U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

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

☐ Public ☐ Charter ☐ Title I ☒ Magnet ☐ Private ☐ Independent ☐ Rural

Name of Principal: Dr. Derick McKoy

Official School Name: MAST Academy (Maritime and Science Technology)
(As it should appear on an award)

Official School Name Mailing Address: 3979 Rickenbacker Causeway, Miami, Florida, 33149

County: Miami-Dade State School Code Number *: 7161

Telephone: 305-365-6278 Fax: 305-361-0996

Web site/URL: https://www.gomakos.org/index.jsp

E-mail: dmckoysr@dadeschools.net

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

Dr. Derick McKoy, Principal _____ Date: 1-8-19

U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

Name of Superintendent: Mr. Alberto M. Carvalho

District Name: Miami-Dade County Public Schools

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

Alberto M. Carvalho, Superintendent Date: 1/9/19

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: Florida Department of Education

Name of Nominating Authority: Commissioner of Education

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) 02/08/19 Date:

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.

Marine and Science Technology (MAST) Academy
Green Ribbon Schools Summary

MAST Academy is a top 100 nationally ranked public high school in Miami, Florida, located on Biscayne Bay with a marine stewardship theme. Established in 1991, MAST converted the "Planet Ocean" museum into a unique magnet program among the 400 schools in the Miami Dade County Public School (MDCPS) system. Its mission is to provide a marine setting and nurturing environment for studies leading to academic success, career preparation, an appreciation of the sea, and environmental awareness.

In 2015, MAST added a 6-8 grade program, a Cambridge studies track, tripled the student body size, and doubled the school's square footage with a large construction project. At the request of veteran teachers, the MAST PTSA created the MAST PTSA Sustainability Committee to introduce green infrastructure and reinvigorate hands-on sustainability activities such as organic gardens, school wide recycling, Bayshore beach cleanups, and coastal restoration projects.

The program kicked off in January 2017 with a local high school student speaker, Delaney Reynolds. Delaney founded the "Sink or Swim" project and has obtained international recognition. She was featured in National Geographic's, "Years of Living Dangerously," addressed the United Nations about the future impacts of sea level rise in Miami, and was one of LeBron James' featured "young voices" tweets in Spring 2018. His tweet reached 40 million viewers. Following her presentation, MAST students spontaneously voted to become a net-zero energy school. Sixth graders were heard asking, "Can we sell lemonade to buy solar panels?" Since that January 2017 event, the school has focused on becoming the first net zero energy and zero waste school in Florida. MAST has created a mission and vision statement, reached out to local stakeholders for support, and pursued local, state, and national recognition to build momentum towards their overarching goal.

In 2018, the PTSA partnered with the Phillip and Patricia Frost Museum of Science to create a Green Champions program that will recognize MAST students at an end-of-year ceremony for dedicating community service hours toward the goal. Students who attend six of ten monthly Green Champion meetings, three of five MAST workdays, and two Frost Science coastal restoration days on Virginia Key, as well as, dedicate (40, 75, or 100) community service hours to environmental or health and wellness programs at MAST will receive bronze, silver, or gold recognition for their achievements. Progress has been accelerated through parent participation. As a PTSA program, parents can donate half of their service hours to their students. To date, 103 MAST families and community members have subscribed to the WhatsApp chat and dozens of parents and students have attended multiple Green Champion meetings and events, amounting to hundreds of dedicated service hours.

MAST has reached several goals since 2017, including becoming the first 6-12 Florida Green Apple School in October 2017, winning the District and State PTSA Environmental Award in May 2018, and winning two Pepsi Recycle Rally competitions in 2018 for their redesigned recycling program and creating a recycling video with their JV basketball team. MAST is the

first School to receive a visit from the Pepsi Roadster; a hybrid solar panel truck that educates the public about recycling. Partnerships were created with local stakeholders, including the University of Miami, Frost Science Museum, IKEA, Outward Bound, the Key Biscayne Community Foundation, Dream in Green, and the US Green Building Council for funding and expertise. Over $20,000 worth of goods and services were received for the program. Environmental impacts and costs were reduced in the following ways:

1. Installed a PTSA funded off the grid solar-powered guard shack with their engineering class
2. Installed the first electric car charging unit in MDCPS, doubling the electric car presence on campus
3. Retrofitted the school pool lights and engineering classroom with dimmers, motion sensors and LED lighting
4. USGBC hosted it's Green Apple Day of Service at MAST. Lighting experts from Lutron demonstrated how MAST will save 30% on electricity costs in the retrofitted engineer room
5. Installed energy monitoring hardware through the ReNew Our Schools competition
6. Became the first school in MDCPS to eliminate straws from its cafeteria
7. Replaced styrofoam cafeteria trays with compostable trays
8. Installed 6 water bottle fillers across campus
9. Funded the only operational recycling program in the school district
10. Secured common area recycling bins and paper recycling bins for every classroom
11. Revived enforcement of the no idling bus policy
12. Secured a bike rack and two free BikeSafe clinics for students
13. Grew and consumed local organic vegetables in the school garden for their culinary class
14. Offered local organic vegetable delivery for MAST families
15. Conducted monthly Bayshore clean-ups along the school's shoreline
16. Participated in coastal restoration events, including native grass and mangrove planting

MAST provides health and wellness enrichment for students and teachers through physical education, free participation in outward bound for 14 teachers and students, nutrition programs, mindfulness clubs, onsite counselors, and peer mental health mentoring. MAST has a mandatory Freshman swimming program and triathlon event which includes a one mile run on a shaded trail behind the school, a 200 meter swim, and a half mile kayaking component.

Physical wellness is bolstered through the physical education curriculum, varsity sports program, a BikeSafe clinic program, and a cafeteria meal plan offered through Miami Dade County Public Schools which offers free daily breakfast and a nutritious lunch. The culinary teacher also partnered with a local farmer to offer an organic vegetable delivery program for MAST families. To encourage increased water consumption and reduced plastic waste, the PTSA funded six water bottle fillers across campus. Their cafeteria bottle filler has already registered the avoidance of more than 20,000 water bottles.

Mental health wellness is also supported at MAST with three on-site professional counselors

and a peer counseling program known as the Health Information Program (HIP). HIP is a breakthrough program that trains upperclassmen to talk with ninth grade physical education students about challenging health topics such as sex education, sexual orientation, drug use, bullying, and physical abuse. At MAST, 53 select juniors and seniors have received training and reached out to 295 ninth graders.

MAST was founded to provide effective environmental and sustainability education. MAST includes rigorous classroom courses and offers internship opportunities with environmental scientists and nationally prominent science institutions. Students can pursue one of two highly acclaimed academic programs; 1) the maritime program, or 2) the Cambridge program. 62% of the faculty have a master's degree or higher and teach college credit eligible courses, including several Advanced Placement and Cambridge Courses. The AP courses include Environmental Science, Biology, Chemistry, Physics, Computer Science, Calculus AB & BC, Mechanics, Electricity and Magnetism. The Cambridge courses include Marine Science, Environmental Management, and Global Perspectives. Students can also take Solar, Experimental science (1-4), and Engineering (1-3). MAST has one of only two JROTC Coast Guard programs in the country. In addition to the course offerings, students pursue internships with institutions located just minutes from the school, including with the National Oceanic and Atmospheric Administration (NOAA), the Coast Guard and the University of Miami Rosenstiel School of Marine and Atmospheric Science.

Students are provided opportunities to execute on their environmental and sustainability education through monthly beach clean ups with the JROTC program, school-wide recycling through the recycling club, organic gardening with a sustainable culinary curriculum, native plant gardening, free BikeSafe clinics, coastal restoration with Frost Science, shark tagging and coral reef restoration for marine research with the University of Miami, and eco art campaigns with a world renown local artist to raise awareness about Miami's vulnerability to sea level rise. In July 2018, their recycling club was featured in the US Green Schools Advocacy Toolkit for tweeting the Superintendent in May 2018 about securing a more reliable recycling vendor. The Superintendent responded positively, promising to roll out a new program. Imbued with the MAST mission and traditions, students' confidently participate in civic engagement and insist on improved sustainability programs due to the exemplary environmental stewardship education received at MAST.

Florida Green Ribbon Schools Application 2018-2019

School Information

School Name: MAST Academy (Maritime and Science Technology)
Address: 3979 Rickenbacker Causeway City, Miami, Florida 33149
Twitter: https://twitter.com/mast_academy?lang=en
Facebook: https://www.facebook.com/MAST-Academy-Maritime-and-Science-Technology-High-School
Website: https://www.gomakos.org/ and
https://www.gomakos.org/apps/pages/index.jsp?uREC_ID=339656&type=d
Instagram: https://www.instagram.com/mastgreenchamps/

Principal Name: Dr. Derick McKoy
Email: dmckoysr@dadeschools.net
Telephone: (305)-365-6278

Lead Applicant: Mrs. Michele Drucker
Position/Role: Chair, MAST PTSA Sustainability Committee
(Parent) Email: michele.drucker@gmail.com
Phone: (305)-321-1925

School Type and Grade Levels Served: Magnet public school serving grades 6-12.

Free and Reduced Price Lunch: 22%
Minority: 69% Hispanic, 3% Black Limited English Proficient: .02%
Graduation Rate: 100%
Attendance Rate: 95.6%
Total Enrolled: 1505

Pillar I: Reduced Environmental Impact and Costs

Describe how your school is reducing environmental impact and costs by reducing or eliminating greenhouse gas emissions; improving water quality, efficiency, and conservation; reducing waste production; and using alternative transportation. Identify your energy-efficient facilities and practices, ecologically beneficial uses of grounds, and methods of disposal for solid and hazardous

wastes. Use supporting data to demonstrate progress when possible.

To reduce environmental impact and costs, our school became a Green Apple School through the Florida Department of Environmental Protection in October 2017. Our school had to demonstrate commitments in six key areas, including:

1) Energy efficiency
2) Water use efficiency
3) Waste reduction
4) Alternative transportation
5) Air quality
6) Communication

To meet these six requirements, our school has the following features:

1. **Energy efficiency/Renewable Energy:**

Energy Management System, Programmable thermostats, and new air chillers. MAST uses both systems, installed by the District in 2014, to manage energy and air conditioning operations. MAST has three buildings, including two built in the mid-1970s and the most recent completed in 2014. Installation of the EMS, new chillers, and a new white roof coincided with construction of the new building that doubled overall square footage and tripled the student population. Remarkably, notwithstanding the increased capacity, these technology improvements resulted in a ***reduction*** in electricity consumption. Per student, the KWH consumption was reduced by almost two-thirds!

a) Pre-construction, the school's overall KWH consumption in 2008-2009 was 3,288,120 KWH costing $317,090.
b) Post construction, the school's overall KWH consumption in 2016-2017 was 3,109,094 KWH costing $259,334.
c) Per student, KWH consumption went from 5,978 KWH to 2,072 KWH per year. This is the equivalent of reducing driving miles from ten thousand nine nundred and four miles per year to three thousand seven hundred and seventy-nine miles per year. (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator).

In July 2017, our school requested and obtained an energy efficiency audit from Florida Power & Light. That report served as a baseline for our energy efficiency goals. The primary thrust of the report recommended LED lighting retrofits.

Lighting retrofits with assistance from Miami Dade Public Schools facilities.

a) Engineering room. Our PTSA, along with the US Green Building Council and their sponsored

Green Apple Day of Service on November 3, 2018, funded a retrofit of the engineering classroom with dimmers, motion sensors and thirty-six LED lighting panels that will reduce energy usage from 112W to 40W per panel and should save $1,135 in yearly lighting costs and 10-15% on cooling costs.

b) Pool. The pool light retrofit included switching out twenty-four 400W lights with 140W LED lights. This should save the school $2,700 a year in lighting costs.

c) MDCPS facilities has also been retrofitting 112W fluorescent bulb panel units with 30W LED bulbs. Approximately fifty panels have been completed which should save the school another $2,800 in electricity costs.

Solar powered guard shack. To increase school security, our PTSA funded an off the grid solar powered guard shack. Our PTSA paid for this project and used solar panels that had been decommissioned during construction of a new school building. We repurposed our high-quality solar panels and the engineering teacher worked with the students to calculate the required materials, including the purchase of the specially designed air conditioning unit with a built in inverter and deep cycle batteries to allow the system to run wholly off the grid.

2. **Water use efficiency:**
Low flow fixtures were installed in our new construction which accounts for 50% of the school building space. The school's zone mechanic responds to reports of water leaks to promptly repair them himself or order professional plumbing repairs.

3. **Waste reduction:**
Schoolwide and classroom recycling. Currently, MAST has the only operating recycling program in MDCPS.

a. A student run recycling club, the "Eclipse Club," recycles bottles, cans, paper, and cardboard. We secured $4,000 to acquire classroom and common area recycling bins from the Key Biscayne Community Foundation and IKEA furniture. We participate in the Pepsi Recycle Rally. Per the recycling tracker, since November 2017, we have saved the equivalent of ten oak trees and avoided the carbon emissions equivalent to what would be captured by twenty-five acres of evergreen trees, (Pepsi Recycle Rally calculator).

b. In May 2018, our students tweeted the Superintendent and requested a new recycling vendor when the students learned that the vendor was not recycling bottles and cans, as promised. The Superintendent responded favorably and the tweet was featured in the US Green Schools Advocacy toolkit in July 2018.
http://build.usgbc.org/l/413862/2018-07-17/n8jdzf/413862/129942/School_Board_Advocacy_Toolkit_Green_Schools_2018_July.pdf (Page 9).

c. Since a new recycling vendor has not been acquired since May 2018, the MAST PTSA funded recycling for the students up to $3,000 a year. We are currently the only school in MDCPS to have any recycling since June 2018.

d. The PTSA installed six water bottle fillers across the school. In the cafeteria alone, we have saved over

twenty thousand water bottles since April 2018.

4. **Alternative transportation:**
   Achieved through a "no idling," bus campaign, electric car charging, and bike safe clinics to encourage biking to school.
   a. Our students measured the carbon emissions in the bus loading area. The CO2 levels exceeded 4,000 PPM. We purchased a no idling banner and circulated postcards to the bus personnel. The PTSA contacted the transportation office and advised of this air quality hazard. As a result, buses no longer idle in the bus waiting area.
   b. The PTSA installed and created the first electric vehicle car charging program for MAST teachers and students. Our program uses a Level 1 charger which is sufficient to replenish most EV batteries for the standard twenty to twenty-five miles daily commute. We have increased the presence of Electric vehicles on campus by 100%.
   c. The PTSA has coordinated two BikeSafe clinics through the University of Miami's Pediatric Neurology department. Over twenty students have attended both clinics, offered in June 2018 and again in September 2018.

5. **Air quality:**
   Verified through regular air filter maintenance by the MDCPS departments. School cleaning products are non-toxic and without chlorine bleach, nitrate or NTAs. Our students created a no idling bus campaign to enforce the district no idling bus policy when the bus waiting area registered levels of CO2 emissions above 4,000 PPM. We created a banner and distributed postcards to our drivers. Our bus drivers no longer idle and can be admonished if they idle in violation of the school transportation policy.

6. **Communications:**
   Our MAST GoGreen program was first rolled out through our PTSA newsletter. Thereafter, we created a logo and GoGreen PTSA webpage. https://www.gomakos.org/apps/pages/index.jsp?uREC_ID=339656&type=d In 2018, we created a What'sApp chat to update students and parents about ongoing programming. We also partnered with Phillip and Patricia Frost Museum of Science to create a Green Champions program that will recognize MAST students at a end of year ceremony who dedicate community service hours to our goal. The chat has one hundred and three subscribers. We also have a student run Instagram page dedicated to the Green Champions program.

   Organic Gardens:
   Native plant program, coastal restoration. MAST students grow vegetables onsite in two raised garden beds and indoors for the culinary and experimental science class. Vegetables are consumed by the students. Over eighty native Florida plant species in four designated areas on campus have been planted around MAST. They are managed with an after school gardening club. More than one hundred and twenty students regularly participate in these programs.

Pillar II: Improve the Health and Wellness of Students and Staff

Describe how your school improves the health and wellness of students and staff by integrating an environmental health program and promoting sound health and wellness practices. You should discuss contaminant, moisture, and asthma control, air quality, thermal comfort, pest management, water quality, and procurement, as well as nutrition and outdoors physical activity. Other components you may include are: health education, health services, counseling, psychological and social services, sun safety, staff health promotion, and family and community involvement. Incorporate metrics when possible.

MAST provides health and wellness enrichment for students and teachers through physical education, competitive athletic teams, participation in outward bound for teachers and students, nutrition programs, mindfulness clubs, onsite counselors, and peer mental health mentoring.

Contaminant, Moisture, Asthma control and Air quality. Contaminant, moisture, asthma control, and air quality are managed through the onsite lead custodian and zone mechanic. The lead custodian, who is on site every day, follows standardized protocols to handle contamination issues such as chemical spills or propane leaks, as well as, more common childhood incidents such as vomiting. The zone mechanic is responsible for changing the air handler filters each month.

As part of the Green Apple Application, our school verified that we have no visible mold issues and a no smoking policy at school. Indoor air quality is managed through replacing air handler filters monthly and conducting yearly coil cleaning. If mold is suspected or air quality is a concern for asthma sensitive individuals, the school is authorized to swiftly engage a mold abatement company that examines for mold in the air ducts, in the air handler, and uses sensors to test for air contaminants.

Thermal comfort is regulated as part of an energy management system that is controlled through a central location. The school does not regulate the air conditioning air temperature.

Miami-Dade water and sewer serves the water needs for MAST. **Water quality** is assured by the county which regularly monitors water quality with quarterly reports. Miami-Dade county benefits from a natural limestone aquifer that results in good tasting and high quality water. There have been no reports of contaminated water at MAST. In addition, the cafeteria water fountain has a water bottle filler with an attached filter system. The water bottle unit indicates when the filter should be changed. To date, the bottle filler has registered dispensing the equivalent of more than twenty thousand plastic bottles in a mere six month period.

Pest management is handled through the school district which conducts inspections and sprays the cafeteria to prevent insects on days when there is no food service, such as teacher work days.

Procurement. School cleaning products are green-certified, non-toxic and without chlorine bleach, nitrate or NTAs. School paper is 50% post-consumer paper. MAST has reduced the purchase of excess hard copy textbooks by using online textbooks. For many classes, hard copy books are limited to one classroom copy for use during the class period.

Nutrition. A cafeteria meal plan offered through Miami Dade County Public Schools offers free daily breakfast and a nutritious lunch. The culinary teacher also partnered with a local farmer to offer an organic vegetable delivery program for MAST families and staff. To encourage increased water consumption and reduced plastic waste, the PTSA funded six water bottle fillers across campus.

Outdoors physical activity. MAST has an outdoor heated swimming pool, an athletic field, and a mile long shaded walking trail along Biscayne Bay. All these facilities are incorporated into the MAST physical education program. MAST has a mandatory freshman swimming program and triathlon event which includes a one mile run on a shaded trail behind the school, a two hundred meter swim, and a one-half mile kayaking component. Physical wellness is bolstered through the eight varsity sports offerings, a free BikeSafe Clinic program and middle school curriculum offered through the University of Miami's Pediatric Neurology Department, and a scuba certification course. MAST students also manage an outdoor vegetable garden and participate in a Florida native plant gardening club. **Sun safety** is incorporated into the PE curriculum across all grade levels.

Health education, health services, counseling, psychological and social services. Three mental health counselors for students are on site, including one middle school and two high school counselors. Health education is offered through the PE curriculum and bolstered by a highly effective peer counseling program known as the Health Information Program (HIP). HIP is popular, widespread and provides peer mentoring especially for vulnerable population students who may be experiencing trauma within their home due to violence, drug use, or bullying. The program teaches older students how to listen and lend support to their peers and younger students who may not have a safe outlet to express concerns affecting their mental health. At MAST, fifty-three juniors and seniors have been selected and trained to reach out to two hunded and nintey-five ninth grade classes. MAST conducts an e-cigarette prevention program.

Staff Health promotion. The Miami-Dade County Public Schools Wellness Program is available to MAST staff and works to increase employees' awareness of benefits and personal health status by establishing and maintaining a workplace that encourages environmental and social support for a healthy lifestyle. The wellness program circulates an employee newsletter highlighting best health practices. This year, seven teachers and seven students were selected to be the first public school participants among MDCPS to participate in a free sponsored Outward Bound program in North

Carolina. Fourteen students and teachers from MAST spent five days on an outdoor adventure and leadership program. All the participants were challenged and became very close after completing the physically challenging program. Teachers also run a mindfulness club.

Family and community involvement. The MAST PTSA created the Green Champions program this year with Phillip and Patricia Frost Museum of Science to recognize students and parents who assist with sustainability programs at MAST. Students who attend six of ten monthly meetings, three MAST workdays, and two coastal restoration days with MAST as well as dedicated fourty, seventy-five, or one hundred community service hours to other after school or green programs will receive bronze, silver, or gold recognition from Frost Science and the PTSA for their sustained efforts. Parents can donate half of their hours to their designated student for also helping with the PTSA initiative. To date we have one hundred and three members in our Green Champions programs and more one hundred students have attended Green Champion meetings, MAST work days, and Frost Coastal restoration days. We have received community assistance from the University of Miami with subject matter expertise, UM student interns, and summer meeting space. Frost Science has provided its employees to help with MAST workdays, such as the garden clean-up. In turn, MAST families and students participate in the Frost Science coastal restoration days.

Pillar III: Effective Environmental and Sustainability Education

MAST Academy was conceived as a marine stewardship school when it was established in 1991. MAST offers multiple science and environmentally themed courses which include either an end of year course (EOC) exam or nationally and internationally graded standardized exams such as the Advanced Placement and the Cambridge exams. MAST is consistently among the highest performing schools in the district and the state on these standardized exams.

Students can pursue one of two highly acclaimed academic programs with four magnet options: 1) the Maritime & Science Technology Program; 2) Cambridge General Studies program; 3) Cambridge Global Studies Program; and 4) Cambridge Science, Technology, Engineering, and Mathematics. 62% of the faculty have a master's degree or higher and teach college credit eligible courses, including several Advanced Placement and Cambridge Courses.

In addition to the course offerings, students pursue internships with institutions located just minutes from the school, including with the National Oceanic and Atmospheric Administration (NOAA), the Coast Guard and the University of Miami Rosenstiel School of Marine and Atmospheric Science. MAST also offers after school club programs and community service hour requirements that oblige students to engage in sustainability programming.

COURSE OFFERINGS

The **Experimental Science (Levels 1-4)** requires collecting data every week from a science lab or field work that provides students with opportunities to interact directly with natural phenomena. An excellent example of this curriculum in action includes participation in the Fairchild Tropical Botanical Garden Challenge and the "Growing Beyond Earth" project: an exciting initiative in partnership with NASA to find potential crops for future space exploration. Students simulate growing conditions on the International Space Station, collect data on best conditions, and report their findings on a weekly basis. At the conclusion of the experiment, students harvest and eat their plants.

Exploration of Solar Energy and Alternatives I focuses on renewable alternative resources and includes hands-on experiments, research, and development of solar energy. The course describes career opportunities in alternative energy development and applications to minimize natural resource depletion and environmental degradation.

Environmental Science and Advanced Placement Environmental Science highlights man's interaction with the environment, including forms of pollution and the importance of conservation, environmental planning and policy, public land usages, population dynamics, and major forms of energy. **AICE Marine Science** studies the marine environment, focusing on the scientific study of the sea and its ecosystems, as well as, human activities that depend on the sea and have an impact on it.

AICE Environmental Management: This syllabus provides an understanding of environmental ecosystems and resources at the local, regional or global level, the consequence of their human exploitation and the goal of sustainable environmental management.

Interdisciplinary learning is present across several curriculums, including math, science, engineering, art, culinary, and the Cambridge Global studies program. For instance, the engineering teacher offers the following courses:

Engineering I , II & III – How to live a sustainable lifestyle

- Your individual environmental impact.
- How to live sustainable lifestyles.
- Most in-demand jobs of 21st century (coastal engineers, environmental engineers, etc).
- Repurposing garage as building materials.

Engineering IV – Makos Improvement Team

- Instead of sending repair crews from the district, our local team does the small fixes around the school.
- We have a paperless Work Order system.

Coding

- Everything is about converting the paper systems of the 20th century to the paperless systems(websites) of the 21st century.
- Reusing/repurposing old computer parts thus extending their useful life.
- Green electronic recycling.

The **culinary class** implements three separate sustainable curriculums where students are taught about sustainable food programs, composting, and provided the opportunity to grow and harvest organic vegetables.

- The Stone Barns Sustainable Food Studies
- World Chefs Feed the Planet Sustainable Education
- The James Beard Foundation Full Kitchen Food Waste Curriculum.

With Family, Career, & Community Leaders of America (FCCLA) club, the culinary class participates in several competitions including, recycle & redesign, food innovations, budget and finance, and environmental ambassador. The culinary class takes two field trips: 1) to a local farm where students learn about the crops and plant, harvest and share a picnic with the farmer and 2) to a boat charter excursion where students fish and learn about sustainable fishing. The culinary class also offers an organic vegetable delivery program for interested MAST families.

JROTC Coast Guard. This course provides leadership skills, marine navigation skills, and an appreciation of physical fitness and team building. Students engage in marine stewardship with monthly beach clean-ups at the school.

Art class. Sustainability programming is also present in art class. Green champion students taking art are currently working with a local and world renowned eco-artist, Xavier Cortada, to install the living mangrove reclamation project at MAST. The Reclamation Project uses eco-art to engage community members in bioremediation (coastal and urban reforestation of native trees).

Subject Matter Expertise Assistance. Our school formed a partnership with the University of Miami's Green U program and Phillip and Patricia Frost Museum of Science. The Green U program assisted with the subject matter expertise on best institutional practices in an educational setting. Our recycling club toured the University of Miami to see their recycling and food digester operations in action. As a result, students created better instructional material to assure proper recycling and reduced recycling contamination.

Green Champions. Frost Science has been a key partner in our sustainability campaign. Together with Frost Science, MAST students will be able to create a living shoreline and plant mangrove propagules in environmentally sensitive areas adjacent to MAST Academy. Our students have been engaged in coastal restoration through the school year, offered by Frost Science in a local park adjacent to the

school. This year, the MAST PTSA partnered with Frost science to create a Green Champions program. Students and parents who help with our sustainability projects will be recognized in an end of year ceremony at Frost Science if they attend monthly meetings, attend three MAST workdays during the year, and attend two coastal restoration events. They must also dedicate fourty, seventy-five, or one hundred community service hours to a Green Ribbon related club, such as the recycling club, the ocean club, or the HIP program.

Outward Bound. MAST was selected this year to become the first Miami Dade Public School to provide an outward bound experience for students and teachers. Seven teachers and seven students explored the Blue Ridge mountains for five days. They endured challenging physical conditions, including cold and rain, and were compelled to rapidly develop trusting bonds with other participants to problem solve and collaborate on expeditions, including rock rappelling and creating a zip line system.

Earth Day 2018. Reducing plastic waste. This year's earth day theme was reducing plastic waste. In the spirit of this year's theme, a MAST student campaigned to remove straws from the school cafeteria. His environmental studies class translated into direct action as he observed that the straws were carelessly discarded by students and created a marine hazard. MDCPS responded favorably and helped MAST become the first straw free school in the district. Additionally, the PTSA funded six water bottle fillers across campus to reduce single use plastics. Again, MDCPS assisted by installing the purchased units. We were able to highlight these initiatives during an Earth Day event hosted at MAST and attended by several local stakeholders who presented sustainability themes.

FLORIDA
GREEN SCHOOL NETWORK

U.S. Department of Education

Green Ribbon Schools

2018-19 TECHNICAL REVIEW

Nominee	**Maritime and Science Technology (MAST) Academy; 3979 Rickenbacker Causeway, Miami, Florida 33149**	
Evaluation Issues	**Approvable**	**Special Notes**
Florida Department of Environment Protection: Check all records available regarding environmental violations for this school. Reviewer Name and Title: ***Jennifer Glass Davis, Business Planning Program Manager, South East District, Florida Department of Environmental Protection***	**YES** 1/14/19	This site has no known environmental issues at this time.
Florida Department of Health: Check Radon Monitoring Records: Reviewer Name and Title: ***Joseph Kidder, Radon and Indoor Air Program; Bureau of Environmental Health; Division of Disease Control & Health Protection; Florida Department of Health***	**YES** 1/14/19	Florida law requires schools to test for radon levels every five years. Radon test has been conducted and is verified as being in compliance.
Florida Department of Agriculture and Consumer Services: Check compliance with regulations related to National School Lunch Program Reviewer Name and Title: ***Lisa Church, Supervisor of Implementation, NSLP, SSO, SMP, Division of Food, Nutrition and Wellness, Florida Department of Agriculture and Consumer Services***	**YES** 1/18/19	NSLP Compliance verified.
Florida Department of Education: Check compliance with USDOE Individuals with Disabilities Education Act (IDEA) Reviewer Name and Title: ***Leanne Grillot, Program Specialist, Bureau of Exceptional Education & Student Services, Florida Department of Education***	**YES** 1/14/19	No violations of IDEA