

School Nominee Presentation Form

ELIGIBILITY CERTIFICATIONS

School and District's Certifications

The signatures of the school principal and district superintendent (or equivalents) on the next page certify that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of their knowledge. *In no case is a private school required to make any certification with regard to the public school district in which it is located.*

1. The school has some configuration that includes grades early learning to 12.
2. The school has been evaluated and selected from among schools within the Nominating Authority's jurisdiction, based on high achievement in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. Neither the nominated public school nor its public school district is refusing the U.S. Department of Education Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district wide compliance review. The Department of Defense Education Activity (DoDEA) is not subject to the jurisdiction of OCR. The nominated DoDEA schools, however, are subject to and in compliance with statutory and regulatory requirements to comply with Federal civil rights laws.
4. OCR has not issued a violation letter of findings to the public school district concluding that the nominated public school or the public school district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan to remedy the violation.
5. The U.S. Department of Justice does not have a pending suit alleging that the public school or the public school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
6. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the public school or public school district in question; or if there are such findings, the state or public school district has corrected, or agreed to correct, the findings.
7. The school meets all applicable federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

U.S. Department of Education Green Ribbon Schools

X Public Charter Title I Magnet Private Independent Rural

Name of Principal: Mr. Matt Haney

Official School Name: Mount Desert Island High School

Official School Name Mailing Address: 1081 Eagle Lake Rd, Bar Harbor, ME 04609

County: Hancock State School Code Number: 1037

Telephone: 207-288-5011 Fax:

Web site/URL: <http://www.mdihs.net/> E-mail: mhaney@mdirss.org

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.



Date: 2/14/2020

(Principal's Signature)

Name of Superintendent: Dr. Marc Edward Gousse

District Name: Mount Desert Island Regional School System

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.



Date: 2/14/2020

(Superintendent's Signature)

Nominating Authority's Certifications

The signature by the Nominating Authority on this page certifies that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of the Authority's knowledge.

1. The school has some configuration that includes grades Pre-K-12.
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. The school meets all applicable federal civil rights and federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency: Maine Department of Education

Name of Nominating Authority: Ms. Shari Templeton

I have reviewed the information in this application and certify to the best of my knowledge that the school meets the provisions above.



Date: 2/14/2020

(Nominating Authority's Signature)

SUBMISSION

The nomination package, including the signed certifications, narrative summary, documentation of evaluation in the three Pillars, and photos should be submitted online according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509

Expiration Date: March 31, 2021

Public Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1860-0509. Public reporting burden for this collection of information is estimated to average 37 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit P.L. 107-110, Sec. 501, Innovative Programs and Parental Choice Provisions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email ICDocketMgr@ed.gov and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.

Summary Narrative: An Overview of MDIHS Work Encompassing All Three Pillars

Mount Desert Island High School (MDIHS) is a rural public high school in Maine which draws 542 students from ten K-8 schools in and around the Mt. Desert/Bar Harbor, Maine region, including three tiny schools (3-36 students) from nearby outer islands. Green and sustainability efforts are strongly supported by school and district administrators, school board members, the school's Environmental Concerns (Eco) team, teachers across departments, and staff including counselors, custodians, and cafeteria staff.

There is a widely shared interest in the health and wellness of students and staff, support for educational experiences that prepare students to be active informed citizens interested in our changing world, and an increasing emphasis on environmental sustainability. The school's mission is "to provide a safe, supportive environment in which all members are held to high academic and ethical standards. The faculty staff, and administration, supported by the community, guide students as they acquire the knowledge and skills necessary to become responsible, self-directed learners and healthy, productive citizens."

Evidence of all of this can be found throughout the school in a multitude of tangible and intangible ways and is obvious to visitors, students, and the community alike. According to students, staff, board members and administrators, it is truly part of “how we do business.”

Most obvious are the 1400+ solar panels on the roof of the high school. MDI High School was the first high school in Maine to go completely solar in the fall of 2019. Visitors need to look closer to see the LED lighting, the trail system, the EV charging station, composting and recycling efforts, and the extra insulation in the renovated part of the school. Soon, everyone will be able to see the new electric bus parked outside with its diesel counterparts.

During the 2019-2020 school year, we estimate that **more than 50% of our students will be in at least one course that includes a focus on climate change, human impacts on the environment, and/or proposing and designing solutions for problems they identify and research.** In comparison with five years ago, **all incoming freshmen will graduate having had to use critical and systems thinking to consider the environmental issues facing our planet and what we might do in response.** For example, we have completely redesigned our required Freshmen biology class to include a strong environmental focus. Freshmen Biology now includes the study of carbon cycling in photosynthesis and cellular respiration through case studies of deforestation and loss of phytoplankton and a study of ecology that includes looking at and discussing trophic cascades, biomagnification of pollutants, and many case studies of human impact on the environment (Aleutian Islands, Willamette River, Yellowstone Wolves). The course culminates with a Human Impact Project in which students research and present one way that humans are impacting the earth, such as through the spread of invasive species, poaching, irresponsible mining, etc.

Most of our students will engage with the related issues of climate change and human impact multiple times during their high school career, regardless of their pathway to graduation, through traditional classes, advanced classes, experiential learning experiences or other electives, and/or during their Senior Ex[hibition] capstone project. It is perhaps not surprising that our students are asked to explore climate change and environmental issues in many science classes (e.g. freshmen biology, chemistry, regular and AP environmental science). However, students also explore these topics when taking any or all of several additional courses across learning areas including human geography, current events, AP History, and Spanish/French III. In addition, students examine topics related to environmental degradation and possible stewardship solutions when engaged in experiential learning opportunities such as the Farm to Table class, the Guatemala Studies class and the Eastern Maine Skippers program. You might find MDI students exploring local aquaculture operations, learning how to compost and save topsoil on farms in central America, or studying the changes in patterns of fishing over time in the lobster industry as the Gulf of Maine waters get warmer.

An emphasis on health and wellness for students is also visible. This is clear from the state-of-the-art fitness center and dance studio, staffing for guidance and counseling, a

full-time nurse, and an abundance of choices for physical education classes and extracurricular athletic options. Facilities and services support wellness through the healthy food served in the cafeteria, the well-placed hydration stations throughout the school and the great condition of the 50 year old building. There is an active staff wellness program led by two teachers who challenge their colleagues each month to improve their physical and mental health through water challenges, movement challenges, morale boosters and more.

It would be easy for MDI High School students, like so many other young people, to be discouraged about slow progress on climate change or to be anxious about the state of the world. They would not be alone. Instead, when interviewed, Eco Team members talk about hope and optimism. Listening to Eastern Maine Skippers' presentations, Senior Ex presentations and student presentations to the community about plastics pollution or the need to declare a climate emergency, it is clear that MDI High School students feel educated and empowered to take action. This, we think, is a good measure of how we are walking the fine line between educating about climate change and environmental sustainability and the attendant challenges while fostering optimism that positive action can still be taken.

Next steps for students on the Eco Team, staff and administrators include researching the best way to reduce paper waste in the bathrooms; further exploration of the implications of the high school cafeteria being part of the Sustainable MDI pledge; embarking on an energy benchmarking project; improving recycling signage, looking into programmable venting (e.g., gym fans), and air quality testing. And, of course, evaluating how the new electric bus performs. Stay tuned!

Nominee Information

School Name: **Mount Desert Island High School**

Category of Nomination: Public High School

Address: 1081 Eagle Lake Rd City: Bar Harbor State: ME Zip: 04609

Website address: <http://www.mdihs.net/>

Facebook: <https://www.facebook.com/MDIHS>;
<https://www.facebook.com/mdistudents/>

YouTube: <https://www.youtube.com/user/MDIHSTrojanTV>

Top official: **Dr. Marc Edward Gousse**

Position/Role: Superintendent Email: marc.gousse@mdirss.org Phone: 207-288-5049

Lead Applicant (if different) **Mr. Matt Haney**

Position/Role: Principal Email: mhaney@mdirss.org Phone: 207-288-5011

Highlight all that apply:

High

Public

Rural

Provide percentages, if any are relevant to your school, district, or institution:

Free and Reduced Price Lunch: **19%**

Minority: **9%**

Limited English Proficient: **1%**

Special Education: **16%**

Graduation Rate: **89%**

Attendance Rate: **92% ADA**

The data above is based on 2018-2019 data from the Maine Department of Education and is based on the May 2019 student count of 533 students.

Total Enrolled: **542** (beginning of the 2019-2020 school year) Number of Schools: **1**

Documentation of Sustainability Achievement

Narrative for Pillar I: Efforts to Reduce Environmental Impact and Costs

Timeline for Pillar 1 Efforts

2016-2017: Students start the Eco Team and one of the science teachers agrees to be

the team's faculty advisor; plastic silverware replaced by metal silverware in cafeteria; student does Senior Ex project on the feasibility of putting solar panels on the roof of MDI High School

2017-2018: Conversion to LED lights and night sky compliance outside lighting; building renovation includes additional insulation.

2018-2019: Green storage building near Athletic Field completed; Electric Charging Station installed; building-wide recycling; composting starts

2019-2020: MDI High School becomes the first high school in Maine to meet all electricity demand using solar power

On January 17, 2020, principal Matt Haney got word that MDI High School had received the grant he had sought from the state to cover 80% of the cost for an electric bus. The electric bus will replace one of the older buses that uses diesel and will be purchased for use during the 2020-2021 school year. Mr. Haney said that "We feel this is extremely important as a symbol as well as another way to reduce our carbon footprint."

The electric bus may not yet be parked outside for students to board but there is plenty of evidence of the school's sustainability efforts over the past three years. In the fall of 2019, MDI High School became the first high school in Maine to meet all of its electricity demand using solar power, with installation of a large solar array covering most of the school's roof. It is estimated that the school will see a savings of 1 million dollars over the next 20 years.

Decisions for the past decade have been made with environmental health and efficiency in mind. In 2011, energy efficient boilers were installed when replacement of the old boilers was necessary. Two years ago, the school completed a conversion to LED lights inside school and LED "night-sky" compliant lighting in parking areas. The building renovation also completed that year included a focus on improving the building's insulation to better regulate temperatures and save energy. The new storage building near the athletic field, completed a year ago, was built green (e.g., rooftop solar panels to meet electricity needs, "smart" climate control) and restrooms there have low flow toilets, water on demand faucets and electric hand dryers. There is an electric vehicle (EV) charging station in the parking lot for staff and students to use.

Within the school, there is whole-school recycling of all recyclable materials managed by advisory groups in classrooms and overseen by the Environmental Concerns (Eco) team. National Honor Society members pick up returnables weekly throughout the building and students manage the recycling in all of the administrative offices as well.

This is the fourth year that the cafeteria is using reusable metal instead of disposable plastic silverware. Composting in the cafeteria started at the end of 2018-2019. The school contracted with Agri-Cycle to efficiently convert food waste into electricity, fuel, fertilizer, and other beneficial products. Cafeteria staff participated in the Smarter Lunchroom program to learn additional ways to cut down on food waste.

Members of the Eco Team are participating in a Gulf of Maine Research Institute EPA Environmental Education project to develop curriculum around sea level rise resiliency.

The Eco Team is also participating in a community-based *Ecosystem Education Project for Maine Youth*. This project involves developing teams knowledgeable about climate change who can facilitate workshops on climate literacy for interested others -- community members, students at other schools, or peers within their own school.

The Eco Team's next steps include researching the best way to reduce paper waste in the bathrooms; further exploration of the implications of the high school cafeteria being part of the Sustainable MDI pledge; embarking on an energy benchmarking project; and looking into programmable venting (e.g., gym fans). Team members know that recycling signage needs to be improved and they are proud to have implemented a 40% discount on coffee if you bring your own reusable mug, a move which has reduced paper cup waste.

While there is always more to do and while we cannot yet quantify most of the outcomes, it all adds up. All of these activities have the support of students, staff, school leaders and school board members. Since there is such a strong commitment to sustainability initiatives, people in the larger community are watching with pride to see what happens at the school in 2020-21 and beyond.

Narrative for Pillar 2: Efforts to Improve the Health and Wellness of Students and Staff

MDI High School emphasizes student and staff health and wellness across the school's regular and extra-curricular programming, physical plant and operations, and services. The MDI High School Board actively supports our educational programming as well as our staff health and wellness initiatives. This can be seen in the resources allocated to health and wellness within and across each of these areas in the high school budget.

To achieve all that is described in this section, MDI High School partners closely with four community organizations: [Healthy Acadia](#), the [Mt. Desert Island YMCA](#) and the [Downeast Family YMCA](#), [Acadia National Park](#) and [A Climate to Thrive](#).

The district [Wellness Policy](#) applies to MDI High School where student wellness is taken very seriously. The policy explicitly states the district's priority on student wellness: *AOS #91 believes that students who learn and practice healthy lifestyles in their formative years may be more likely to be conscious of the importance of good nutrition and exercise as adults, practice healthy habits, and reduce their risk of obesity, diabetes and other chronic disease.*

Health and Wellness Focus

Improving student and staff mental and physical health and wellness is an explicit priority of principal Matt Haney.

MDI High School's commitment to student wellness can be seen in its staffing which ensures low staff: student and teacher: student ratios to promote relationships and accessibility. The school has three full-time guidance counselors, including one who focuses solely on the transition of 8th grade students from each of the sending schools

and support for these students during their freshmen year. As of the 2017-2018 school year, the school has had a full time Licensed Clinical Professional Counselor on staff as well. Counselors from the community are allowed to come to the school to meet with students who see them regularly but who may not have the transportation or opportunity to see a counselor outside of school. The school provides a full time nurse and health center, three teachers who focus on physical education and wellness, a fitness center that includes a weight room and dance studio, and a schoolwide advisory program where students have the same advisor for all four years, ensuring that all students have an adult advocate within the school. This staffing configuration and combination of services strongly communicates that student physical wellness and mental health are important.

Students are also committed to physical wellness and mental health. Last spring, when students in the Advanced Design Thinking class took over all of the planning and facilitation for the Junior and Senior Social Responsibility Day, they polled their fellow students and found that there was strong support for a day focused on health, including healthy relationships, and wellness, particularly on strategies that can relieve stress. They designed the Healthy Trojans day which went beautifully, to their surprise and to the surprise of some of the adults working with them!

The district Wellness Policy extends to staff: AOS #91 highly values the health and well-being of every staff member and will support personal efforts by staff to maintain a healthy lifestyle. All Mount Desert Island Regional School System – AOS #91 [schools are] encouraged to implement staff wellness related programs and activities that are consistent with the Local Wellness Policy.

MDI High School has two Health and Wellness Ambassadors, teachers who are stipended to promote health and wellness, boost staff morale, build community and help staff get the most out of their health insurance wellness offerings. The two, a science teacher and the dance instructor, participate in the district's Health and Wellness Ambassador program and manage a small budget to incentivize and sponsor health and wellness activities at the high school. Wellness challenges during the 2019-2020 school year thus far include: Hydration, Movement, Mindfulness/Be Still, Give Up 1 Favorite Comfort Food, Get Outside, Practicing Gratitude, Health & Wellness Calendar and Serenity through the Solstice. At a recent presentation to the board, the ambassadors shared that participation in the Wellness Challenges has increased from 7 staff initially to between 20 and 30 who take up each challenge. The ambassadors encourage staff to have meetings while walking and workout buddies. The school also provides space in the dance studio for staff Tai Chi and Body Sculpting classes and twice weekly 20 minute "dance parties" before school on Wednesdays and Fridays. The Health and Wellness Ambassador program was piloted in the second half of the 2018-2019 school year and fully implemented beginning in the fall of 2019.

Teachers can use the fitness center during prep time as well as before and after school. The two closest YMCAs offer 30% off memberships to all school staff. MDI High School staff also have the opportunity to participate in health and wellness-related sessions at all district professional development days. In the past two years these have included

sessions on mindfulness, various types of dance and nature walks on the school's trails. For many years, the nurse at MDI High School coordinated a small Wellness Fair once a year for high school staff. This has turned into a district-wide biennial Health and Wellness Professional ½ Day held at MDI High School in March designed to build community, emphasize wellness and help staff relax and rejuvenate. Sessions are led by staff and community members. For example, on March 24, 2019, high school teachers and staff participated with colleagues from all of the K-8 schools in a wide range of activities ranging from line dancing, Omnikin Ball, sensory integration, and trail running to yoga and meditation, free apps to support health and wellness and information on the wellness benefits offered through the district's insurance plan. At the Wellness Fair that day, people could sign-up for free shoulder massage, make smoothies, and get free health checks (blood pressure, cholesterol screenings, etc.). Repeated themes in the feedback included: *Taking time to focus on health is important. So easy to put ourselves last on the to-do list. It's fun to get out of a rut and try something new....Every age is the right age to start getting healthier...It is important to spend some time on yourself to recharge and being with coworkers doing enjoyable activities is rejuvenating...It is important to take time to think about our own health...Then we will be stronger and more capable of dealing with everyday stressors. This will benefit our students...Breathing helps relax the body and mind; doing something uncomfortable is challenging, but super rewarding...I think the most important part was relaxing with our colleagues, laughing, sharing and having a great time together. It was also great to learn some new things about taking care of our health and getting a poke to get moving!*

Educational Programming Related to Health and Wellness

MDI High School requires that all students take a 9 week (.5 credit) Wellness course and two 9 week (total:1 credit) PE courses. The required Wellness course is organized around the essential question: *What should I do to ensure my total wellness?* The course addresses the following topics: healthy behaviors and personal health, dimensions of health, diseases/other health problems, environment and personal health, growth and development and basic health concepts. The course also addresses how to locate valid resources related to health information, products and services. CPR certification is a part of the required Wellness class. This ensures that approximately 50% of the total student body is certified in CPR at any given time.

Students have a choice of a variety of .5 credit classes to complete the 1 credit PE requirement: Foundations of Fitness, Lifetime Activities, Team Sports, Weight Training and Cardiovascular Fitness, Outdoor Activities and Fitness. Students with referrals enroll in the Adapted PE Class. Some students take additional PE classes beyond the requirement as an elective to make sure they stay active on a daily basis. Students may also choose to take other elective classes such as Yoga and Dance.

For a school its size (approx. 540 students), MDI High School offers a very full set of extracurricular opportunities (arts and music, theater, robotics, athletics). 65-70% of the student body participates in school sponsored extracurricular activities. The majority of students participate in at least one sport; many opt to play in all seasons. Athletic

options include the following choices by season: *Fall*: Cross-country, football, soccer (JV and varsity), volleyball, cheerleading, and golf. *Winter*: Basketball (freshmen, JV, varsity), swimming and diving (held at the local YMCA), indoor track, cheering and wrestling. *Spring*: Baseball (JV and varsity), softball (JV and varsity), tennis (JV and varsity), sailing, and track & field.

Every two years MDI High School students participate in the Maine Youth Integrated Health Survey (MYIHS). The survey asks a variety of questions related to healthy eating, substance use, tobacco use, exercise and mental health. The results are used by the school's counselors, administrators and health and physical education teachers for feedback on whether programs are supporting health and wellness effectively and what other supports may be needed. In 2019, MDI High School scored significantly better than the state average for the number of students at a healthy weight, eating fruit and vegetables, low consumption of soda and daily PE classes. The school also scored significantly above the state average in the number of students who said the following:

- at least one teacher really cares about me
- the school fairly enforces rules
- the school addresses bullying most of the time or always
- people in my community make me feel like I matter
- I receive support from adults other than my parents

Physical Plant and Operations Support a Healthy Learning Environment

Within the school: Students, staff and the community have a lot of pride in the high school. The custodial staff keep the 50 year old building looking shipshape, something commented on by the state Commissioner of Education on a recent visit to MDI High School. The custodial staff uses eco-friendly cleaning chemicals and products to keep the floors buffed, classrooms and bathrooms clean and the windows sparkling. Student artwork, including between 20-30 murals from the student murals class, decorates the walls throughout the school. During the building renovation in 2017, filtered water bottle filling stations were located throughout the school to reduce plastic waste and promote hydration.

The cafeteria received a silver commendation in 2019 from the national [Smarter Lunchrooms project](#). The cafeteria offers a daily salad bar. Staff in the administrative offices often purchase the salad bar for lunch, an endorsement that most school cafeterias cannot claim.

The school goes above and beyond requirements outlined by Maine statute to ensure students and staff have a healthy environment within which to work. Ninety-eight percent of overhead lighting throughout the entire building is now LED, which is safer and less toxic, as well as cost effective. As part of the proposed library renovation, the last remaining fluorescent light ballasts will be removed, eliminating what was once an extensive PCB hazard throughout the building. The school was built in 1979 so an asbestos management plan was put into place twenty years ago and staff are trained annually. Drinking water is regularly tested for nitrates, coliforms, lead, copper and pesticide residue. We have eliminated the use of toxic substances in the art studios and

chemical management is taken very seriously, following the OSHA safety guidance for science labs.

The principal and head custodian believe that the next environmental health standard that needs to be looked at is indoor air quality and radon testing. The plan going forward is to have certified air quality checks become part of the school's regular monitoring cycle.

School grounds: The high school campus includes a track that is heavily used by students and staff as a place to walk, run, and take an active break. Students and staff have access to the tennis courts and the trail system built and maintained by students. Picnic tables outside are popular in the late spring and early fall as a place for staff and students to eat lunch.

There is signage and an ongoing effort to discourage engine idling. The school is set back quite far from the main road, minimizing traffic noise and air quality degradation from passing cars and trucks.

There is an Integrated Pest Management (IPM) Plan and practices in place. The head custodian is a licensed water operator. He works closely with the Department of Environmental Protection to ensure pesticides and greywater do not adversely affect the wetlands on the outskirts of the high school campus. Three test ponds on the property are regularly monitored. Irrigation systems and drinking water systems are entirely separate, drawing from two different wells.

Narrative for Pillar 3: Efforts to ensure Effective Environmental and Sustainability Education

During the 2019-2020 school year, we estimate that **more than 50% of our students will be in at least one course that includes a focus on climate change, human impacts on the environment, and/or proposing and designing solutions for problems they identify and research.** In comparison with five years ago, **all incoming freshmen will graduate having had to use critical and systems thinking to consider the environmental issues facing our planet and what we might do in response.** Most will engage/can choose to engage with the issues multiple times during their high school career, regardless of their pathway to graduation, through traditional classes, advanced classes, experiential learning experiences or other electives, and their Senior Ex experience.

In 2012, MDI High School revised its learning outcomes/vision statement. The vision statement is based on [Maine's Guiding Principles](#) plus two outcomes added by MDI High School related to health and the environment. The vision statement reads: "We believe that to be well prepared for life people should be integrated and informed thinkers, be aware of their impact on others and the environment, be creative and practical problem solvers, be responsible and informed citizens, communicate clearly and effectively, make mindful and healthy decisions, collaborate and produce high quality work and be self-directed and lifelong learners. School and district administrators

have used this list to guide the design of curriculum and instruction throughout the school for the past eight years.

Curriculum and Instruction

MDI High School, along with the rest of the district, adopted the [Next Generation Science Standards](#) (NGSS) at the beginning of the 2013-2014 school year. The 8 NGSS Science and Engineering Practices serve as the school's graduation standards in the area of science and students have to provide evidence of each in two different areas of science: Asking Questions and Defining Problems, Developing and Using Models, Planning and Carrying Out Investigations, Analyzing and Interpreting Data, Using Mathematics and Computational Thinking, Constructing Explanations and Designing Solutions, Engaging in Argument from Evidence, and Obtaining, Evaluating, and Communicating Information. Using the NGSS standards to design new courses and redesign existing courses has resulted in more hands-on science teaching and learning requiring students to think critically and analytically throughout. It has also allowed us to think about how to interweave opportunities to use the practices throughout all of our science offerings. As new science courses have been introduced or old ones redesigned, we have taken the opportunity to integrate experiences into the coursework allowing students to learn and think about Climate Change at multiple points and in multiple ways throughout the courses we offer.

For example, as of the 2019-2020 school year, all freshmen take a redesigned biology class with a strong environmental focus. **Freshmen Biology** includes the study of carbon cycling in photosynthesis and cellular respiration through case studies of deforestation and loss of phytoplankton and a study of ecology that includes looking at and discussing trophic cascades, biomagnification of pollutants, and many case studies of human impact on the environment (Aleutian Islands, Willamette River, Yellowstone Wolves). The course culminates with a Human Impact Project. After discussing sustainable development, students research and present one way humans are impacting their environment (climate change, poaching, consumption of meat, etc.). Students then write a reflection about which of their classmate's projects had the biggest impact on them and how we might work to ameliorate the issues raised. According to one of the teachers of this course: "Almost all of our 8 Science Graduation practices are assessed through the lens of human impacts on the environment, in addition to multiple content standards."

In our redesigned **Chemistry** classes, students study the chemistry of climate change, and what it means for something to be a greenhouse gas. Common misconceptions about climate change are addressed and discussed. Students research the scientific assumptions in policy recommendations and examine existing environmental policies to assess the probability that these will help the environment as intended. Students also calculate and come up with ways that they can reduce their own carbon footprint. The goal is to develop climate change literate citizens who can evaluate proposals and claims based on science.

Three years ago we began offering **Environmental Science** and **AP Environmental**

Science classes. These have been very popular. In the **Environmental Science** course students gain an understanding of the interrelationships of the natural world, identify and analyze environmental problems, and examine alternative solutions for resolving and/or preventing them. Topics include plate tectonics, weather and climate, ocean and groundwater, soils, ecosystems and energy flow, natural resource use, pollution, and current global changes. The course includes inquiry and problem solving, scientific reasoning, and communication of scientific findings and ideas, and focuses on the essential question: How can we meet our needs and wants without compromising the needs and wants of future generations? The **AP Environmental Science** class focuses on the essential question: How do the biotic and abiotic systems of the natural world interrelate and what current challenges does our environmental stability currently face? Students engage with scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, and to examine alternative solutions for resolving and/or preventing them. Students study, in depth, earth systems and resources, population, land and water use, energy resources and consumption, and pollution sources and remediation.

MDI students' study of climate change, environmental issues and sustainability, is **not limited to science classes**. All of our freshmen take a **Human Geography** course where students discuss the impacts of climate change on human migration and examining climate change from a social justice perspective. Students in **Spanish III and French III** classes complete a unit on the environment with heavy focus on endangered animals. Students read, listen, speak and write about the topic in the target language and research an endangered animal from a Spanish or French speaking country (current status, possible solutions, and efforts to save). As part of their unit assessment, students do oral presentations in Spanish or French to the class about the endangered animal. In **AP History**, students can explore environmental policy when choosing a policy area to research. This has become an increasingly popular choice. Climate change is, of course, also an area of focus in our 9 week **Current Events** elective. Using electronic and print media sources, guest speakers and other available resources, students learn about events in order to take, support and defend positions on important issues. The caveat in the Program of Studies reads: *This class is intended for a broad audience, but the course demands that all participants relish respectful discourse about tough issues.*

Many of our interdisciplinary **experiential learning experiences** either include an environmental focus or provide the option for students to do further study in an area of climate science that interests them. For example, MDI High School is one of nine local high schools where students have the option to participate in the semester-long [Eastern Maine Skippers Program](#), a program developed and supported by the Maine Center for Coastal Fisheries. The program's purpose is to have students engage in building relationships and developing the knowledge, and skills needed to face the rapidly changing business, science, politics, and fishing environments of the 21st Century. A core theme of the program is the impact of climate change on the water temperature in the Gulf of Maine, the lobster population changes over time, and the changes lobstermen have had to make to keep up with those impacts. The program supports

hands-on place-based local exploration of global issues. A central feature of EMSP is a project in which students work collaboratively with community members like scientists, fishermen, regulators, and industry professionals, to investigate serious challenges within the fishing industry, and to research, develop and present effective solutions. Projects use the Design Thinking Process and can be done individually, in small groups, or as a Senior Ex capstone project.

Students enrolled in the 9 week **Farm to Table** elective visit local farms and spend some time in the kitchen, learning to prepare and cook locally grown and gathered food. Topics addressed include sustainable farming/gardening methods, food systems, food waste, and food insecurity. Students do a mix of “hands-in-the-dirt” work and classroom learning and complete a research project. Work in this class is assessed on the 4Cs: Creativity, Collaboration, Communication, and Critical Thinking, as well as the national standards for Family and Consumer Sciences Education. Other 9 week Family and Consumer Science electives also include an emphasis on the connections between the topics addressed and impacts on or from the environment. For example, in the **Food and Nutrition** course students discuss the environmental impact of agriculture and ways that it can be done more sustainably, compare the environmental and economic impacts of eating locally vs globally sourced foods and explore the nutritional importance of water and impact of global climate change on the availability of clean water. Students in the **Clothing Construction** course compare natural vs synthetic fibers and fabrics, and discuss the environmental impact of each, as well as the impact of mass production of natural fabrics vs organic and/or locally grown fibers. Microplastics in the ocean and how fabric care can contribute to the problem is also discussed.

The **Guatemalan Studies class**, offered every other year since 2012, is a semester long course combined with two weeks of study, cultural immersion and service learning in the highlands of Guatemala. Within the Maine classroom, each cohort of fifteen students investigates the complexity of Guatemala's past and present, exploring the roots of contemporary environmental and social justice issues. While in Guatemala students meet with and work alongside community leaders in towns that border Lake Atitlan and a rural community near Quetzaltenango. Students have seen the impact of crop disease, deforestation, lack of access to clean water and to local food sources. In one community, students work with the organization Instituto Mesoamericano de Permacultura (IMAP) that addresses climate change related food security and food sovereignty issues in its communities by teaching traditional Mayan farming practices combined with the principles of permaculture. IMAP also has a seed bank which stores native seeds from Mexico to southern Central America. In Pachaj, students support the efforts of a reforestation project to secure the rights of local access and ownership of land and water resources. Students have met with the mayor and city council of San Pedro La Laguna, the first community in Guatemala to ban single-use plastic bags, straws and styrofoam containers. Finally, students explore the topic of climate related refugees, as many communities in the western highlands of Guatemala are seeing climate fueling the migration of farmers due to droughts and an increase in pests and disease to crops.

MDI High School students can also apply for school year and summer internships at [The MDI Biological Laboratory](#) where they can study sea life adaptation to the changing climate. The MDI Biological Laboratory also partners with individual MDI High School teachers to have students participate in an ongoing place-based citizen science investigation and data literacy project into arsenic levels in local wells, a growing concern in Maine and New Hampshire.

Another powerful pathway to developing critical, creative thinkers and problem solvers is our **Design Thinking courses** - Intro (first offered in 2017-2018 - focused on designing solutions) and Advanced (first offered in 2018-2019 - focused on designing experiences). Design thinking is an active learning strategy that develops creative confidence and the ability to innovate. It engages and empowers students, teaching them to conceive, organize, lead, implement, and evaluate purposeful projects in any discipline. We teach and use the five components of the Design Thinking process developed at the Stanford d. School: Empathize, Define, Ideate, Prototype and Test. One major difference between the design thinking model we use and other models is that the process starts with empathy meaning that the work starts with learning the perspectives of those who perceive there is a problem and understanding what people think the issue is before moving to a brainstorm of solutions. Design Thinking classes take place in MDI High School's Island Innovation Center which is comprised of a flexible classroom that supports team work, brainstorming and design and our redesigned shop areas which now serve as makerspaces housing a variety of modern technologies (3D scanner and printer, laser cutter, virtual reality system alongside a comprehensive assortment of metal and wood shop technology tools). These tools are used to support the various stages of the design thinking process (eg., prototyping) as well as interdisciplinary work done in our Island Pathways alternative education program, arts and STEM collaborations, robotics, and our Marine Services Technology program, and can be reserved for any hands-on or design work students do in any discipline.

Students who choose to do so can study a topic related to how their own lives may be impacted by climate change for their **Senior Ex capstone project**. Senior Ex projects are appropriate for all students, celebrate student interests, achievements, and talents as they enter adulthood, encourage real-life problem solving based on issues the student identifies, provide an opportunity for students to work with experts in the community, are assessed to determine whether students demonstrate new learning, critical reflection, and effective communication (consistent with the Maine Guiding Principles) and provide an opportunity for the community to observe and give feedback to the school on the rigor and relevance of our program. Senior Ex is an MDI High School graduation requirement and final projects are presented to a panel of teachers, students and community members. The Senior Ex project is a real-life demonstration of Maine's Guiding Principles and MDI High School's vision of what is needed to be a successful graduate.

Students take the Lead

It is clear that a growing number of MDI High School students are passionate about the

need to find solutions to address the challenges that come with climate change. Students have taken the lead in the school and in the surrounding communities with the support of teachers and administrators. In 2017, one student's Senior Ex project explored the feasibility of solarizing MDI High School. Now the school's energy needs are powered by the sun and the 1400 solar panels installed on the school's roof. During the 2018-2019 school year, four freshmen girls pushed area towns to pass ordinances outlawing one use plastic bags. As of now, two towns have passed such ordinances. With the support of the school and the school's partner, [A Climate to Thrive](#), the girls worked with town selectmen in Southwest Harbor, Bar Harbor and Mt. Desert, made multiple educational presentations about plastic pollution, and gave interviews to the press. This was the same year that nine students taking AP Environmental Science presented the results of their study of impacts of sea level rise on Mt. Desert Island to then attorney general Janet Mills (Mills was subsequently elected governor, taking office in January 2019.) This presentation contributed to youth being included on the Climate Council that Mills convened as governor. MDI High School students were among those who took part in the Youth Day of Action last April 23rd at the state capitol in Augusta and in the Climate March in Bar Harbor the following week. In the fall of 2019, a group of students from the Eco Team and students from the [College of the Atlantic](#) banded together and demanded that the town of Bar Harbor consider declaring a climate emergency. The town is now in the process of assembling a task force to address the issues raised by the students. The Eco Team started with a handful of members during the 2016-2017 school year. Now, about ten percent of the school's students and many teachers are on the Eco Team email list.

In the summer of 2017, A Climate to Thrive, an area organization aiming for the island to be fossil fuel free by 2030, offered MDI High School students two summer internship positions. Since then, a total of nine MDI High School students have interned with the organization, learning how to lobby lawmakers, raise awareness and carry out sustainability campaigns related to LED lights, reducing restaurant waste and promoting plant-based diets. The Eco Team continues to work closely with *A Climate to Thrive*, most recently asking for the organization's help with the energy benchmarking project they want to do to measure the effects of all of the efforts by the school to reduce its carbon footprint. Members of the Eco Team are currently working a community partner to develop a workshop designed to spread climate change literacy that will be shared with other youth environmental education teams (YEET).

MDI High School wants its students to graduate literate in the issues associated with climate change along with the skills and disposition to take action. It would be easy for MDI High School students, like so many other young people, to be discouraged about slow progress on climate change or to be anxious about the state of the world. They would not be alone. Instead, when interviewed, Eco Team members talk about hope and optimism. That, we think, is a good measure of how we are walking the fine line between educating about climate change and environmental sustainability and the attendant challenges while fostering optimism that positive action can still be taken.

Photo credits/captions:

1. Photo courtesy of Julie Meltzer. Two of the four MDI freshmen girls seeking a town ordinance to ban single use plastic bags present on plastic pollution at the Southwest Harbor Public Library.

2. Photo courtesy of Lyn Gatz. MDI students learn about the importance of soil by making compost. Instituto Mesoamericano de Permacultura (IMAP), Patchitulum, Guatemala.

3. Photo courtesy of Lyn Gatz. MDI Students haul topsoil from the forest to supplement the seedlings at the tree nursery. Chico Mendes Reforestation Project, Pachaj, Guatemala.

4. Photo courtesy of Ruth Poland. An MDI student speaks at the Youth Voices Day of Action in Augusta.

5. Photo courtesy of Marc Gousse. High School Student works out in the MDI High School fitness room.





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