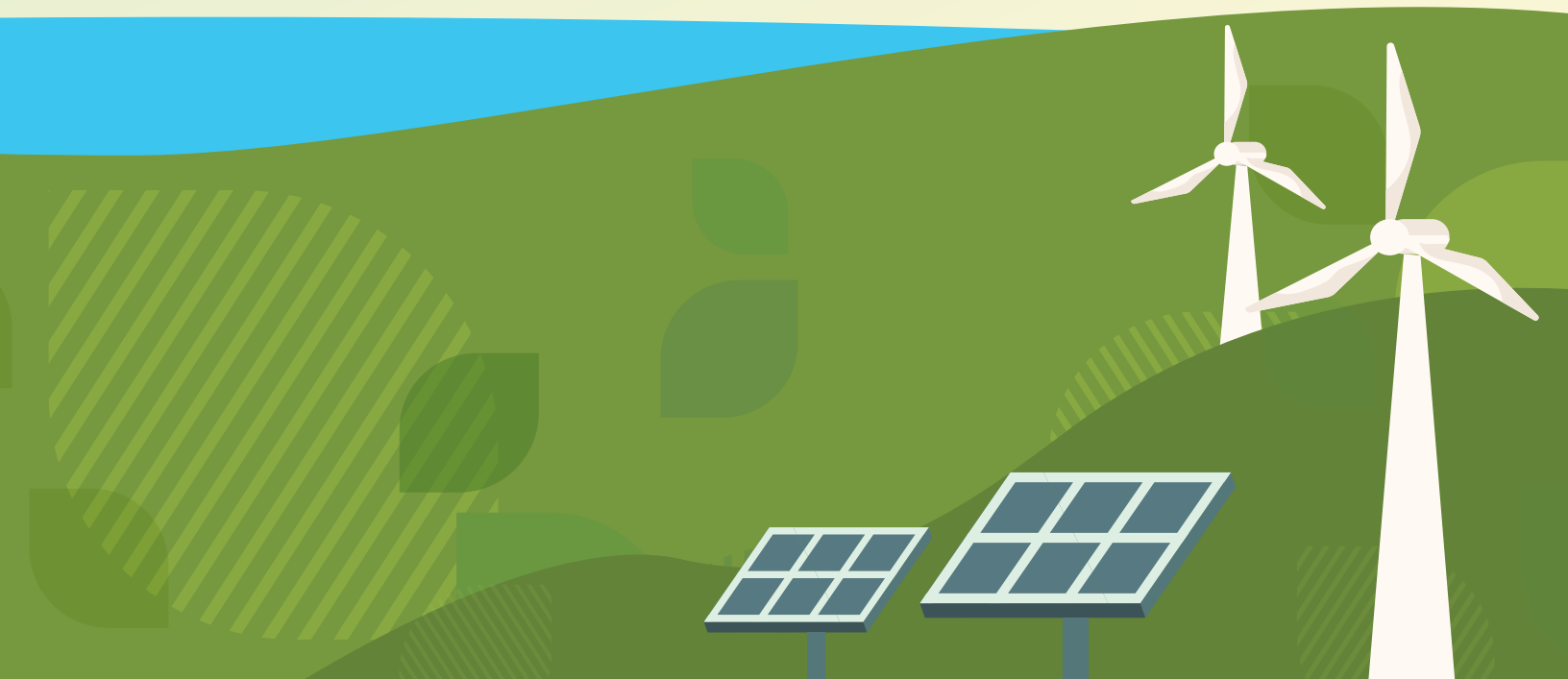




CLEAN ENERGY REVOLUTION

Challenge Guidebook



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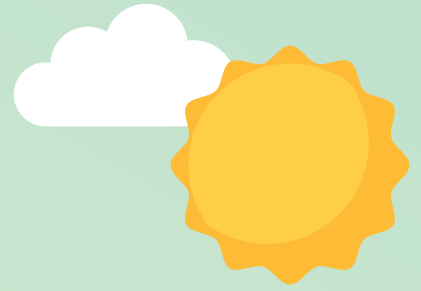
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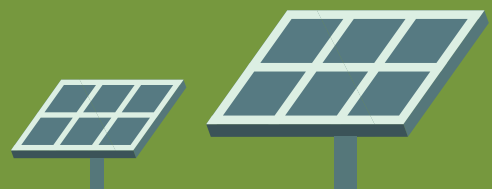
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What is the Clean Energy Revolution?

Program Highlights

- Skill development and building for middle and high school learners
- Career pathway development through industry expert mentors
- Healthy competition with rewards for both the participating learners and schools
- Real-world application of the clean energy sectors in Nova Scotia
- Learners can explore the clean energy sectors through the curriculum, across the curriculum, or through extra-curricular opportunities, allowing for easy integration into schools.
- Learners can create projects that explore concepts through STEAM, social sciences etc. or a combination of some or all, allowing them to build on their own interests and strengths.



Introduction

Canada is undergoing an energy transition across the country, and Nova Scotia is no exception. The Generation Energy report describes this in the following way:

“An energy transition is underway – and will continue to roll out over the course of a generation, roughly between now and 2040. It is the greatest shift of this kind the world has seen in generations. For nations like Canada that embrace this shift, it can represent a big change for the better. This transition has the potential to change how you switch on the lights, heat your home and get to work – maybe even the kind of work you do when you arrive there.”

Nova Scotia has been actively leading this energy transition for over a decade and continues to be a leader in the reduction of greenhouse gas emissions. One of many success stories in the province is our transition to renewable and cleaner energy sources.

The Department of Natural Resources and Renewables is leading initiatives that focus on the energy transition through the everyday, real-world development of the clean energy sector in Nova Scotia. A key aspect of addressing these challenges and building capacity within the Province includes a policy focus on raising energy literacy for Nova Scotians and building skills in youth for the future of our energy sector.

Meanwhile, learners today are facing an ever-changing landscape, and an environment where acquisition of key skills and competencies, such as creativity and innovation, critical thinking and technological fluency, become central for success in modern society.

The Clean Energy Revolution design challenge will provide opportunities for youth to develop skills, to become problem solvers and innovators in solving real-world environmental problems through relevant and authentic engagement. This challenge will meet the needs of today's learners with authentic learning experiences of STEAM subjects by engagement with the engineering design process and project management, teamwork and hands on applied learning.

This unique project is truly cross-curricular, requiring integration and application of topics across the curriculum, and provides an opportunity to carry out research, to analyze problems using scientific concepts and mathematics skills, to create and solve problems using technology, and to communicate their work to a broader audience.

Furthermore, the Nova Scotia Department of Education and Early Childhood Development have identified in the 2015 Education Action Plan that partnering with mentors in local business community can provide key experiences for students. These experiences foster an environment for authentic engagement in learning about STEAM subjects and skills of modern society and expanding awareness of careers and mentorship.

¹ Generation Energy Council Report. Canada's Energy Transition: Getting to our Future Together (2018). http://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/CouncilReport_june27_English_Web.pdf

² Province of Nova Scotia, Department of Education and Early Childhood Development. The 3 Rs: Renew, Refocus, Rebuild - Nova Scotia's Action Plan for Education. (2015). <https://www.ednet.ns.ca/docs/educationactionplan2015en.pdf>

The Clean Energy Revolution

Goal: Advance learners (grades 6 to12) awareness and understanding of the causes, consequences and clean energy solutions to climate change in Nova Scotia. This challenge will:

- Support youth who are eager to become leaders and require support to do so;
- Build skills and knowledge in innovation and design thinking in learners; and
- Improve energy literacy skills and highlight career pathways for youth in clean energy fields.

Objectives: : Youth will work collaboratively within teacher-led teams and will liaise with partners across government, non-governmental organizations, and academia to encourage critical thinking and creativity. Youth will examine how the clean energy sector can offer possible solutions address to address climate change mitigation in Nova Scotia. The real world application of the clean energy industry in Nova Scotia offers learners opportunities to link classroom learning to real-world applications, concepts and challenges, and to develop skills in problem-solving, technological fluency, project management, teamwork and communication.

The Clean Energy Revolution challenge will:

- Create connections between learners, teachers and schools and industry experts through mentorships allowing for learning and development opportunities through transfer of information, guidance, skill and capacity building, promoting links to future job and career pathways.
- Encourage the development of critical and creative thinking, problem-solving and leadership skills through the exploration of clean energy as one of the solutions to climate change for the province of Nova Scotia.
- Advance energy literacy through the exploration of the clean energy industry in Nova Scotia and creating connections to potential jobs and career opportunities.
- Encourage participation of students and teachers through curriculum integration for focused, in-depth projects exploring the clean energy industry by class subject area or as an extra-curricular exercise of interdisciplinary concepts. Students will explore the clean energy sector concepts stated in the Challenge Statement and through problem-solving and critical and creative thinking that will offer an innovative solution for the clean energy industry.

Rationale: The challenge enables learners to make connections to real-world applications of clean energy and climate change in Nova Scotia. Currently, clean energy is a growing sector in Nova Scotia that offers solutions to a growing set of complex problems presented by climate change. Curriculum in Nova Scotia is undergoing a renewal process. This initiative will build upon the renewal and offer advanced opportunities for schools, teachers, and students who choose to participate. Improving energy literacy throughout the province is a goal of the Department of Natural Resources and Renewables; this initiative can not only accomplish this goal, but it may also harness the creativity of young minds, engaging their participation in developing innovative solutions to today's challenges.

Clean Energy Revolution Statement

To protect our environment and meet our provincial, national and international climate change goals, Nova Scotia is moving away from coal-based electricity and toward the use of cleaner fuels that produce less carbon emissions, such as natural gas and renewable energy sources. Nova Scotia is a leader in energy efficiency and conservation, and we have an abundance of renewable resources that we can develop responsibly. Our opportunity to increase the use of renewable energy to generate electricity is significant.

Clean energy is one of many solutions to reducing greenhouse gas emissions and addressing climate change in Nova Scotia. The development of the clean energy sector is a shift away from fossil fuel energy sources such as coal, oil, and gas. This shift can create economic, cultural, social, and environmental benefits. However, a shift of this magnitude creates the need for a meaningful dialogue on Nova Scotia's energy future. It requires an understanding of our energy history and the future of cleaner, green energy in Nova Scotia as an important part of this dialogue.

No single resource can supply all our energy needs. Fossil fuels will continue to play a role in our energy needs, but we can reduce that role and create a diversity of energy resources, which include renewable, storage, clean electricity imports, as well as reduce our energy use through efficiency and conservation efforts.

Introduction & Challenge

Thank you for participating in the Clean Energy Revolution Challenge!

Nova Scotia's future will be stronger with innovators like your learners. This challenge asks your learners to imagine and present a solution to one of the following issues:

1. Clean energy technology development that works in Nova Scotian contexts and conditions
2. Addressing energy poverty and energy affordability for low-income households in Nova Scotia
3. Innovating with energy technology that works with nature and with Nova Scotian ecosystems
4. Changing behaviours, habits, and actions of energy users
5. Another clean energy related issue in Nova Scotia

Together, our responses to these problems, and others like them, will shape how Nova Scotia continues to thrive in the future. This is your opportunity to shape one part of how you and future generations of Nova Scotians would like to live, starting right now!

With their team, they will develop a solution to address one of the above issues. They have two options to show your solution idea.

- A. A model, prototype design or a demonstration of a solution or product concept
- B. A business plan for a social enterprise

The project may address a clean energy solution in one or more of the fields in the Nova Scotian energy sector currently be explored and implemented:

- Wind
- Marine Renewable Energy
- Hydropower
- Geothermal
- Solar
- Biomass
- Energy storage
- Low-carbon transportation
- Electrification
- Active transportation
- Energy efficient buildings: Including net zero, passive house, beyond the National Energy Code for Buildings, and existing buildings
- Energy conservation and load shifting technology
- Another cutting-edge clean energy solution

Eligibility

- The competition is open to teams of students in grades 6 to 12, including those who are homeschooled
- Student members may be part of an extracurricular club and not necessarily attend the same school.
- The team must be lead by a teacher or adult guide (parent, Scout or Girl Guide, 4H or cadet leader, etc.).
- The maximum group size is four students. In light of Covid-19 health protocols, submissions from individual students will be permitted.
- A student may not be on multiple teams.

Prizes and awards

Finalists are eligible to win cash prizes for themselves and their schools in the following three categories: Grades 6-7 , 8-9 and 10-12. Recognition awards will also be given in special categories – most creative, best presentation, etc. Prizes are as follows:

	Student	School or Organization
1 st	\$200	\$1000
2 nd	\$100	\$500
3 rd	\$50	\$250

Timeline

Registration opens: November 3, 2021

Registration and project proposal due: March 11, 2022

Written component and/or model due: April 8, 2022

Finalists chosen and notified: April 22, 2022

Clean Energy Revolution Event (presentations from Finalists): May 2022

Rules

- Schools or organizations must register and submit their proposal for the competition by midnight (AST) on **March 11, 2022**.
- If deadlines are missed, points may be deducted from the final score.
- Judges will evaluate projects in accordance with the rubrics, and the score a judge assigns is final.
- All students on the team must participate.
- Harassment or bullying in any form will not be tolerated.
- Any complaints or disputes must be lodged by the team adult leader.
- A person who volunteers as a judge during the competition may not also serve as a mentor or adult leader for a team during the competition cycle.
- Expenses incurred during the innovation process will be the responsibility of the individual teams.
- Presentation aids such as slideshows and videos must be submitted in advance to ensure compatibility with technology available at the Clean Energy Revolution Event (for finalists).

Scoring

The projects will be evaluated by judges from a range of backgrounds: people working in the clean energy industry, in government, and educators. Scoring will be based on innovation, design, utility and presentation of the final product.

Registration	10%
Proposal	15%
Final Product	75%
Design Process Description	
Research	
Product Utility & Context	
Overall Presentation and Quality	

The rubrics used for scoring are included in the Appendices of this guidebook for reference and use.

Educator Resources

Introduction to Educator Resources

Welcome to the Clean Energy Revolution and thank you for participating! The Clean Energy Revolution is a cross curricular project-based learning activity that is designed to be integrated as a class project or completed as an extra-curricular activity. Depending on the topic and direction the learner(s) choose(s), the Challenge can be used to complement almost any middle or high school course. The resources contained in this guidebook are optional but may provide a jumping-off point for project management, the design process, and evaluation of the components.

Mentorship

An important outcome of this challenge is the creation of connections between students, teachers, and schools with industry experts through mentorships. Mentorship encourages the transfer of information, guidance, skill and capacity building, and facilitates learners' transition to job and career pathways.

A mentor is a professional in Nova Scotia's energy industry, who has important subject matter expertise and experience in dealing with the unique challenges of the Nova Scotian landscape. This person can act as a resource for information, advice or expertise, providing skills or resources. Suggestions of available mentors for the Challenge will be provided by contacting representatives at Clean (EnergyRevolution@cleanfoundation.ca), or if groups have ideas for potential mentorships, they may pursue that avenue as well. It is expected that you may contact this person several times over the process of this challenge.

Checklists for Educators

As a project-based, student-led challenge, this challenge will help develop leadership, problem-solving, and creative thinking skills in young innovators. This checklist is a compilation of tasks to which the educator may refer that will ensure a successful Clean Energy Revolution Challenge experience for all involved.

Getting Started:

- o Read the handbook to get a sense of the scope of the project, deadline and deliverables, and who you can get in touch with if you have any questions.
- o Get in touch with a Challenge co-ordinator if you have any questions or concerns.
- o Have your team fill in a registration form and submit this along with the project proposal by email before midnight (AST) on **March 11, 2022**.
- o Work with students to create a preliminary schedule, making sure time is allotted for contacting mentors, phases of the design process, and preparing for the Challenge Event.
- o Provide copies of any forms, graphic organizers, or rubrics from the Guidebook that will be helpful to your team.
- o Provide some ideas for project management tools to student team to help them effectively plan and communicate.
- o Assist students during the brainstorming and project proposal phase to ensure they are within the Challenge specifications.
- o Assist in initiating contact with an industry mentor, if necessary.
- o Oversee the design process with each team.

Throughout Development

- o Check in with students to make sure they are on track with timelines and team communication.
- o Assist in obtaining materials if necessary.
- o Encourage team to think critically, revisit design process, contact mentors when necessary.

Project Management Tools for Students

Guiding students through the project management process will ensure they are meeting their deadlines and charting their progress. There are many ways to manage projects, but the underlying components are typically:

1. Set goals and track progress
2. Break tasks down and assign deadlines
3. Implement specific strategies (i.e. the design process)
4. Iteration/feedback loop: adjust and problem solve

Project management software helps with planning and managing deadlines within teams. Each team and project will benefit from different approaches to project management software so it is beneficial to have a variety of tools available from which students can choose. The following resources may be of use:

Trello

Trello is a free project management tool that can be used by students to collaborate by sharing an interactive project board where tasks may be moved between different columns (such as to-do, in progress, and finished). It can be integrated with Google Docs and real-time progress monitored daily.

Padlet

Padlet is a digital whiteboard on which users can post text, images, videos, or links. Users can collaborate, create connections between posts, and reply to posts to create discussion threads.

Microsoft Planner

Planner is a paid solution included in Office 365. It has similar features to Trello, but is tightly integrated within the Office ecosystem so files and schedules can be seamlessly synchronized across a team.

Google Classroom

Google Classroom is a cross-platform (Android, IOS, computer, tablet) learning management system that can be used for project management. Deadlines can be posted with automatic reminders and notifications for students. This also allows teachers to view documents that learners work on in real-time, and provide feedback, regardless of the platform used.

Gantt Charting in a Spreadsheet

Spreadsheet software can be used to keep track of projects in a Gantt chart or project timeline format. Templates are available to simplify the creation process. Students will be able to see project timelines and responsibilities as they extend toward deadlines.

Preparing for Presentation (Finalists)

- o Review presentation rubrics and rules with team.
- o Assist with software and other technology needs for presentation.
- o Practice presentation with team and offer feedback for improvement.
- o Submit presentation slideshow or video by deadline indicated within Finalist information package.

Challenge Event (Finalists)

- o RSVP to Challenge event.
- o Make sure students have all their equipment, visual aids, and required materials for their presentation.
- o As the Challenge Event will be virtual, you could involve other classes and students at the school to stream the event from their classrooms.
 - Ensure technology needs are satisfied prior to the event. (Test your webcam and speakers)

Learner Facing Documents

The learner's guide is organized into 9 steps. A self guiding checklist allows learners and groups to work independently and concurrently on different ideas as optional graphic organizers create a scaffold onto which they can design their own solution. Learners will decide if their solution will be a model/prototype (A) or if they will create a business plan for a social enterprise (B). The graphic organizers are common for both except for Step 7 which splits into the individual solution types. Learners complete the challenge by creating a final product to submit to the judges.

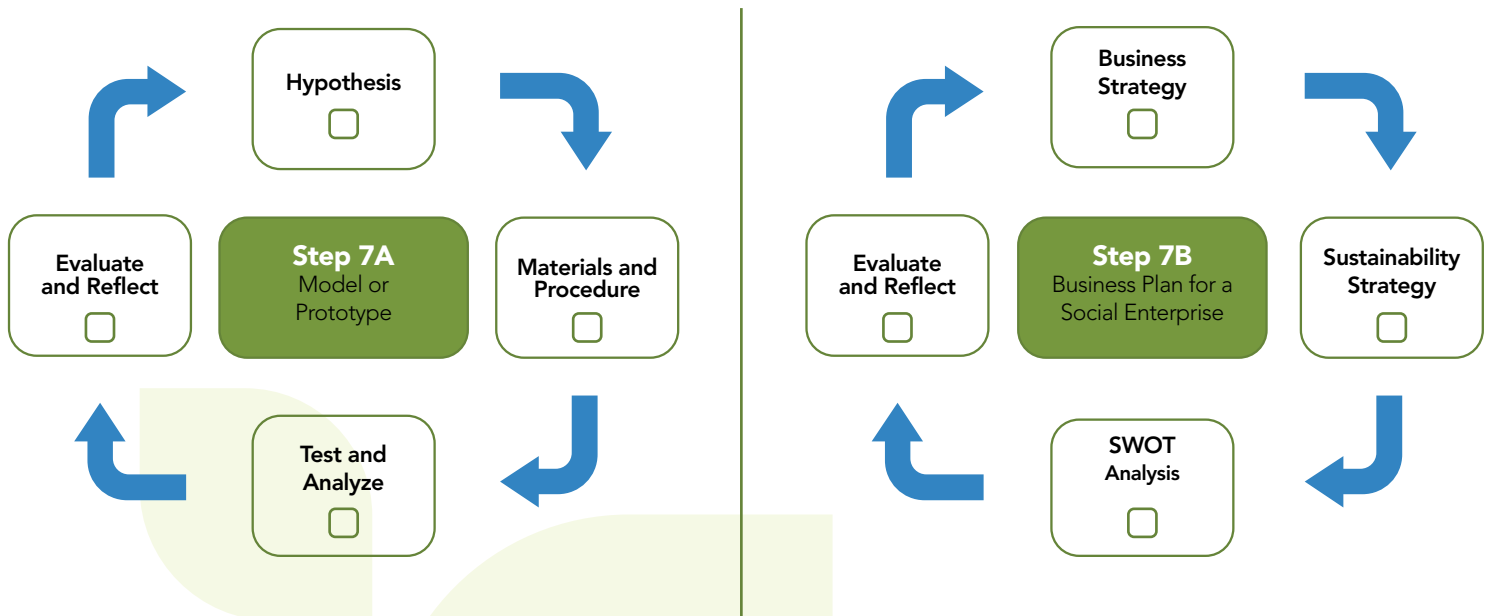
Checklist for learners (from learner's guide found in Appendix G):

Completing the Challenge: Step by Step Learner's Checklist

- ☐ **Step 1:** Complete Registration
- ☐ **Step 2:** Select the Problem you Choose to Improve
- ☐ **Step 3:** Research Possible Solutions
- ☐ **Step 4:** Brainstorm Possible Solutions and Set Realistic Goals
- ☐ **Step 5:** Select a Design for Your Idea!
- ☐ **Step 6:** Proposal
- ☐ **Step 7:** If you are creating a model or prototype, go to **Step 7A**.

OR

if you are building a business plan for a social enterprise, go to **Step 7B**.



- ☐ **Step 8:** Refine the design of your solution
- ☐ **Step 9:** Submit your Final Product

Appendix A: Registration Form

Registration opens November 1, 2021. Project Proposals are due by March 11, 2022. Please submit forms online at clean.ns.ca/clean-energy-revolution, or send to EnergyRevolution@cleanfoundation.ca.

Project Name:	
Name of Student	Grade
1.	
2.	
3.	
4.	
School (s) or indicate if homeschooled	
Name(s):	
Address(es):	
Co-operating Adult	
Name:	
Phone Number (s):	
Email Address:	
Relationship to youth in group (teacher, parent, guardian, leader, etc.):	

Appendix B: Project Proposal

Project Proposals are due by March 11, 2022. Please submit forms online [here](#) or send to EnergyRevolution@cleanfoundation.ca.

Project Name:
Team Members:
Co-operating Adult:
Name of School(s):
Industry Mentor (if known):
Estimated Completion Date:
Project Description (please include additional pages, if necessary)
Define the Problem your Innovation will Solve
Specific Goals
Target Audience
Anticipated Benefits
Outline of Team Member Tasks

EVALUATING THE PROJECT PROPOSAL

Category	Specification	✓ Complete	✓ Incomplete
Description of the product or business plan for a social enterprise	The focus of the project is clear		
	The project is within the Challenge specifications		
Target Audience	Students have identified the individuals, groups, communities who will benefit from their project		
	Included rationale as to why target audience was chosen		
Goal of Project	Goal of project is clearly stated		
	Project has measurable outcomes		
Benefits	Anticipated benefits of project are listed		
Tasks	General overview of project broken down into several major tasks		

Appendix C: Final Product Submission Rubric

FINAL PRODUCT SUBMISSION				
Category	Below Standard-Poor	Approaching Standard-Fair	At Standard-Good	Above Standard-Excellent
Learners are expected to...	1	2	3	4
Adherence to Revolution Challenge Specifications <i>... become self-aware and self-directed. (PCD)</i> <i>... set and pursue goals. (PCD)</i>		<ul style="list-style-type: none"> Project fails to meet some Challenge specifications 		<ul style="list-style-type: none"> Project falls within Revolution Challenge specifications
Defining the Revolution Challenge <i>... make unexpected connections. (CI)</i> <i>...analyze cultural, economic, environmental and societal issues. (CZ)</i> <i>...analyze and evaluate evidence, arguments and ideas. (CT)</i>	<ul style="list-style-type: none"> May just “follow directions” without understanding the purpose for innovation or considering the needs and interests of the target audience 	<ul style="list-style-type: none"> Beginning to understand the goal or purpose of the innovation and target audience 	<ul style="list-style-type: none"> Understands the basic purpose for innovation but does not thoroughly consider the needs and interests of the target audience 	<ul style="list-style-type: none"> Understands the purpose driving the process of innovation (Who needs this? Why?) Develops insight about the particular needs and interests of the target audience
Developing and Revising Ideas and Products <i>... generate new and dynamic ideas, techniques and products. (CI)</i> <i>...analyze and evaluate evidence, arguments and ideas using reasoning systems. (CT)</i> <i>... reflect critically on the thinking process. (CT)</i> <i>... make decisions, judgements and solve problems. (CZ)</i> <i>... appreciate the creative and innovative work of others. (CI)</i> <i>... participate in critical dialogue by listening, reading and viewing. (COM)</i>	<ul style="list-style-type: none"> Stays within existing frameworks; does not use idea-generating techniques to develop new ideas for product(s) Selects one idea without evaluating the quality of ideas Does not ask new questions or elaborate on the selected idea Reproduces existing ideas; does not imagine new ones Does not consider or use feedback and critique to revise product 	<ul style="list-style-type: none"> Develops some original ideas for product(s), with emerging idea generating techniques Evidence of emerging evaluation of idea quality Asks a few new questions but does not apply them to ideas Reproduces existing ideas; does not imagine new ones Does not consider or use feedback and critique to revise product 	<ul style="list-style-type: none"> Develops some original ideas for product(s), but could develop more with better use of idea-generating techniques Evaluates ideas, but not thoroughly before selecting one Asks a few new questions but may make only minor changes to the selected idea Shows some imagination when shaping ideas into a product, but may stay within conventional boundaries Considers and may use some feedback and critique to revise a product, but does not seek it out 	<ul style="list-style-type: none"> Uses idea-generating techniques to develop several original ideas for product(s) Carefully evaluates the quality of ideas and selects the best one to shape into a product Asks new questions, takes different perspectives to elaborate and improve on the selected idea Uses ingenuity and imagination, going outside conventional boundaries, when shaping ideas into a product Seeks out and uses feedback and critique to revise product to better meet the needs of the intended audience
RESEARCH AND RESOURCES				
Building Knowledge, Understanding, and Skills & Identify Sources of Information <i>... generate new and dynamic ideas, techniques and products. (CI)</i> <i>... appreciate the creative and innovative work of others. (CI)</i> <i>...analyze and evaluate evidence, arguments and ideas. (CT)</i>	<ul style="list-style-type: none"> Uses only typical sources of information (website, book, article) Sources limited to 1- 3 	<ul style="list-style-type: none"> Uses typical sources of information but investigates more than 3 sources 	<ul style="list-style-type: none"> Finds one or two sources of information that are not typical Offers new ideas, but stays within narrow perspectives Research and resources included 	<ul style="list-style-type: none"> In addition to typical sources, finds unusual ways or places to get information (adult expert, community member, business or organization, literature) Promotes divergent and creative perspectives Research and resources presented in a grade level appropriate way

PRODUCT UTILITY

Solves a real-world clean energy problem.

... generate new and dynamic ideas, techniques and products. (CI)

... contribute to the quality and sustainability of their environment and community. (CZ)

... use and apply technology to collaborate, communicate, create, innovate and solve problems. (TF)

- Solves a problem but not related to scope of clean energy innovation
- Solves a problem related to clean energy but the solution is not practical to apply
- Solves a problem related to clean energy and solution could be applied with restructuring
- Solves real world clean energy problem that is ready to implement

Solution fits Nova Scotia clean energy context

... generate new and dynamic ideas, techniques and products. (CI)

...contribute to the quality and sustainability of their environment and community. (CZ)

... use technology in a way that is legal, safe, ethically responsible and that supports and enhances learning. (TF)

- Product/ solution would not work in Nova Scotia clean energy context
- Not useful or valuable to the intended audience/user
- May not solve cer-tain aspects of the defined problem or exactly meet the identified need for intended audience
- Unclear if product would be practical or feasible to the intended audience
- Useful and valuable to some extent; it may not solve certain aspects of the defined problem or exactly meet the identified need
- Practical, feasible to intended audience
- Excellent novel product or plan that is not currently available and meets the identified need
- Valuable to the intended audience

OVERALL PRESENTATION AND QUALITY

Professionalism and Quality Grade level teamwork, communication, quality of product at all stages, mentor relationship, etc.

... appreciate the creative and innovative work of others. (CI)

...understand and appreciate how culture contributes to work and personal life roles. (PCD)

... participate in critical dialogue by listening, reading and viewing. (COM)

...interpret and express themselves through a variety of media. (COM)

- Learners occasionally behaved professionally and/or maintained a good level of quality of their work
- Learners sometimes behaved professionally and/ or maintained a good level of quality of their work
- Learners often behaved professionally and/or maintained a good level of quality of their work
- At all times, learners behaved professionally and maintained an exemplary level of quality of their work

Appendix D: Evaluating the Clean Energy Revolution

Finalist Presentation

EVALUATING CLEAN ENERGY REVOLUTION FINALIST PRESENTATION

Category	Below Standard-Poor	Approaching Standard-Fair	At Standard-Good	Exceeds Standard-Excellent
<i>Learners are expected to...</i>	1	2	3	4
Time Limit	<ul style="list-style-type: none"> Presentation is 4 minutes over or 2 minutes under limit 	<ul style="list-style-type: none"> Presentation is 3 minutes over or 1 minute under limit 	<ul style="list-style-type: none"> Presentation is 2 minutes over 	<ul style="list-style-type: none"> Presentation falls within time limit
Presentation Content and Organization	<ul style="list-style-type: none"> Poorly organized and missing some major elements with little relevant information 	<ul style="list-style-type: none"> Fair organization Contains most major elements Some relevant supporting information Some logical transitions 	<ul style="list-style-type: none"> Well organized and contains all major elements Supporting info could be better 	<ul style="list-style-type: none"> Extremely well organized Excellent variety of supporting information providing credibility Concise and relevant
Presentation Skills	<ul style="list-style-type: none"> Poor skills throughout presentation with little non verbal skills (body language) 	<ul style="list-style-type: none"> Fair to good skills for the majority of presenters but needs more practice 	<ul style="list-style-type: none"> Very good verbal and nonverbal skills by most of team throughout most of presentation 	<ul style="list-style-type: none"> Excellent verbal and nonverbal skills by most of team throughout presentation
Use of Visual Aids	<ul style="list-style-type: none"> Visual aids or imagery are not used effectively Demonstration aids are poor or non-existent 	<ul style="list-style-type: none"> Fair use of visual aids to enhance the presentation 	<ul style="list-style-type: none"> Varied use of visual aids effectively illustrate product and enhance presentation 	<ul style="list-style-type: none"> Extremely effective and varied use of visual aids Contributes to understanding product and greatly enhances presentation
Question and Answer	<ul style="list-style-type: none"> Answers a few questions accurately but does not use supporting facts 	<ul style="list-style-type: none"> Answers at least half of questions correct with a few supporting facts 	<ul style="list-style-type: none"> Answers at least 75% of questions correctly and some supporting facts 	<ul style="list-style-type: none"> All questions are fully, accurately and confidently answered with many supporting details
Creativity	<ul style="list-style-type: none"> Presents ideas and products in typical ways (text-heavy PowerPoint slides, recitation of notes, no interactive features) 	<ul style="list-style-type: none"> Fair to good skills for the majority of presenters but needs more practice 	<ul style="list-style-type: none"> Very good verbal and nonverbal skills by most of team throughout most of presentation 	<ul style="list-style-type: none"> Excellent verbal and nonverbal skills by most of team throughout presentation
Use of Visual Aids	<ul style="list-style-type: none"> Visual aids or imagery are not used effectively Demonstration aids are poor or non-existent 	<ul style="list-style-type: none"> Presents ideas and products in typical ways with emerging attempts at adding interesting features 	<ul style="list-style-type: none"> Adds some interesting touches to presentation media Attempts to include elements in presentation that make it more lively and engaging 	<ul style="list-style-type: none"> Creates visually exciting presentation media Includes elements in presentation that are especially fun, lively, engaging, or powerful to the audience

Appendix E: Curriculum Connections: Skills and Competences

	CONTENT KNOWLEDGE	COMPETENCIES						OTHER SKILLS		
Competition Deliverables	STEAM subjects (Mathematics, Sciences, Technology Education, Arts, etc.)	Communication	Citizenship	Creativity and Innovation Design Process	Critical Thinking Problem Solving	Technological Fluency	Personal Career Development	Project Management	Marketing	Research
Project Plan/ Proposal	✓	✓		✓	✓		✓	✓		✓
Background information/ research	✓	✓	✓	✓	✓	✓	✓	✓		✓
Model Or Business Plan	✓	✓	✓	✓	✓	✓	✓	✓		✓
	✓	✓	✓	✓	✓				✓	✓
Presentation		✓	✓	✓	✓	✓			✓	✓

Appendix F – Step 7B: Business Plan for a Social Enterprise

This appendix contains all the questions in the graphic organizers and goes into more depth, if preferred for your learning level.

Creating your business plan: Business Strategy

- What is the purpose of the social enterprise?
- How does the enterprise meet the need for clean energy solutions in Nova Scotia?
- Who are the customers or beneficiaries (those who benefit)?
- How will the customers be served by the social enterprise?
- What specifically does the program look like?
- Why is your business plan better than something that is already on the market? (don't forget to include the resources you researched)
- What is your plan for growth?
- Where do you see your enterprise in 3-5 years?
- What are your short- and long-term goals?

Creating your business plan: Marketing Strategy

What promotional strategies will you undertake to market your enterprise? (Example: television, Internet, social media, radio, posters, brochures, business cards, networking, newspapers, special events, sponsors, etc.)

Creating your business plan: Operational Plan

What do your day-to-day operations look like?

What are your requirements in terms of infrastructure, facilities, and supplies?

Creating your business plan: Human Resources

Write a brief organizational layout of your social enterprise. Include:

- What are the roles in your organization? Include a job description for each
- What other skills or education are required for staff
- Will the organization employ paid staff or volunteers?
- Are there any other human resources you may require?

Creating your business plan: Social Responsibility Strategy

- How will your social enterprise contribute to communities and/or the province?
- How will you ensure your enterprise has good environmental practices?
- How will you ensure your enterprise has good labour practices?

Creating your business plan: Financial Forecast

- What initial funds will be needed to get the social enterprise running (estimate with a budget)?
- Where will you obtain funding for the start-up costs?
- Will you sell your service/ product or provide a free service?
- If sales are involved, estimate your sales for the first year: \$ _____
- Provide a profit and loss forecast — this is the level of profit you expect to make, given your projected sales, the costs of providing goods and services, and your overhead costs.

Creating your business plan: Business Exit Strategy

- Will your social enterprise have a defined starting and end, or will it be ongoing?
- If your enterprise is ongoing, will you continue to manage it, or transfer the ownership and management to another party? How will that transfer occur?

Executive Summary

- In the final written product, this will be the first part, and probably the most important feature of your business plan, however you should write it LAST, after the rest of the business plan is done
- Highlights the most important sections of the business plan
- Short: be short and concise - no more than a page

Strengths, Weaknesses, Opportunities, and Threats Analysis (SWOT)

Strengths

- What will your business do exceptionally well?
- What makes it innovative and sets it apart from other initiatives?

Weaknesses

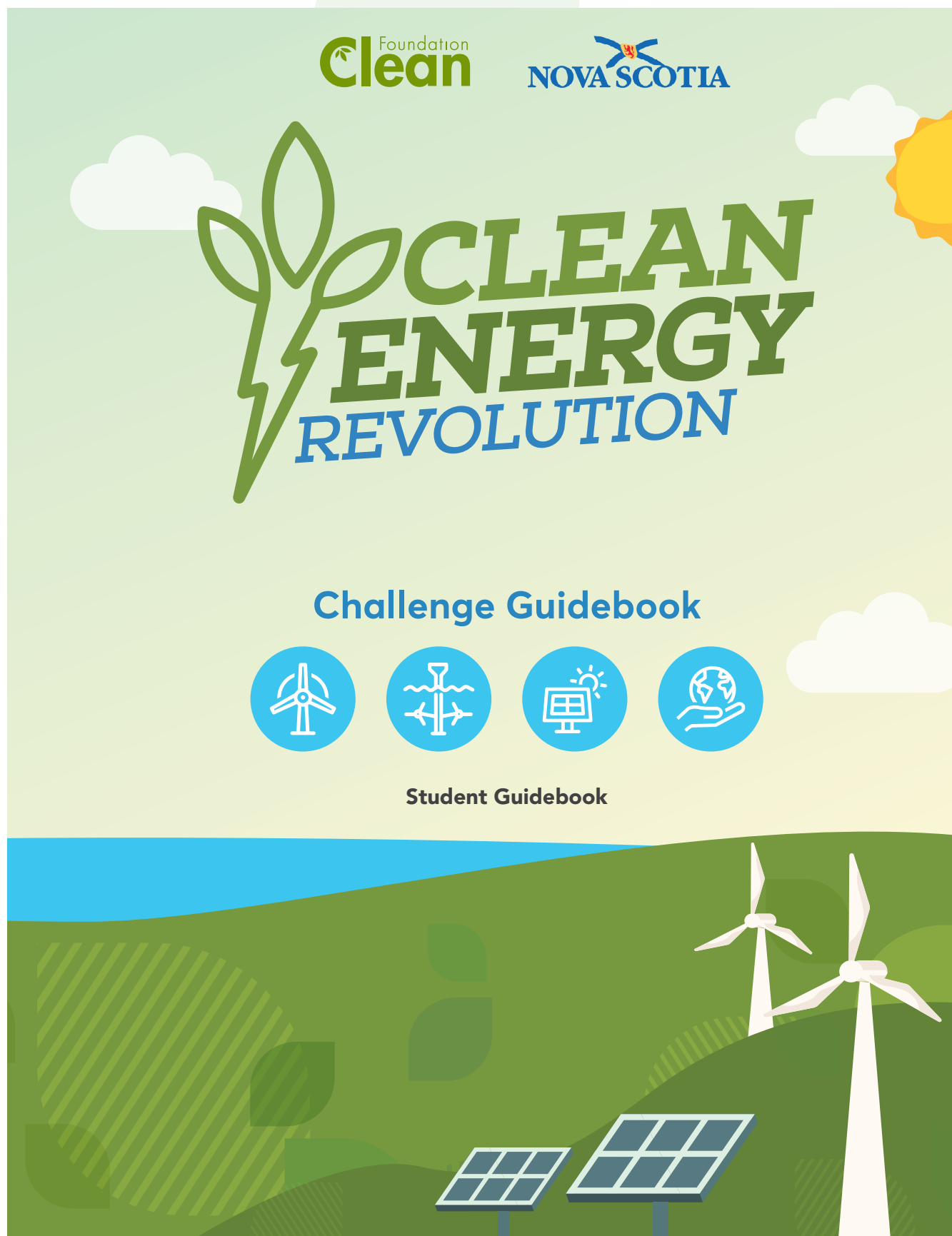
- Where do you foresee difficulties or vulnerabilities in your business plan?
- How will you compete with other businesses?
- Who will you need to hire to be successful?
- How will the business be funded?

Opportunities

- Where are the sources of growth in the market?
- What trends will encourage people to buy your products/services?
- What regulations could help your enterprise?
- How do people feel about your industry or product?

Threats

- What competitors might enter your market?
- Do you have access to all the materials you need?
- How could technology change to affect your enterprise?
- Are people's behaviours or habits changing in a way that could negatively impact your enterprise?
- What market trends could be a problem?



The Clean Energy Revolution Challenge

Introduction

Thank you for participating in the Clean Energy Revolution Challenge!

Nova Scotia's future will be stronger with innovators like you. This challenge asks you to imagine and present a solution to one of the following issues:

1. Clean energy technology development that works in Nova Scotian contexts and conditions
2. Addressing energy poverty and energy affordability for low-income households in Nova Scotia
3. Innovating with energy technology that works with nature and with Nova Scotian ecosystems
4. Changing behaviours, habits, and actions of energy users
5. Another clean energy related issue in Nova Scotia

Together, our responses to these problems, and others like them, will shape how Nova Scotia continues to thrive in the future. This is your opportunity to shape one part of how you and future generations of Nova Scotians would like to live, starting right now!

With your team, you will develop a solution to address one of the above issues. You have two options to show your solution idea.

- A. A model, prototype design or a demonstration of a solution or product concept
- B. A business plan for a social enterprise

Think about what is needed in Nova Scotia to achieve a cleaner future. There are resources included in this guidebook to help you through this innovation process. Be creative! There are many different pathways that our province is currently exploring.

This list may help you get started but feel free to branch out, as long as your topic is related to clean energy in Nova Scotia!

- Wind
- Marine Renewable Energy
- Hydropower
- Geothermal
- Solar
- Biomass
- Energy storage
- Low-carbon transportation
- Electrification
- Active transportation
- Energy efficient buildings: Including net zero, passive house, beyond the National Energy Code for Buildings, and existing buildings
- Energy conservation and load shifting technology
- Another cutting-edge clean energy solution

In addition to this guidebook and your co-operating educator, you will have the opportunity with this challenge to benefit from the knowledge of an industry expert as a mentor. This can provide you with valuable insight into your chosen topic, and feedback on improvements throughout the innovation and design process. We hope all participants in the Challenge take advantage of this unique opportunity.

Before beginning the Challenge, please take time to read the documents and use the graphic organizers included in this guidebook to help you know what to do and what to present as your final "product". And finally, have fun!

Mentor Communication Guidelines

Your **enthusiasm, preparation, and ability to communicate** clearly will help you have a successful mentorship. **Listen** to your mentor and **respect** the opportunities and limitations of the relationship they can provide for you.

When you communicate with your mentor, always be respectful. Before you speak with your mentor, think about the information which would be helpful for your group and your project.

Before you first communicate with your mentor, answer these questions:

1. What do you need to be mentored in? For example, what goals do you want to achieve? What information would you like to gain access to?
2. What questions would you like to be answered by a mentor?
3. What experience does your mentor have that you think will help you achieve your goals?
4. How often would you like to communicate with your mentor? (Being aware of their time limitations and availability)?
5. Why have you chosen this mentor?

What to do in your first meeting with a mentor...

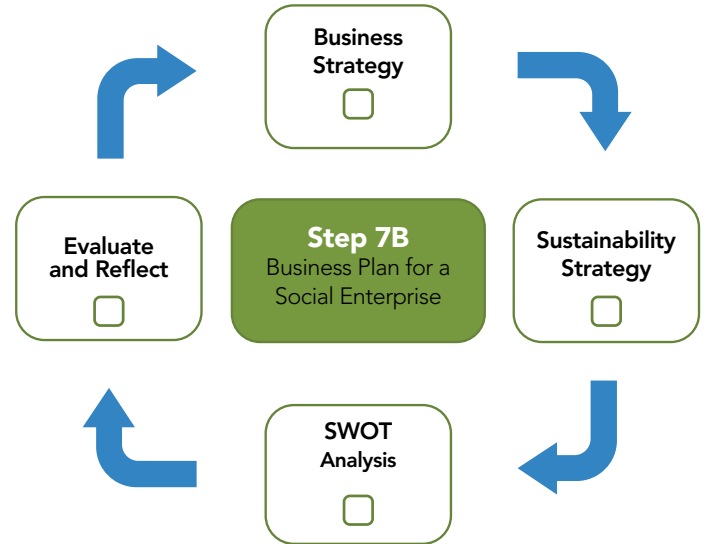
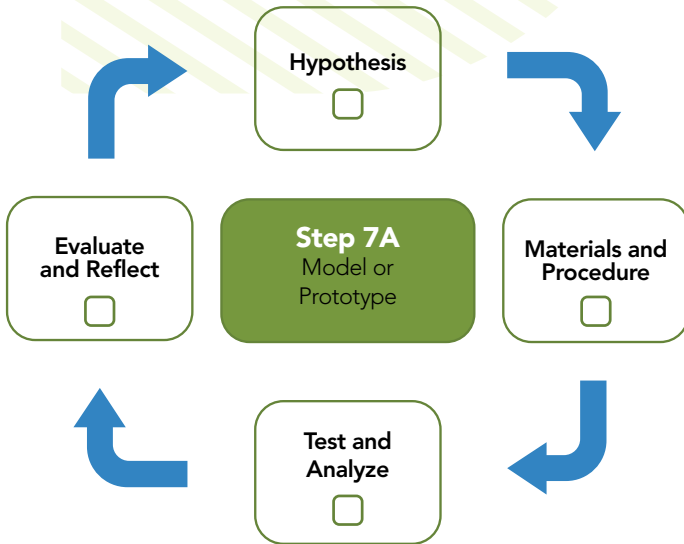
- Introduce yourself and your group, school and cooperating educator
- Ask about your mentor's role in their company or organization
- Tell your mentor about your project and the topic you have chosen
- Ask your mentor the questions you have prepared
- Ask your mentor for any feedback they think would be helpful for you
- Take notes!
- If your mentor is available to meet another time, don't forget to pick a time for your next meeting
- Send a follow-up email to thank your mentor for their time and their help

Completing the Challenge: Step by Step Learner's Checklist

- ☐ **Step 1:** Complete Registration
- ☐ **Step 2:** Select the Problem you Choose to Improve
- ☐ **Step 3:** Research Possible Solutions
- ☐ **Step 4:** Brainstorm Possible Solutions and Set Realistic Goals
- ☐ **Step 5:** Select a Design for Your Idea!
- ☐ **Step 6:** Proposal
- ☐ **Step 7:** If you are creating a model or prototype, go to **Step 7A**.

OR

if you are building a business plan for a social enterprise, go to **Step 7B**.



- ☐ **Step 8:** Refine the design of your solution
- ☐ **Step 9:** Submit your Final Product



Step 1: Complete Registration

Use this form to draft your answers before submitting your Registration Form. You can submit your form online [here](#) or send it to: EnergyRevolution@cleanfoundation.ca.

Registrations open November 2, 2021. Deadline for Registration is March 11, 2022.

Project Name:	
Name of Student	Grade
1.	
2.	
3.	
4.	
School (s) or indicate if homeschooled	
Name(s):	
Address(es):	
Co-operating Adult	
Name:	
Phone Number (s):	
Email Address:	
Relationship to youth in group (teacher, parent, guardian, leader, etc.):	

Step 2: Select the problem you choose to improve

Time to research! Which problem are you going to explore? How have others tried to solve this problem?

Use the boxes below to help you with Step 2. These are optional and do not need to be submitted with your final product.

Circle which of the four Challenge problems you will try to solve:

- Clean energy technology development that works in Nova Scotian contexts and conditions
- Addressing energy poverty and energy affordability for low-income households in Nova Scotia
- Innovating with energy technology that works with nature and with Nova Scotian ecosystems
- Changing behaviours, habits, and actions of energy users
- Another problem related to clean energy in Nova Scotia

Who does this problem affect?

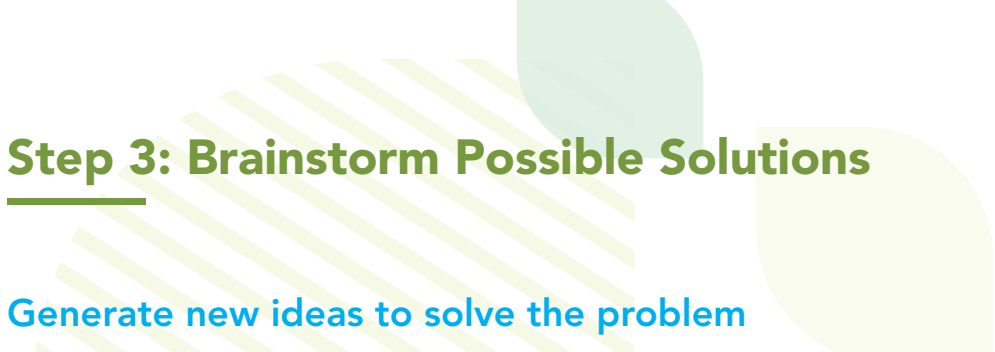
How does the problem you selected affect nature in Nova Scotia?

Time to research!

Investigate what have others tried to solve this problem. (Don't forget to keep track of your resources)

Idea	When	Who	Did it work?	Why?
1.			Yes/No	
2.			Yes/No	
3.			Yes/No	
4.			Yes/No	

Identify what else needs to happen to solve the problem?



Step 3: Brainstorm Possible Solutions

Generate new ideas to solve the problem

Generate new ideas to solve the problem

Have a discussion with your group to make some new ideas or improvements on another idea from the research in Step 2.

Let's pretend, for a moment, that you have all the money, time, and resources in the world. How could you solve this problem?

Be creative!

Step 4: Set Realistic Goals

Now it's time to be realistic with what we can do right here and right now! In a perfect world, you would have everything you need at your fingertips, however there will always be limitations on getting your project completed.

Project Resources

What can you use to help design and build (if chosen) your clean energy innovation? Think about people you can ask for advice, including teachers and mentors available through the Challenge. What skills are required to carry out your plan? What can you, your team and mentors offer? What supplies, equipment, and software will you need and where will you obtain them? How will you communicate with your team members?

- | | |
|---------|---------|
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |

Limitations

They may come in the form of sticking to the challenge specifications, but also time, money, and availability of mentors and teachers with needed expertise should be considered. List the limitations you imagine facing below and include ways to work with and around them as much as you can.

- | | |
|---------|---------|
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |

Assumptions

What do you know to be true about this project? Write down how much time you have, the materials you know you can get, how and when your group members will work together, and what assumptions you have about the difficulties you will face.

- | | |
|---------|---------|
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |
| • _____ | • _____ |

Step 5: Select a Design for Your Idea!

Which problem are you going to explore?

Choose two or more of the best ideas from the brainstormed list and then make a brief outline or sketch of each idea and select which type of solution you will create.

Idea	Solution Type A or B? (Circle one)
1. _____ _____ _____ _____ _____ _____ _____	<p>A -Model or Prototype</p> <p>OR</p> <p>B -Business Plan for a Social Enterprise</p>
2. _____ _____ _____ _____ _____ _____ _____	<p>A -Model or Prototype</p> <p>OR</p> <p>B -Business Plan for a Social Enterprise</p>
3. _____ _____ _____ _____ _____ _____ _____	<p>A -Model or Prototype</p> <p>OR</p> <p>B -Business Plan for a Social Enterprise</p>
4. _____ _____ _____ _____ _____ _____ _____	<p>A -Model or Prototype</p> <p>OR</p> <p>B -Business Plan for a Social Enterprise</p>

Select the best idea!

What is it? How will you formulate your plan? Write the idea you have selected under column A or B

A - Model or Prototype	B - Business Plan for a Social Enterprise

OR

Justify your choice by listing the reasons you selected this design

•	•
•	•
•	•
•	•
•	•
•	•
•	•

Outline of Team members tasks:

Team member	Task

Now you are ready to write your proposal. **On to step 6!**

Step 6. Project Proposal

Use this form to draft your answers before submitting your Registration Form. **You can submit your form online [here](#) or send it to: EnergyRevolution@cleanfoundation.ca.** Project proposals are due by **March 11, 2022**.

Project Name:

Team Members:

Co-operating Adult:

Name of School(s):

Industry Mentor (if known):

Estimated Completion Date:

Project Description (please include additional pages, if necessary)

Define the Problem your Innovation will Solve

Specific Goals

Target Audience

Anticipated Benefits

Outline of Team Member Tasks

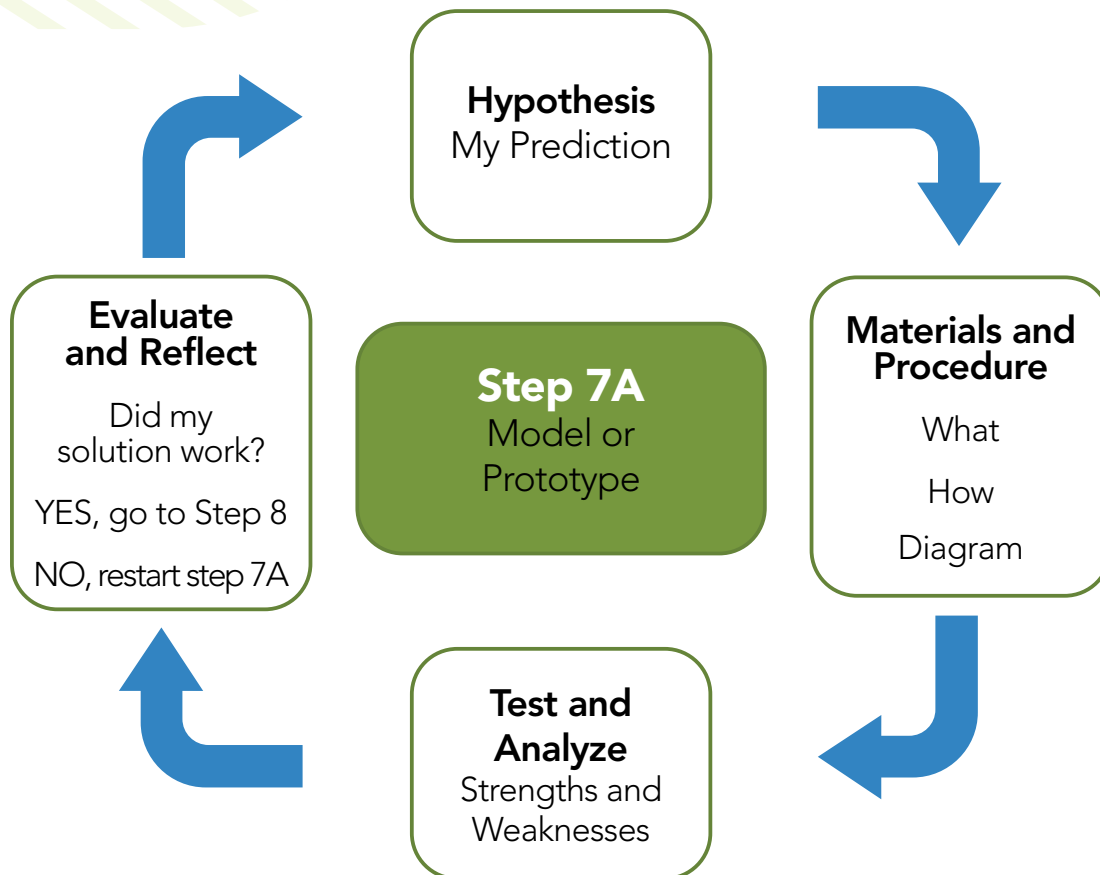
EVALUATING THE PROJECT PROPOSAL

Category	Specification	✓ Complete	✓ Incomplete
Description of the product or business plan for a social enterprise	The focus of the project is clear		
	The project is within the Challenge specifications		
Target Audience	Students have identified the individuals, groups, communities who will benefit from their project		
	Included rationale as to why target audience was chosen		
Goal of Project	Goal of project is clearly stated		
	Project has measurable outcomes		
Benefits	Anticipated benefits of project are listed		
Tasks	General overview of project broken down into several major tasks		

Congratulations on submitting your proposal! Now it's time to roll up our sleeves and get to work. If you are creating a model you will use **7A** and if you are creating a business plan for a social enterprise, you will use **7B** on **page 20**

Step 7A: Model or Prototype

Designing a prototype often requires lots of trial and error. Here are the steps you repeat until you are satisfied with your design.



Step 7A: Model or Prototype

Model or Prototype

Formulate a hypothesis

If I _____, then I expect that...

Select your materials

Formulate a procedure

(Ask your cooperating adult to verify it is a safe idea, then have fun creating!)

Step 7A: Model or Prototype

Create a labelled diagram of your model or prototype

Test the model or prototype, evaluate, and analyze design

Write about your design's performance during testing. What did you observe?

[illegible]

Step 7A: Model or Prototype

Analyze:

List and compare all the strengths and weaknesses of your design

[illegible]

Now that you've tested out the model, what changes are you going to make to the design?

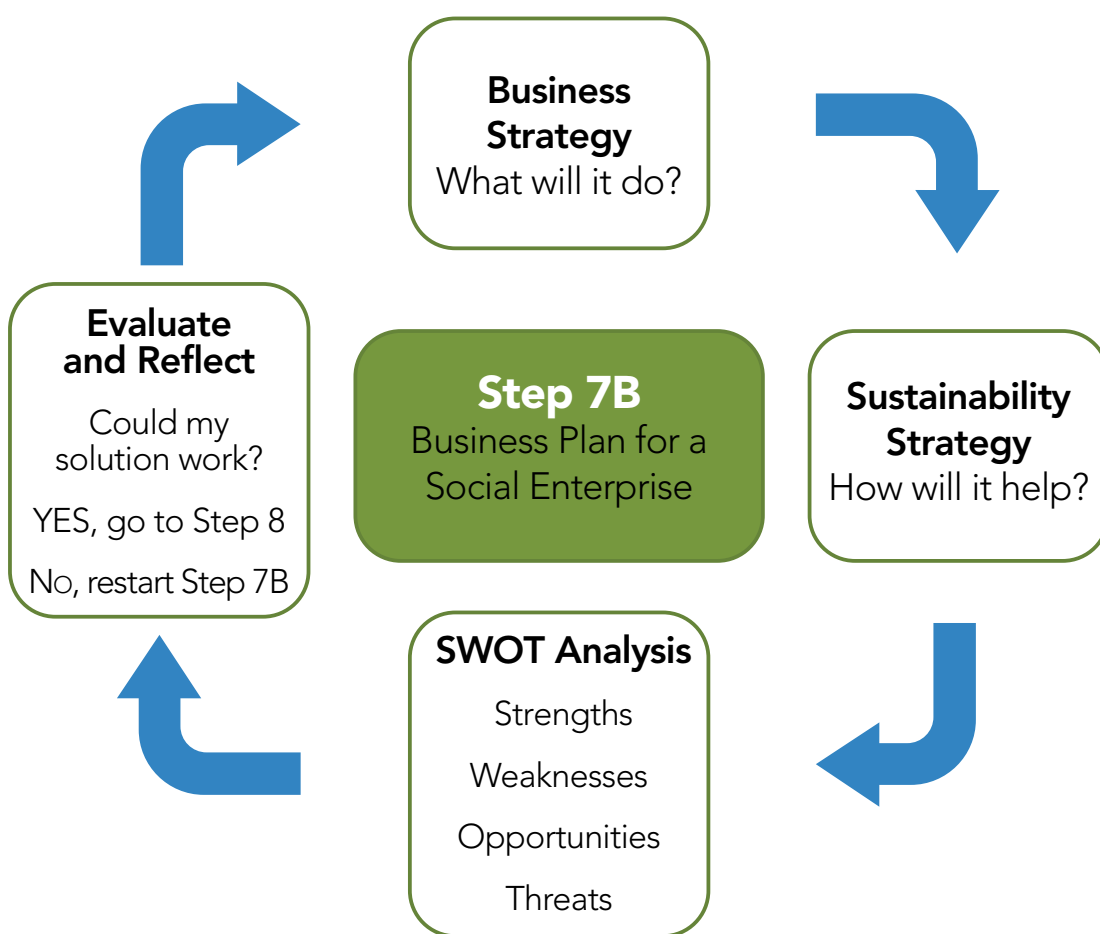
Reflect and discuss any changes that were made due to the limitations *(from Step 4)*

This image shows a single sheet of white paper with horizontal blue or grey ruling lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Congratulations on submitting your proposal! Now it's time to roll up our sleeves and get to work. If you are creating a model you will use **7A** on **page 15** and if you are creating a business plan for a social enterprise, you will use **7B**.

Step 7B: Business Plan for a Social Enterprise Solution

Here are the steps to create your business plan:



Step 7B: Business Plan for a Social Enterprise Solution

Creating your business plan: Business Strategy

What is the purpose of the social enterprise?

[illegible]

How does the business help clean energy in Nova Scotia?

Who are the customers or who benefits?

Step 7B: Business Plan for a Social Enterprise Solution

How will the customers be served by the social enterprise?

[illegible]

What specifically does the program look like?

This image shows a single sheet of white paper with horizontal blue or green ruling lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

What are your short- and long-term goals?

This image shows a single sheet of white paper with horizontal blue or green ruling lines, typical of notebook paper. The paper has rounded corners and a thin border around the edges. There are approximately 20 lines visible across the page.

Step 7B: Business Plan for a Social Enterprise Solution

Creating your business plan: Marketing Strategy

What promotional strategies will you undertake to market your enterprise? (Example: television, Internet, social media, radio, posters, brochures, business cards, networking, newspapers, special events, sponsors, etc.)

[illegible]

Creating your business plan: Operational Plan

What do your day-to-day operations look like?

[illegible]

Step 7B: Business Plan for a Social Enterprise Solution

Creating your business plan: Human Resources

Write a brief organizational layout of your social enterprise. Include:
What are the roles in your organization? Include a job description for each

Lined area for writing the organizational layout and job descriptions.

What other skills or education are required for staff?

Lined area for writing about other skills or education required for staff.

Step 7B: Business Plan for a Social Enterprise Solution

Creating your business plan: Social Responsibility Strategy

How will your social enterprise help the community, nature and its workers?

How will your social enterprise contribute to communities and/or the province?

How will you ensure your enterprise has good environmental practices?

How will you ensure your enterprise has good labour practices?

Creating your business plan: Financial Forecast

- How much money will you need to begin?
- Where will you get the money to start up?
- Will you sell your service/ product or provide a free service?

Step 7B: Business Plan for a Social Enterprise Solution

Executive Summary

- In the final written product, this will be the first part, and probably the most important feature of your business plan, however you should write it LAST, after the rest of the business plan is done
- Highlights the most important sections of the business plan
- Short: be short and concise - no more than a page

Step 7B: Business Plan for a Social Enterprise Solution

Strengths

- What will your business do exceptionally well?
- What makes it innovative and sets it apart from other initiatives?

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. At the top, there is a light green rectangular header area. The paper has rounded corners and appears to be part of a notebook or binder.

Weaknesses

- Where do you foresee difficulties or vulnerabilities in your business plan?
- How will the business be funded?

This image shows a single sheet of white paper with horizontal blue or green ruling lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Step 7B: Business Plan for a Social Enterprise Solution

Opportunities

- Where are the sources of growth in the market?
- What trends will encourage people to buy your products/services?
- How do people feel about your industry or product?

This image shows a blank sheet of white paper with horizontal blue lines, resembling notebook paper. The paper has rounded corners and is framed by a thin green border. In the top-left corner, there is a decorative element consisting of several parallel green diagonal stripes. The rest of the page is empty, with no handwriting or other markings.

Threats

- What competitors might enter your market?
- Do you have access to all the materials you need?
- How could technology change to affect your enterprise?
- Are people's behaviours or habits changing in a way that could negatively impact your enterprise?

[illegible]

Step 8: Refine the design of your solution

Based on the results you anticipate (business) or from testing (prototype), make improvements on your solution's design

Identify the changes you would like to make

Give reasons for the changes

Step 9: Submit your Final Product

Time to share the design of your solution with others! Whether you decided to create a model/prototype, or, created a business plan, now is when you will organize your work into an appropriate final product format.

How you submit your 'Final Product' can be... well, almost anything you can dream up! It could be a podcast, a prototype, or a persuasive letter – many types of projects are accepted. This will be a summary of all the work you did in Steps 2-8.

Make sure that whatever you submit still includes information we need to complete the Judging Rubric (at the end of Step 9). This means that, for example, if you write a song, we still need to know how you developed and refined your ideas, how you used research to find information and consider perspectives, and that your clean energy solution fits within a Nova Scotian context.

This could take many forms including a combination of the following:

Model or Prototype	Business Plan for a Social Enterprise
<ul style="list-style-type: none">• 3D model file• Picture of physical model or prototype• Labelled diagram• Text document• Video of testing or use• Power Point Presentation• Interview• Email/Text discussion thread• Poster (insert picture)• Manual for new product• Portfolio• Drawing• Chart• Graph• Report• Science Experiment Report	<ul style="list-style-type: none">• Power Point Presentation• Report• Safety plan• Infographic• Pamphlet• Advertisement• Persuasive letter• Podcast• Template of social media presence for their product or business• Survey• Interview• Text document• Video

Present your ideas to your class for feedback then submit your final product! We can't wait to see it!

Registration	10%
Proposal	15%
Final Product	75%
Design Process Description	
Research	
Product Utility & Context	
Overall Presentation and Quality	

Final Project Judging Rubric

FINAL PRODUCT SUBMISSION				
Category	Below Standard-Poor	Approaching Standard-Fair	At Standard-Good	Above Standard-Excellent
Learners are expected to...	1	2	3	4
Adherence to Revolution Challenge Specifications ... become self-aware and self-directed. (PCD) ... set and pursue goals. (PCD)		<ul style="list-style-type: none"> Project fails to meet some Challenge specifications 		<ul style="list-style-type: none"> Project falls within Revolution Challenge specifications
Defining the Revolution Challenge ... make unexpected connections. (CI) ...analyze cultural, economic, environmental and societal issues. (CZ) ...analyze and evaluate evidence, arguments and ideas. (CT)	<ul style="list-style-type: none"> May just “follow directions” without understanding the purpose for innovation or considering the needs and interests of the target audience 	<ul style="list-style-type: none"> Beginning to understand the goal or purpose of the innovation and target audience 	<ul style="list-style-type: none"> Understands the basic purpose for innovation but does not thoroughly consider the needs and interests of the target audience 	<ul style="list-style-type: none"> Understands the purpose driving the process of innovation (Who needs this? Why?) Develops insight about the particular needs and interests of the target audience
Developing and Revising Ideas and Products ... generate new and dynamic ideas, techniques and products. (CI) ...analyze and evaluate evidence, arguments and ideas using reasoning systems. (CT) ... reflect critically on the thinking process. (CT) ... make decisions, judgements and solve problems. (CZ) ... appreciate the creative and innovative work of others. (CI) ... participate in critical dialogue by listening, reading and viewing. (COM)	<ul style="list-style-type: none"> Stays within existing frameworks; does not use idea-generating techniques to develop new ideas for product(s) Selects one idea without evaluating the quality of ideas Does not ask new questions or elaborate on the selected idea Reproduces existing ideas; does not imagine new ones Does not consider or use feedback and critique to revise product 	<ul style="list-style-type: none"> Develops some original ideas for product(s), with emerging idea generating techniques Evidence of emerging evaluation of idea quality Asks a few new questions but does not apply them to ideas Reproduces existing ideas; does not imagine new ones Does not consider or use feedback and critique to revise product 	<ul style="list-style-type: none"> Develops some original ideas for product(s), but could develop more with better use of idea-generating techniques Evaluates ideas, but not thoroughly before selecting one Asks a few new questions but may make only minor changes to the selected idea Shows some imagination when shaping ideas into a product, but may stay within conventional boundaries Considers and may use some feedback and critique to revise a product, but does not seek it out 	<ul style="list-style-type: none"> Uses idea-generating techniques to develop several original ideas for product(s) Carefully evaluates the quality of ideas and selects the best one to shape into a product Asks new questions, takes different perspectives to elaborate and improve on the selected idea Uses ingenuity and imagination, going outside conventional boundaries, when shaping ideas into a product Seeks out and uses feedback and critique to revise product to better meet the needs of the intended audience
RESEARCH AND RESOURCES				
Building Knowledge, Understanding, and Skills & Identify Sources of Information ... generate new and dynamic ideas, techniques and products. (CI) ... appreciate the creative and innovative work of others. (CI) ...analyze and evaluate evidence, arguments and ideas. (CT)	<ul style="list-style-type: none"> Uses only typical sources of information (website, book, article) Sources limited to 1- 3 	<ul style="list-style-type: none"> Uses typical sources of information but investigates more than 3 sources 	<ul style="list-style-type: none"> Finds one or two sources of information that are not typical Offers new ideas, but stays within narrow perspectives Research and resources included 	<ul style="list-style-type: none"> In addition to typical sources, finds unusual ways or places to get information (adult expert, community member, business or organization, literature) Promotes divergent and creative perspectives Research and resources presented in a grade level appropriate way

PRODUCT UTILITY

Solves a real-world clean energy problem.

... generate new and dynamic ideas, techniques and products. (CI)

... contribute to the quality and sustainability of their environment and community. (CZ)

... use and apply technology to collaborate, communicate, create, innovate and solve problems. (TF)

- Solves a problem but not related to scope of clean energy innovation

- Solves a problem related to clean energy but the solution is not practical to apply

- Solves a problem related to clean energy and solution could be applied with restructuring

- Solves real world clean energy problem that is ready to implement

Solution fits Nova Scotia clean energy context

... generate new and dynamic ideas, techniques and products. (CI)

...contribute to the quality and sustainability of their environment and community. (CZ)

... use technology in a way that is legal, safe, ethically responsible and that supports and enhances learning. (TF)

- Product/ solution would not work in Nova Scotia clean energy context
- Not useful or valuable to the intended audience/user

- May not solve cer-tain aspects of the defined problem or exactly meet the identified need for intended audience
- Unclear if product would be practical or feasible to the intended audience

- Useful and valuable to some extent; it may not solve certain aspects of the defined problem or exactly meet the identified need
- Practical, feasible to intended audience

- Excellent novel product or plan that is not currently available and meets the identified need
- Valuable to the intended audience

OVERALL PRESENTATION AND QUALITY

Professionalism and Quality Grade level teamwork, communication, quality of product at all stages, mentor relationship, etc.

... appreciate the creative and innovative work of others. (CI)

...understand and appreciate how culture contributes to work and personal life roles. (PCD)

... participate in critical dialogue by listening, reading and viewing. (COM)

...interpret and express themselves through a variety of media. (COM)

- Learners occasionally behaved professionally and/or maintained a good level of quality of their work

- Learners sometimes behaved professionally and/ or maintained a good level of quality of their work

- Learners often behaved professionally and/or maintained a good level of quality of their work

- At all times, learners behaved professionally and maintained an exemplary level of quality of their work

