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 one or more of grades Pre-K-12. (Schools on the same campus with one principal, even a Pre-K-12 school, must apply as an entire school.)

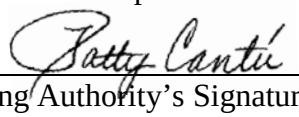
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.

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 Michigan Department of Education

Name of Nominating Authority Mrs. Patty Cantú, Director, Office of Career and Technical Education
(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

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



(Nominating Authority's Signature) Date January 30, 2014

Michigan Department of Education

Green Ribbon Schools Nomination Form

Tab to each field to complete your answers. Text fields will automatically expand as you type.

District Information:

Legal Name of District:	Clarkston Community Schools	School Code: 9010
Address of District:	6389 Clarkston Rd	
City and Zip Code:	Clarkston, MI	
Is your district one of the largest 50 districts in the nation?	☐ Yes ☒ No	

Building Information: Note: each building must complete a separate form.

Name of Building:	Renaissance High School
Address of Building:	6558 Waldon Rd
City and Zip Code:	Clarkston, MI 48346

School Principal Information:

Name of Principal:	Billie Pambid
E Mail Address: bipambid@clarkston.k12.mi.us	Telephone (area code): 248.623.8060

Application Contact Information:

Name of Contact Person:	Jessica Kimmel	Title: Supervisor, Facilities & Energy
Address:	6590 Middle Lake Rd	
City and Zip Code:	Clarkston, MI 48346	
E Mail Address: jlkimmel@clarkston.k12.mi.us	Telephone (area code): 248.623.8020	

School Website Address:	http://www.clarkston.k12.mi.us
Facebook Page:	https://www.facebook.com/pages/Clarkston-Community-Schools/164498640303901

School Demographics:

Level: ☐ Early Learning Center ☐ Elementary (PK – 5 or 6) ☐ K – 8 ☐ Middle (6 – 8 or 9) ☒ High (9 or 10 – 12)	School Type: ☒ Public ☐ Private/Independent ☐ Charter ☐ Magnet
How would you describe your school: ☐ Urban ☐ Suburban ☒ Rural	Does your school have at least 40 percent of your students eligible for free and reduced meals? ☐ Yes ☒ No

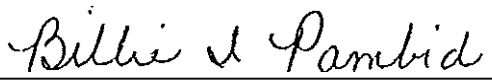
By submitting this electronic application, the school principal (or equivalent) certifies that each of the below statements concerning the school's eligibility and compliance with the following requirements is true and correct:

- The school has some configuration that includes one or more of grades pre- K-12. (schools on the same campus with one principal, even a K-12 school, must apply as an entire school)
- The school has been evaluated and selected from within the Nominating Authority's jurisdiction as 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
- Neither the nominated public school or 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
- 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 plan to remedy the violation
- 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
- 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
- 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 onsite verification

Signatures:

Title: Jessica Kimmel Supervisor, Facilities/Energy

Date: 1/10/14



Signature of Principal

Title: Billie Pambid Principal, Renaissance High School

Date: 1/10/14

Clarkston Renaissance High School
Green Ribbon Schools Application

Clarkston Renaissance High School's (RHS) vision is to integrate Green Education throughout the curriculum. The goal is for all courses to be taught through the lense of environmentally responsible, global citizens with daily practices reflecting this learning. Our current school projects are based on data collected through LEEDS and Project Learning Tree (PLT) investigations. All of our science teachers are PLT trained. Students study the impacts of individual, political and economic practices on the environment in order to make informed decisions and career choices in the future.

- EnviroStats Course - Students conduct "carbon footprint"- energy audits; study cafeteria waste stream; Investigate environmental, economic and wellness impacts of biodegradable versus styrofoam or reusable cafeteria supplies; study impacts of practices and material choices on waste and resource use, locally and globally. Hydroponic window gardening is used to investigate healthy eating, sustainability and cost effectiveness.
- Blended Moodie Environmental Chemistry Course -Focuses on water, and the impacts of human activities. Water, land and air waste streams caused by agriculture, traditional and nontraditional energy production, industry and modern living are investigated.
- Ecology Part A Course - PLT School Site Investigations are used to develop pertinent projects. Using data from the investigations, students solicited help from district grounds and the community to develop a native plant bioswale that will reduce the amount of impervious area runoff into the stormwater drainage system. The bioswale area will be used to study native flora and fauna, measure project effectiveness, and problem solve unexpected issues. The community will be invited to use it as an example and for educational/recreational purposes. The bioswale will serve as an outdoor classroom for future learning.
- Ecology Part B Course - In this course students concentrate on an area of interest in our green curriculum and become an expert. They research and problem solve on-going projects. They keep data and communicate findings for later reference. Experts teach beginning students. Current projects Worm farming; organic cafeteria and grounds material are used to produce soil and liquid fertilizer. Research includes health of the worm farm. Rainwater; rain barrels are used to collect water for worms and indoor farming. Quality control monitoring and problem solving mechanical issues are included. Organic gardening; soil and hydroponic gardens are used for experimentation. In addition to growing medium, they are investigating lighting and nutrient sources. Data is collected on plant growth, flowering, fruiting and harvesting. Resources from Worm farms and rain collection are used. Important partnerships in the community for this project include owners of a local gardening store that meet with students weekly and an experimental lighting company that students share data with via website. Any harvest is used by the students, staff or cafeteria.
- Solar Panel Development • Ten science teachers and students received training on use and development of panels. Conceptual physics students are developing a solar charging station to offset energy used by indoor growing lights. More training is planned. Panel use and job opportunities in this field are integrated into our courses.
- Community Forum- Daily mini lessons introduce students to social, intellectual and environmental concepts. These lessons include how to use passive solar energy in the building based on time of day and year, weather, and building orientation. Habits to create

a healthy indoor environment and how to decrease our school carbon footprint are discussed, brainstormed and implemented.

- Cross-curricular Connection -After many cross-curricular green courses we have designed a semester where every class is taught through the green lens and the theme of water. k3 an example, civics class will be taught through examination of laws, conflicts and government regarding use and regulation of water. English students will write research papers based on water themed lessons in other classes. Students will investigate jobs in relationship to water and gain information to make informed decisions regarding water in the future.
- Outdoor Physical Education - Backed by research, we believe outdoor physical education enhances health and learning. Besides holding PE classes outdoors whenever feasible, many classes go out for small sessions of increase your heart rate and get fresh air. This Is encouraged and expected.
- Recycling Program- We have an ongoing recycling program for paper, plastic, printer cartridges, aluminum, glass, and cardboard. With PLT grant money we purchased visible, easy to use recycling bins for students and community.
- 2013 Green Rally-In October we held our first "Green Rally" to celebrate our successes. LEED consultants and a DTE Energy representative presented to the students. Through Investigations of school site, waste and recycling, water, environmental quality and development and Implementation of green projects RHS was awarded a PLT Green Schools Banner. It was presented to the school body as the Rally's culminating activity. Renaissance High School is the first high school in the state of Michigan to be recognized as a model PLT GreenSchool.

On a separate page, please provide an 800 word maximum narrative describing your school's efforts to reduce environmental impact and costs, improve student and staff health, and provide effective environmental and sustainability education. Focus on unique and innovative practices and partnerships.

Cross-Cutting Questions

Participation in Michigan Green Schools, Programs, and/or Awards for Environmental and Sustainability Efforts

CC1.	Yes	No
Is your school participating in a local, state, or nationally recognized green school program which asks you to benchmark progress in some fashion (for example, EPA ENERGY STAR, National Wildlife Federation Eco-Schools USA, Green Schools Alliance, Collaborative for High Performance Schools, or Project Learning Tree's Green Schools!, Energy Essentials, Rebuild Michigan, or Michigan Green Schools), in any or all of the Pillars?	☒	☐
What program(s) are you participating in and what level(s) have you achieved?	**Michigan Green Schools, PLT Green Schools, EPA Energy Star**	

CC2.	Yes	No
Has your school, staff, or student body received any awards for facilities, health, or environment?	☒	☐
Please list the awards you have received and the years you received them.	**EPA Energy Star 2008-2012**	

Pillar 1: Reduced Environmental Impact and Costs

Pillar 1 includes four main elements. Each question in this section is designed to measure your school's progress toward Pillar I and its associated four elements:

- Reduced or eliminated greenhouse gas emissions, using an energy audit or emissions inventory and reduction plan, cost-effective energy efficiency improvements, conservation measures, and/or and onsite renewable energy and/or purchase of green power
- Improved water quality, efficiency, and conservation
- Reduced solid and hazardous waste production through increased recycling, reduced consumption, and improved management, reduction, or elimination of hazardous waste
- Expanded use of alternative transportation, through active promotion of locally-available, energy-efficient options and implementation of alternative transportation supportive projects and policies

Element 1A: Reduced or Eliminated Greenhouse Gas Emissions

ENERGY (non-transportation)				Yes	No
1.	Can your school demonstrate a reduction in its greenhouse gas emissions?			☒	☐
	Percentage reduction:			51%	
	Time period measured:	from (mm/yy)	06/2006 to (mm/yy)	7/2013	
Please provide the following information:					
	Initial GHG emissions rate (MT eCO2/person):			693	
	Final GHG emissions rate (MT eCO2/person):			334	
	Offsets:			359	
	How did you calculate the reduction?			Energy Star Portfolio	
2.	Do you track resource use in EPA ENERGY STAR Portfolio Manager?			☒	☐
	If yes, what is your score? If score is above a 75, have you applied for and received ENERGY STAR certificates?			81 ☒ ☐ Year: 2008-2012	

ENERGY (non-transportation)				Yes	No
3.	Has your school reduced the total non-transportation energy use (i.e., electricity and temperature control) from an initial baseline?			☒	☐
Please provide the following information:					
	Current energy usage (KBTU/student/year):				
	Current energy usage (KBTU/square foot/year):			92	
	Percentage reduction:			50%	
	Time period measured:	from (mm/yy)	06/2006 to (mm/yy)	7/2013	
	How did you document his reduction?			Energy Star	
4.	What percentage of your energy is obtained from:				
	Onsite renewable energy generation:	0%	Type:		
	Purchased renewable energy:	0%	Type:		
	Participation in USDA Fuel for Schools, DOE Wind for Schools, or other federal or state school energy program:				

BUILDINGS			
5.	In what year was your school originally constructed?	1929	
	What is the total building area of your school?	63,189	
		Yes	No
1A6.	Has your school constructed or renovated buildings in the past 10 years?	☒	☐
Please provide the following information:			
For new building(s):	Percentage of the building area that meets green building standards (for example, Leadership in Energy and Environmental Design (LEED), Collaborative for High Performing Schools (CHPS), Green Globes or other standards):	NA%	
	What certification did you receive and at what level? Year received:	NA	
	What is the total constructed area?	sq. ft.	
For renovated building(s):	Percentage of the building area that meets green building standards:	In Progress%	
	What certification did you receive and at what level? Year received:	In Progress LEED EBOM	
	What is the total renovated area?	sq. ft.	

Element 1B: Improved Water Quality, Efficiency, and Conservation

WATER					Yes	No
7.	Can you demonstrate a reduction in your school's total water consumption from an initial baseline?				☐	☒
Please provide the following information:						
	Average baseline water use (gallons per occupant):					
	Current water use (gallons per occupant):					
	Percentage reduction in domestic water use:				%	
	Percentage reduction in irrigation water use:				%	
	Time period measured:	from (mm/yy)	to (mm/yy)			
	How did you document this reduction (i.e., ENERGY STAR Portfolio Manager, utility bills, school district reports)?				Utility Bills	

GROUNDS				
8.	What percentage of your landscaping is considered water-efficient and/or regionally appropriate?			10%
	Types of plants used and location: Native Plant bioswale, salt and drought tolerant landscaping			
9.	Describe alternate water sources used for irrigation (50 words maximum):			
10.	Describe any efforts to reduce storm water runoff and/or reduce impermeable surfaces (50 words maximum): Native Plant Bioswale: Reduction of stormwater runoff, erosion of local stream, fluctuating water levels(harmful to aquatic life), providing infiltration of pollutants from parking lot that would go directly to watershed, ecology curriculum, engineering (managing stormwater, building green infrastructure), math/statistics (insect/wildlife counts), social sciences (managing stigma toward unorthodox solutions/community reaction)			
11.	Our school's drinking water comes from:	☒ Municipal water source	☐ Well on school property	☐ Other:
12.	Describe how the water source is protected from potential contaminants (50 words maximum):			

13.	Describe the program you have in place to control lead in drinking water (50 words maximum): The municipality undergoes testing	
14.	What percentage of the schools ground are devoted to ecologically beneficial uses?	80%

Element 1C: Reduced Waste Production

WASTE		
15.	What percentage of solid waste is diverted from landfilling or incinerating due to recycling and/or composting? Complete all the calculations below to receive points.	
	Monthly garbage service in cubic yards (garbage dumpster size(s) *x* number of collections per month *x* percentage full when emptied or collected):	18 cubic yd%
	Monthly recycling volume in cubic yards (recycling dumpster size(s) *x* number of collections per month *x* percentage full when emptied or collected):	18 cubic yd%
	Monthly compostable materials volumes in cubic yards (food scrap/food soiled paper dumpster size(s) *x* number of collections per month *x* percentage full when emptied or collected):	<1 cubic yd%
	Recycling Rate = ((B + C ÷ (A + B + C) *x* 100): 50 Monthly waste generated per person = (A/number of students and staff):	
16.	What percentage of your school's total office/classroom paper content is post-consumer material, fiber from forests certified as responsibly managed, and/or chlorine-free?	30%

HAZARDOUS WASTE				
17. List the types and amounts of hazardous waste generated at your school:				
Flammable Liquids	Corrosive Liquids	Toxics	Mercury	Other:
How is this measured?				
How is hazardous waste disposal tracked? Contracter disposes				
Describe other measures taken to reduce solid waste and eliminate hazardous waste (100 words maximum):				
18. Which green cleaning custodial standard is used: ISSA Cleaning Industry and Management Standards, EPEAT, EPA Reducing Risk from Hazardous Waste				
What percentage of all products is certified? 75%				
What specific third party certified green cleaning product standard does your school use? Green Seal				

Element 1D: Expanded Use of Alternative Transportation

Alternative Transportation		
19.	What percentage of your students walk, bike, bus, or carpool (two + students in the car) to/from school?	95%
	Check if your school does not use school buses:	☐
How is this data calculated (50 words maximum): Bus ridership is counted in October and reported to State. Walkers, bikers and carpoolers are estimated (and from survey).		
20.	Has your school implemented any of the following (check all that apply): ☐ Designated carpool parking stalls ☒ A well-publicized no idling policy that applies to all vehicles (including school buses) ☒ Vehicle loading/unloading areas that are at least 25 feet from building air intakes, doors, and windows ☒ *Safe Pedestrian Routes to School* or *Safe Routes to School*	
21.	Describe how your school transportation use is efficient and has reduced its environmental impact (50 words maximum: All buses are equipped with an engine preheater to reduce warm-up time (pre-trip) and idle time. Bus pre-trip times have been reduced by 5 mins prior to the buses leaving the depot. All buses shut down in front of school building prior to pm students boarding and during layover times. The buses use low sulfur fuel and follow the fuel emissions standards from 2009	
22.	Describe any other efforts toward reducing environmental impact, focusing on innovative or unique practices and partnerships (100 words maximum):	

Pillar 2: Improved Health and Wellness

Pillar 2 includes two main elements. Each question in this section is designed to measure your school's progress toward Pillar 2 and its associated elements:

- An integrated school environmental health program based on an operations and facility-wide environmental management system that considers student, visitor, and staff health and safety in all practices related to design, construction, renovation, operations, and maintenance of schools and grounds
- High standards of nutrition, fitness, and quantity of quality outdoor time[1] for both students and staff

Element 2A: Integrated School Environmental Health Program

Integrated Pest Management			
1.	Describe your school's Integrated Pest Management efforts, including IPM/green certifications earned, routine inspections, pest identification, monitoring, recordkeeping, etc. We have an IPM program in place. We avoid pesticide applications , unless necessary. We have prior notification forms that are sent to parents annually . We have logged inspections monthly .		
2.	What is the volume of your annual pesticide use (gallon/student/year):		
	Describe your efforts to reduce use:		
Contaminant Controls and Ventilation, Asthma Control, Indoor Air Quality, Moisture Control, Chemical Management			
3.	Which of the following practices does your school employ to minimize exposure to hazardous contaminants?		
	Provide specific examples of action taken for each checked practice:		
	☒ Our school prohibits smoking on campus and in public school buses. The board adopted policy and signs are in the process of being placed on doors.		
	☒ Our school has identified and properly removed sources of elemental mercury and prohibits it purchase and use in the school. We have a lamp and biohazard waste program established and mercury items are included in this (thermomoters, bulbs, etc)f		
	☐ Our school uses fuel burning appliances and has taken steps to protect occupants from carbon monoxide (CO).		
	☐ Our school does not have any fuel burning combustion appliances.		
	☐ Our school has tested all frequently occupied room at or below ground level for radon gas and has fixed and retested all rooms with levels that tested at or above 4pCi/L **or** our school was built with radon resistant construction features and tested to confirm levels below 4pCi/L.		
	☐ Our school has identified any wood playground or other structures that contain chromate copper arsenate and has taken steps to eliminate exposure.		
4..	Describe how your school manages and controls student and staff exposure to chemicals (including pesticides) routinely used in the school. (100 words maximum):		
5.	Describe actions your school takes to prevent exposure to asthma triggers in and around the school (100 words maximum): The energy management controls monitors outside air intake and ensure s the proper percentage is introduced to the space at occupied times. We also have a preventative maintenance program to ensure outside air dampers and HVAC equipment is properly working.		
6.	Describe actions you school takes to control moisture from leaks, condensation, and excess humidity and promptly clean up mold or removes moldy materials when it is found (100 words maximum): We have a work order program the allows staff to identify any areas that they see leaks or moisture. We routinely identify and address with a roofing company an leaks. We immediately change ceiling tiles to best monitor the leak and ensure no mold growth. With areas of concern, we have an environmental company do testing.		
		Yes	No
7.	Our school has installed local exhaust systems for major airborne contaminant sources.	☒	☐
8.	Describe your school's practices for inspecting and maintaining the building's ventilation system and all unit ventilators to ensure they are clean and operating properly (100 words maximum): We have a preventative maintenance program to ensure outside air dampers and HVAC equipment is properly working.		
9.	Describe actions your school takes to ensure that all classrooms and other spaces are adequately ventilated with outside air, consistent with state or local codes or national ventilation standards (100 word maximum): The energy management controls monitors outside air intake and ensure s the proper percentage is introduced to the space at occupied times.		
10.	Describe other steps you school takes to protect indoor environmental quality, such as implementing EPA		

IAQ Tools for School and/or conducting other periodic, comprehensive inspections of the school facility to identify environmental health and safety issues and take corrective action (200 word maximum):

Element 2B: Nutrition and Fitness

Fitness and Outdoor Time, Food and Nutrition

11. Which practices does your school employ to promote nutrition, physical activity, and overall school health? Provide specific examples of actions taken for each checked practice, focusing on innovation or unique practices and partnerships (100 word maximum each):

☒ Our school participates in the USDA's HealthierUS School Challenge. Level and year:
☐ Our school participates in a Farm to School program to use local, fresh food.
☐ Our school has an onsite food garden.
☐ Our school garden supplies food for our students in the cafeteria, a cooking or garden class, or to the community.
☒ Our students spent at least 120 minutes per week over the past year in school supervised physical education.

Fitness and Outdoor Time, Food and Nutrition

12. Describe the type of outdoor education, exercise, and recreation available (100 words maximum):

13. Describe any other efforts to improve nutrition and fitness, highlighting innovation or unique practices and partnerships (100 words maximum): Daily students grow tomatoes, peppers, and lettuce and collect data on height, internode lengths, stem and plant diameter, flowering, fruiting, and harvesting. They perform all jobs necessary to run the organic gardens. The students also have cultivated a working worm farm, using the nutrient rich soil created for plants around building.
Statistics Course – This is our newest course where we are growing vertical hydroponic gardens and soil based gardens. The "claim" is that the vertical garden plants will produce 50% more fruits than conventional soil based plants. Students are comparing the data and forming conclusions.
Supplying lettuce for cafeteria – Our Ecology B students have been continually harvesting our lettuce to be used in our cafeteria for student lunches. Outdoor Learning Lab – Our outdoor learning lab is presently being developed through the native plant bioswale and picnic tables made by our geometry students. Our building has an open athletic field adjacent to it which is used by community residents for sports for all ages. The community residents will be able to enjoy our outside lab by sitting at the picnic tables and enjoying the native flowers while enjoying the sporting events. Our spring trimester is devoted to Outdoor Team-building and Nature PE activities. For example, students play blind soccer; Jog Your Memory nature hunt; skipping rope, raking & weeding in plant bioswale, to name a few.

Coordinated School Health, Mental Health, School Climate, and Safety

	Yes	No
14. Does your school use a Coordinated School Health approach or other health-related initiatives to address overall school health issues?	☐	☒
15. Does your school partner with any postsecondary institutions, businesses, nonprofit organizations, or community groups to support students health and/or safety?	☒	☐

If yes, describe these partnerships: Project Learning Tree (PLT) - We have developed a partnership with PLT through training, environmental grants, and most significantly, by conducting investigations of school site, waste & recycling, water, and environmental quality. We became a model PLT Greenschool. We are the first high school in the state of Michigan to be recognized as a model PLT GreenSchool.

USGBC – We have partnered with USGBC this year in the process of becoming a LEED certified builings (EBOM). Students in various courses conducted LEED surveys. More importantly, we have applied some of the survey results to further our green education such as using the light meters for best placement of our garden plants.

Michigan Garden Supply – The owners of this organic gardening supply firm have donated both hydroponics tables and many hours each week to working with our students on organic gardening. They work with the students on seeding, re-planting, discussing insect problems, teaching students how to change water and add nutrients to hydroponics' units, to name just a few of their gardening gifts to our students.

Lowes – Lowe's personnel have worked with our students on making outdoor benches and picnic tables.

Venntis Technologies – They are a Michigan-based company that has designed a LED light for hydroponic plants.

[1]Local prevailing weather conditions over the course of the school year will be considered in assessing this element to account for regional variability.

These lights are in the developmental stage and we are collecting data to help them with their research.

16.	Does your school have a school nurse and/or a school-based health center?	☐	☒
17.	Describe your school's efforts to support student mental health and school climate (e.g., anti-bullying programs, peer counseling, etc.):		

Pillar 3: Effective Environmental and Sustainability Education

Pillar 3 includes three main elements. Each question in this section is designed to measure your school's progress toward Pillar 3 and its associated elements:

- Interdisciplinary learning about the key relationships between dynamic environmental, energy and human systems
- Use of the environment and sustainability to develop STEM content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy
- Development of civic engagement knowledge and skills, and students' application of these to address sustainability and environmental issues in their community

1. Which practices does your school employ to help ensure effective environmental and sustainability education? Provide specific examples of actions taken for each checked practice, highlighting innovation or unique practices and partnerships:

☐ Our school has an environmental or sustainability literacy requirements (200 word maximum):

☒ Environmental and sustainability concepts are integrated throughout the curriculum (200 word maximum): We believe "green projects" should not be outside of curriculum. Instead, "green projects" should be part of "green education" taught through "green courses". " All our Green Education is data-driven including both LEED and Project Learning Tree (PLT) Investigations.

Blended Moodle Environmental Chemistry Course - Focuses on water and scarcity of it around globe. Students research food & nutrition; air, nuclear & other alternatives; and petroleum as each relates to water.

Ecology Part A Course – Students study the ecological factors affecting Lake Michigan.

Ecology Part B Course – This is our most active green curriculum. Daily students grow tomatoes, peppers, and lettuce and collect data on height, internode lengths, stem and plant diameter, flowering, fruiting, and harvesting. They perform all jobs necessary to run the organic gardens.

Statistics Course – This is our newest course where we are growing vertical hydroponic gardens and soil based gardens. The "claim" is that the vertical garden plants will produce 50% more fruits than conventional soil based plants. Students are comparing the data and forming conclusions.

Community Forum – This daily period introduces students to social, intellectual, and environmental concepts such as should blinds be open or closed depending on east/west facing and whether students can decrease carbon footprint by decreasing energy usage.

☒ Environmental and sustainability concepts are integrated into assessments (200 word maximum): All assessments are project and/or research-based. For example, our Ecology A course focuses on the 10 major threats affecting Lake Michigan. One of the major threats is invasive species. As a final project, the students are required to develop a children's picture book based on one invasive species. The student work is judged on the problem, causes and how it became a problem; possible future effects of the problem; what is being done to solve the problem; laws related to it; and what an individual can do to help. Another example is the final project for our vertical garden project in our math statistics class. Students will use their weekly data to write a paper on why or why not vertical garden plants will produce 50% more fruits than conventional soil based plants.

☐ Students evidence high levels of proficiency in these assessments (100 word maximum):

☒ Professional development in environmental and sustainability education is provided to all teachers (200 word maximum): We have been training all teachers on environmental and sustainability education. Formally, all of our mathematics and science teachers have been trained through Project Learning Tree (PLT) on high school environmental modules. All of our teachers have been exposed to and are involved in our green curriculum. For example, we had a Green Rally in October to celebrate Green successes. All teachers and students were participants. Attending were USGBC consultants and a DTE Energy representative who presented Take Action activities that students can do at home or school to reduce

	their carbon footprint. Three of our teachers have been involved in training and data collection in conjunction with USGBC personnel. Also, our science teachers and selected students received 2-day training on need and development of solar panels. Teachers and students will continue training in the spring of 2014. Knowledge from this training will be incorporated into our conceptual physics course where students will learn how to develop a solar panel charging station to reduce energy drain from our hydroponics lights.	
2.	For schools serving grades 9-12, provide: Percentage of last year's eligible graduates who completed the AP Environmental Science course during their high school career: Percentage scoring a 3 or higher:	 NA% NA%
3.	How does your school use sustainability and the environment as a context for learning science, technology, engineering, and mathematics thinking skills and content knowledge? (200 words maximum): Our vision is to infuse Green Education throughout our curriculum. Our philosophy mirrors the intent of the Next Generation Science Standards which calls for integration of science, technology, engineering, and mathematics thinking. We do not believe in discreet courses of science and wonder how we can wedge in some sustainability and environmental concerns. For example, this year students in Ecology Part A discovered that our bioswale water was directed to our storm sewer. The students decided to replace our current grass bioswale with a native plant bioswale which will reduce dramatically water directed to storm water system; increase a wider variety of habitat through native plantings; and serve as outdoor multidisciplinary laboratory for all students. Another example was the need for a solar charging station to reduce the amount of electricity usage for our soil and hydroponics gardens. Thus, a new concept in solar panel development will be added to our conceptual physics class. Another example is our geometry students who are building picnic tables for the outdoor environmental lab located in our native plant bioswale. Geometry and statistics teachers conducted surveys on occupant comfort, controllability of systems lighting, daylight and views, alternative commuting transportation, and water efficient landscaping.	
4.	How does your school use sustainability and the environment as a context for learning green technologies and career pathways? (200 words maximum): This is one of our building goals – to prepare our alternative high school students for careers or further training in green education. We believe that environmental and sustainability education is important to the planet. We believe that the future job market will provide many opportunities for students are exposed and proficient in green education. Through solar panel experiences, we envision our students working for solar panel companies. Through hydroponics and soil-based gardening, we envision our students working in greenhouses and on organic farms. Through our blended Moodle environmental chemistry course we envision our students going on to college to study environmental studies. Through our school wide recycling program, we envision our students working for recycling companies.	
5.	Describe students' civic/community engagement projects integrating environment and sustainability topics (200 words maximum): Recycling Program - Partnership with the post high handicapped students who are housed in the same complex. We recycle paper, plastic, printer cartridges, aluminum containers, glass & cardboard. With grant money from Project Learning Tree we purchased a 4-in-one recycling bin for the atrium to be used by community residents who use our building for community education classes. Selling our plants in spring – We have sold our plants to community residents who visit our building for community education activities Supplying lettuce for cafeteria – Our Ecology B students have been continually harvesting our lettuce to be used in our cafeteria for student lunches Outdoor Learning Lab – Our outdoor learning lab is presently being developed through the native plant bioswale and picnic tables made by our geometry students. Our building has an open athletic field adjacent to it which is used by community residents for sports for all ages. The community residents will be able to enjoy our outside lab by sitting at the picnic tables and enjoying the native flowers while enjoying the sporting events.	
6.	Describe students' meaningful outdoor learning experiences at every grade level (200 words maximum): Outdoor Physical Education – Our spring trimester is devoted to Outdoor Team-building and Nature PE activities. For example, students play blind soccer; Jog Your Memory nature hunt; skipping rope, raking & weeding in plant bioswale, to name a few.	

7. Describe how outdoor learning is used to teach an array of subjects in contexts, engage the broader community, and develop civic skills (200 words maximum): Outdoor education is used across the curriculum. Natural sciences use the grounds as laboratories to study living organisms, their interactions with non-living things and human impacts on both. They have planned and implemented natural landscaping that impacts parking lot runoff into the sewer system benefiting the community and instilling civic responsibility. Math classes and physical education classes use the grounds in various ways. Some examples are, measuring and making scale representations, geometry calculations, collecting data on wildlife, recognizing and categorizing living and non living things and geological formations, analyzing water at the nearby stream and following weather conditions. Language arts classes use the outdoors as inspiration for writing and healthy working conditions. Physical education classes use the grounds for out door activities as much as possible encouraging life long health and fitness in the outdoors.

Community volunteers are included in most of the outdoor activities and many of the projects are designed to have a positive effect on the environment benefiting everyone. Students develop civic skills by striving to learn and develop projects that are for the greater good. They also are responsible for educating and informing the public of their ideas, reasoning, needs and learning.

8. Describe your partnerships to help your school and other schools achieve in the three pillars. Include both the scope and impact of these partnerships (200 words maximum): Project Learning Tree (PLT) - We have developed a partnership with PLT through training, environmental grants, and most significantly, by conducting investigations of school site, waste & recycling, water, and environmental quality. We became a model PLT Greenschool. We are the first high school in the state of Michigan to be recognized as a model PLT GreenSchool.

USGBC – We have partnered with USGBC this year in the process of becoming a LEED certified builings (EBOM). Students in various courses conducted LEED surveys. More importantly, we have applied some of the survey results to further our green education such as using the light meters for best placement of our garden plants.

Michigan Garden Supply – The owners of this organic gardening supply firm have donated both hydroponics tables and many hours each week to working with our students on organic gardening. They work with the students on seeding, re-planting, discussing insect problems, teaching students how to change water and add nutrients to hydroponics' units, to name just a few of their gardening gifts to our students.

Lowes – Lowe's personnel have worked with our students on making outdoor benches and picnic tables.

Venntis Technologies – They are a Michigan-based company that has designed a LED light for hydroponic plants. These lights are in the developmental stage and we are collecting data to help them with their research.

9. Describe any other ways that your school integrates core environment, sustainability, STEM, green technology, and civics into curricula to provide effective environmental and sustainability education, highlighting on innovative or unique practices and partnerships (200 words maximum): Venntis Technology has become a very unique partner for us. We have developed a website for downloading data and pictures. On a weekly basis, our students are corresponding with their biologist and determining what new data is needed and/or what went wrong and how we can correct the problem. They approve the dependent and independent variables of the plants as we compare their lights to soil and water-based growing.

This concludes your Green Ribbon Schools Application. We appreciate your participation in this program.

Applications are due no later than 5:00 p.m., Friday, January 10, 2014

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