PART II - HIGHLIGHTS REPORT READY SUMMARY NARRATIVE

Minuteman Regional Vocational Technical High School, Lexington, Massachusetts

Summary of Achievements:

Minuteman High School is a public regional career technical education high school, which integrates academic and technical learning. As an accredited member of the New England Association of Schools and Colleges (NEASC), Minuteman challenges all students to aspire to their full potential, accelerate their learning, and achieve success in the 21st century global community. Minuteman offers 19 career technical majors, 14 sports teams, and 20 clubs and activities. Minuteman was able to build a state-of-the-art LEED Silver certified building to replace an outdated 30+ year old facility. In 2019, the staff, students, and all CTE program equipment was moved across the campus to the new facility. As part of the LEED certification, the Horticulture and Environmental science programs were complimented with individual greenhouse spaces that use a 2,000-gallon water collection system from water collected off the roof to offset our water usage from the city supply. The larger greenhouse has energy curtains to keep the heat in the growing zone and black out curtains that meet the standard for the Town of Lincoln's Dark Sky community initiative. The greenhouse supports a sustainable food and farming curriculum by allowing students to be able to grow produce and herbs year-round that supply the student cafeteria. Five beehives are also tended to by students. Students learn how to perform health checks on the colonies and harvest honey and wax for school use. Multiple varieties of maples on campus are tapped in the winter and early spring to collect sap for maple syrup production, showing students the value of the landscape as it relates to the economy and environmental health. The building was outfitted with a solar photovoltaic system housed on the roof. The power generated from the photovoltaic installation is equivalent to removing 330 tons of carbon dioxide from the atmosphere annually – that's the equivalent of taking 65 cars off the road, or 752,000 fewer miles driven by passenger cars. Minuteman makes every effort to ensure that our Career and Technical Education programs are keeping up with sustainability efforts in the industry. Students are encouraged to take their skills learned in their shops out to the jobs site where they get to work on real life projects including invasive species collection and eradication, building sustainable and environmentally friendly homes for low to medium income families in the community, and preparing meals for low-income families and seniors using excess food from grocery stores that would otherwise be destined for the landfill. Students at Minuteman participate in academic and vocational classes that weave sustainability skills and practices into their daily lessons and projects.

PART III - DOCUMENTATION

Green Ribbon Schools Pillar 1: Reducing Environmental Impact

Improvements to K-12 school facilities save schools money, strengthen the nation's energy security, and conserve natural resources.

Pillar 1, Element A: Improved energy conservation/energy-efficient building(s)

Minuteman is in a new construction building that opened in the Fall of 2019. The building is LEED Silver certified. The roof is equipped with solar panels that generate about 15% of the building's energy. The power generated from the photovoltaic installation is equivalent to removing 330 tons of carbon dioxide from the atmosphere annually – that's the same as taking 65 cars off the road, or 752,000 fewer miles driven by passenger cars. Through Minuteman's power agreement with Solect Energy, the solar panel system contributes to the new building's overall sustainability goals.

There is a water collection tank (2,000 gallons) for the Horticulture greenhouse that takes roof water to be used to water in the 3600sqft production greenhouse. There are eight electric car charging stations on the property, located in the staff and student parking lots as well as near the athletic fields. All plantings on the campus are native plants with no additional irrigation needed.

Pillar 1, Element B: Improved water quality, efficiency, and conservation

All drinking water stations have water bottle filling available at them. All water goes through an ionic filter. The water bottle filler has a sensor to shut off when a bottle is not at it. There is not irrigation on the grounds. All plantings are native plants that require minimal maintenance. The parking lots have water drainage areas with plants to infiltrate the water. The 3600sqft greenhouse for the Horticulture program has a 2,000 gallon water tank that collects water from the roof to be used for watering the greenhouse crops.

Pillar 1, Element C: Reduced waste production and improved recycling and composting programs

Most paper goods for the restaurant and cafeteria are compostable. The school is the process of setting up a recycling program. We do currently have recycling for printer cartridges. Our Robotics First club has a fundraiser drive through event coming up that will recycle electronics.

Pillar 1, Element D: Use of alternative transportation to, during, and from school

Minuteman is close to the Minuteman bike trail. Students and teachers who live close use the trail. The school has bike parking. The road we are located has no dedicated bike lanes and is narrow, so the amount of teachers and students riding bikes to school is minimal (about 2). All students were polled to see who is taking the bus so that bus stops could be consolidated to minimize use and shorten routes. 75% of our students take the bus, as we draw from 9 towns. These towns are from as far west as Lancaster to as south as Dover and Needham. All areas of the parking lot are no idling zones. All parking lots have multiple electric charging (8 in total) stations for electric vehicles.

Green Ribbon Schools Pillar 2: Improved Health and Wellness

Healthy school environments help students and educators remain healthy and strong.

Pillar 2, Element A: An integrated school environmental health program

Minuteman follows a strict Integrated Pest Management (IPM) plan. There are 3 staff members with an active Massachusetts Pesticide applicators license who help to make the safest decisions when

eradicating pests. In the Horticulture program, the greenhouse crops are managed by cultural and biological controls. No pesticides are used. By keeping a close eye on the crops and training students to do so as well, the IPM plan uses sticky cards to monitor. Cultural controls are in place to minimize pests and disease (sweeping, sanitizing, keeping the hose nozzle off the floor, proper temperature for the crop, proper moisture, etc.). Once a threshold is reached on a pest, biological control is used. Various biocontrol are used including nematodes, parasitic wasps, beneficial mites, etc.

Fertilizers are used as part of the cultural control strategy of our greenhouse and outdoor IPM plan. All nutrients are applied based on the needs of the plants and following rates set by the label for the targeted crop/landscape plant. Compost application as well as aerating of the grass areas helps to further strengthen the roots and soil health. This also helps to strengthen the plants in the riparian areas of the campus that border the water areas

For the building, cultural controls are emphasized (making sure the food waste and trash are taken out regularly, closing windows and doors, not leaving food out in teacher areas, etc.). A pest control company is contracted by the school to put out peppermint, cinnamon, and other oils, to deter pests from high priority areas (cafe, restaurant).

Minuteman's HVAC system was designed to save energy by employing a building wide computerized programable interface. This allows temperature setbacks, special events and holiday programming during times when the building is unoccupied. it also uses a computer algorithm to utilize outside air to cool the building. ALL roof top air handling unit fan motors are equipped with VFDs (Variable speed drive) Technology. that will slow the motor down when air volumes are achieved thus reducing energy consumption.

Minuteman uses an approved list of cleaning products. All products are Green Seal Certified. Ice Melt used in the winter on our sidewalks are a formulation of sodium chloride, calcium chloride, potassium chloride and magnesium chloride. This is an environmentally formulated ice melt that is safe for plants and animals. The parking lots are sanded, no salt is used. Both cleaning products and ice melt are applied according to the label.

Pillar 2, Element B: Health, Wellness, and Nutrition

Minuteman has a full gymnasium, weight room, and athletic fields. All students are able to take physical education classes. Vocational programs are encouraged to take breaks outside by taking a walk or a stretch. Minuteman is in the process of implementing the Multi Tiered Systems of Support (MTSS) framework to address the social-emotional health of our students. We also employ social workers, additional psychologists, and have a full guidance department to assist with student needs. Our student union (cafeteria) food service is Fresh Picks, which utilizes fresh produce, some from our own greenhouse, and other local farms to fresh prepare food for our students.

Green Ribbon Schools Pillar 3: Effective Environmental and Sustainability Education

Incorporating environmental and sustainability concepts into your education program can create a community of green-minded citizens.

Pillar 3, Element A: Interdisciplinary learning/coursework

At least 50 staff members are trained and certified by the Center for Green Schools. This certification required the implementation of coursework into the curriculum. All students receive the integrated Environmental science and energy saving curriculum throughout their academic science courses. Most shops also naturally cover the curriculum through their State Chapter 74 frameworks. Being a vocational high school, many of our shops look at the environment (Environmental science, horticulture, automotive, plumbing, engineering) as well as energy (physics, engineering, robotics) and human systems (Health Assisting, A and P, Nutrition, Biology, Biotechnology). Some examples include offering AP Biology, AP Environmental Science, and integration projects between academics and shops (Physics and Automotive, Biology and ENVS, Health and Horticulture, etc.)

Pillar 3, Element B: Use of the environment and sustainability to develop STEM content, knowledge, and thinking skills

Many vocational programs and academic classes used the outside campus as an extension of the classroom. We are lucky to have Minuteman National Park across the street, which many classes take advantage of as well. We have a STEM club but also other chapters, clubs and vocational programs that have a strong emphasis on STEM. These include FirstRobotics, FFA (formerly Future Farmers of America) and SKILLS USA. Our FFA and SKILLS USA are 100% participation chapters, which means that all students are members and are encouraged to participate.

Pillar 3, Element C: Development of civic engagement knowledge and skills

Many of our clubs and vocational programs partner with community groups on projects and events. Horticulture has partnered with local garden clubs and conservation commissions to complete planting projects and invasive inventories, Environmental Science has partnered with Town trusts to do environmental surveys, culinary has partnered with Food Link, a local group that uses food from grocery stores that is close to expiration, to create meals for seniors and people in need, while eliminating food waste. Our FirstRobotics club has scheduled an electronics recycling drive through event. Our Carpentry, Plumbing, and Electrical Shops work on a Habitat for Humanity house every few years or a LexHab house. LexHab is a nonprofit in Lexington that rehabs houses and then provide low to moderate income families with safe affordable housing in Lexington. Part of the mission is also to develop housing that is environmentally sustainable, thoughtfully designed, and community focused. Our automotive students work with Second Chance Cars. Over the past 4 years, the students have repaired 11 cars to be donated to veterans and others in need of a reliable car. About 90% of all students participate in civic engagement projects through their shop, SKILLS USA, FFA, Community Service Club, or other clubs.