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Schools can work toward environmental sustainability by becoming more “green,” reducing school and personal carbon footprints, promoting a commitment to life-long environmental responsibility, and incorporating environmental education into the curriculum. Schools systems and institutions of higher learning are integral components of a sustainable tomorrow.

Schools

Assessment Area

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Miami-Dade County is home to a wide variety of educational institutions that include private and public schools as well as colleges and universities. Miami-Dade County Public Schools (M-DCPS) is the largest school district in Florida and the 4th largest in the United States with a diverse enrollment of more than 340,000 students from over 100 countries in 392 schools, that include elementary, middle, senior high schools and alternative, specialized and vocational centers.

In terms of higher education, Miami-Dade College (MDC) is the largest and most diverse college in the nation with eight campuses and over 170,000 students from across the world. Florida International University (FIU) has more than 39,000 students, over 1,000 full-time faculty, 7,000+ employees, and 135,000 alumni. FIU is one of the 25 largest universities in the nation, based on enrollment. Both are public institutions. University of Miami (UM) is amongst the 12 private institutions in and around Miami. It is a research university with more than 15,000 students from around the world.

For purposes of this assessment report County staff has gathered information on existing efforts as well as data for the following indicators from M-DCPS: educational attainment, quality of schools, infrastructure, school bus age, and water consumption. These are not all inclusive and do not paint the entire picture of how schools are a component of a sustainable community.

While the report does not yet include assessment data or indicators of local colleges and universities, several initiatives are highlighted under “*Existing Efforts*.” We welcome feedback in this area as we realize that there are data gaps.

SUMMARY OF KEY SUSTAINABILITY CHALLENGES

Main challenges identified through collaborative stakeholder analysis of assessment data & indicators

- Educating our children, and indirectly their families, to live and behave in a more sustainable manner.
- Ensure comprehensive early childhood education as an investment that results in long-term academic success and positive social outcomes for youth.
- Developing and promoting robust curriculum at the schools, colleges and universities to produce a pool of talent that can participate in new and emerging technologies and “green” industries or jobs.
- Positioning our educational institutions to participate in and benefit from research and trends in new and emerging alternative energy, design, construction, and sustainable approaches in general.
- Designing, constructing and operating school facilities that are energy and water efficient, procure and dispose of materials and resources sustainably, maintain high standards of indoor air quality utilize sustainable landscaping and site selection techniques and where possible integrate these practices into educational objectives and curriculum.
- Reducing exposure of drivers, children, staff, and community residents to diesel exhaust from school bus fleet operations.
- Increasing mixed uses of buildings and the school’s relationship in the neighborhood. For

example, connecting schools with libraries, parks, pools and other safe and healthy locations.

- Building schools to encourage urban development rather than suburban sprawl.

ASSESSMENT DATA & INDICATORS

Data and analysis to identify key challenges & establish a sustainability baseline

Educational Attainment

The educational attainment rate for the 25 and older population of Miami-Dade County as of 2007 is illustrated in the table below. The high school graduation rate for people 25 years and over nationwide is 85 percent and 85.2 percent statewide compared to 77 percent in Miami-Dade County. *(See the Demographics & Our Economy Section of this report for more detailed information on educational attainment.)*

Educational Attainment	2008 Estimate	2007 Estimate	2007 - 2008 % Change
Population 25 Years and Over	1,623,937	1,606,447	1.1%
Less than 9th Grade	206,693	197,612	4.6%
9th to 12th Grade, no diploma	161,145	172,882	-6.8%
High school graduate (includes equivalency)	430,136	454,300	-5.3%
Some college, no degree	245,169	228,564	7.3%
Associate's degree	129,563	133,192	-2.7%
Bachelor's degree	286,615	271,735	5.5%
Graduate or professional degree	164,616	148,162	11.1%

(Source: Miami-Dade County Planning & Zoning Economic Development Coordination Division)

(Data Source: Selected Demographic Characteristics for Miami-Dade County from the American Community Survey.)

Quality of Public Schools

The Department of Education of the State of Florida grades each public educational institution individually or as whole for a district. The Dade School District grades are as follows:

Year	Grade
2008-2009	B
2007-2008	B
2006-2007	C
2005-2006	B
2004-2005	B
2003-2004	C

The criteria utilized to calculate the grade is based on overall achievements in the areas of reading, math, writing, science as well as gains made. The results in these areas for 2008 – 2009 are:

2008 - 2009	
District Number: 13 & District Name: DADE	
% Meeting High Standards in Reading	62%
% Meeting High Standards in Math	69%
% Meeting High Standards in Writing	88%
% Meeting High Standards in Science	40%
% Making Reading Gains	63%
% Making Math Gains	69%
% of Lowest 25% Making Learning Gains in Reading	63%
% of Lowest 25% Making Learning Gains in Math	67%
Points Earned (Sum of Previous 8 Columns)	521%
Percent Tested	99%

(Source: <http://schoolgrades.fldoe.org/>)

Infrastructure

M-DCPS includes 381 facilities. There are 338 school facilities and 43 administrative facilities. This consists of 3,092 buildings that take over 34,695,365 square feet of area. The weighted average age of the buildings for the Miami Dade School District is from 1979. The breakdown by the nine districts is reflected in the chart below. Despite new construction, about 50 percent of the building inventory is 40 years or older, and about 34 percent is 50 years or older. In terms of energy efficiency challenges, many of these older schools were designed to maximize cross-ventilation with walls of jalousie type windows that may not be airtight and allow for warming through the filtration of natural light.

	Schools	Admin	Buildings	Area (GSF)	Year
District 1	45	2	409	3,259,825	1971
District 2	59	17	499	6,470,037	1975
District 3	20	1	174	2,135,127	1978
District 4	36	1	276	4,095,196	1983
District 5	26	5	234	2,606,012	1983
District 6	32	4	298	3,142,778	1969
District 7	33	4	274	3,928,741	1992
District 8	37	5	399	4,072,016	1977
District 9	50	4	529	4,985,633	1979
Total	338	43	3,092	34,695,365	1979

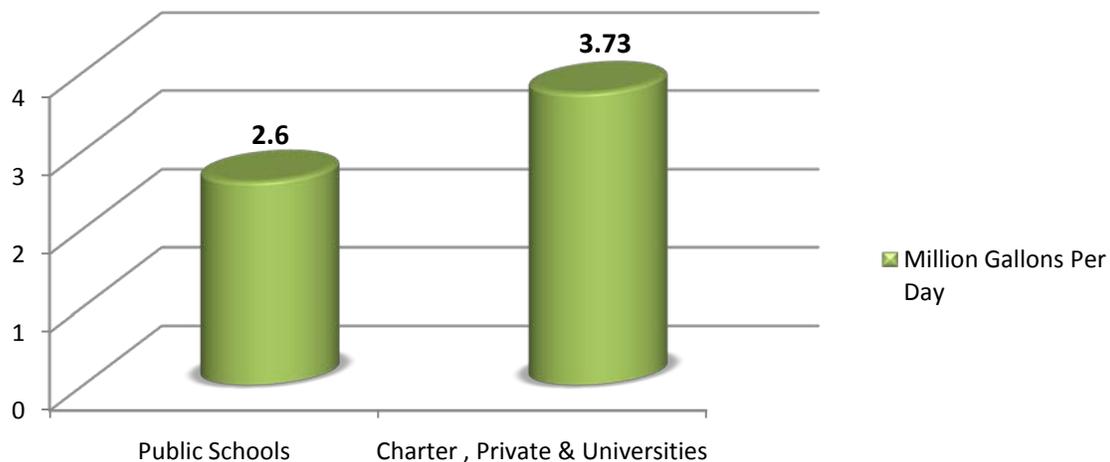
(Source: Miami-Dade County Public Schools.)

(Data Source: 2008-2013 Educational Plant Survey.)

Water Use

The County developed a plan for reducing water consumption at public schools as part of the Water Use Efficiency Plan adopted by the Board of Miami-Dade County Commissioners in 2006. As part of this effort, school water consumption for those schools located within the Miami-Dade Water and Sewer service area is tracked, and the County will collaborate with the school system on the development of a consumption reduction plan. Similarly, the District is developing a program for future implementation. The education sector is a large water user with consumption exceeding 6 million gallons a day (MGD). The chart below includes consumption at all facilities classified as schools, including public and private schools as well as universities.

Schools Water Consumption 2008



Bus Fleet

There are 1,469 school buses (607 purchased in 2007) in M-DCPS. The average age of the buses is 6.5 years. According to a grant application filed in 2006, the typical replacement life of the fleet's buses is approximately 12 years. From a community wide perspective it is important to note that these buses are expected to remain in operation for at least an additional ten years after being sold by the District. This durability of diesel engines coupled with the fact that buses manufactured today are approximately 98 percent cleaner, highlights the importance of addressing emissions from existing diesel fleets. See the "Existing Efforts" Section for information on initiatives associated with this indicator.

(Source: Miami Dade School Board and Project R.I.D.E. Reducing In Cabin Diesel Exposure EPA Grant Application)

As mentioned previously, County staff has gathered the following indicators for public schools: educational attainment, quality of schools, infrastructure, school bus age, and water consumption. These are not all inclusive and there are data gaps in:

- Energy (Electrical and Fuel) Use
- Indoor Air Quality
- Private School Indicators and Existing Efforts
- Indicators for Colleges and Universities

EXISTING EFFORTS

Consolidates current plans, goals, and initiatives related to the specific assessment area

Comprehensive Development Master Plan

The Educational Element is the 10th component of the Comprehensive Development Master Plan (CDMP). It states the development, operation, and maintenance of a system of public education by M-DCPS in cooperation with the County and other appropriate governmental agencies which strive to improve the quality and quantity of public educational facilities available to the citizens of Miami-Dade County.

(Source: <http://www.miamidade.gov/planzone/cdmp/plan/CDMPEducationalElement10.pdf>).

Although this component covers the planning process it would be advisable to show strength in the sustainability related matter. There is an opportunity to make use of the countywide sustainability plan to provide direction and initiative to this element.

Human Services – Child Development Services

Miami Dade County's Child Development Services assists parents and families needing financially assisted child care (School Readiness and Voluntary Pre-Kindergarten) for children from infancy to 9 years of age. Services include eligibility determination and placement of children through a network of licensed child care facilities throughout Miami-Dade County. Other services include resource and referral information on child related services, developmental screening and assessment services to identify children at-risk for developmental delays, inclusion training and technical assistance for child care teachers and providers, school readiness and Voluntary Pre-Kindergarten (VPK) providers payments. Programs included:

- **Child Care Financial Assistance**: provides child care financial assistance to parents with low-income. The County's function is to determine the eligibility of children and their families.
- **Resource and Referral**: maintains a database of all legally operating child care programs and serves children from birth to age thirteen.
- **Selecting Child Care Centers**: provides a list of child care facilities sorted by zip code, child age groups, child care cost, accredited center or all centers. This information can be accessed by using the online child care lookup.
- **Voluntary Prekindergarten (VPK)**: is a free program that belongs to the Voluntary Prekindergarten Education Program. The required conditions are that you live in state of Florida and that your child turns 4 years of age by September first. The County is responsible for registering parents and refunding the cost of program to the approved vendors.
- **Inclusion and Assessment**: provides developmental screening of children from ages 0 to 5 as well as work with the parents and schools to address the delay issues that will bring the child up to their recommended level.

(Source: <http://www.miamidade.gov/dhs/children.asp>)

TERRA Environmental Research Institute

This high school opened in August of 2009. It is an eco-friendly prototype for schools and a green laboratory for students. It accommodates 1,864 student work stations with a total of 178,000 square feet. A specialized green curriculum includes Environmental Research & Field Studies, Biomedical Research, and Robotics & Engineering Technology for the school. TERRA is the District's first school to go through the United States Green Building Council for Leadership in Energy and Environment Design (LEED) certification process - projected to achieve a Gold LEED designation.

(Source: <http://greenschool.dadeschools.net/index.htm>)

Green Education Program

The Superintendent's Eco-awareness Access Platform is developing a Green Education Program that imbeds age and grade appropriate 'green' concepts in curriculum and will

implement them systemically. They are also establishing and implementing a curriculum at the high school level that teaches 'green building' principles and practices and prepares high school students for the Associate Level LEED exam which is currently under formulation in collaboration with the US Green Building Council (USGBC).

(Source: "2009 Elected Officials Joint Workshop Session" presentation)

M-DCPS Energy Conservation

In the area of energy conservation, the M-DCPS has committed to reducing its overall carbon footprint and has specifically committed to achieving incremental yearly reductions in greenhouse gas emissions. The goal for the 2009-10 school year is to reduce 100 million KWH which represents a 15 percent reduction from the 2008-09 baseline. The estimated savings associated with this reduction is approximately \$9 million and an emissions reduction in CO2 equivalents of about 72,000 metric tons. A monitoring mechanism has been deployed in all sites which delivers monthly progress reports. This data could be used as a future indicator of energy conservation in the public school system.

Efforts to achieve the energy conservation goals include a commitment to 'zero waste' principles, participation in the Environment Protection Agency's (EPA) Energy Star Portfolio Management System, and the adoption of green building practices. Green building practices are being adopted for existing and future schools. Future major renovation projects for existing buildings and large building system replacement projects will incorporate 'green' elements, materials and practices, as well as to incorporate 'green' practices and materials in routine maintenance protocols. New school facilities, including replacements, will be designed and built to achieve at a minimum certification at the Silver level by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™. Silver LEED certification encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria. LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

(Source: "2009 Elected Officials Joint Workshop Session" presentation)

M-DCPS Bus Fleet

The District completed the following diesel retrofit projects:

- \$21,000 In-Kind Project with Miami-Dade County Department of Environmental Resources Management (DERM) to retrofit three school buses with clean diesel technologies resulting in an estimated overall reduction in diesel emissions of 40 percent (2005).
- \$171,000 EPA Clean School Bus USA Grant to retrofit 110 school buses with clean diesel technologies resulting in an estimated overall reduction in diesel emissions of 40 percent.

Dream in Green

Dream in Green is a non-profit organization whose mission is to develop and implement programs that promote energy conservation and efficiency, environmental sustainability, and the use of renewable energy. They build partnerships with schools, local governments, and businesses for the purpose of reducing greenhouse gas emissions, waste, and reliance on fossil fuels. Their programs emphasize education and behavior change.

The Green Schools Challenge involves students and staff directly in designing and implementing environmental and energy solutions at their schools. Local schools reduce their

overall carbon footprint while promoting environmental sustainability. Activities are often student-led and usually promote low and no cost conservation as part of the overall plan to reduce the school's carbon footprint.

Since the launch of the Green Schools Challenge in August 2006, Dream in Green has expanded the program from three to 44 schools in Miami-Dade, the nation's 4th largest public school district. Each of the pioneering schools is taking concrete steps to lower its electricity consumption, recycling and carbon footprint. The collective efforts of the participating schools saved (from September 2008 to March 2009) over \$414,000 in energy costs, which translates to approximately 9,800,000 kWh of electricity. M-DCPS schools also recycled over 375,000 pounds of paper, plastic, and aluminum, mitigating over 14,000,000 pounds of carbon dioxide. (Source: <http://www.dreamingreen.org/index.php> & <http://www.greenometer.org>)

Florida International University

- **Climate Action Plan – September 15, 2009**

Florida International University's (FIU) Climate Action Plan, dated September 15, 2009, outlines greenhouse gas emissions of FIU, as well as the University's plan to reduce its environmental impact. It takes into consideration findings from the FIU Greenhouse Gas Inventory Summary Report submitted in 2008 by the FIU Presidents Climate Commitment Task Force.

The Climate Action Plan will guide FIU into a more sustainable future through education, research, and mitigation strategies. The report found that achieving reductions are economically feasible, and require the dedication of the entire FIU community. Reductions will be achieved through mitigation strategies in the areas of transportation, building and energy, solid waste, and offsets. Other notable areas include sustainable efforts, and student sustainability initiatives. *Specific indicators will be included into this assessment at a later date.*

- **FIU Facilities Management**

FIU's Facilities Management Department is the center for quality service and performance excellence in the development of the University's physical environment. It is their mission to provide for the physical development and growth of the university community, and is committed to providing quality, sustainable facilities, and diligent oversight of all aspects of the physical environment. Recycling and waste reduction strategies at FIU include, but are not limited to: the recycling program, energy reduction, water consumption reduction, purchasing recycled materials, and the LEED program which will cause all future construction to be green. *Data and indicators will be provided at a later date.*

(Source: <http://facilities.fiu.edu>)

- **FIU Green – Sustainable Green Living Program**

Florida International University's (FIU) Sustainable Green Living Program is run by the multidisciplinary student organization, FIU Emerging Green Builders, with a coalition of students and young professionals from engineering, construction management, architecture, business and others, to promote the integration of technology, entrepreneurship, economic and political leadership into the green building movement. Its vision is to provide a unique educational and outreach opportunity to FIU students and professionals to enhance their education and training through involvement in real-world sustainable green building projects. Its mission is to create a cohort of emerging green building leaders and to develop opportunities for networking through the United States Green Building Council (USGBC) and other green building organizations to generate momentum for the green building industry.

(Source: www.fiugreen.org)

FIU began offering a course this fall for a professional certification in sustainable construction. This interdisciplinary Professional Certificate provides both traditional students and practicing professionals with a unique learning experience that enhances their design and management capabilities in the emerging field of sustainable building design and construction. The program focuses on an integrated system approach to apply basic engineering science/architectural principles to practical applications through interdisciplinary teamwork.

(Source: web.eng.fiu.edu/~green/sc/Program.html)

Miami Dade College – Strategic Plan 2004-2010

The Strategic Plan is the active blueprint, guiding the efforts of the College for the past years. Under the fourth strategic theme “Serving the Community” a strategic goal was created to address sustainability in their plan. It was defined as “Promote environmental sustainability within the College, student body, and broader community”. The recommended actions identified are the following:

- Establish policies and procedures that encourage environmental sustainability
- Provide campus-based programs/events that educate about sustainability
- Increase the number of courses addressing environmental sustainability in relation to the specific discipline (credit and non-credit)
- Denote on course schedule the course with an environmental sustainability component
- Implement MDC Energy Conservation Program
- Revise MDC Facilities Management design & construction standards for new construction/remodeling/renovation of facilities to include sustainability requirement
- Seek financial support for “Greening” Across the Curriculum

The One Year Milestone of these actions are the following:

- Establishment of Green teams at 6 of the 8 campuses
- Paper recycling college wide
- Paper and beverage container recycling during Book Fair
- Development of the College-wide energy conservation policy
- Upgrade lighting/AC control systems & automatic/motion sensor lighting controls in offices (measure = % of systems/controls updated)
- Increase partnership initiatives with FPL to reduce consumption & engage Energy Service Company (ESCO) services for college-wide energy audit to explore further energy conservation measures
- Grants Proposals funded (added 12/2008)
- A variety of courses through Community Education Departments including the Environmental Center and the Green Urban Living Center.

The Strategic Plan is presently under revision for the development of the 2010 – 2015 update.

(Source: <http://www.mdc.edu/main/news/president/2010/strategicplan10-15.asp>)

Miami Dade College - Earth Ethics Institute

Earth Ethics Institute (EEI) opened its doors, as the Environmental Ethics Institute, in 1993 and has been a catalyst for introducing administrators, faculty, staff, and students at Miami Dade College (MDC) to a new way of thinking called "Earth Literacy." Grounded in the profound implications of the story of the evolution of our 14-billion-year-old universe and the developmental process out of which the Earth and all life emerges, Earth Literacy fosters respect for Earth and life in all its diversity. EEI provides resources, workshops, and programs for the MDC community that encourages the integration of the knowledge, values, and skills needed for a sustainable way of life in all practices and disciplines. EEI fosters an awareness of global interdependence, ecological integrity through biological diversity, and the natural processes that sustain life.

Several MDC programs or initiatives include:

- *Green Studies Workshops*: EEI offers a series of professional development workshops for MDC faculty interested in infusing ecological concepts and a cosmological context into the course objectives of their disciplines. Dozens of MDC faculty have participated in EEI workshops, featuring topics such as Greening the Curriculum, Biophilia, Culture and Cosmology, Technology and Sustainability, and Ethics.
- The integration of a green perspective into many faculty lesson plans.
- Encouraging the purchase of green products.
- Providing a series of Photovoltaic Workshops to educate the community.
- *Organic Gardens*: Since 2004 EEI has been partnering with Miami Dade County Public School teachers and Three Sisters Organic Farm to establish organic vegetable gardens within the schools, to be used as outdoor, experiential learning centers. In this context teachers and students can explore a wide range of subjects while fulfilling the Florida Sunshine State Standards. Students learn to take ownership and responsibility for their plants, write poems about the garden, measure, chart and compare growth of the plants, and learn about nutrition, food preparation and self care. In addition, lessons about ecology, companion plants, composting and decomposers present an opportunity for developing a deep understanding of the interconnectedness of all living things and the importance of diversity.

(Source: www.mdc.edu/enviroethics/index.asp)

On October 26, 2009, Dr. Padron appointed a College-Wide Environmental Sustainability Steering Committee. Chaired by Dr. Gina Cortes-Suarez, president of MDC InterAmerican Campus, the committee will serve as an advocacy group for environmental sustainability at the College. Activities will include but are not limited to: facilities related sustainability efforts, college and community awareness, recycling, resource development coordination, career preparation, curriculum development, etc.

The current MDC Strategic Plan, which expires 2010, includes environmental sustainability, and drafts of the new plan are putting a stronger emphasis on sustainability in the future. Also MDC Learning Outcomes include a specific outcome that all departments and disciplines are addressing. All MDC graduates are being assessed on Learning Outcome #10 that states "Describe how natural systems function and recognize the impact of humans on the environment."

University of Miami – Green U

Through its teaching and research endeavors, as well as the operations of its overall enterprise, the University of Miami (UM) is committed to the safeguarding of the environment. Innovative programs in schools and colleges, interdisciplinary centers and institutes, and events and activities throughout the University address issues involving a wide spectrum of environmental concerns. In 2005, the University launched Green U, a program coordinated by the Office of Environmental Health and Safety aimed at making UM a community leader in the acquisition of environmentally responsible products and the practice of ecologically sound maintenance and operations procedures.

Through its Green U initiative, the University of Miami established a university-wide goal to be a community leader in becoming more sustainable, a goal that requires active participation of the entire University community. Green U includes numerous conservation and energy efficiency initiatives, recycling initiatives and certification initiatives, and certified products. The University is also the home to the first high-rise in South Florida - residential or commercial - that was designed and built for energy efficiency and sustainability. The new Clinical Research Institute is home to clinical trials and other medical research at the UM Miller School of Medicine. The Biomedical Research Institute currently under construction will be LEED certified.

In 2006, student leaders founded Sustainable U to educate faculty, staff and students at UM about the benefits of engaging in activities on campus that sustain, rather than deplete, the environment. Student have implemented Recycle Canes, a comprehensive recycling program on the Coral Gables campus, got hybrid vehicle owners a 50 percent discount on parking passes and work closely with university administration to plan and implement future sustainable efforts. (Source: www.miami.edu/greenu)

Talloires Declaration

Originally composed in 1990 at an international conference in Talloires, France, this is the first official statement made by university administrators of a commitment to environmental sustainability in higher education. The Talloires Declaration (TD) is a ten-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities. It has been signed by over 350 university presidents and chancellors in over 40 countries.

The Association of University Leaders for a Sustainable Future (ULSF) serves as the Secretariat for signatories of the Talloires Declaration. Its mission is to support sustainability as a critical focus of teaching, research, operations, and outreach at colleges and universities worldwide through publications, research, and assessment.

Several local colleges and universities have signed the Talloires Declaration, and as members they can develop their own course of action with the goal of achieving greater environmental sustainability and awareness on campus.

(Source: <http://www.ulsf.org/index.html>)

COMMUNITY FEEDBACK

Feedback & results gathered though the planning process or surveys

No feedback is available at this time.