A Message from Dr. Michael L. Burke, MATC President

To all our stakeholders and friends:

At MATC, we practiced sustainability before it became fashionable. Today, we believe sustainability means more than making our own campuses cleaner, more energy efficient and less wasteful. It means expanding our impact exponentially by preparing students for careers in which they can help make our community greener and healthier.

This focus on sustainability is central to my signing of the American College and University Presidents’ Climate Commitment in March 2010. As MATC begins its second century, energy efficiency and clean energy have become global imperatives. The opportunities to reduce global carbon emissions are at our fingertips, from the simplest energy-conserving measures, to emerging technologies in renewable energy, smart electrical grids, net-zero-energy buildings and much more.

As we modernize our buildings’ lighting and heating, recycle aggressively, adopt hybrid vehicles and use solar, wind and geothermal energy throughout our campuses, we are preparing our students to contribute to the world’s exciting green energy future.

Building on a century’s heritage in power and energy engineering, MATC has become a national center for energy technology excellence. We currently offer, and continue to develop, comprehensive occupational programs and courses covering a wide range of competencies essential to the pursuit of clean and green energy careers.

We present this first sustainability report as part of our responsibility under the Presidents’ Climate Commitment, and we pledge to update it and share our progress annually. We welcome your comments on this report and on what more MATC can do to build a sustainable future for our community.

Sincerely,

Michael L. Burke, Ph.D.
President
Milwaukee Area Technical College
EXECUTIVE SUMMARY

Milwaukee Area Technical College offers this sustainability report to the community as part of its responsibilities as one of more than 650 signatories to the American College and University Presidents’ Climate Commitment. Among the highlights:

- MATC aims to prepare students for sustainable future careers with programs in energy engineering, environmental health and sustainability, in addition to the training and educational offerings in wind, solar and geothermal energy.
- The Center for Energy Conservation and Advanced Manufacturing (CECM) provides six instructional laboratories that feature a full complement of renewable energy technologies.
- MATC generates 0.0075 metric tons of carbon dioxide per 1,000 square feet of building space. While this compares favorably with other Wisconsin Technical College System institutions, our goal is to further reduce our carbon footprint for both environmental and fiscal reasons.
- The college complies with Wisconsin Technical College System construction guidelines, which require all new projects of 5,000 square feet or larger to be designed and built to at least the LEED Silver standard. Various other initiatives promote green building operation.
- MATC purchases Energy Star-rated equipment where possible and has built Energy Star requirements into procurement bid specifications.
- The college aggressively recycles metals, paper, glass, plastics and electronic devices and commits to take part in the RecycleMania national competition for college and university recycling programs.
- The college has made substantial investments in renewable energy and has renewable resources in place on three campuses. The 32-acre, 540 kW Photovoltaic Educational Laboratory is one of Wisconsin’s largest photovoltaic facilities and serves as a training and learning laboratory.
- MATC continues to make its operations more sustainable and to prepare more students for sustainability-related careers. A Sustainability Committee comprised of faculty, staff and students reviews and offers input on remodeling, energy conservation efforts and other sustainability efforts.

WHO WE ARE

MATC is the Midwest’s leading two-year community-based technical college, serving about 46,000 students annually on four comprehensive campuses and through online learning. Founded in 1912, MATC has continuously evolved in response to the community’s changing needs. MATC offers students multiple pathways to personal and professional success with:

- 170 career-centered programs aligned with the needs of area businesses.
- Hundreds of four-year college transfer options.
- Accelerated degree programs geared to working adults.
- Bilingual classes and bilingual technical programs.
- Pre-College offerings that help students earn a GED, HSED or high school diploma.
- Comprehensive student services that help ensure retention and completion.
- Flexible day, evening, weekend and online classes.
- Faculty members who bring practical, real-world knowledge to their classes.

Within six months of graduation, 89 percent of MATC graduates are employed or have moved on to further their education at four-year colleges and universities.
OUR CLIMATE COMMITMENT

MATC President Michael L. Burke, Ph.D., signed the American College and University Presidents’ Climate Commitment in March 2010, at the college’s annual Green Energy Summit.

The Presidents’ Climate Commitment responds to a consensus reached in the early 21st century, among scientists, policymakers, colleges and universities and the general public, that climate change is taking place and that the main contributors to global warming are caused by human activity, the largest being the emission of greenhouse gases (GHG) from burning fossil fuels.

By signing this commitment, Dr. Burke pledged the college to climate neutrality, to sharply reducing and eventually eliminating all its global-warming emissions, and to accelerate educational programs that equip students and society to stabilize the earth’s climate. At the time of the signing, the college had taken affirmative steps in that direction, many of which are outlined in this report. Currently, MATC is further updating technologies and practices as part of a long-standing commitment to reduce the college’s carbon footprint.

The Presidents’ Climate Commitment was formed in 2006 by 12 college and university presidents concerned about global warming and climate neutrality. To date, signatories include presidents of more than 630 U.S. colleges and universities in all 50 states and the District of Columbia, representing nearly six million students. The signatories pledge to:

• Complete a greenhouse gas emissions inventory.
• Eliminate their campuses’ net greenhouse gas emissions on a timetable they choose.
• Create and implement a climate action plan and timetable to achieve climate neutrality.
• Integrate sustainability into the curriculum and make it part of the college experience.
• Make available publicly the action plan, inventory and periodic progress reports.

Dr. Burke serves on the American College and University Presidents’ Climate Commitment Steering Committee, whose members represent a cross-section of two- and four-year colleges and universities, public and private institutions, Historically Black Colleges and Universities, and Hispanic-serving institutions. He also serves on the Sustainability Task Force of the American Association of Community Colleges.

The Presidents’ Climate Commitment was the first effort by any major sector of society to set climate neutrality – not just emissions reduction – as its target. MATC shares the belief of signatory college and university presidents and chancellors that exerting leadership in addressing climate disruption is integral to the mission of higher education. Besides the global benefits of climate stabilization, these efforts have tangible, local benefits that include:

• Stabilizing and reducing long-term energy costs.
• Helping to attract excellent students and faculty.
• Helping to attract new sources of funding.
• Increasing support from alumni, businesses and communities.

Find out more at presidentsclimatecommitment.org

A sustainable future

PREPARING THE NEXT GENERATION

MATC offers comprehensive educational and training opportunities in energy engineering, environmental health and water quality technology, sustainability and renewable energy. The college’s newer offerings in wind, solar and geothermal energy are built on the solid foundation of programs in basic energy engineering and technology. This combination prepares students to help their employers optimize performance and reduce the carbon footprint in existing energy systems, and in the future use of high-efficiency traditional technologies, renewables and innovative energy system configurations.

The Center for Energy Conservation and Advanced Manufacturing on the Oak Creek Campus (see sidebar) hosts a full complement of energy equipment and systems for students to train on. It includes conventional boilers, chillers, rooftop units and heat pumps; an ice storage system; piping, pumping, sensing and actuation systems; and a digital energy management system. Students gain experience with control loops, 5-20 mA signals, programming, ladder logic, and in operating, maintaining and controlling building energy systems.

The Center is also home to a wind turbine and three solar photovoltaic systems, as well as a solar thermal energy system and a geothermal heating and cooling system. These contribute directly to the building’s energy needs and serve as teaching tools for students.

ECAM: The Center for Energy Conservation and Advanced Manufacturing

Many of MATC’s energy and sustainability offerings are focused at the ECAM applied technology center on the Oak Creek Campus. This 59-miles, 34,000-square-foot facility is the result of a public-private partnership where partners include Fortune 500 companies, small manufacturing firms and local trade unions. It is unique in being home to the full complement of renewable energy sources: solar photovoltaic, solar thermal, wind, and geothermal.

For high school graduates, ECAM offers a valuable pathway into high-demand, rewarding careers in energy management and sustainability. For employers and their workforces, it provides customized workshops, seminars, training, for-credit courses and certificates, and production skills credentialing. For the public, ECAM provides advanced courses and certifications for continuing learners and opportunities to earn degrees and diplomas. For apprentice training programs, it provides advanced college courses serving a variety of trade occupations.

ECAM includes six laboratories where students learn industry-standard practical skills and gain valuable, technical skills on industry-standard technologies and related equipment. Much of the technology has been donated by industry partners. In addition to the labs for advanced manufacturing and welding, four labs relate to energy and sustainability:

• Energy Solutions Lab specializes in energy management in the context of business productivity. Its focus includes energy conservation, renewable resources, green building design, LEED certification, energy auditing, commissioning and systems integration.
• HVAC Digital Controls Lab features installation and service of high-efficiency comfort systems, management and maintenance of digital control devices; and testing, adjusting and balancing of air and hydraulic systems. It also covers industrial exhaust systems, clean room certification, energy retrofits, indoor air quality, building systems commissioning, sound and vibration testing, and thermal storage.
• HVAC Commissioning Lab provides advanced training in the design and integration of high-efficiency building control systems.
• Advanced Software Lab highlights CAD/CAM systems, mechanical design, rapid prototyping, industrial manufacturing and engineering, CNC programming, tool and die design and HVAC building control systems.

Dr. Michael L. Burke

Ed Begley, Jr. (right) at the Green Energy Summit.

Milwaukee Mayor Tom Barrett (left) and MATC faculty member Dr. George Stone at the Green Energy Summit.
Sustainable Facilities Operations Associate in Applied Science Degree

This degree program helps prepare students to manage facility systems efficiently and effectively. The program emphasizes cost-effective energy options, direct digital controls, energy management systems, sustainable operations management, maintenance management, commissioning and project management. Students learn to perform energy audits, and also study LEED green-building certification and renewable energy.

Environmental Health and Water Quality Technology Associate in Applied Science Degree

This program focuses on protecting air, water and food. Students use current technology and learn to identify, monitor and evaluate environmental health hazards. Students also learn to apply appropriate regulations and guidelines. The program promotes environmental protection, improvement and sustainability, enhancing the overall quality of life for the community.

Sustainable Facilities Operations Certificate

This certificate program helps prepare students to efficiently manage commercial and industrial facilities and other operations. Coursework emphasizes cost-effective energy options, energy management systems, sustainable operations management and maintenance management, along with Six Sigma, Lean and other continuous improvement initiatives applied to sustainability. LEED Associate certification is covered in depth, and an overview of renewable energy is included.

Energy Engineering Technology Certificate

Students learn to audit building energy usage, commission systems for new construction and retrofit-commissioning existing buildings. Coursework emphasizes cost-effective energy options, energy management systems, facility management systems, HVAC and other systems involved in resource management in commercial and industrial buildings. Students also are prepared to document system performance through adequate monitoring and to report quantitative system performance.

Energy Modeling Certificate

The focus of this program is energy modeling with eQuest, a free download from the U.S. Department of Energy website. The certificate explores foundational energy questions through lectures and hands-on classroom work, along with use of eQUEST energy modeling software wizards. By combining lectures on basic building system concepts with hands-on measurement and modeling of energy use in an existing building, students are prepared to learn additional, energy modeling skills and apply that knowledge to existing buildings, new buildings and retrofit projects.

Advanced Energy Studies Cluster

This program, supported by the U.S. Department of Energy, is built on common core principles required for career success in multiple occupations within an applied energy cluster. This shared core consists of academic foundations, communication, problem-solving and critical thinking, information technology applications, systems thinking and safety, health and the environment. Leadership, teamwork, ethics, career development and technical skills are also considered (pending WTCS Board approval).

Energy Career Pathway

The MATC Energy Career Pathway is built on a multi-semester program of academic and technical study that prepares students for a full range of post-secondary options within a variety of applied energy studies. The pathway provides context for exploring career options at various levels of education and a framework for linking learning to the knowledge and skills needed for future education and employment (pending WTCS Board approval).

Framework of Career Pathways, Career Clusters and Programs of Study

This program organizes educational preparation and occupational choices into a unified concept of applied environmental studies in an energy cluster. It combines academic and technical education. The applied energy cluster:

- Serves all students interested in solving environmental problems.
- Offers a distinct educational plan of study that students can follow from pre-college to postsecondary education to the workplace to advanced degrees.
- Connects to nationally recognized certification.
- Helps counselors, teachers, parents and students design individual plans of study.
- Offers a key element in enhancing sustainable economic development by connecting environmental responsibility with schools, business and industry (pending WTCS Board approval).

New Courses

These new courses are planned for the 2013-14 academic year:
- Energy Modeling with eQuest
- Intelligent Lighting Systems
- Advanced Commissoning
- Photovoltaics
- Wind Energy

Courses Under Development

Courses being developed or waiting WTCS Board approval include:
- Micro-grid
- Energy Project Management
- Solar Thermal
- Geothermal Systems

Existing Course Highlight: Emerging IT Technologies

MATC is one of 127 colleges nationwide which offers a course that qualifies students to test for the VMware Certified Professional credential. VMware (VM stands for virtual machine) is a leading, computer server virtualization software. Server virtualization can significantly reduce IT energy costs and reduce an organization’s carbon footprint.

Existing Course Highlight: Green Pre-College

For prospective students lacking a high school diploma or GED, MATC offers preparatory coursework to build a foundation for an emphasis on green jobs. MATC faculty developed a program consisting of a Basic Math and Science course and a Basic Green Resources Practices and Technologies course that ladder students into a related college-level program including sustainability-related degree programs.

Beyond the College Curriculum

Befitting its leadership in sustainability education in Milwaukee and Wisconsin, MATC annually hosts two statewide events:

Sustainability Summit and Exposition

MATC is the host and a sponsor – with the Wisconsin Technical College System and other Wisconsin colleges and universities – of this annual event, formerly called the Green Energy Summit. The event recognizes that green enterprises will be a major component of future economic development. It supports a transition from economies that generate too much waste and inefficiency and depend too heavily on fossil fuels to systems that are more conserving, efficient and sustainable. The event aims to motivate and educate professionals, investors and entrepreneurs, and to help workers in transition and students become employers in the future green-energy workforce. The 10th annual Summit will be held March 6-8, 2013, at the Delta Center in downtown Milwaukee.

Green Vehicles Workshop

MATC is the host and a major sponsor of this workshop, an all-day event that explores the latest trends in the alternative fuel industry, and enables students and community members to experience green vehicles firsthand. The event, conducted with Wisconsin Clean Cities, features many types of advanced-technology vehicles that run on propane autogas, natural gas, ethanol and electricity. The 10th annual Green Vehicles Workshop will be held in May 2013, at MATC’s Downtown Milwaukee Campus.
As a signatory to the American College and University Presidents’ Climate Commitment, MATC agreed to initiate at least two of seven suggested “tangible actions” to reduce greenhouse gases while a more comprehensive plan is developed:

1. Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council LEED Silver standard or equivalent.

2. Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by the institution.

3. Encourage use of and provide access to public transportation for all of the institution’s faculty, staff, students and visitors.

4. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where the institution’s endowment is invested.

5. Adopt an energy-efficient appliance purchasing policy requiring purchase of Energy Star-certified products in all areas for which such ratings exist.

6. Participate in the Waste Minimization component of the national RecycleMania competition and adopt three or more associated measures to reduce waste.

7. Within one year of signing this document, begin purchasing or producing at least 15 percent of the institution’s electricity consumption from renewable sources.

While making some degree of progress toward most of these goals, MATC chose to initially focus on actions 1, 5 and 6. A summary of MATC’s progress on these and the remaining four tangible actions follows.

Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council’s LEED Silver standard or equivalent.

MATC presently complies with Wisconsin Technical College System construction guidelines, which request that all new projects of 5,000 square feet or larger to be designed and built to at least the LEED Silver standard.

As part of its commitment to green building practices, the college processes construction materials and debris in an environmentally friendly manner. Contractors are required to maintain separate waste bins and take all waste to waste separation and recycling sites to recover materials and minimize landfill waste.

In addition, the college has registered to pursue Gold certification for its Oak Creek Campus and Center for Energy Conservation and Advanced Manufacturing (ECAM) under the LEED for Existing Buildings: Operation and Maintenance rating system. The process will unfold over the next two years, students will assist with the certification as part of their coursework. That experience will help qualify the students to take the exam for LEED Accredited Professional, a credential that requires actual project experience.

Greening all facilities

While taking appropriate steps toward green building certification, MATC is also taking measures to make its existing building operations greener. These include:

Cleaning methods and chemical usage

MATC is committed to using environmentally preferable approaches throughout its building operations. The college has reduced its cleaning chemical consumption by 43 percent in the past five years. In 2009, MATC was among the first institutions in southeast Wisconsin to use floor-cleaning equipment that treats water with an electrostatic charge to provide superior cleaning without chemicals. Restrooms are cleaned using a Green Seal Certified pressure-washing system. Wherever possible, MATC uses Green Seal Certified cleaning solutions and methods. Restrooms are routinely equipped with high-velocity air hand dryers instead of paper towel products.
Lighting efficiencies
In 2012 MATC completed the conversion of fluorescent lighting fixtures to T8 lamping technology, as required by the U.S. Environmental Protection Agency. The most recent project was a major lighting fixture retrofit at the Downtown Milwaukee and Mequon campuses. The college recycles spent fluorescent tubes to ensure that harmful materials are kept out of the environment.

In 2010, MATC converted from sodium vapor lighting to LED lighting technology at a college-owned Downtown Milwaukee Campus 900-car parking structure, reducing energy consumption and costs by 39.7 percent.

The CNC lab at the ECAM facility in Oak Creek installed 18 roof-mounted Solar Light Pipe units (Orion Energy) that use reflection to collect and concentrate sunlight and distribute it indoors, reducing reliance on electric lighting. The installation was completed in 2009.

Heating and cooling efficiencies
MATC completed a district-wide upgrade of central chiller plants in 2012. These upgrades replaced 1970-era technology with state-of-the-art centrifugal chillers. In addition to operating up to 40 percent more efficiently than the older equipment, these new chillers use environmentally friendly 134A refrigerant to help protect the ozone layer.

As of late 2012, the college was in the design phase of boiler replacements at two of its four campuses. MATC expects to achieve 15 percent or greater efficiency improvements through the replacement of these 1980-era boilers. The replacements will be installed in 2013.

Along with these projects, a major upgrade to the Metasys building automation system was implemented in 2011. After many years of using pneumatic building heating and cooling controls, the college has begun converting to digital controls that will enable MATC to control and operate its building systems more efficiently and effectively. In line with this, all new construction projects include digital controls.

Water conservation
The college has begun upgrading to motion-sensing faucets in lavatories. The sensing systems are solar powered (by way of room lighting) rather than hardwired or battery operated.

IT efficiency
MATC is at the forefront of virtual server technology. The college is using software to enable a desktop PC to emulate a physical network computer server. This change greatly reduces the number of physical servers required and saves significant electricity.

Tangible Action (continued)

Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by the institution.

While MATC has not yet specifically addressed offsetting greenhouse gas emissions generated by air travel, the college has taken steps to reduce travel by faculty and staff. In 2012, the college undertook a major telecommunications system replacement that includes robust CISCO teleconferencing capabilities at all campuses.

This system, when completed in 2013, will significantly reduce the need for faculty and staff to travel between campuses to attend meetings, classes and presentations.

Encourage use of and provide access to public transportation for all of the institution’s faculty, staff, students and visitors.

MATC has collaborated with the Milwaukee County Transit System to make sure its bus routes interconnect all four campuses. Students enrolled in six or more college-level credits can obtain a no-cost UPASS from the Student Services office and receive free, unlimited public transportation through the Milwaukee County Transit System. A nominal student fee supports this popular mass transportation option.

More than 6,000 students obtained a UPASS in 2012. The transit system also offers a 15 percent discount to MATC faculty and staff members who purchase monthly passes.

Tangible Action

Tangible Action

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**TANGIBLE ACTION**

Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where the institution’s endowment is invested.

MATC, through its Sustainability Committee, is developing a draft policy to be implemented in 2013.

**TANGIBLE ACTION**

Adopt an energy-efficient appliance purchasing policy requiring purchase of Energy Star-certified products in all areas for which such ratings exist.

Through its procurement practices, MATC purchases Energy Star-rated equipment where such items exist and where the purchase prices are financially prudent. In addition, Energy Star requirements are built into procurement bid specifications where appropriate.

**TANGIBLE ACTION**

Participate in the Waste Minimization component of the national RecycleMania competition and adopt three or more associated measures to reduce waste.

The college commits to participate in RecycleMania, a national competition and benchmarking tool for college and university recycling programs to promote waste reduction throughout campus communities. The objectives are to motivate students and employees to increase recycling and reduce waste, generate attention and support for campus recycling programs, and encourage colleges to measure and benchmark recycling as part of their effort to improve their programs over time.

The college aggressively recycles metals, paper, glass, plastics and other materials at all campuses. Recycling containers are deployed broadly throughout MATC campus buildings. At present, 48 percent of an annual 321 tons of waste consists of recyclables. In addition, the college recycles more than 19 tons of electronic devices per year to make sure potentially harmful materials are managed according to regulations and do not threaten the environment.

To create incentives for further recycling, the college plans to allow departments that collect and sell recyclables to retain the revenue as part of their own budgets, instead of having it go into the general fund.

In January 2013, MATC will launch a reusable beverage cup promotion in the college’s cafeterias. Students, faculty and staff will have the opportunity to purchase reusable mugs and receive a discount when refilling those containers at beverage stations. In addition, the college has piloted a food-waste composting program at the Downtown Milwaukee Campus.

The ECAM manufacturing labs facility observes a no-waste policy for scrap and spent materials. Faculty is exploring reverse logistics and closed-loop systems that essentially capture products after their useful life and reintroduce the used materials into the manufacturing cycle. A course and a certificate in reverse logistical closed-loop systems are planned for launch in 2014.

**TANGIBLE ACTION**

Within one year of signing this document, begin purchasing or producing at least 15 percent of the institution’s electricity consumption from renewable sources.

MATC has made substantial investments in renewable energy and has renewable resources in place at three campuses.

**PHOTOVOLTAIC Educational Laboratory**

The showcase of MATC’s renewables efforts is the Photovoltaic (PV) Educational Laboratory, located near the college’s Milwaukee Public Television (MPTV) transmitter at 810 East Capitol Drive in Milwaukee. Commissioned in 2010, it is one of the largest PV facilities in Wisconsin and was the first entirely portable PV facility in the nation.

The 32-acre, 540 kW facility has 2,590 PV panels in eight configurations. It serves as a teaching and learning lab for technicians, installers, designers, site assessors, electricians, sales personnel and other renewable energy professionals. The training capabilities at the site strengthen and expand partnerships with other colleges, including University of Wisconsin – Milwaukee, Marquette University, Milwaukee School of Engineering and Concordia University of Wisconsin.

Energy produced at the site powers the MPTV (Channels 11 and 36) transmitter, which is the first energy- and carbon-neutral public TV transmitter in the nation. Energy savings in the first year were $70,300. The system has a complete set of digital, electrical energy performance monitoring points and the data is web-based, allowing classroom displays of system performance measures. The lab’s variety of PV manufacturers and technologies enables comparative analysis.

The installation benefits every level of PV training and education. Teachers and K-12 students can visit to learn about solar energy technology. The site serves to train technicians at the technical college level who will install and troubleshoot PV systems. It is available for undergraduate and graduate student studies, and the data is available for advanced research projects involving simulations and modeling. The site is also open to local graduate students working on their dissertations.

**GEOTHERMAL**

Oak Creek Campus: 72,000 Btu/hr system

The solar thermal and geothermal systems were installed in 2011. The energy produced helps offset the campus’s energy needs, in addition to being important cornerstones of MATC’s renewable energy educational programs.

Also at Oak Creek, an on-campus weather station provides the opportunity for performance monitoring of the wind turbine, solar thermal system and photovoltaic system. The station replicates industry standards that students will encounter on the job.

**WIND ENERGY**

Mequon Campus: 90 kW turbine

The Mequon wind turbine is 160 feet tall with a blade diameter of 56 feet. It is one of the largest on a Wisconsin college campus and provides about eight percent of the campus’s electricity. The Oak Creek turbine is 47 feet tall with an 8-foot blade; installation was completed in November 2012.
FUTURE INITIATIVES
MATC continues to make its operations more sustainable and to prepare more students for a growing number of sustainability-related careers. Here are a few future initiatives:

SUSTAINABILITY COMMITTEE
A Sustainability Committee, comprised of faculty, staff, and students, meets monthly to review and offer input on all matters that affect the college’s sustainability efforts. The committee receives information on remodeling, energy conservation efforts, and other projects. At present, the committee is co-chaired by MATC Vice President of Finance James Williams, Ed.D., and MATC Natural Science faculty member, George Stone, Ph.D.

MICRO-GRID TECHNOLOGY
In 2014, the ECAM facility will complete the installation and programming of a micro-grid, a system proven to reduce a community’s carbon footprint by as much as 50 percent. Under the micro-grid concept, a facility, campus, or community generates electricity onsite instead of purchasing it from a utility and uses heat from the generating source (a reciprocating engine or turbine) to heat or cool buildings or processes. Micro-grid systems can achieve up to 92 percent efficiency, even higher if they include renewable energy sources. In addition, a real-life, real-time, intelligent micro-grid system can provide a powerful learning tool for students, the trades, engineering disciplines, technicians, and researchers.

TRAINING CLEARINGHOUSE
MATC received a National Science Foundation grant to make the ECAM facility a clearinghouse for energy training, education and research. The project will begin in July 2013. Faculty and administrators from other colleges will visit ECAM to learn how to develop courses for specific equipment, such as PV, solar thermal, wind and geothermal systems on the renewable side, as well as boilers, pumps, compressors, chillers and other demand-side equipment. They will also learn about energy auditing, energy modeling, intelligent lighting systems, power engineering, energy engineering technology, commissioning and LEED buildings. The micro-grid will be a prominent part of the initiative.

WATER INDUSTRY EDUCATION
In 2012, the National Science Foundation awarded MATC a three-year, $498,216 grant, H2Options, to help develop curriculum and educate new water industry technicians. These graduates will help serve the roughly 150 water-related industries in metro Milwaukee. The college’s Environmental Health and Water Quality Technology associate degree program will be an important part of the grant’s education emphasis.

MATC and UW-Milwaukee collaborated to create an intelligent lighting laboratory on the UW-Milwaukee campus, using U.S. Department of Energy funds under the American Recovery and Reinvestment Act of 2009. Intelligent lighting systems use advanced controls to increase lighting efficiency and reduce energy costs significantly. In the laboratory, MATC students will learn how to commission, operate, repair and troubleshoot lighting systems. Interaction with UW-Milwaukee engineering students will help encourage MATC students to continue toward bachelor’s degrees in engineering.

TOWARD CLIMATE NEUTRALITY – 2030
MATC is aiming for carbon neutrality by 2030. Being carbon neutral is mostly a function of:
- Practicing efficiency and conservation
- Installing renewable energy technologies
- Using carbon-reducing or carbon-neutral products and services
- Planting trees and other carbon-absorbing life on our grounds
- Purchasing carbon credits

MATC continues to install the latest technologies in energy, water and materials. As we remodel, construct and replace equipment and systems, we will continue to use the most efficient technologies available. From faucets to HVAC systems to renewable energy, we will continue to reduce our carbon footprint with the goal of net zero by 2030.

We believe, as a technical college, our most profound environmental impact is, and will be, through our students. Our students will be an integral part of the new generation of professionals and leaders who will help determine the future of communities and businesses. That future is taking shape now at MATC. Sustainability practices are integrated into many of our career-centered programs. This critical student investment is helping to lead us to a more sustainable future.

MATC 2011 Carbon Footprint

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*2011 is the last complete year for which data was available at the time this report was published. MATC projects the 2012 carbon footprint will be essentially the same.

MATC羰胺碳足迹

MATC 2011 碳足迹

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*2011年是最后完整年，数据在报告发布时可用。MATC预计2012年的碳足迹将基本相同。
To comment on this report, to request copies, or for related information contact:

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Dr. Joseph Jacobsen, Associate Dean, Environmental Sciences
Susan Ruggles, Communications
Dr. George Stone, Natural Science faculty member
Jaime Vega, Director, Construction Services
Dr. James Williams, Vice President, Finance
Stephen Watrous, Social Science faculty member
Theodore Wilinski, Sustainability faculty member

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