

MODULE ENM1100: CONSERVATION CHALLENGE

Level: Introductory

Theme: Management and Conservation

Prerequisite: None

Module Description: Students examine relationships between energy and mineral development and the environment, and they propose individual and shared actions that foster environmental stewardship.

Module Parameters: Access to government, industry and community organizations responsible for sustainable energy/mineral development (e.g., Natural Resources Canada, Alberta Energy, Alberta Environmental Protection, Alberta Research Council, Alberta Energy and Utilities Board, Alberta Oil Sands Technology and Research Authority, Petroleum Communication Foundation).

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> describe ways in which energy or mineral development may affect the environment 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> completing a research project on the environmental impacts of an energy or mineral development. <i>Research to address:</i> <ul style="list-style-type: none"> land use practices soil, water and air quality factors waste/emission control impact on wildlife and natural habitat site reclamation practices compliance with environmental policy. <p><i>Assessment Tool</i> <i>Research Process: Environmental Impacts, ENM1100-1</i></p> <p><i>Standard</i> <i>Complete all components of research to a standard of 1 on the rating scale</i></p>	<p>25</p>

MODULE ENM1100: CONSERVATION CHALLENGE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> identify trends in the consumption of an energy or mineral resource, and explain the objectives of a conservation strategy 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> graphs constructed to illustrate consumption patterns and trends within each of Alberta’s residential, commercial, industrial and transportation sectors. <p><i>Assessment Tools</i> <i>Assessment Criteria: Graphs, ENMGRA Alberta in the Global Energy Spectrum, Alberta Energy Information Centre Energy Alberta 1996, Alberta Energy and Utilities Board</i></p> <p><i>Standard</i> <i>Construct each graph to a standard of 1 on the rating scale</i></p> <ul style="list-style-type: none"> developing and presenting a conservation strategy for an energy or mineral resource. Strategy to address: <ul style="list-style-type: none"> – definitions and examples of conservation and preservation – a rationale for conservation of the resource – a plan for action, based on reduced consumption, energy alternatives and/or material substitutes – supporting agencies and/or structures. <p><i>Assessment Tool</i> <i>Assessment Criteria: A Conservation Strategy, ENM1100–2</i></p> <p><i>Standard</i> <i>Develop and present the conservation strategy to a standard of 1 on the rating scale</i></p>	<p>25</p>

MODULE ENM1100: CONSERVATION CHALLENGE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> propose personal and shared actions that foster conservation and responsible use of an energy or mineral resource 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> maintaining a journal of lifestyle practices that affect an energy or mineral resource, inferences regarding the potential impact of each practice on the resource, and ideas for environmental citizenship. Each journal entry to involve reflection on: <ul style="list-style-type: none"> needs versus wants consumerism use of leisure time conservation ethics. <p><i>Assessment Tool</i> <i>Reflection Guide for Environmental Responsibility/Citizenship, ENMREF Guide to Inferences: Personal Impact on Resources, ENM1100–3</i></p> <p><i>Standard</i> <i>Complete 10 journal entries; address criteria for reflection to a standard of 1 on the rating scale</i></p> <ul style="list-style-type: none"> given a current issue regarding societal use of an energy or mineral resource, negotiating and debating the issue while assuming the role of one or more stakeholder groups. <p><i>Assessment Tool</i> <i>Negotiation and Debate, ENMNEG–1</i></p> <p><i>Standard</i> <i>Address criteria in negotiation/debate to a standard of 1 on the rating scale</i></p> <ul style="list-style-type: none"> a proposal (oral, written or visual) that suggests one personal action and one leadership role in relation to resource conservation and environmental citizenship. <p><i>Assessment Tool</i> <i>Assessment Criteria: Proposal for Environmental Action, ENMPRO</i></p> <p><i>Standard</i> <i>Complete each proposal to a standard of 1 on the rating scale</i></p>	<p>50</p>

MODULE ENM1100: CONSERVATION CHALLENGE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • a personal contract expressing commitment to five or more lifestyle practices that foster responsible use of an energy or mineral resource. <p><i>Assessment Tools</i> A Primer on Environmental Citizenship, <i>Environment Canada</i> Sample Conservation Contract, ENM1100–4</p> <p><i>Standard</i> Complete all parts of the “Conservation Contract”</p> <ul style="list-style-type: none"> • a letter written to a management official expressing support or concern regarding an energy or mineral development, and critique of the response received. <p><i>Assessment Tool</i> <i>Assessment Criteria: Letters of Support or Concern, ENMLET</i></p> <p><i>Standard</i> Complete the letter to a standard of 1 on the rating scale</p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Environmental Impact</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify environmental factors related to the extraction, processing and use of an energy or mineral resource; e.g.: <ul style="list-style-type: none"> – land use practices – soil, water and air quality – wildlife habitat and natural areas • research and make predictions regarding environmental change at global levels caused by resource development 	<p>Discuss the impact of transportation corridors on rural and/or native villages, wildlife and other development projects.</p> <p>For example,</p> <ul style="list-style-type: none"> • deforestation • acid deposition • greenhouse effect.

MODULE ENM1100: CONSERVATION CHALLENGE (continued)

Concept	Specific Learner Expectations	Notes
Environmental Impact (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify short- and long-term benefits and costs related to the extraction, processing and use of an energy or mineral resource • explain strategies that enable an energy or mineral industry to protect the environment; e.g.: <ul style="list-style-type: none"> – waste/emission control – soil, water and air quality sampling – wildlife/habitat protection – site reclamation – compliance with environmental policy – research and development. 	<p>Research an environmental “success story” within an energy or mineral industry.</p>
A Conservation Strategy	<ul style="list-style-type: none"> • identify demands placed on an energy or mineral resource in Canada and Alberta; e.g.: <ul style="list-style-type: none"> – residential – commercial – industrial – transportation • explain patterns and trends in consumption and use of the resource • provide justification for conservation of the resource; e.g.: <ul style="list-style-type: none"> – declining reserves – environmental impact • describe major aspects of conservation in relation to the resource; e.g.: <ul style="list-style-type: none"> – using less – relying more on alternatives or substitutes • identify specific goals of departments and agencies involved in the conservation of the resource; e.g.: <ul style="list-style-type: none"> – local – national – international • relate specific energy or mineral conservation practices to the resource saved and subsequent benefits to society. 	<p>Consider:</p> <ul style="list-style-type: none"> • sustainable development • economic diversification/expansion <p>Compare/contrast philosophies of conservation and preservation.</p> <p>Discuss the benefits of relying more on energy alternatives/material substitutes, and conserving nonrenewable resources for their ideal use and less damage to the environment.</p> <p>Identify and explain current legislation pertinent to the recycling industry.</p>

MODULE ENM1100: CONSERVATION CHALLENGE (continued)

Concept	Specific Learner Expectations	Notes
<p>Personal and Shared Actions</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • explain how personal attitudes, actions and lifestyles may affect an energy or mineral resource; e.g.: <ul style="list-style-type: none"> – conservation ethic – energy use practices – housing and transportation choices • plan and conduct a school-wide campaign to increase awareness of economic, social and environmental perspectives regarding our use of energy • debate an issue regarding the impacts of lifestyle on an energy or mineral resource; e.g.: <ul style="list-style-type: none"> – conduct research – develop a position – participate in debate • propose personal strategies for using an energy or mineral resource which foster the attainment of social, economic and environmental goals; e.g.: <ul style="list-style-type: none"> – personal actions – leadership roles • establish consensus regarding a local issue involving the development and/or use of an energy or mineral resource; e.g.: <ul style="list-style-type: none"> – conduct research – generate alternatives – agree to a workable solution • identify constructive ways in which individuals can influence public decisions that affect an energy or mineral resource; e.g.: <ul style="list-style-type: none"> – voting – lobbying – seeking office – supporting compatible interest groups. 	<p>Compile a personal inventory of material possessions/daily practices that affect an energy or mineral resource.</p> <p>Distinguish between “needs” and “wants” as reflected through an inventory of consumption.</p> <p>Invite a community member to moderate the debate.</p> <p>Consider:</p> <ul style="list-style-type: none"> • recycling and reusing • reducing • transportation alternatives.