



BY INSIDE EDUCATION



A+ FOR ENERGY

2019/2020 PROJECT SUMMARY WINNERS

1. **Altario School**

Altario

BARN RENEWABLE ENERGY | \$5,000

Our goal with our A+ Energy Education project is to supply power to our school barn for lights, a couple power outlets and a waterer for our school animals (steers, bred cow, chickens, sheep, and possibly pigs or goats) using solar panel technology to provide this electricity. The barn would be self-sustaining with the inclusion of the solar panels that we would be able to wire into the barn and create a self-sustaining electrical system to provide lighting and electrical power. This is a great opportunity for our students to learn about renewable energy and how it can be put to use in our everyday farming and ranching operations. Students will gain knowledge about using solar energy, how renewable energy can save on costs, and how renewable energy can be used to provide other technologies.

2. **Connections for Learning Y(our) Program**

Stony Plain

ENERGY PATH | \$3,850

After talking with bus students in our class, we discovered that there was an incredible waste of time and energy going into transportation for these students. Students are spending 50 minutes on the bus to go less than 2 km to their transfer station. We discovered that there is an alternative to this and it consists of building a path through some land owned by the Town of Stony Plain heritage site. This path will go directly to a different bus stop used by a nearby school. We are writing proposals to our division transportation, the partner school, the heritage site, the town of Stony Plain and our building facility. We plan on calculating the fuel saved and emissions reduced by removing our inefficient bus. We are also taking inspiration from our recent trip to the Gener8 conference and the Care Package of environmentally friendly items that we were given. We want to line the new path with bee/butterfly friendly plants, solar panel lights and various beautification/environmentally friendly projects. This would be a project that could be ongoing for many years as we fundraise and add to the overall landscape of the path.

3. Michael Strembitsky School & École Champs Vallée School *Edmonton & Beaumont*

BRINGING THE “GREEN” INTO GREENHOUSE GAS EMISSIONS | \$5,000

In the next phase of our sustainability through space exploration project, students will take the lead in researching, designing and exploring different methods for reducing greenhouse gas emissions. They will measure the power used by the systems they design and, by extrapolating experimental data, calculate the amount of CO₂ and methane that would be given off, quantifying the carbon emission decrease. Based on their results students will draw conclusions about best practices that can be undertaken in our lives to reduce our carbon footprint through the decrease and reclamation of CO₂ and other greenhouse gas emissions.

4. St. Theresa Catholic Middle School *Sherwood Park*

CONSERVATION IS NEVER OUT OF STYLE | \$5,000

This project will focus on reducing Greenhouse Gas emissions, by using more energy efficient styling tools. Cosmetology students will test current styling tools, to see how much energy is used and will research alternative styling tools and techniques that use less energy.

5. École Lacombe Composite *Lacombe*

ROOF 4 KIDS | \$5,000

Our EcoVision Club intends to build an Outdoor Agriculture Hub with a classroom, living roof, animal sanctuary and microclimate garden. We believe that this project will enhance cross-curricular educational opportunities, improve the environmental landscape, encourage community connections and provide a model of a sustainable holistic urban agricultural system.

Our proposal has three phases:

PHASE 1 - Goat Sanctuary with a Living Roof. Repurposed sea containers will be transformed into an agriculture animal sanctuary for animals like “kids” or baby goats. The roof of the sea container would be living as it would contain gardens.

PHASE 2 - Sixteen sea containers would be repurposed and added to house different animals and agricultural products. It would be a multipurpose agricultural space.

PHASE 3 - MicroClimate & Living Roof - Develop micro

6. Jasper Place High School

Edmonton

SPACE FOR ENERGY | \$4,725

Nearly 100% of the Earth's energy budget originates from the Sun. The process of energy generation in the Sun is the same one that powers the stars and produces light, radiation and heat from Nebulae, Stars and Galaxies. At Jasper Place High School, students study the energy production, use and transmission in astrophysical processes by taking two different Astronomy courses. To improve their understanding and engagement I would like to sign up for remote telescope time on a Robotic Telescope Network called iTelescope.net. Using the internet, students can remotely access this network of robotic telescopes and take pictures of Stars, Nebulae, Galaxies, and Planets.

The images students take will then be analyzed to better understand the physics behind the energy production and utilization. Many of the most remarkable discoveries in science have come by pointing telescopes at the sky. Our understanding of Nuclear Fusion, Radioactive Decay, X-rays, Optics, and Electromagnetic Radiation all have roots in astronomical observations and instead of reading about these amazing discoveries, students will have the opportunity to actively make these discoveries for themselves. Once students have finished taking their pictures and analyzing the results, students will print two copies of their photos. One for them to keep and one to be displayed in the school.

7. Notre Dame High School

Calgary

DESIGN THINKING FOR INNOVATION | \$5,000

With the state of the economy in Alberta, my students ask "why are we so reliant in oil and gas?". I say, "because no one has developed a better or cheaper or more reliable way of producing enough energy to power our society, we have oil, and everyone wants oil." Another student says, "I don't think BC wants our oil" ... My students are interested in looking for alternative or clean energy sources. One student made a model nuclear power plant this summer.

This year my "Design, Innovation and Engineering" grade 12 students are researching, designing and building a wind power generating system (with the support of the welding class). The grade 10s that I have want to design and build a cell phone charging station for students using this energy. Next year maybe we will build a solar array to further bolster our clean energy production. In the future we would like to build an educational billboard inside the school showing a running total of the energy generated with some information on clean energy and environmental change. Becoming engaged in a real-world problem has given my students a tangible goal; learn about how we can change the future.

8. Rosemont School *Calgary*

FUEL FOR FUEL | \$3,000

How much energy did it take for that banana to make it into your lunch bag? Rosemont students from grades K to 6 will embark on an inquiry around the food that fuels our bodies. Our inquiry will involve studying climate patterns, researching local plant varieties, the study of water reserves and pollinator data collection. Students will track the energy and resources required to transport the food we grow/raise, and the benefits of saving energy by shopping locally through field trips and visiting/online experts. Students and teachers will gain knowledge of food import and export as it relates to sustainability practices and energy consumption.

9. St. Theresa Catholic Middle School *Sherwood Park*

REACH FOR THE STAR! | \$5,000

"Reach for the Star!" aims to educate students about energy consumption in their everyday lives. With a focus on solar energy, our grade 7 and 8 students will make the connection that sustainable energy choices today impact our world tomorrow. Students will monitor our current energy output in the school and put into use portable solar panels and solar generators to help charge student computers, science lab equipment, cosmetology supplies, music equipment and a multitude of other uses with an emphasis on reducing our school's collective carbon footprint. They will also research sustainable energy practices, compare them to traditional methods and present their results at our "Reach for the Star" fair, our project based learning exhibition.

10. Hawkwood School *Calgary*

ACTIVE TRANSPORTATION COME RAIN OR COME SHINE | \$4,627.³⁵

Hawkwood School is working hard to protect and improve our school learning environment through various initiatives such as paper towel composting, litterless lunches, and signage reminding everyone to shut off lights. As part of this and to further promote healthy lifestyles, energy conservation, and waste reduction we are encouraging our students to find active and alternative forms of transportation to and from school. The plan is for this to continue at home and for students to be active regardless of the wild weather we can get in Calgary. Our students will track how they get to school in the warmer weather and see if they can match this physicality by riding stationary bikes and participating in other indoor activities in the cooler months.

11.**St. Joseph School***Coaldale***FABRICATE WITH SOLAR! | \$4,995.⁸⁵**

The purpose of Fabricate with Solar is for students to become more environmentally conscious by understanding the benefits and challenges of solar technology power and how it works alongside conventional energy sources, as well as inspire creative project based learning. Using 3D software and a 3D printer and cnc router, students will design, build, test, and modify their solar powered projects until they are satisfied they have done their best to harness the Sun's awesome power, using a range of solar panel sizes alongside rechargeable batteries to power their creations.

Fabricate with Solar relates to renewable and alternative energy sources as the solar panels incorporated into student projects will conserve energy that would have been provided by electricity from batteries. Students will understand that despite our best efforts to harness the Sun's energy to provide electricity we still need assistance from other sources, especially for projects with higher electrical requirements. Students will have the opportunity to embrace their role as future engineers as they design and build products such as Bluetooth speakers and 3D printed rc cars.

12.**Glenmeadows School***Calgary***ENERGY EDUCATION THROUGH THE ARTS | \$5,000**

At Glenmeadows School we strongly believe in a STEM approach. We feel our students' learning can be greatly enhanced by adding the "A" (Arts) to the equation thereby promoting a STEAM approach to energy education. An arts-integrated approach to learning science can better engage a greater number of students by making learning fun by facilitating a safe space for collaboration, self-esteem, creativity and risk-taking to thrive. Following a thorough investigation of several grade-specific, curriculum-connected energy topics through research, experimentation, field trips, and guest speakers, students will identify a key question they wish to explore in dramatic form facilitated by professional artists from Evergreen Theatre.

Students will "grow a show" through a series of playwriting and performance workshops over a period of one week. Each workshop will offer a unique blend of science/energy and social studies scene building, script writing character creation, choreography, dramatic games, and improvisation. The students will then perform an "Energy Extravaganza" of their own creation, showcasing their energy-specific learning.

13. New Myrnam School

Myrnam

MINIMIZING MYRNAM'S CARBON FOOTPRINT THROUGH COMMUNITY COLLABORATION | \$5,000

This year's project will focus on answering the following inquiry question: How can citizens in a small, rural community work collaboratively to reduce their collective carbon footprint? Students will work in four cross-grade, cross-curricular teams to examine this question from a number of perspectives. Specifically, students will look at how local food production can reduce the carbon footprint of a rural community that is geographically isolated from larger centres. The purpose of this project is to determine to what extent the production of foods locally at New Myrnam School can reduce the carbon footprint of our school and larger community.

They will also form community partnerships with local restaurants, grocery stores and community agencies to use our harvested vegetables. This project will see students in our school's horticulture program design and create a large-scale hydroponic system to produce lettuce varieties, vegetables and herbs. In addition to producing lettuce varieties, herbs and other vegetables for our school nutrition program, our school will also partner to provide these foods for the local Myrnam grocery store, restaurant (C.J.s) and a restaurant in St. Paul that specializes in sourcing and serving foods from local producers.

To conclude the project, students will calculate to what extent our local carbon footprint has been reduced through the reduction in the shipping of food over long distances and the use of exclusively renewable energy sources to produce our food. They will communicate their findings at our spring Open House and a Village of Myrnam Council Meeting.

14. Cappy Smart Elementary

Calgary

ENERGY PERSPECTIVES | \$5,000

The students will learn about diverse energy perspectives including the western view and the Aboriginal one, the ultimate goal being to identify reasonable approaches to reduce our reliance on fossil fuels and consequently to decrease the greenhouse gas emissions. The learners will gain theoretical knowledge about energy by generating questions; looking for answers by using books, websites, videos; discussing with experts in the energy field and with Aboriginal elders; recording / discussing their findings.

Second, they will design experiments by manipulating diverse variables in order to investigate the transformation of different resources of energy into electricity. Third, the students will analyze the data and they will recommend the best ways to use energy in our daily lives considering diverse perspectives. Finally, the learners will share their newly gained knowledge and skills with various audiences in and outside of the school.

15. **Tilley School** *Tilley*

ESCAPING STINKY AIR | **\$5,000**

Who can “escape” from stinky air during the construction of a school? What is in the air that we breathe in a rural school? We will track and analyze the inside and outside air to determine what impacts our air and then design an escape room project to teach others about what we have learned.

16. **Capitol Hill School** *Calgary*

THE STORY OF WATER: A TALE OF CONSERVATION | **\$5,000**

The Story of Water: A Tale of Conservation is a series of project based learning tasks for Grade 3/4 students at Capitol Hill School. Students will focus on learning about water and the ways it is used within our local community and province. They will investigate how it is a necessary resource globally. Through student participation in a series of learning tasks they will experience, first-hand, how water is necessary.

Some of these tasks involve: designing and constructing an irrigation system for our indigenous plant and food garden, participating in a school based science exhibition (showcasing projects focused on Alberta’s different energy sources), and investigating how water is used in production and as an energy source.

Students will also deepen their understanding by participating in off-site activities and inviting guests into the school to share their expertise, knowledge, and to provide feedback to students. Over the course of the year, students will collect their understandings, findings, and experiences together to create “The Story of Water: A Tale of Conservation,” in a self-published book.

17. **St. Mary’s Elementary** *Lloydminster*

A THREE-PRONGED APPROACH TO LEGO ROBOTS | **\$4,665.²⁸**

Utilizing LEGO Mindstorms EV3 Robotics and Renewable Energy Add-on, students will incorporate aspects of makerspace and the engineering design process, with an emphasis on coding, renewable energy generation and efficiency on both a small-and-large scale. In addition, the project will be making use of the LEGO kits as part of our school’s LEGO Therapy social/emotional learning initiative.

18. Strathmore High School

Strathmore

ALBERTA'S FIRST NET ZERO HIGH SCHOOL | \$4,785

Current unsustainable practices are leading to undesirable consequences like climate change that will negatively impact current and future generations. These undeniable facts have motivated us to take action and create Alberta's first net zero high school. This project will be a student lead initiative with access to facilitators and industry experts. We will start learning about energy efficiency, energy audits, measuring and monitoring energy use and funding innovations that will help our school toward energy neutrality.

We are working to develop and utilize our individual strengths to fill particular roles in working towards common goals. With a given amount of time per week we are learning through existing industry practices and working towards creating innovative ways to design and create sustainable workplaces and habitations. With this knowledge we are measuring our energy consumption, coming up with creative low cost solutions and implementing these solutions to reduce our energy use. After this stage, we will develop ideas for generating renewable energy on site by performing cost benefit analysis scenarios and consulting industry experts.

19. Cold Lake High School

Cold Lake

HAND DRYERS- WILL BLOW YOU AWAY! | \$4,449.98

After visiting the University of Alberta one of the members of our Environment Club was inspired and came back to our Team and proposed the idea of replacing our paper towel dispensers with hand dryers to lower the carbon footprint of our school; similar to what they observed at the U of A. The Envi-Royals are an extra-curricular club at CLHS. We will work as a Team to research the benefits of hand dryers versus paper towel dispensers.

We see this project as potentially the start of a system wide change within Northern Lights Public Schools, because not only do energy efficient hand dryers lower the environmental impact, in the long term they also provide cost savings over traditional paper towels. The students will present their findings and involve people within three key stakeholder groups with their project: the Students within our School Community, the Staff within our School Community and Northern Lights Public School Board.

20. Hillview School *High Prairie*

THE COMMUNITY GREENHOUSE | \$5,000

Our school is a small K-6 school situated in the middle of a Metis Settlement in Northern Alberta. The closest municipality is 45 km away, at High Prairie. This means the vegetables and flowers purchased by residents have to be bought in the town of High Prairie, which is a considerable distance away. Our goal is to have the students build a solar powered greenhouse which would grow the vegetables and flowers. These would in turn be sold at cost to the community. The savings to the community of having to drive to town for these items would be tallied and graphed. This would show the students the cost savings of driving for supplies that can be bought locally, and give the students pride in growing and providing something to their local community. This creates an innate satisfaction the students would have in contributing in a positive way to the community.

21. Matthew Halton High School *Pincher Creek*

ENERGY EFFICIENCY PROJECT | \$2,025

This project seeks funding to purchase and assemble three Home Energy Monitoring Kits to be used by schools to teach about electricity and energy efficiency. The kits will be available to borrow from the Pincher Creek public library so households and other organizations can utilize the tools to assess critical aspects of energy efficiency in the buildings they live and/or work.

The kits are one component of a larger initiative by a group of enterprising high school students raising awareness about the global energy transition, educating citizens about renewable energy and taking affirmative action to reduce the community's carbon footprint. The students initiated a campaign at their school and in the surrounding community seeking enough 'votes' to persuade the Calgary based company, MyHeat, to conduct thermal image mapping of Pincher Creek. The map, together with on-line digital tools provided by MyHeat, allow residential, municipal and commercial building owners to detect and make visible the waste heat escaping from their premises.

The kits allow property owners to gather more detailed information about their energy losses while encouraging them to look for solutions. Each kit includes a Kill-o-watt Meter, an InfraRed Imaging Thermometer, a stopwatch, light meter, LED light bulb, and a battery charger secured safely inside a durable storage case. Each kit includes background information about energy efficiency, instructions on how to use the tools, and a contact list of retail outlets, local contractors, and other resource people available to assist people to improve their building's energy efficiency.

22.

Ian Bazalgette School

Calgary

PROJECT SUNSHINE: A BRIGHTER FUTURE FOR CALGARY | \$1,000

Climate change is one of the most pressing environmental issues of our time, impacting every local community in the world. The steady increase of greenhouse gases calls for local action to tackle its adverse effects on the natural and social environments. One of the ways to combat climate change in the city of Calgary is to harvest solar energy. Calgary is one of the sunniest cities in Canada, receiving 2,396 hours of sunlight, or approximately 333 days of sunny days annually.

This source of renewable energy presents opportunities for environmentally-friendly initiatives such as the use of solar panels. One solar panel measuring 165 cm by 99 cm (or 65 inches by 39 inches) provides 550 kilowatts (kWh) of electricity. Benefits of solar energy include savings to electricity bills, cutbacks in greenhouse gas emissions, low maintenance costs, and the reduction of fossil-fuel dependency.

The commitment to a sustainable future in Calgary begins with solar panels. This project is seeking a grant to fund the planning and construction of solar panels for one junior high school in the city of Calgary. Its aim is to build the solar panels above a small room of the school and reduce the amount of greenhouse gases emitted annually. Funding in the amount of \$27,100 is requested to cover expenses related to the project.

