APEGBC
GUIDELINES FOR SUSTAINABILITY

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Preface

These *Guidelines were* developed by members of the Task Force on Sustainability, who, in spite of differing points of view on specific issues, share one common belief: that the concept of Sustainability is fundamental to our future work.

Sustainability is a complex concept that involves environmental, economic, social and technological perspectives. The achievement of sustainability is not easily measured and goals will change with time. For this reason, Members are encouraged to support the overall direction of sustainability in their professional activities.

Sustainability involves everyone. It represents both a challenge and an opportunity for the Association and its Members. It involves Members in a special way since, through training and professional involvement, they are frequently decision-makers or in a position to influence decision-makers.

In May, 1993, Council resolved "that APEGBC make a formal commitment to be involved and active in the issue of sustainability and development". These *Guidelines* are one step in making that commitment a reality.

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Summary

Guidelines for Sustainability

Sustainability can be defined as a process or state that can be maintained indefinitely. Sustainability integrates a viable economy, protection of the environment and social well-being. Sustainable development is development that supports the concept of sustainability.

In order to take sustainability into account in the practice of professional engineering and geoscience, Members should use the following *Guidelines.*

Within the scope of a Member's task and work responsibility each Member, exercising professional judgment, should:

1. **Develop and maintain a level of understanding of the goals of, and issues related to, sustainability.**
2. **Take into account the individual and cumulative social, environmental and economic implications.**
3. **Take into account the short- and long-term consequences.**
4. **Take into account the direct and indirect consequences.**
5. **Assess reasonable alternative concepts, designs and/or methodologies.**
6. **Seek appropriate expertise in areas where the Member's knowledge is inadequate.**
7. **Cooperate with colleagues, clients, employers, decision-makers and the public in the pursuit of sustainability.**

These *Guidelines* are intended to assist Members. Nothing in these *Guidelines* should be interpreted to create any legal duty or obligation owing by a Member to any person.

Introduction

Sustainability can be defined as a process or state that can be maintained indefinitely. Sustainability integrates three closely linked aspects: a viable economy, protection of the environment and social well-being. Sustainable development is development that supports the concept of sustainability.

Initially, the concept of sustainability focused on new "development" and the term commonly used was "sustainable development". It has now, however, been recognized that sustainability has a broader application than just "development"; hence, the reference to "sustainability".

The BC and National Round Tables on the Environment and the Economy and others have developed principles and/or goals for sustainability. The following goals represent a summary of that work:

- Limit our impact on the living world so as to stay within its carrying capacity.
- Protect and, where appropriate, restore the environment, including biological diversity.
- Manage our resources through good stewardship.
- Foster a viable economy.
- Foster social well-being.

The *Code of Ethics* of the Association of Professional Engineers and Geoscientists of BC (Appendix I) states, in part, that Members shall:

- "*act at all times ... with fidelity to the public needs*" (Preamble), and
- "*hold paramount the safety, health and welfare of the public, the protection of the environment* ..." (Section 14 (a) (1))

These provisions of the *Code of Ethics* can be interpreted to mean that Members are required now, without the benefit of these *Guidelines*, to have regard for sustainability in their practice. Disregard for sustainability can be prejudicial to public needs, the safety, health or welfare of the public, or the environment.

As with the *Code of Ethics*, application of the *Guidelines* will always be a matter of professional judgment. In the same manner that Members must weigh issues, such as cost and risk, application of the *Guidelines* will require that Members balance competing interests. This is an essential element of a Member's practice.

Sustainability is directly referenced in the Association's *Guidelines for Professional Excellence:*

> *"Members should demonstrate their commitment to society by maintaining and promoting a high level of professionalism and excellence in their activities.*
>
> *Through their many professional and private activities, Members guide society in making choices. Given that these choices can have far-reaching consequences for society, Members must explore and promote economic, social, political and environmental solutions and directions that promote a broad concept of 'sustainability'."* (p. 4.2)

To put sustainability in context, the world's population has doubled over the past 40 years and industrial activity has increased sevenfold in that same period. The impacts of population growth and related industrial activity are being experienced at global, national, provincial and local levels. There are diverse opinions about the state of our environment and our ability to sustain current growth. There is, however, increasing agreement that current practices have resulted in significant problems today and will continue to do so unless answers to these problems are found very soon.

For many problems of the past, Members of our professions have found answers and have made significant contributions to the economy, the environment and society. For the present and future, the knowledge and training of Members enables them to provide comprehensive information upon which decisions that will lead to sustainability can be made. Taking a leadership role on sustainability will not only benefit society, it will enhance the prestige of the professions. The *Guidelines* will help Professional Engineers and Professional Geoscientists contribute to sustainability.

Guidelines for Sustainability

Within the scope of a Member's task and work responsibility each Member", exercising professional judgment, should:

1. **Develop and maintain a level of understanding of the goals of, and issues related to, sustainability.**

2. **Take into account the individual and cumulative social, environmental and economic implications.**

3. **Take into account the short- and long-term consequences.**

4. **Take into account the direct and indirect consequences.**

5. **Assess reasonable alternative concepts, designs and/or methodologies.**

6. **Seek appropriate expertise in areas where the Member's knowledge is inadequate.**

7. **Cooperate with colleagues, clients, employers, decision-makers and the public in the pursuit of sustainability.**

Application of the Guidelines

The *Guidelines* are advisory in nature and are intended to assist Members. Their use will help to clarify the desirability of proceeding with a Member's task. Nothing in these *Guidelines* should be interpreted to create any legal duty or obligation owing by a Member to any person.

The *Guidelines* are generally applicable to the practice of professional engineering and geoscience, but

are not specific to any one discipline. Members are encouraged to develop checklists for their discipline-specific tasks. An example checklist is presented in Appendix II.

Members must exercise professional judgment in adhering to the *Guidelines* and are not expected to apply them without qualification. It is not anticipated that a project or development will score 100% on all of the *Guidelines*.

While no sustainability goal should be infringed without clear justification, there will be times when compromise and balancing of competing interests is necessary. For example, there may be short-term economic costs in supporting communities or environmental conditions. Declining environmental conditions on a local level may be accepted until social or economic conditions improve in another case.

Amplification of the Guidelines

Scope of a Member's Task

"Within the scope of a Member's task and work responsibility each Member, exercising professional judgment, should ..."

This preamble to the *Guidelines* emphasizes that the *Guidelines* apply **within the scope of a Member's task and work responsibility**.

No individual Member can be expected to assume responsibility for incorporating sustainability in work or tasks beyond that for which the Member is responsible. For example, a Member who is part of a design team cannot be responsible for the entire project if the Member's scope of authority is limited.

The preamble to the *Guidelines* also emphasizes that their application is a **matter of professional judgment**. As in all matters, incorporating sustainability will require balancing competing interests. The *Guidelines* are not intended to remove or limit that need to exercise professional judgment.

While the application of the *Guidelines* is a matter of judgment, consideration of them is not. As Members carry out and perform their tasks, they should consider the goals of sustainability.

Compliance with the *Guidelines* will, in certain instances, require more work and it is anticipated that additional professional fees and costs will be required. It is intended that the *Guidelines* will assist Members to convince clients and employers that such additional services are required as part of the proper practice of professional engineering and geoscience.

GUIDELINE 1

Within the scope of a Member's task and work responsibility each Member,exercising professional judgment, should ***develop and maintain a level of understanding of the goals of, and issues related to, sustainability.***

Sustainability is not a "fixed" condition. Our understanding of sustainability will evolve as our appreciation and understanding of natural, economic and social systems and their interrelationships develop through practice.

Many Members have an understanding of, and support, the individual elements of sustainability, but are not comfortable with relationships between these elements. Achieving sustainability requires an understanding of the complex relationships between each of the three aspects of sustainability.

GUIDELINE 2

Within the scope of a Member's task and work responsibility each Member, exercising professional judgment, should ***take into account the individual and cumulative social, environmental and economic implications.***

In the past, the world could be simply compartmentalized within nations, within sectors (eg, energy, agriculture, trade, etc) and within broad areas (environmental, economic and social). Today, it is increasingly clear that all disciplines, sectors and areas are interrelated. For example, the construction and operation of a riverside industrial plant may produce beneficial products and create jobs but may cause some environmental degradation.

Members can no longer limit their considerations to technical issues. For each task all implications, from negligible to significant, should be considered. Additionally, known and reasonably foreseeable cumulative implications must be considered.

GUIDELINE 3

Within the scope of a Member's task and work responsibility each Member,exercising professional judgment, should ***take into account the short- and long-term consequences.***

Consequences will flow from all stages of a project, including commissioning, operation and decommissioning. All of these should be considered.

GUIDELINE 4

Within the scope of a Member's task and work responsibility each Member, exercising professional judgment, should ***take into account the direct and indirect consequences.***

Decisions for sustainability require a consideration of the consequences of not only the proposed action, but its products and byproducts, including their disposal. Additionally, it is important to consider the full costs and benefits of any proposed action.

GUIDELINE 5

Within the scope of a Member's task and work responsibility each Member, exercising professional judgment, should ***assess reasonable alternative concepts, designs and/or methodologies.***

There is almost always more than one way to perform a task. The purpose of exploring alternatives is to encourage consideration of processes or options that best support sustainability.

A Member is not obliged to assess all concepts, designs and methodologies, only those that are deemed reasonable under the circumstances of the task. In making a determination of what is "reasonable", a Member is expected to exercise professional judgment.

GUIDELINE 6

Within the scope of a Member's task and work responsibility each Member, exercising professional judgment, should ***seek appropriate expertise in areas where the Member's knowledge is inadequate.***

Depending on the scope of a Member's task and responsibility, a Member may identify issues that are relevant and important to the implementation of the goals of sustainability but are beyond the Member's own expertise. In such a case, this *Guideline* requires that the Member take reasonable steps to have a person with the appropriate expertise consider those issues, and provide comment and opinion as part of the information to be considered by the client or other decision-maker.

GUIDELINE 7

Within the scope of a Member's task and work responsibility each Member, exercising professional judgment, should ***cooperate with colleagues, clients, employers, decision-makers and the public in the pursuit of sustainability.***

Members should be proactive in assisting others to work towards sustainability.

Members have qualifications to provide key information, analysis and judgment that others require in order to make informed decisions. While not always required by these *Guidelines* to take the lead in these matters, Members must recognize situations where their silence may be of disservice to the community and must come forward to provide comment and opinion.

This obligation does not require a Member to breach other professional duties such as the duty of confidentiality to a client or employer. Where there is such a conflict, these *Guidelines* require that the Member attempt to resolve the conflict for the benefit of the public by, for example, seeking permission from the Engineer, Geoscientist, client or employer to disclose the confidential information which, in the Member's professional judgment, should be made public as part of informed decision-making.

This *Guideline* also requires that a Member guard against, and take appropriate steps with respect to, use by the public of only part of, or distortions of, his or her engineering or geoscience opinions or

reports in support of a position or decision where full and accurate disclosure might lead to a different conclusion.

Finally, this *Guideline* highlights the professional requirement that Members have a duty to exercise their professional judgment objectively and evenly, and not in a predetermined attempt to support a given conclusion or result. Honest differences of technical opinion among Members are to be anticipated because the matters are not subject to easy analysis. Open debate among such Members may be healthy and helpful to decision-makers, but care must be taken not to be too closely aligned with a client or employer. The public and the Association will best be served if Members maintain objectivity.

Appendix I -- Code of Ethics

The purpose of the *Code of Ethics* is to give general statements of the principles of ethical conduct in order that Professional Engineers and Professional Geoscientists may fulfill their duty to the public, to the profession and to their fellow members.

Professional Engineers and Professional Geoscientists shall act at all times with fairness, courtesy and good faith to their associates, employers, employees and clients, and with fidelity to the public needs. They shall uphold the values of truth, honesty and trustworthiness and safeguard human life and welfare and the environment. In keeping with these basic tenets, Professional Engineers and Professional Geoscientists shall:

1. hold paramount the safety, health and welfare of the public, the protection of the environment and promote health and safety within the workplace;

2. undertake and accept responsibility for professional assignments only when qualified by training or experience;

3. provide an opinion on a professional subject only when it is founded upon adequate knowledge and honest conviction;

4. act as faithful agents of their clients or employers, maintain confidentiality and avoid a conflict of interest but, where such conflict arises, fully disclose the circumstances without delay to the employer or client;

5. uphold the principle of appropriate and adequate compensation for the performance of engineering and geoscience work;

6. keep themselves informed in order to maintain their competence, strive to advance the body of knowledge within which they practice and provide opportunities for the professional development of their associates;

7. conduct themselves with fairness, courtesy and good faith towards clients, colleagues and others, give credit where it is due and accept, as well as give, honest and fair professional comment;

8. present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded;

9. report to their association or other appropriate agencies any hazardous, illegal or unethical professional decisions or practices by engineers, geoscientists, or others; and

10. extend public knowledge and appreciation of engineering and geoscience and protect the profession from misrepresentation and misunderstanding.

Appendix II -- Example Checklist

Members must apply professional judgment as to the relevancy and application of the *Guidelines* and are encouraged to develop their own checklist as a function of their unique discipline and the specific task. Members may be responsible for only a part, or the whole, of a particular project. A checklist can be used to determine, to the best of each individual's ability, the extent to which a particular task meets the goals of sustainability. The following represents **an example checklist** to be developed by a Professional Engineer or Geoscientist to comply with the *Guidelines* and apply the goals of sustainability. The checklist addresses the assessment, design optimization (feasibility), commissioning, operation and decommissioning stages.

Assessment

1. Describe the proposed development, its products and byproducts.

2. Describe the reason or need for the proposal.

3. Prepare a "sustainability assessment" of the development, its products and byproducts including:

   - technical, economic, social and environmental impacts at each stage (commissioning, operating and decommissioning);

   - all beneficial and adverse effects, their probability, duration and degree of reversibility;

   - whether impacts are of local or broader significance; and

   - an appraisal of fiscal and non-fiscal costs and benefits and their degree of certainty.

4. Consider and assess the cumulative impacts of the development.

Design Optimization

5. Consider alternatives and compare with the effects of the proposed development.

Commissioning and Operation

6. Describe design parameters introduced to meet sustainability goals and how they will be monitored.

Decommissioning

7. Describe measures that will ensure that development, operation and decommissioning will address the goals of sustainability.