are pursued "on the job" to close gaps that have been identified in the self-assessment of competence, strengths and learning needs.

- **Formal education**: Structured courses or programs that may be for credit and may have an evaluation process. These may include seminars, courses, workshops, and university or college courses taught in traditional classroom settings, or remotely using techniques such as correspondence, videos or interactive electronic exchange. Examples include undergraduate or graduate courses offered by universities, colleges or technical institutes; industry-sponsored courses, programs and seminars; employer-sponsored training programs and structured on-the-job training, and short courses provided by a technical learned society.

- **Informal education**: Activities that are not normally offered by an educational institution or other formalized organization, but expand knowledge, skills or judgment. These include self-directed study (e.g. reading technical journals, books or manuals), attendance at conferences workshops and industry tradeshows, attendance at technical, professional or managerial meetings and structured discussion of technical or professional issues with peers.

- **Public, community and professional service**: Active participation in professional, technical or managerial associations or
societies, enabling interaction with peers and exposure to new ideas and technologies. The overall purpose of service activity is to understand and appreciate the importance of volunteer work as a member of the profession or as a member of the community.

**Contributions to Knowledge:** Preparation, publication and/or presentation of papers, journals, codes, standards or patents that expand or develop the technical knowledge base in the discipline. Regardless of whether continuing professional development is mandatory or voluntary, you are encouraged to pursue it through the wide variety of methods and sources listed above.

**Step 5 - Documenting the initial continuing professional development plan**

A form to document the initial continuing professional development plan referred to as “Professional Development Plan Form” is provided in Appendix C. The form is also available in the separate volume that has all forms in one place. The actions to be taken should focus on those areas of practice and levels of competence where engineers have identified and prioritized a learning need to suit their goals and objectives.

**Step 6 – Recording and reporting continuing professional development activities**

Engineers should maintain a record of their professional development activities. Recording should encompass learning and development, which includes what has been done, but also what has been learned. The process of committing learning to paper or computer helps to organize thoughts and experiences, and to build upon them. Such practice will enable the experience to be documented for use and reference later when reviewing and planning continuing professional development as well as other activities such as a resume writing or when asked by a prospective employer for a summary of past experience and training.

It is recommended that engineers keep a learning log that records the following:

- what has been done;
- when it was done;
- what was learned;
- how to apply the learning; and
- follow-up activities that might be useful.

Records should include all forms of continuing professional development, not just formal learning. On-the-job training and experience is another important component. Capturing learning through a log can document achievements and learning. Once the log is created and continually maintained, it becomes a valuable tool for assessing and planning future continuing professional development as well as a means to assess and provide documentation of competence for new employment opportunities. Many employers have their own paperwork systems to help employees keep records of training and development that they have undertaken. These range from staff reports written after a performance appraisal to a note in a personnel file about a course attended.

All such records are useful, but should not substitute for the individual effort of documenting all forms of continuing professional development. This is especially true for informal and other forms of continuing professional development outside the workplace as well as specific work experiences, which may not be captured in the written records of the organization. Some regulators require submission of reports annually (e.g. APEGGA, APEGNB and PEGNL). For regulators that have mandatory reporting, their forms must be used. Others require the engineer to retain records of their continuing professional development for possible inspection (e.g. OIQ). Engineers should consult with the regulator in which they are registered to learn about continuing professional development reporting requirements.

**Step 7 – Updating the continuing professional development plan**

Periodically reviewing the continuing professional development plan is a vital part of the process. The frequency of reviews should fit into current circumstances. Things to consider in reviews could include:

- the nature and timing of goals and objectives that should trigger review;
- the timing could coincide with formal appraisals by the employer. This allows the engineer to be fully prepared to discuss this aspect of his/her review as well as to rapidly incorporate any changes into the plan; and
- if employment or personal circumstances change, e.g. changes in job or responsibility level. Review in these cases should also consider their effect on career aims and overall direction as well as personal objectives.

It is recommended that, as a minimum, engineers should review their continuing professional development plan yearly, perhaps following an annual performance review by the employer.

If there is no need to update the plan, then return to Step 4 and decide on the next set of continuing professional development priorities and continuing professional development methods and repeat the processes described for Steps 5 and 6 until the next time for review.

If there is a need to update the plan, engineers should return to an earlier stage in the process. Which step you begin with...
depends on the reasons for the review. If the job or duties have changed significantly, engineers should return to the scope of practice definition (Step 1) and make changes to reflect these new duties and responsibilities. If they have gained new knowledge, skills and experience they should update their self-assessment of competencies and make appropriate changes to the ratings (Step 2). Finally, if they have reached the end of their current continuing professional development plan cycle and goals and objectives have been accomplished, it may be time to set new objectives (Step 3).

Appendix A

Scope of practice review guide

Introduction

This guide provides instructions to fill out the Scope of Practice Review Form, which completes this appendix.

To effectively plan professional development, engineers should have a well-defined, individual scope of practice. The scope of practice should be defined on the basis of:

- current job description;
- current and past projects undertaken;
- the role and specific responsibilities in each project;
- the specific contributions or deliverables assisted by, prepared by and/or reviewed by the engineer; and
- the level of responsibility assumed or taken by the engineer in each project.

Documents that may be consulted to define the scope of practice may include, but not be limited to:

- written job descriptions;
- contracts;
- project lists, log book, time sheets;
- proposals;
- drawings, specifications, maps, reports, etc.; and
- promotional brochures.

Other sources of information that could be used to define the scope may include:

- references – other engineers and supervisors and their judgement of the work performed;
- memberships in professional associations;
- employer performance appraisals;
- past continuing professional development;
- contributions to knowledge;
- design notes or drawings for specific projects;
- project specifications;
- relevant sub-consultant reports; and
- design codes and material standards used.

The following are instructions and commentary to fill out certain parts of the Form.

First, fill out name, all professional designations and the association(s) in which the engineer is registered.

Second, fill out the time period for which this scope of practice will be valid. One year or more is recommended.

Academic background

List all degrees and diplomas by discipline, using the name of the degree or discipline. Include information on the school and date of graduation.

Current job title

List the title of your current position with your employer. Include the level of responsibility of the current position e.g. municipal department head, manager of electrical department, chief engineer, project engineer, etc.

Duties and responsibilities
This should include a list of your primary duties, task and responsibilities in your current position, usually obtained from the job description.

Supervision

This section asks two questions: 1) are you supervising the work of others; and, 2) is your work being supervised by an engineer or other individual. List the name of the person you are reporting to, their position and any professional qualifications.

Defining your practice

On a separate sheet of paper, list activities and tasks performed over the assessment period that fall within the engineering practice areas that include:

- technical;
- management;
- communication;
- business; and
- professional elements.

These practice areas are the main practices and responsibilities that are the basis for qualification as an engineer and are the generic range of activities usually performed in the practice of engineering. Estimates of the percentages of total time spent in each of these practice areas will provide you with a good understanding of where your responsibilities and work are concentrated.

Evaluation of practice administration

Engineers need to address the administration of professional work, which is an obligation that exists regardless of the employer. It is a common element in all scopes of practice. For each of the questions, assess whether your current practices meet the requirement or need improvement by checking the appropriate box.

For the last question concerning the liability limitations period please be aware that provinces and territories have different ultimate limitation of liability periods under law for the work of engineers, ranging from 10 to 30 years. Most documents do not need to be kept this long. However, if there are documents that have a liability for a longer period, you or your employer needs to ensure that there is a system to keep such documents in safe storage for the full period of time and that there is the ability for the engineer to access them regardless of whether they still work for the current employer.

There are a few ways to deal with this: 1) speak to your employer’s records management personnel to ensure they are aware of the obligations and see that the appropriate records management systems are put into place; or 2) it may be necessary to keep personal copies of your own work. Communication with the employer is required to ensure that this can be done in an appropriate manner.

You must be able to produce the unaltered professional documents for which you were responsible. This is even more critical when it comes to electronic documents, which can be easily altered without your knowledge. Another engineer might amend the document, but in this case he or she is obligated to take professional responsibility.

Meeting due diligence obligations

Due diligence should be demonstrated during all aspects of practice. These questions help you analyze your level of due diligence. For further guidance, please refer to the particular Standards of Professional Practice for the regulator(s) in which you are registered.

Scope of Practice Review Form

Appendix B

Self-assessment guide and forms

The Self-Assessment Form consists of three tables, referred to as parts, covering three aspects of engineering practice:

- Part A: Overall Practice Assessment
- Part B: Engineering Competence Assessment
- Part C: Non-Engineering and Non-Technical Competence Assessment
Self-assessment of these three areas will provide you with a comprehensive and modular picture of strengths and learning needs, and will be a key input to the development of your continuing professional development plan. This guide is intended to provide a reference to enable you to fill out the three tables that comprise the Self-Assessment Form. Learning needs identified through this analysis will allow you to compare and prioritize them for action through the continuing professional development plan.

Part A – Overall practice assessment

Completion of the Overall Practice Assessment will provide you with a clear picture of the professional and administrative aspects of your professional practice. Appendix B, Part A is the table to be used for this portion of the self-assessment.

Ranking

Questions 1-2 ask for your ranking or to indicate that it is not applicable to your particular situation. A ranking of 5 indicates a sufficient level of knowledge and understanding on the issues related to that particular question. Any question ranked below 5 may indicate a learning need and possible action through continuing professional development or other means.

Question 1: Have a clear understanding of job performance expectations and it is documented.

In order to properly assess yourself, you need to know what you do. A starting place is a complete and up-to-date job description. You or your employer may already have one on file. If not, take a moment to write down those job-related activities/duties, which you are responsible. In any event, the job description should be as complete as possible listing all the job related activities.

Question 2: Documented all the professional development activities undertaken during the last year to maintain competency in his/her area(s) of practice.

In order to determine currency in the area(s) of practice, you need to know what activities have been undertaken over the last year to maintain competency and keep a record of professional development and continuing education activities. There are a number of tools available:

- professional development program documentation from the regulator as well as continuing professional development providers;
- your employer may keep track of training activities; and
- develop a professional development file, a diary or your own database system (e.g. Excel or Access

When reviewing what has been done over the last year the following should be considered:

- Practice: outline projects and activities (perhaps taken from 4A on the Self-Assessment Form) or the list of activities and tasks performed that were prepared in reviewing your scope of practice.
- Peer Discussions: Record types of discussion held and with whom.
- Courses: Record courses taken or given.
- Reading: Record books, periodicals, articles, etc. read, written or prepared.
- Study Club (office sessions and field trips with peers and specialists).
- Committee Work: Record the nature and types of committees, as well as duties.
- Lecturing: Record lectures, seminars, courses and training given.
- Recent performance reviews by your employer.
- Recent certification audits or internal audits that looked at aspects of your area(s) of practice.
- Mentoring, including sponsoring enrolled members.
- Research or operational trials.
- Strategic planning meetings or brainstorming sessions to improve organization or professional performance.

Question 3: Practice aspects of engineering

Provincial and territorial Engineers Acts establish the profession of engineering and define engineering practice. These Acts grant the exclusive right to practice engineering to members registered with one or more of the regulators.

Using the definition of the practice of engineering, determine what aspects of engineering you practice, if any (this includes volunteer activities related to the practice of engineering).

If you are unsure whether a particular activity falls within the definition of engineering for the jurisdiction you are registered, regulator staff may be able to assist. You can contact the registrar or a staff member in the registration department at the regulator office for assistance.
Self-assessment may lead to the conclusion that you are not practicing engineering. This self-assessment is still a useful tool to keep currency as a member. Regardless of the area(s) of practice, there is still a need to keep up-to-date with the work so you can practice to the required standard of due diligence. The personal and professional self-assessment tools contained in this document are a useful part of the professional development plan.

Regardless of your area of practice or whether or not you practice engineering, you should fill out the Self-Assessment Form as a key element of developing or updating your continuing professional development plan.

**Question 4: Engineering practice assessment.**

**Question 4A: Areas of practice**

List the primary, secondary and tertiary areas of practice in Question 4A: Areas of Practice using the criteria listed below:

- **primary areas of engineering practice consuming more than 35 percent of total time;**
- **secondary areas of engineering practice consuming 10-35 percent of total time; and**
- **tertiary areas of engineering practice consuming less than 10 percent of total time.**

The areas of practice can best be determined by reviewing diaries or time sheets.

**Question 4B: Professional practice assessment**

In Question 4B, you are asked to compare your professional development requirements compared to listed areas of practice. The following competence scale defines different levels that may be applied to grade the performance of engineering tasks or activities within each component of practice:

**Level 1:** Performs the activity with significant supervision and guidance. Performs basic routines and predictable tasks. Little or no responsibility or autonomy for the task/activity.

**Level 2:** Supervision is only required in more complex circumstances. Some individual responsibility or autonomy for the task/activity.

**Level 3:** Performs the activity in some complex and non-routine contexts. Significant responsibility and autonomy. Can oversee the work of others.

**Level 4:** Performs the activity in a wide range of complex and non-routine contexts. Substantial personal autonomy. Can develop others in the activity.

**Level 5:** Can take a strategic view. Applies a significant range of fundamental principles and complex techniques across a wide, and often unpredictable, variety of contexts. Wide scope of personal autonomy.

For each area of practice listed in Question 4A: Areas of Practice, indicate the required level of competence (based on the above 5-point scale) needed to do the job (Column A). Indicate present level of competence for that particular area of practice using the same 5-point scale (Column B).

Those practice areas where your present level of knowledge and experience (Column B) is lower than what is required (Column A) will form the basis of your professional development plan for the coming year. Each “Learning Need” should be addressed in the professional development plan.

**Questions 5, 6 and 7: Keeping up-to-date**

As an engineer you are obligated through your Code of Ethics (as well as mandatory continuing professional development programs in some jurisdictions) to maintain competency in all areas of professional responsibility. To help you determine if you are keeping up-to-date, tools have been developed for the following three areas:

- **Overall Practice (Appendix B, Part A);**
- **Engineering Competence Assessment • (Appendix B, Part B); and**
- **Non-Engineering and Non-Technical Areas • of Practice (Appendix B, Part C)**

**Question 8: Meeting the objectives of last year’s professional development plan**

You should review your professional development plan from the previous year to determine if goals were met. For each goal not met, assess the relevance of that goal and determine what further action is required, if any.

**Part B – Engineering competence assessment**

Completion of the Engineering Competence Assessment will provide you with a clear understanding of strengths and learning needs in the technical and engineering-related aspects of your professional practice. Appendix B, Part B is an example form that could be used for this portion of the self-assessment.
The sample form can be used to document the competencies in the five practice areas that cover the practice of engineering. Each competence area is comprised of up to several practice elements. The following provides some guidance to filling out the various columns in the table.

In your job duties or career aspirations not all practice elements will necessarily apply. If the practice elements as described in the form do not apply or you do not perform job functions that address some or all of the descriptions then answer no. If some or all of the descriptors apply the answer is yes. If you answer no to many of these questions your scope of practice and ability to practice engineering should be carefully reviewed.

For each practice element, list activities and tasks that you currently perform in your work or which will be performed in the period covered by the plan. These statements will provide evidence of the level of competence for that element. Please refer to the examples of filled out forms for early, mid and late career engineers in the separate volume for ideas on the level of detail and the wording to use.

Based on the list of activities and tasks for each practice element, assess if it is a strength or a learning need (where perhaps certain tasks are not performed to a level that is required for your current position and/or future career aspirations). Use the levels of competency defined in Part A to help you define what your present level is to compare to what your job requirements are or could be in the future. If your competency level is good enough to meet your job requirements or career aspirations this can be a strength, and if not, then you have identified a possible learning need to improve your level of competency.

Where competency standards exist, e.g. company-based, industry or professional standards, you are advised to use them as benchmarks, particularly for determining the required level of competence. Completion of this table will enable you to identify learning needs as well as determine their extent, i.e. if a present level of competence is well below the required level more emphasis on continuing professional development in this area is likely needed versus other areas where the present/required levels are closer. Competence assessment may be applied to individual tasks, activities or responsibilities you are currently responsible for, as well as applying to your defined goals and objectives for the future. Sources of information to consult in making these judgements include the following.

Present level of competence

» Practice: past and current projects and activities (taken from 4A on the Self-Assessment Form and personal resume).
» Peer Discussions: Record of types of discussion held and with whom.
» Courses: Record courses taken or given.
» Reading: Record books, periodicals, articles, etc. read, written or prepared.
» Study Club (office sessions and field trips with peers and specialists).
» Committee Work: Record the nature and types of committees, as well as duties.
» Lecturing: Record lectures, seminars, courses and training given.
» Recent performance reviews by the employer.

Required level of competence

» Current job description (or description of the job the engineer wishes to pursue).
» Published employer competency/job framework.
» Consultation with supervisors, mentor, colleagues, senior management.
» Industry or employer standards.

Part C – Non-engineering and non-technical skills

Self-assessment of competence must necessarily include non-engineering and non-technical/business skills to meet these important elements of engineering practice.

Non-technical skills have become increasingly more valuable to industry and employers due to new organizational models. Such skills are becoming critical considerations in recruitment and career advancement decisions. Key non-technical skills that have taken on increased importance are those required to ensure the effectiveness of a team. Key elements to consider in assessing your skill set in this area include, but are not restricted to:

» oral and written communication;
» interpersonal skills;
» project management;
» problem solving;
Appendix B, Part C provides the form to assess your strengths and learning needs in these areas. The same levels of competence that were used to assess engineering competencies may be employed here. The same sources of information that were used to judge the present and required levels of engineering competence (Part B) should be used for the non-engineering and non-technical/business skills assessment (Part C) to ensure consistency.

The same process of listing your current activities and tasks that employ these skills is recommended to help you judge your present and expected level of competency to help judge those skills that are a strength and those that are a learning need.

Overall Practice Assessment Form

Appendix C

Professional development plan guide

Initial plan preparation

Once the three parts of the Self-Assessment Form (Appendix B) are completed, learning needs should be identified from an analysis of each of the three areas (Part A, B and C), where the required level was greater than the present level of competence. The learning needs should be grouped into each of the three areas and ranked in terms of priority.

Priorities within each area may be determined by one of three methods:

» those areas, which had the largest difference between required and present levels of competence to be listed first, since these identify the largest gaps;
» based on your personal objectives and priorities; and
» a combination of 1 and 2.

You should determine the particular areas of practice to be maintained and others to be expanded and/or new areas to be pursued. It is recommended that you define short-term goals and objectives to maintain and expand the scope of practice for the next year or so. The objectives should be realistic (in terms of available time, financial and company support and effort) and measurable to enable recognition when achieved. Objectives should be prioritized and achievable timings set for no more than three to four objectives for a year.

You should commit these goals/objectives and activities to paper. This appendix provides an example form to record the plan. Under Actions to be Taken determine the type(s) of continuing professional development to be pursued to meet each objective and, where feasible, identify the particular continuing professional development opportunity e.g. course and date, on-the-job training etc., and map it to the particular objective or goal.

Types of professional development

There are many methods of continuing professional development available to meet the needs of a continuing professional development plan. Most regulators encourage or require their members to use a combination of methods so that no one method is relied upon. Regulators recognize various types of continuing professional development towards meeting their mandatory continuing professional development reporting requirements, where applicable. The categories include the following.

Professional practice: Technical work in one’s area of practice is known to be a significant factor contributing to competency. Opportunities are pursued “on-the-job” to close gaps that have been identified by the individual engineer.

Formal education: Structured courses or programs that may be for credit and may have an evaluation process. These may include seminars, courses, workshops, and university or college courses taught in traditional classroom settings, or remotely using techniques such as correspondence, videos or interactive electronic exchange. Examples include universities, colleges or technical institutes; industry-sponsored courses, programs and seminars; employer-sponsored training programs and structured on-the-job training, and short courses provided by a technical learned society.

Informal education: Activities that are not normally offered by an educational institution or other formalized organization, but expand knowledge, skills or judgment. These include self-directed study (e.g. reading technical journals, books or manuals), attendance at conference workshops and industry trade shows, attendance at technical, professional or managerial meetings and structured discussion of technical or professional issues with peers.

Public, community and professional service: Active participation in professional, technical or managerial associations or societies, enabling interaction with peers and exposure to new ideas and technologies.
The overall purpose of service activity for the engineer is to understand and appreciate the importance of volunteer work as a member of the profession or as a member of the community.

**Contributions to knowledge:** Preparation, publication and/or presentation of papers, journals, codes, standards or patents that expand or develop the technical knowledge base in the discipline.

Professional Development Plan Form