Climate Action Planning Strategies for Achieving Carbon Neutrality and Net Zero Campus Operation

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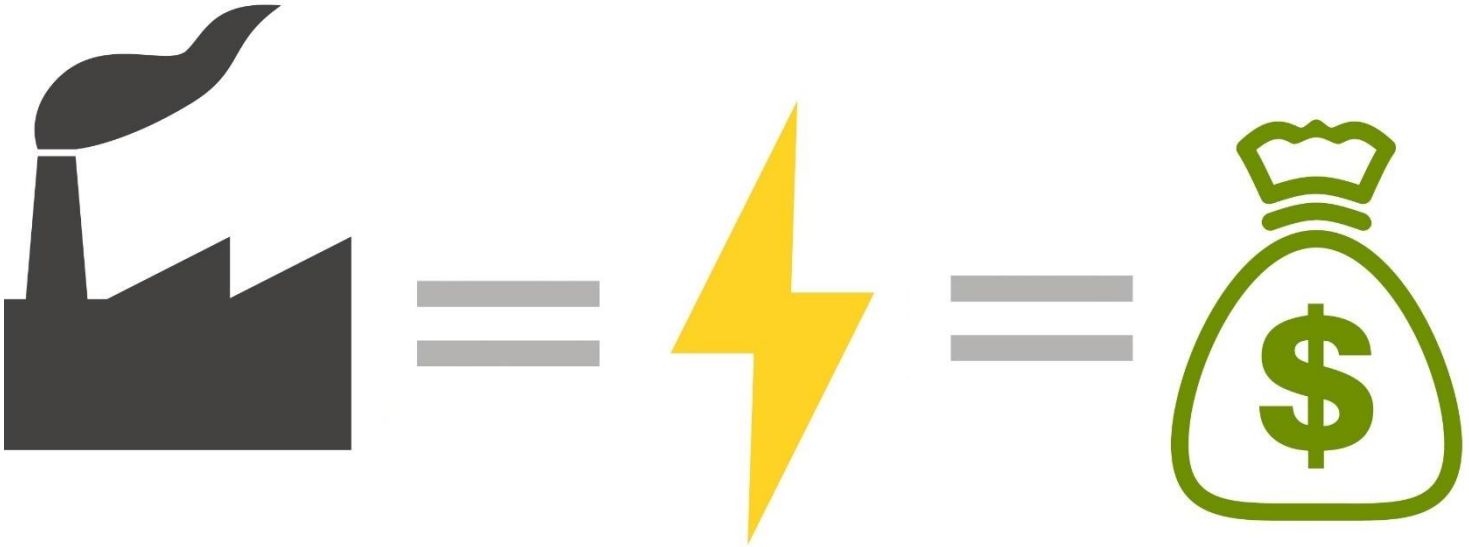

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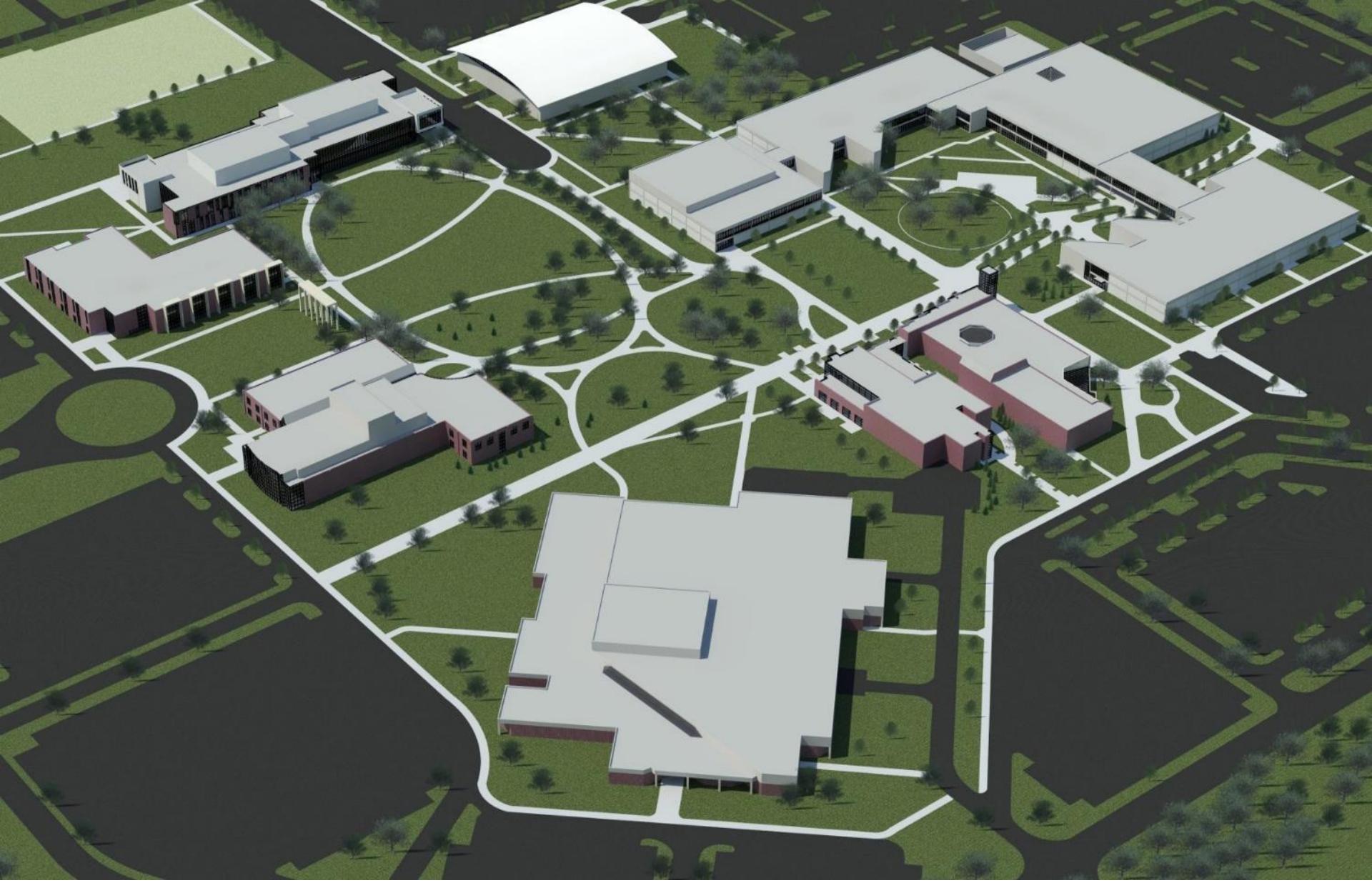
over **$1,800,000** annually



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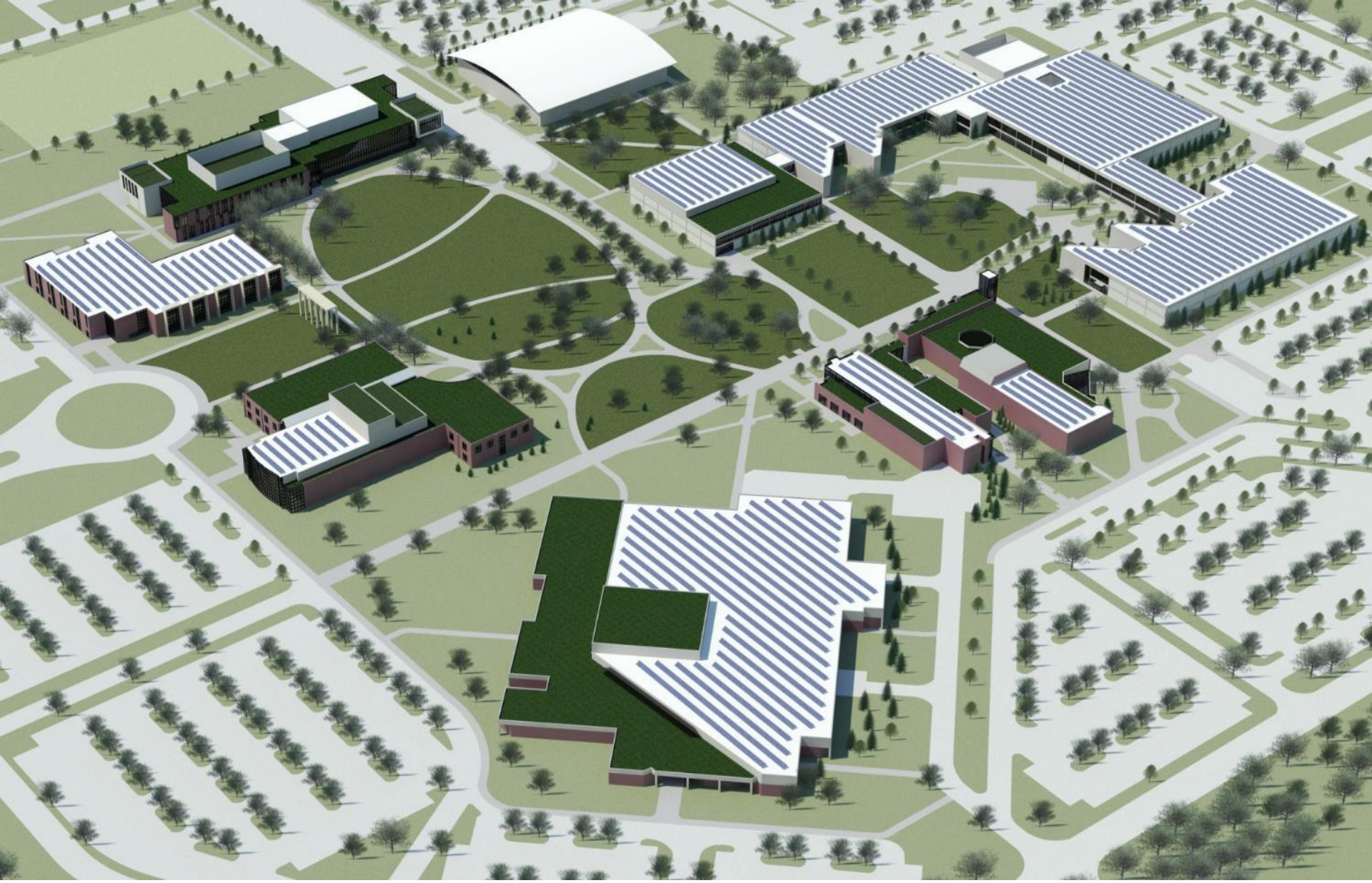
High
Medium
Low



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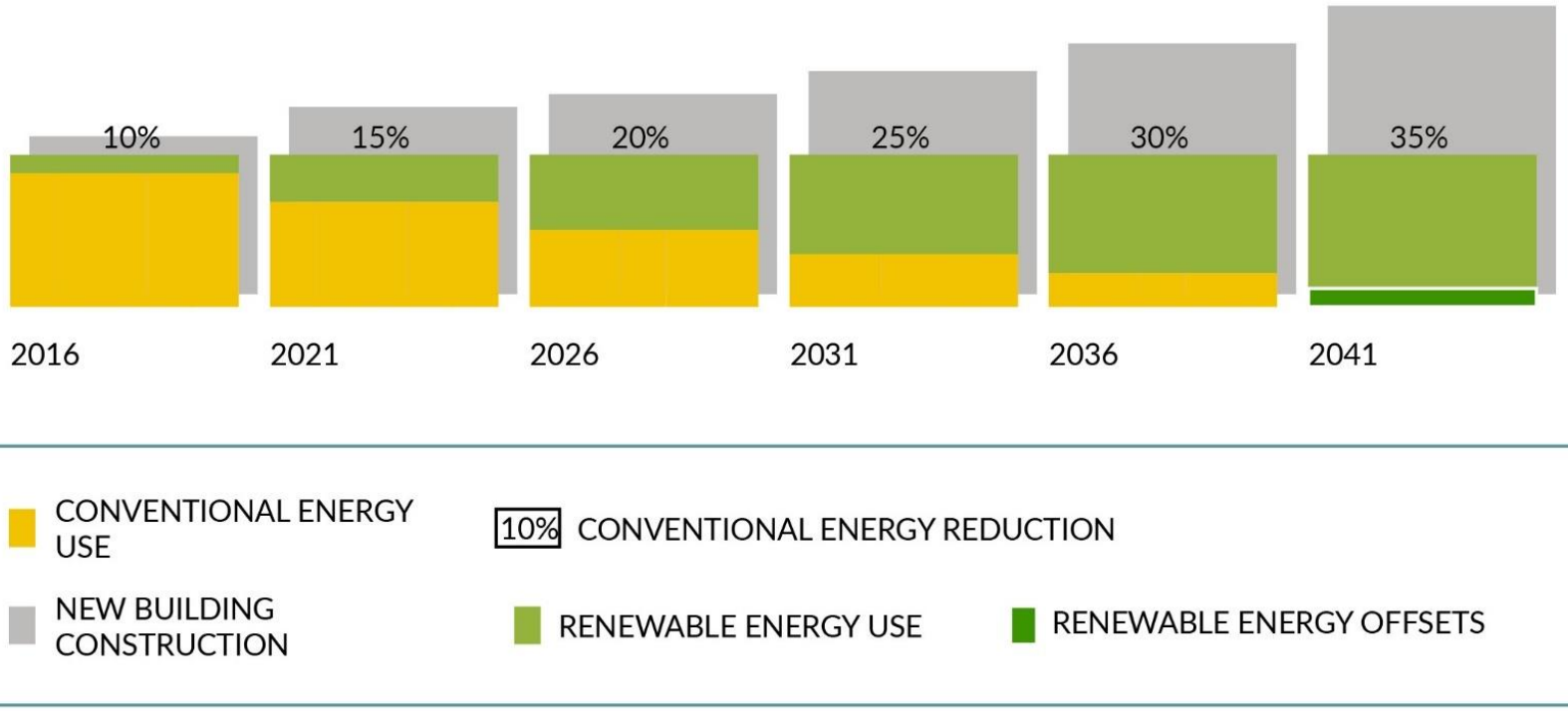
Climate Action Plan Implementation



SECOND NATURE CLIMATE ACTION PLAN REPORTING REQUIREMENTS

The Carbon Commitment defines climate neutrality as having no net GHG emissions by a certain date, which for Moraine Valley is 2042. The following text is the official Carbon Commitment outlining necessary actions and reporting requirements to satisfy the commitment. The remainder of this document explains how Moraine Valley Community College will fulfill its obligations.

Carbon Commitment

We, the undersigned presidents and chancellors of colleges and universities, believe firmly in the power, potential, and imperative of higher education's key role in shaping a sustainable society. Not only are we deeply concerned about the increasing pace and intensity of global climate change and the potential for unprecedented detrimental impacts, but we also understand that technology, infrastructure, global interconnectedness, and our greatest asset – engaged, committed, smart students – allow us to explore bold and innovative solutions and to lead in climate action and sustainable solutions.

1. Develop a Climate Action Plan to achieve carbon neutrality *

    a. After signing this document, create internal institutional structures to guide the development and implementation of the Plan.

    b. After the implementation start date, complete a greenhouse gas emissions inventory and identify near term opportunities for greenhouse gas reduction. Report these in the first annual evaluation of progress.

    c. After the implementation start date complete the plan, which will include:
        - A target date for achieving carbon neutrality as soon as possible
        - Interim target dates for meeting milestones that will lead to carbon neutrality
        - Mechanisms and indicators for tracking progress
        - Actions to make carbon neutrality a part of the curriculum and other educational experiences for all students
        - Actions to expand research in carbon neutrality

    d. Review, revise if necessary, and resubmit the climate action plan not less frequently than every five years.

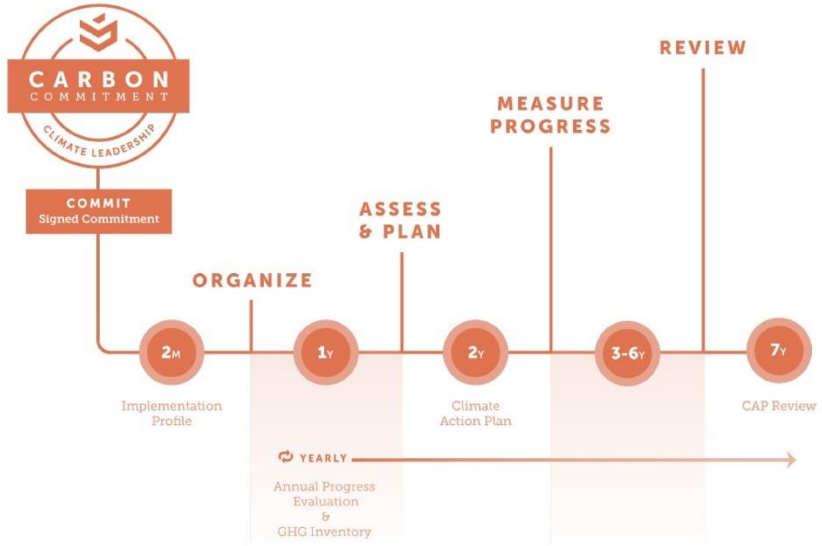
2. Submit an annual evaluation of progress:

    a. After the implementation start date, and every year thereafter, complete an annual evaluation of progress.

    b. Make the action plan, annual evaluation of progress (including greenhouse gas inventory), publicly available by submitting them to Second Nature's reporting system for posting and dissemination.

* The Moraine Valley's CAP was created in alignment with the Campus Master Plan, further substantiating the importance of this plan as well as providing additional support to achieving the goals within by integrating with an established college process.

- Carbon Commitment, Second Nature Requirements



Carbon Commitment Timeline, Second Nature

MORAINE VALLEY'S CLIMATE COMMITMENT

"By joining the Carbon Commitment, Moraine Valley also aligns with a specific, ambitious goal adopted by hundreds of other higher education institutions; united we are nurturing the kind of shared vision across our institutions that is needed to achieve transformational changes to avoid climate disaster."

A Message from the President

As a community college, it is our mission to serve our community, to be a steward of its health through education, workforce development and service. It is our responsibility to be aware of changes and emerging challenges so we may develop solutions that drive community wellness. Now, more than ever, we recognize that not just our community, but our world, is facing serious challenges due to climate change and disruption. Clearly, the Moraine Valley district is not exclusive of these threats. Many are trying to find solutions to these challenges; however, I recognize it is our students will bear the greatest burden of finding solutions to these global problems.

Climate change is a collective issue, whereby the responsibility to generate solutions is not isolated to policy makers and scientists. At Moraine Valley, sustainability is a serious issue for every department and discipline, as well as student, and we want to make an equal impact on our community and the world at large. As an institution of higher education, we recognize our greatest impact on climate change can be through our primary asset – teaching our students how to interpret and react to pressing issues of our time. Students are the next generation of problem-solvers; however, it is also our duty to demonstrate examples of solutions.

Therefore, in the fall of 2013, I made a significant commitment on behalf of Moraine Valley Community College when I signed the Second Nature Carbon Commitment (formerly, the American Colleges and Universities Presidents Climate Commitment). This commitment is the beginning of a journey through which we will achieve campus carbon neutrality, support community resilience, and provide climate change education and global citizenship opportunities for our students.

By signing this commitment and upholding the promises within, Moraine Valley is leading by example; we are showing our community that we are responsible stewards and recognize our duty to do everything we can to mitigate climate change disruption because it's necessary and because it's the right thing to do.

As a matter of fact, through our participation with the South Metropolitan Higher Education Consortium (SMHEC), we are working directly with our community to make the Chicago Southland the greenest and most resilient region through sustainable practices. We have partnered with key community stakeholders, including municipal, manufacturing, non-profit, health care and other leaders, to provide a platform to link and leverage resources throughout the area. Through this effort, we will raise up the region's ability to adapt to a changing climate while also mitigating carbon emissions and other unsustainable practices, fostering a healthy future for us all.

I am honored to say that at Moraine Valley we recognize and fully support this effort as a necessary cooperative and unified action that will make positive change for today and tomorrow.

Furthermore, by joining the Carbon Commitment, Moraine Valley also aligns with a specific, ambitious goal adopted by hundreds of other higher education institutions; united, we are nurturing the kind of shared vision across institutions that is needed to achieve transformational changes to avoid climate disaster. To do this, we have developed this Climate Action Plan; a plan that is flexible and adaptive over time and which will lead to the institution's climate neutrality.

Moraine Valley could not fulfill its obligation to create a Climate Action Plan without the input and effort of a strategically coordinated team of many influential stakeholders of its campus community. To that effort, I organized a campuswide representative task force, with members grouped into four key focus areas: operations, community engagement, students, and academics.

Carbon neutrality is a lofty goal, and we know it will not happen overnight. However, as evidenced within this Climate Action Plan, the tremendous work of this task force has set us on the right path to eventually achieve net zero emissions. I am grateful for their efforts.

Now with our plan in place, I am excited to lead our Moraine Valley community and fully support the efforts of our implementation team as we begin applying strategies to mitigate our climate footprint; continue to support the growth of resilient campuses and communities; and develop curriculum to educate our students about climate change while providing opportunities for them to become engaged, empowered, solutions-minded global citizens of today and tomorrow.

To a healthy future, sincerely,

Sylvia M. Jenkins, Ph.D.
President

STRATEGIES

MITIGATION
- M.1 ENERGY EFFICIENCY
- M.2 TRANSPORTATION
- M.3 OPERATIONS AND MAINTENANCE
- M.4 WASTE

RENEWABLE ENERGY
- R.1 WIND
- R.2 SOLAR
- R.3 GEOTHERMAL
- R.4 PURCHASE
- R.5 RESEARCH

ADAPTATION AND RESILIENCE
- A.1 SAFETY
- A.2 SOCIAL AND CULTURAL
- A.3 LANDSCAPE AND INFRASTRUCTURE

ENGAGEMENT
- E.1 LEADERSHIP
- E.2 CURRICULUM
- E.3 STUDENT ACTIVITIES
- E.4 OUTREACH

MORAINE VALLEY'S GHG **DATA ANALYSIS**

Scope 1 Emissions

These carbon emissions are a result of equipment used to maintain campus grounds (for example, maintenance vehicles, lawn mowers, snow blowers/plows). Additional sources of scope 1 emissions are attributed to building boilers, steam production, use of lab equipment, campus shuttles, and any other equipment that is located on campus and operated by the college.

Although scope 1 emissions represent the smallest share of the three scopes, it presents some of the easiest methods to reduce the amount of carbon emitted by the college each year. Since these emissions arise directly from sources that are owned and/or controlled by the college, proposed changes and procedure updates only need to be accepted by campus administration and faculty. Strategies that address this emissions category are covered later in this document.

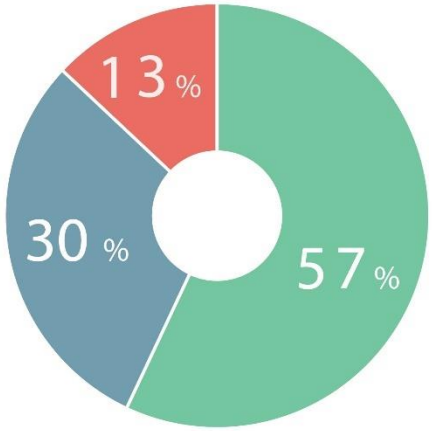
Scope 2 Emissions

Since most of the energy purchased by the college is derived from non-renewable resources, all of the carbon generated during the energy production is recorded under this category. While the college cannot control how the purchased energy is produced, there are many alternative options such as the production of renewable energy on campus or the purchase of renewable energy certificates.

Scope 3 Emissions

The largest, and most difficult, category to address is scope 3 since these are emissions produced by sources outside of the college's control. This category includes students, faculty, and staff commuting to the campus on a daily basis. Commuting emissions also extend beyond the everyday commute to include business trips, field trips, or any other travel needs of the college's population. While they do not account for the majority of the category, the emissions released due to the handling and disposal of solid waste and water treatment are other factors that are included in the college's carbon footprint.

EMISSIONS DATA FY 2014:

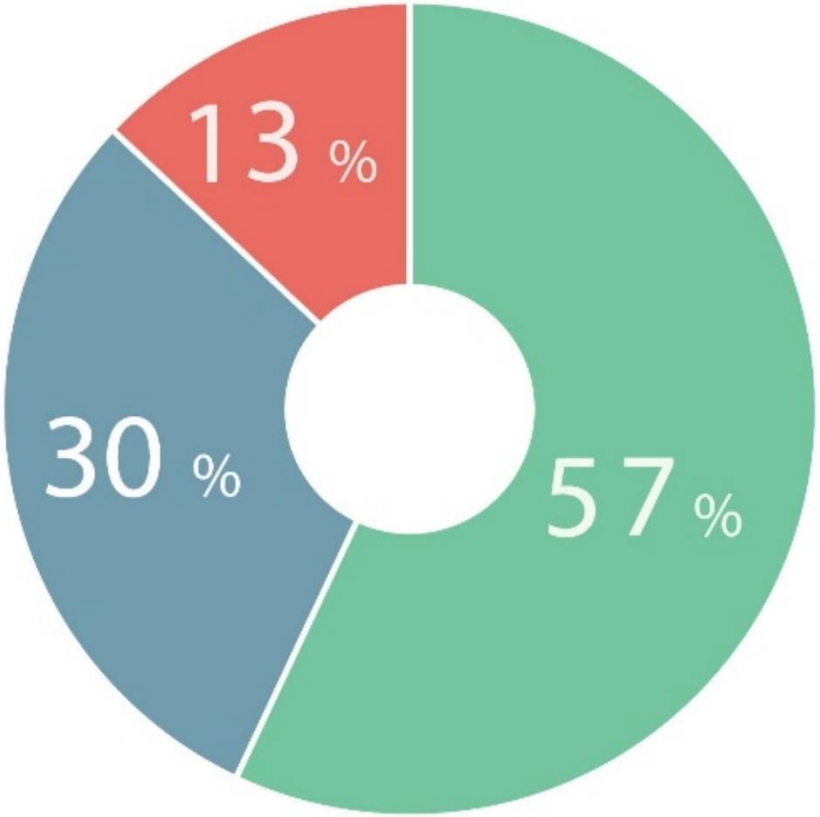


Metric Tons of CO2e

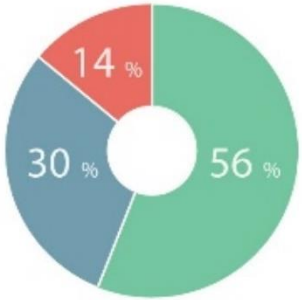
SCOPE 1 EMISSIONS	
Stationary Combustion	3,134
Mobile Combustion	237
Process Emissions	0
Fugitive Emissions	6
Subtotal	3,377
SCOPE 2 EMISSIONS	
Purchased Electricity	7,849
Purchased Heating	0
Purchased Cooling	0
Purchased Steam	0
Subtotal	7,849
SCOPE 3 EMISSIONS	
Commuting	13,246
Air Travel	472
Solid Waste	831
Sub-total	14,549
TOTAL EMMISIONS	
Total	25,775

The FY2014 total of CO_2e emitted by Moraine Valley and activities associated with the college amounts to 25,775 metric tons. To put this number into perspective, the college's total annual emissions are equivalent to the use of 4,295 automobiles every year!

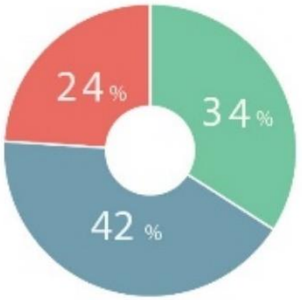
Carbon Footprint Comparison



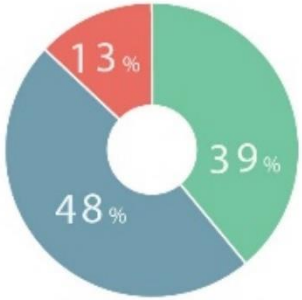
MORAINE VALLEY COMMUNITY COLLEGE
25,775 CO_2e



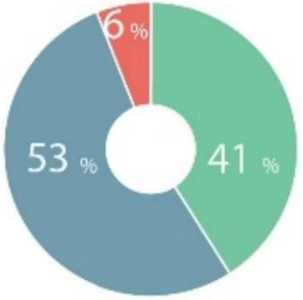
KANKAKEE COMMUNITY COLLEGE
11,912 CO_2e



HARPER COLLEGE
30,528 CO_2e



PARKLAND COLLEGE
28,518 CO_2e



LAKE LAND COLLEGE
9,860 CO_2e

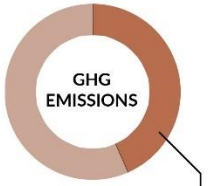
MITIGATION

STRATEGY M.1
ENERGY EFFICIENCY

WHY?

"Buildings have a life-span of 50-100 years during which they continually consume energy and produce CO2 emissions. If half of new commercial buildings were built to use 50% less energy, it would save over 6 million metric tons of CO2 annually for the life of the buildings—the equivalent of taking more than one million cars off the road every year."

- USGBC



43% emissions due to Moraine Valley's BUILDING PORTFOLIO

BUILDING

- R VALUE — Recommend envelope and glazing **R-VALUES** for new buildings to exceed current energy code.
- Review **POTENTIAL** for **RENOVATING** all existing buildings to LEED O&M.
- Recommend all new buildings to be designed to **LEED Silver** or higher. Green building standards to be reviewed periodically for their campuswide adoption.
- **AUDIT CLASS SCHEDULING** with regards to building utilization. Set goals for higher utilization rates.

EQUIPMENT

- Review the long-term facilities plan to include setting increasingly **HIGHER STANDARDS FOR FIXED-EQUIPMENT** energy efficiency.
- Set **AGGRESSIVE IT GOALS** for machine visualization.

CULTURE

- Utilize the cultural energy of the campus to **REDUCE ENERGY** use through class/ departmental **COMPETITIONS**, or incentives.
- Continue to **RETAIN AND HIRE** knowledgeable and qualified people to implement new systems.

MITIGATION

STRATEGY M.2
TRANSPORTATION

WHY?

"The environmental impact of transport is significant because it is a major user of energy, and burns most of the world's petroleum. "
- Center for International Climate and Environmental Research

"EPA's vehicle greenhouse gas rules will save consumers $1.7 trillion at the pump by 2025, and eliminate six billion metric tons of GHG pollution."
- Environmental Protection Agency

STRATEGIES WITHIN/IN-BETWEEN CAMPUSES

Create on-campus infrastructure and economic models in order to encourage the use of **ALTERNATIVE TRANSPORTATION** (electric charging stations, preferred parking for alternative fuel vehicles, increased bike paths and racks, carbon credit purchasing)

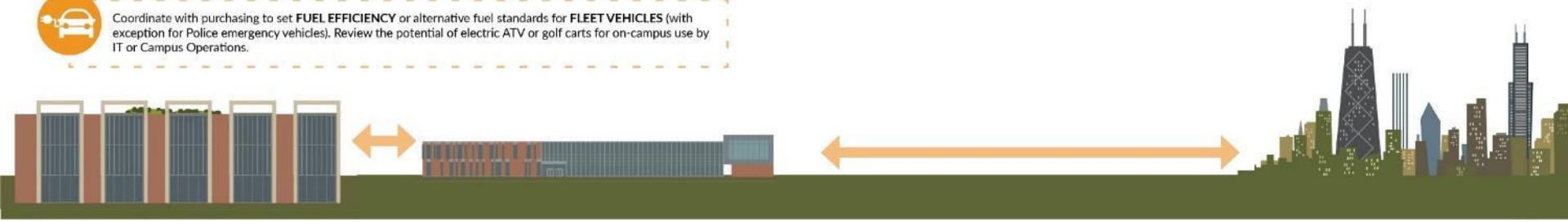
Coordinate with purchasing to set **FUEL EFFICIENCY** or alternative fuel standards for **FLEET VEHICLES** (with exception for Police emergency vehicles). Review the potential of electric ATV or golf carts for on-campus use by IT or Campus Operations.

STRATEGIES TO/FROM CAMPUS

Review feasibility of inter-/intra-campus **SHUTTLE SERVICE**. Also review feasibility of a shuttle to/from Worth/Palos Heights Metra stations, or Red Line at 95th/Dan Ryan.

NEGOTIATE with local municipalities, institutions, and adjacent stakeholders to improve the conditions for alternative transportation.

Create **DIGITAL EDUCATIONAL/SERVICE MODELS** which encourage off-campus learning or services. Make virtual services and classes available to students, especially between campuses (virtual advising, virtual financial aid, virtual lectures).



MITIGATION

STRATEGY M.3
OPERATIONS AND MAINTENANCE

WHY?

"By improving your energy efficiency, you reduce the size (and cost) of the renewable energy system needed ... Improving your energy efficiency is the first and most important step toward adopting renewable energy."
- The American Solar Energy Society

OPERATIONS

- Audit all departments for **PRINTING** frequency and recommend reductions or decommissioning of redundant print stations.
- Recommend a **250-MILE RADIUS FOR FOOD OPERATIONS PRODUCE** as a preferred first source of food items.
- Set increasingly **HIGH ENERGY EFFICIENCY REQUIREMENTS** for all new office/campus equipment.

GROUNDS

- Establish campus as an **ARBORETUM**. Create sequestration monitoring program. Plant resilient, climate-ready trees around campus for shading buildings and parked cars.
- Create a goal of transferring 100% of **EXTERIOR LIGHTING** to **LED** by 50% of the CAP completion date.

BUILDINGS

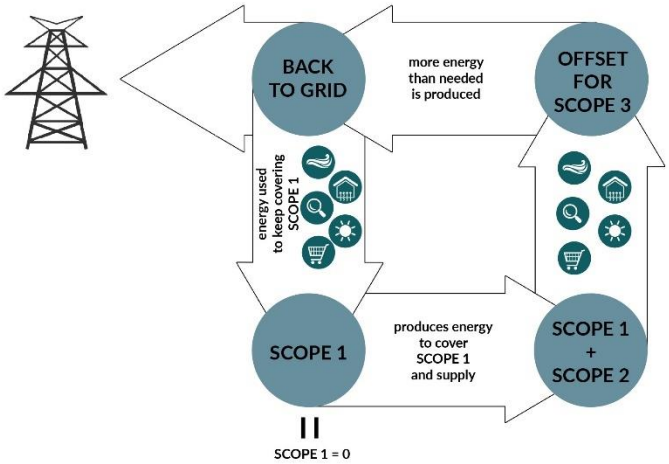
- Establish aggressive IT mandates to **CUT DOWN** on computer station and peripheral **ENERGY USE** when not in operation.
- Audit office departments for **REDUNDANT PERIPHERALS** and create a decommissioning plan (space heaters, personal printers, etc).
- **AUDIT** existing buildings for **POTENTIAL REDUCTIONS** in electrical loads through LED fixtures, dimmer switches, and occupancy/ vacancy sensors.
- Install submeters on all buildings to **TRACK** specific and relevant **ENERGY USE** to target energy and envelope renovations.
- Audit and **REPLACE** inefficient or "high-flow" **PLUMBING FIXTURES**.

RENEWABLE ENERGY

WHY?

"A 20 percent national standard would reduce the projected growth in power plant CO2 emissions under a business-as-usual scenario by 63 percent, or 223 MMT per year by 2020. This level of reductions is equivalent to taking 36.4 million cars off the road."

- Union of Concerned Scientists



PURCHASING

Annually increase purchasing of clean energy from a renewable energy electricity provider by 1% each year through negotiations with local power companies.

RESEARCH

Assign an interdepartmental committee, coordinated by the Center for Sustainability, to annually review renewable technologies, battery technologies, and novel technologies and their feasible applications or testing on Moraine Valley campuses.

SOLAR PV

1. Install photovoltaic panels on campus. Create short-term, mid-term and long term installation plans to offset a determined percentage of electricity use by the halfway mark of the climate action plan.
2. Coordinate with communications and curriculum development to create opportunities for academic study.
3. Investigate solar heating water panels to produce hot water in areas which have suitable solar exposure and structure to support solar water heating.

WIND ENERGY

1. Install a 30' wind turbine on campus. Create short-term, mid-term and long-term installation plans. Determine a suitable area and plan in tandem with PV installation plans.
2. Coordinate with communications and curriculum development to create opportunities for academic study.

GEOTHERMAL

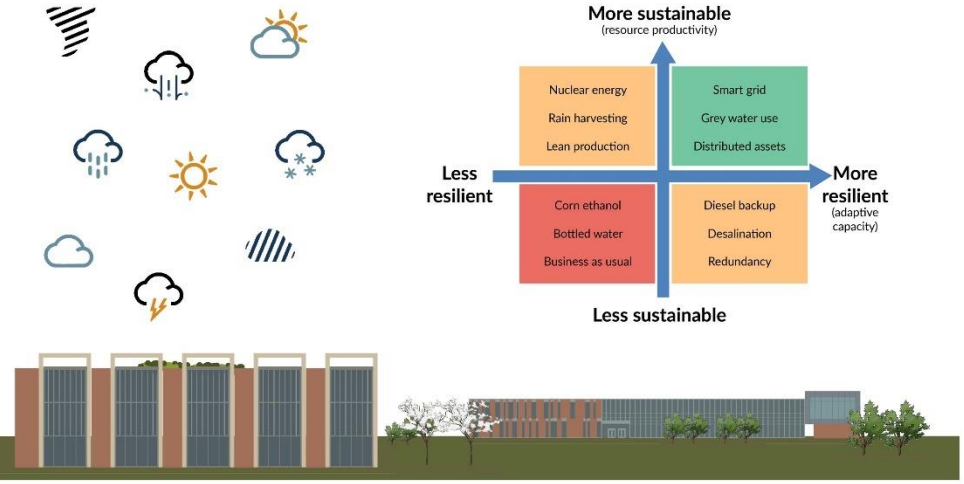
Investigate the potential for on- or near-campus geothermal energy.

ADAPTATION AND RESILIENCY

WHY?

"It is increasingly essential that in addition to greenhouse gas reduction actions, we must also ensure that our decisions are smart in the face of expected and unexpected changes and extremes. These decisions should not only reduce our vulnerability, but also increase opportunity and value. Sustainability and resilience often go hand in hand and mutually support each other."

- Second Nature



SOCIAL AND CULTURAL

- Re-establishing the **FARMERS MARKET** and increased use of the community garden could provide greater strength to this program.
- Include a mandate to utilize the online **LEARNING MANAGEMENT SYSTEMS** (Blackboard/Canvas)
- Utilize and improve the **ORGANIZATIONAL STRUCTURE** of Moraine Valley to increase resiliency to sudden shocks and chronic stresses.
- In coordination with the **WELLNESS PROGRAM**, encourage students/faculty to pack healthy lunches/dinners to facilitate greater whole-person wellness among the faculty, staff and students.

SAFETY

- Negotiate **BETTER DESIGNED** out-roads and automobile exiting protocols.
- Continue to evaluate **PHYSICAL EMERGENCY SYSTEMS** for redundancy and plan for their ability to respond to all types of extreme social/environmental events.

LANDSCAPE AND INFRASTRUCTURE

- Continue sustainable **STORM WATER MANAGEMENT** initiatives and review new technologies as they become available.
- Continue **ECOSYSTEM RESTORATION** for campus prairie.
- Create **ANTI-IDLING RESTRICTIONS** to reduce on-campus pollution (with exception to emergency vehicles).
- Establish commitment to **SUSTAINABLE LANDSCAPE PROGRAM**, with long-term landscape management plan, to include more native and climate-ready plant and tree species, reducing the need for the use of chemical fertilizers and reducing the need for outdoor irrigation.
- Create continual cycles of review and implementation of systems and processes with regards to the predicted **LONG-TERM EFFECTS** of global climate change and their impacts on the physical campuses.

ENGAGEMENT

WHY?

"When people discover what they have, they find power. When people join together in new connections and relationships, they build power. When people become more productive together, they exercise their power to address problems and realize dreams."

- Mike Green, When People Care Enough to Act

STUDENT ACTIVITY

Create **STUDENT BODY SPOKESPERSONS** for Climate Action Plan to spread and organize student-body efforts.

Continue to integrate initiatives to create a **COHESIVE APPROACH TO CO-CURRICULAR** student **PROGRAMMING** that fosters the global citizen.

CURRICULUM

Create a curriculum development team that develop sustainability certificates and academic programs to satisfy college/national requirements and emerging trends in job development:

1. Create the SUS-101 Introduction to Sustainability as a general education course.
2. Implement the Sustainability Scholars Program student component, with notation on transcripts and pre- and post-assessment.
3. Create new academic programs, like urban farming and solar or wind to make more opportunities for our students.
4. Encourage the Sustainability Scholars Program be taken by all faculty to broaden the list of sustainability and climate change-infused classes.
5. Develop graduate courses in sustainability and climate change for staff and faculty.

OUTREACH

Create department spokespersons for Climate Action to share the progress of CAP efforts.

Continue to work with community partners to identify and implement community resilience strategies:

Develop programs to assist students, faculty and staff to upgrade their own residences through improved energy efficiency and better utilization of solar energy to reduce greenhouse gas emissions, such as a home energy audit kit that is available to check out from the library.

Marketing team to develop clear and consistent message for the Climate Action Plan, implementation and progress reports, multi-faceted and across different media including CAP presidential updates at all staff meetings.

Consistently communicate systems and processes to mitigate waste, redundancy, and ensure maximum efficiency (example; IT LCM program, recycling initiatives)

Integrate with the Moraine Valley communications team to document existing sustainability efforts, and encourage the use of waste-reducing strategies (water bottles, bag lunches, resource reuse).

LEADERSHIP AND STRATEGY

Make **SUSTAINABILITY** and climate education a prominent/official **COMPONENT OF RECRUITMENT** and orientation of new faculty and staff.

Create **"BEST PRACTICES" GREEN OFFICE** strategies challenge for use by administration and adopted by departments for recognition.

ALIGN GOALS of the Center for Sustainability and other initiatives, like The Democracy Commitment and Service learning, increasing impact on co-curricular student opportunities.

Thank you

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