



Meeting Summary

February 10, 2012

Council members present:

Robert M. Specter, Vice President for Administrative Affairs & CFO (Chair)
Mahlon Straszheim, Associate Provost, Academic Affairs
John Farley, Assistant Vice President, Administrative Affairs
Ross Salawitch, Professor, Atmospheric and Oceanic Sciences
Steve Hutcheson, Professor, Cell Biology & Molecular Genetics
Thomas Zeller, Associate Professor, History
Scott Lupin, Associate Director, Environmental Safety and Director, Office of Sustainability
Jay Elvove, Manager, OIT
Bryan Quinn, Director of Technical Operations, Department of Electrical and Computer Engineering
Ian Page, Graduate Student, Agriculture and Resource Economics
Matthew Popkin, Undergraduate Student, Government and Politics

Meeting start time: 10:00 am

Meeting Highlights

Minutes Approved

Meeting minutes from December 9, 2011 Council meeting were approved.

Sustainability Fund Projects

Matthew Popkin presented a report from the Student Advisory Subcommittee, which recommended a total of \$101,843.20 in grants to nine projects. **See Appendix A.** This distribution of funds is in addition to the four projects that received a total of \$27,469.40 from the Fund in December 2011. The projects and Council's decisions are listed below. Bryan Quinn recused himself from voting on three projects that he is involved with including SETIL, Peace and Friendship Garden, and Rooftop Community Garden.

- **Food Recovery Network: \$1,033.20**
 - *Subcommittee recommendation:* Complementing the funding approval in December, this additional funding will be used to purchase additional reusable trays for the transport and storage of excess collected food. The group has been expanding rapidly and this will allow them to not be delayed in the event that they need additional trays. A maximum of 100 trays will be covered by this amount.
 - *Council decision:* Approved

- **Peace and Friendship Garden Solar Powered Irrigation System: \$5,000**
 - *Subcommittee recommendation:* This is an Engineers Without Borders project to design an automated solar-powered irrigation system for the Peace and Friendship Garden near the University House. A drip irrigation system is a network of pump or gravity pressurized water delivery pipes. This will decrease labor and time, and it has potential to be applied broadly across the campus. Funding will cover material costs for the irrigation system. The solar panels themselves were donated.
 - *Council decision:* Approved
- **Rooftop Community Garden: \$7,450**
 - *Subcommittee recommendation:* The South Campus Rooftop Garden received a start up from the fund last year to pilot urban agriculture. Thus far, the garden has been successful and is accessible to students, staff, and faculty. The subcommittee voted to partially fund the project with \$3,750.00 allocated for improving the social environment of the urban garden space and \$3,700 for the eco-mats, recycled mulch, and equipment for a total of \$7,450.
 - *Council decision:* Approved
- **HydrateUMD: \$9,000**
 - *Subcommittee recommendation:* The project is seeking to install water bottle filling stations at a number of locations with data tracking capabilities to measure use. It is intended as a pilot project to help encourage sustainable alternatives to bottled water consumption and make it easier to refill reusable water bottles. The subcommittee voted to partially fund the project for 6 filling stations, preferably 2 in Tawes, 2 in McKeldin, and 2 on the first floor of 2 residence halls.
 - *Council decision:* Approved with the following conditions. The installation locations must be approved by the Director of Residential Facilities and the Associate Vice President of Facilities Management, as applicable. In addition to obtaining necessary approvals prior to installation, funding is provided based on the condition that the group coordinates efforts with those of the Council's Bottle Water Task Force, which is chaired by Dr. Bruce James. The Task Force will be finalizing a set of recommendations in the coming weeks. In the event a filling station standard is established, the University Sustainability Council would like the filling stations proposed under this project to conform to the standard.
- **ENST Green Façade: \$9,500**
 - *Subcommittee recommendation:* This project would implement technology developed by Dave Tilley, Associate Professor of Environmental Science and Technology, to grow leafy plants on the south side of the ENST-Animal Science building to block the south facing exterior from solar heat gain in the summer. Green walls are intended to shield buildings from direct sunlight thus leading to potential for energy savings. Funding will cover structural and plant costs.
 - *Council decision:* Approved with the following conditions. The \$9,500 is approved on the condition that: (1) the funding be applied to pay for material costs associated with the green façade; (2) the project conforms to University and State building and landscape standards; and (3) the project receives approval from Carlo Colella, Associate

V.P. for Facilities Management, before beginning work on the installation or accessing these funds.

- **Maximizing the Efficiency of Greenhouses Using Aquaponics: \$12,000**
 - *Subcommittee recommendation:* This is a Gemstone research project that seeks to explore the potential of aquaponics, which is a sustainable, organic, and efficient method of agriculture combining aquaculture and hydroponics. Limited research has been done overall on aquaponics, and the group intends to have the system accessible to students with educational materials available. It is likely that the project will be constructed on the South Campus Dining Hall rooftop space. Funding will cover the material and construction costs associated with the project.
 - *Council decision:* Approved with the following conditions. The \$12,000 is approved on the condition that: (1) the funding be applied to pay for material costs associated with the project; and (2) that a suitable location is found for the project and approved by the Director of the appropriate campus unit. In addition, by accepting this funding the project leaders indicate that intellectual property rights remain vested in the University of Maryland, as these funds are from public student fees. Although not a condition, the Council and Subcommittee hope that this project will have longevity beyond the Gemstone team's goals and be used for future courses and/or research projects.
- **Green Roof Research: \$12,410**
 - *Subcommittee recommendation:* A graduate research project designed to investigate best practices regarding green roof technology using test platforms on the roof of a campus building. Green roofs help mitigate storm water runoff. Funding will cover the material and construction costs associated with the project.
 - *Council decision:* Approved with the following conditions. The \$12,410.00 is approved on the condition that: (1) the funding be applied to pay for material costs associated with the project; and (2) that a suitable location is found for the project and approved by the Director of the appropriate campus unit. Project leaders should ensure that none of the plant species used in the research is prohibited by University, State, or Federal regulations. In addition, the Council requests that project leaders present the research findings to Facilities Management staff and the University Sustainability Council.
- **Sustainable Energy Teaching Initiatives Laboratory (SETIL): \$12,500**
 - *Subcommittee recommendation:* Expanding upon the Maryland Education Solar Array Project from last year, SETIL will be adding wind turbines to this rooftop classroom energy lab. The applicant requested 4 turbines, noting that 2 turbines would be necessary as a minimum. The subcommittee voted favorably to fund half the project, which, even in the event that no more funding is secured, would still allow the project to move forward. The \$12,500 would be put towards the 2 small-scale wind turbines and the respective technical aspects of the installation.
 - *Council decision:* Approved
- **STAMP Composting: \$32,950**
 - *Subcommittee recommendation:* This project creates and fully integrates a large-scale composting operation in the STAMP Student Union. With all-out marketing, bin

renovations, a large compactor, and dock retrofitting, STAMP will integrate composting into the waste separation of the building. This is an excellent way to educate students, staff, faculty, and visitors beyond the dining halls about proper waste disposal. STAMP and Facilities Management have committed a total of \$36,000 towards the project. The recommendation is for the fund to cover the remaining \$32,950 towards dock retrofitting, replacement bins, collection stations, and compost totes.

- *Council decision:* Approved

Clean Energy Purchasing

Students including members of SGA's Student Sustainability Committee and UMD for Clean Energy submitted a letter to the University Sustainability Council in December 2011 asking the University to eliminate its emissions from purchased electricity (scope 2 emissions). In response to the students' request, the Office of Sustainability and FM Energy Office drafted a proposal for how the University can meet the students' demands in a fiscally responsible way. Mark Stewart presented that proposal and an overview of renewable energy credits (RECs) in a PowerPoint presentation. **See Appendix B.**

The Council debated the value and strategy of buying RECs. Although there was no decision or clear consensus on the issue, some Council members voiced opposition to purchasing unbundled RECs that do not force the development of new renewable energy generation facilities. They preferred buying bundled RECs, which deliver electricity and RECs from new renewable energy projects, or putting the money into on-campus energy efficiency or renewable energy projects. The Office of Sustainability agreed with investing in on-campus energy efficiency or renewable energy projects, which the University is already doing, but encouraged the Council to consider purchasing unbundled RECs as an additional strategy for reducing the University's reported carbon footprint.

Since the Council could not reach a decision during this meeting, Rob Specter called for a special one-hour meeting to take place at 9:00 am on February 23rd to continue conversation on this issue.

Adjourn: 11:45 am



Student Advisory Subcommittee February 10, 2012 Recommendation:

For the 2011-2012 year, each undergraduate paid \$8.00 to the University Sustainability Fund. The fund currently has approximately \$214,528.00. In December, the Council approved \$27,469.40 for four projects. The subcommittee brings another set of 9 projects forward for approval totaling \$101,843.20. The subcommittee took a fiscally conservative approach, encouraging efficient project designs and working with project leaders to streamline their proposals. We are also hoping to spur large-scale high-impact projects, which will likely be higher in cost. Presuming all 9 are approved, there will be \$85,215.40 remaining. Any unused money from the approved projects will be returned to the fund.

1. Food Recovery Network: \$1,033.20

- a. Complementing the funding approval in December, this additional funding will be used to purchase additional reusable trays for the transport and storage of excess collected food. The group has been expanding rapidly and this will allow them to not be delayed in the event that they need additional trays. A maximum of 100 trays will be covered by this amount.

2. Peace and Friendship Garden Solar Powered Irrigation System: \$5,000

- a. This is an Engineers Without Borders project to design an automated solar-powered irrigation system for the Peace and Friendship Garden near the University House. A drip irrigation system is a network of pump or gravity pressurized water delivery pipes. This will decrease labor and time, and it has potential to be applied broadly across the campus.
- b. Funding will cover material costs for the irrigation system. The solar panels themselves were donated.

3. Rooftop Community Garden: \$7,450

- a. The South Campus Rooftop Garden received a start up from the fund last year to pilot urban agriculture. Thus far, the garden has been successful and is accessible to students, staff, and faculty.
- b. The subcommittee voted to partially fund the project with \$3,750.00 allocated for improving the social environment of the urban garden space and \$3,700 for the eco-mats, recycled mulch, and equipment for a total of \$7,450.

4. HydrateUMD: \$9,000

- a. The project is seeking to install water bottle filling stations at a number of locations with data tracking capabilities to measure use. It is intended as a pilot project to help encourage sustainable alternatives to bottled water consumption and make it easier to refill reusable water bottles.
- b. The subcommittee voted to partially fund the project for 6 locations of filling stations, preferably 2 in Tawes, 2 in McKeldin, and 2 on the first floor of 2 residence halls.

5. ENST Green Façade: \$9,500

- a. This project would implement technology developed by Dave Tilley, Associate Professor of Environmental Science and Technology, to grow leafy plants on the south side of the ENST-Animal Science building to block the south facing exterior from solar heat gain in the summer. Green walls are intended to shield buildings from direct sunlight thus leading to potential for energy savings.
- b. Funding will cover structural and plant costs.

6. Maximizing the Efficiency of Greenhouses Using Aquaponics: \$12,000

- a. This is a Gemstone research project that seeks to explore the potential of aquaponics, which is a sustainable, organic, and efficient method of agriculture combining aquaculture and hydroponics. Limited research has been done overall on aquaponics, and the group intends to have the system accessible to students with educational materials available. It is likely that the project will be constructed on the South Campus Dining Hall rooftop space.
- b. Funding will cover the material and construction costs associated with the project.

7. Green Roof Research: \$12,410

- a. A graduate research project designed to investigate best practices regarding green roof technology using test platforms on the roof of a campus building. Green roofs help mitigate storm water runoff. Funding will cover the material and construction costs associated with the project.

8. Sustainable Energy Teaching Initiatives Laboratory (SETIL): \$12,500

- a. Expanding upon the Maryland Education Solar Array Project from last year, SETIL will be adding wind turbines to this rooftop classroom energy lab. The applicant requested 4 turbines, noting that 2 turbines would be necessary as a minimum.
- b. The subcommittee voted favorably to fund half the project, which, even in the event that no more funding is secured, would still allow the project to move forward. The \$12,500 would be put towards the 2 small-scale wind turbines and the respective technical aspects of the installation.

9. STAMP Composting: \$32,950

- a. This project creates and fully integrates a large-scale composting operation in the STAMP Student Union. With all-out marketing, bin renovations, a large compactor, and dock retrofitting, STAMP will integrate composting into the waste separation of the building. This is an excellent way to educate students, staff, faculty, and visitors beyond the dining halls about proper waste disposal.
- b. STAMP and Facilities Management have committed a total of \$36,000 towards the project. The recommendation is for the fund to cover the remaining \$32,950 towards dock retrofitting, replacement bins, collection stations, and compost toters.



sustainableumd

Clean Energy Purchasing

Proposal to the University
Sustainability Council

Context

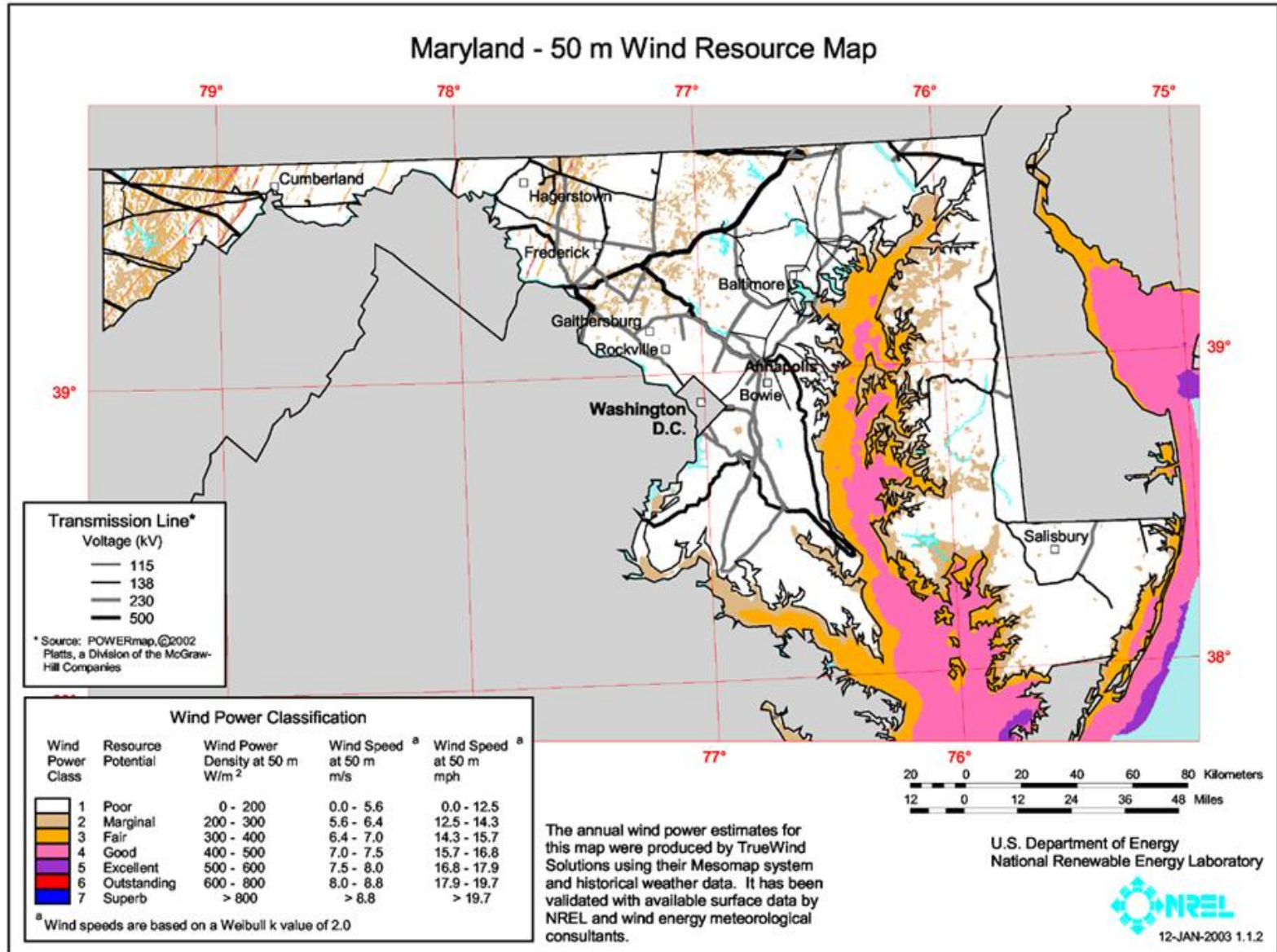
- Call to action on Climate Change
 - Maryland goal: 80% reduction in emissions by 2050
 - Higher Education should be at the forefront
- UMD Climate Action Plan Goals
 - 50% reduction from 2005 baseline by 2020
 - 100% reduction by 2050
- 24% of UMD emissions come from electricity produced off-site (scope 2 emissions)
 - 61% of purchased electricity is produced by fossil fuels (33% nuclear, ~6% renewable)
- Students proposed neutralizing all scope 2 emissions

Renewable Energy Options

Potential to meet campus demand
based on existing technologies

	<u>On-Site</u>	<u>Off-Site</u>
● Wind	Low	High
● Solar	Low	Moderate
● Biomass/biogas	High	High
● Geothermal	Moderate	Low

Why Wind Projects are/will be Off-Site



Buying Off-Site Renewables

- Bundled RECs through PPAs
 - Long term commitment to buy power and RECs
 - If buyer doesn't buy RECs, power cannot be counted as renewable energy
- Unbundled RECs
 - Green attributes associated with power generation

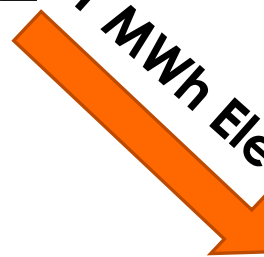
Bundled RECs through PPAs



1 MWh REC



1 MWh Elect.



**Load
Serving
Entity**



**Electricity and
RECs bundled
together**

Unbundled RECs



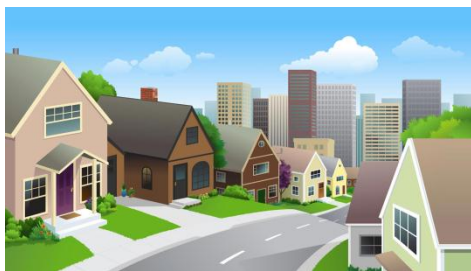
1 MWh REC



Can claim
renewable energy



1 MWh Elect.



Can't claim
renewable energy

1 MWh Elect.



Electricity and
RECs sold
separately



UMD's current RECs

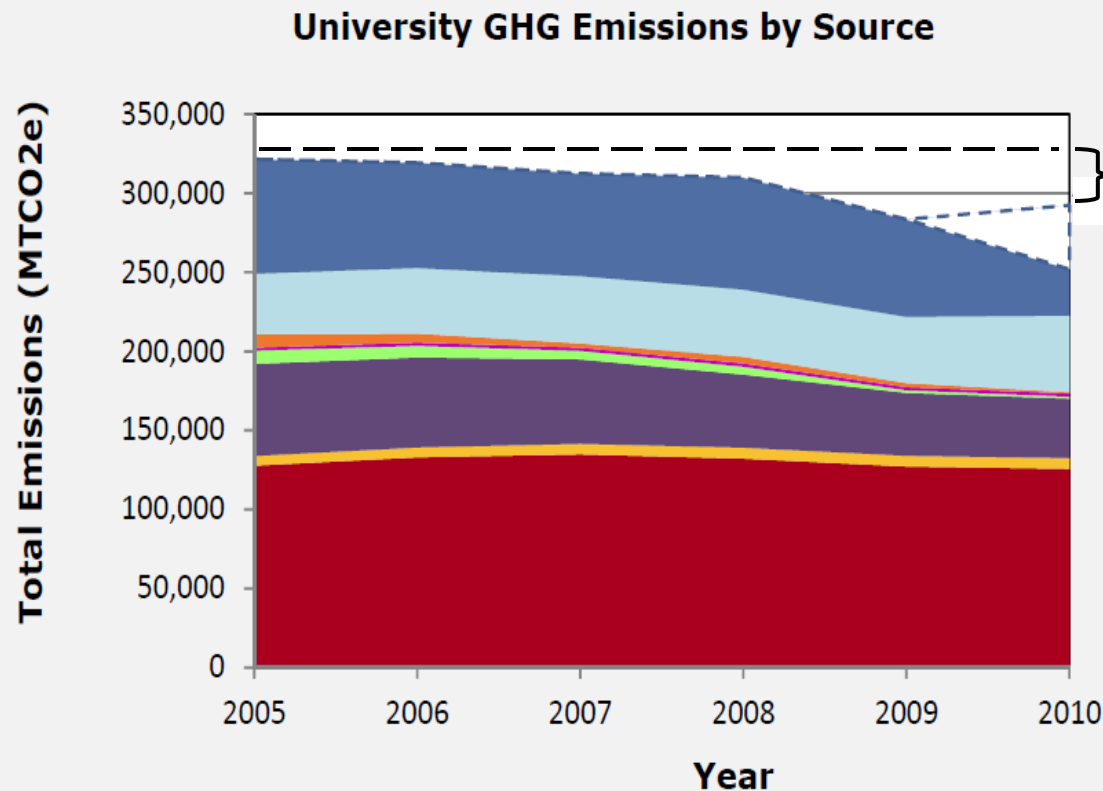
- Bundled:

- West Virginia Wind – 10,000 RECs
- Western Maryland Wind – 3,500 RECs
- Mt. St. Mary's Solar – 2,300 RECs
- Severn Solar – 792 RECs (starting in 2016)

- Unbundled:

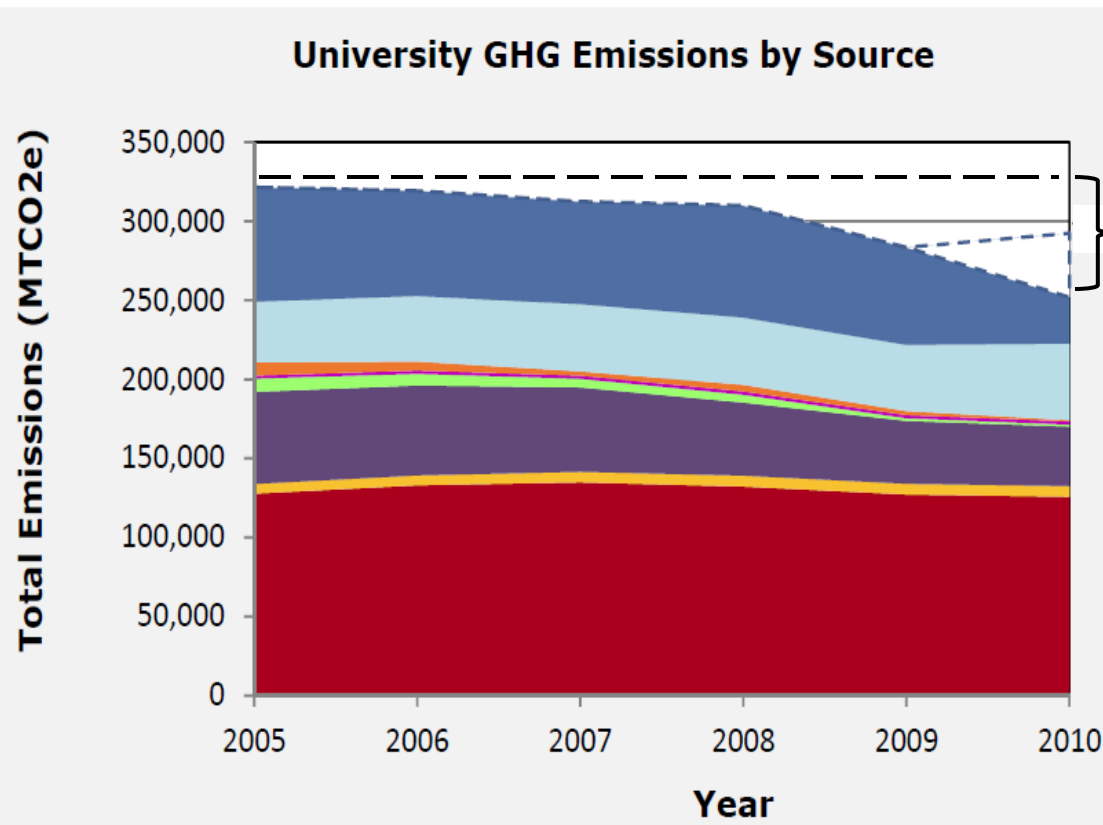
- Student Purchase – 66,000 RECs (expired in 2011)
- Oakland Hall – 1,200 RECs
- Severn Solar – 792 RECs (until 2016)
- Knight Hall – 250 RECs
- Chincoteague Hall – 120 RECs

RECs and CAP



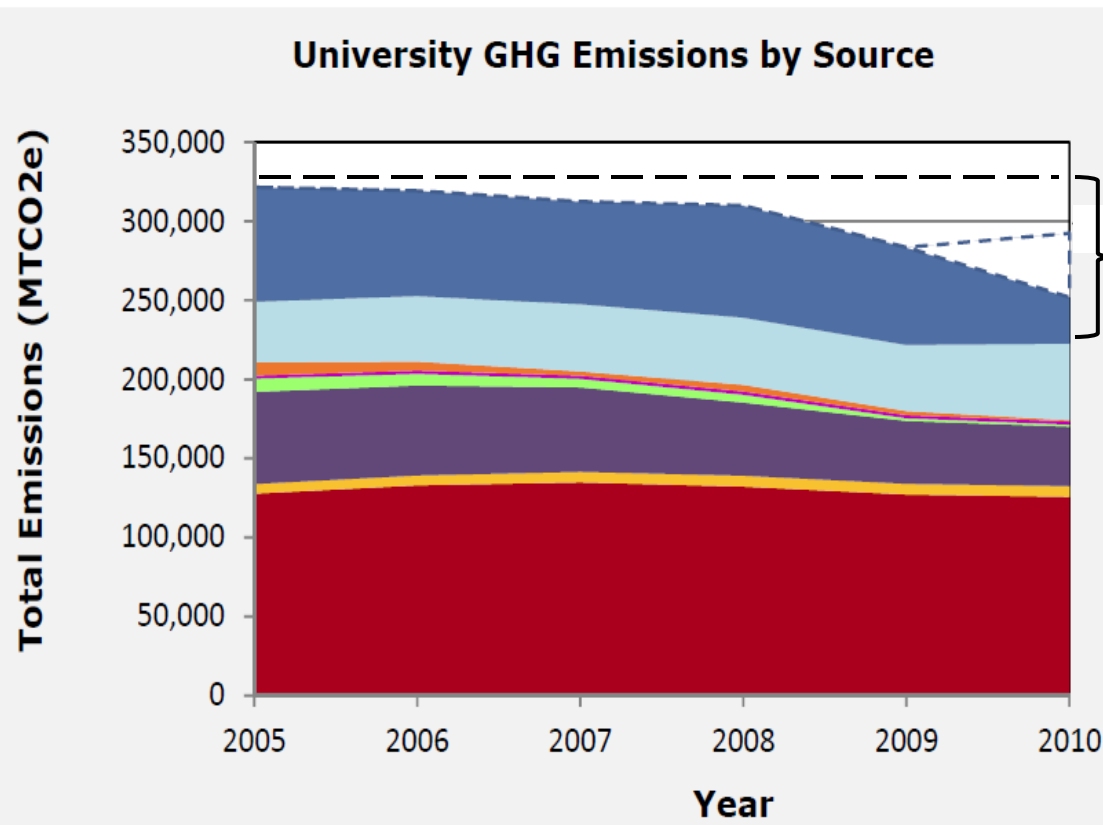
} 9% cut b/w 2005 and 2010 without RECs

RECs and CAP



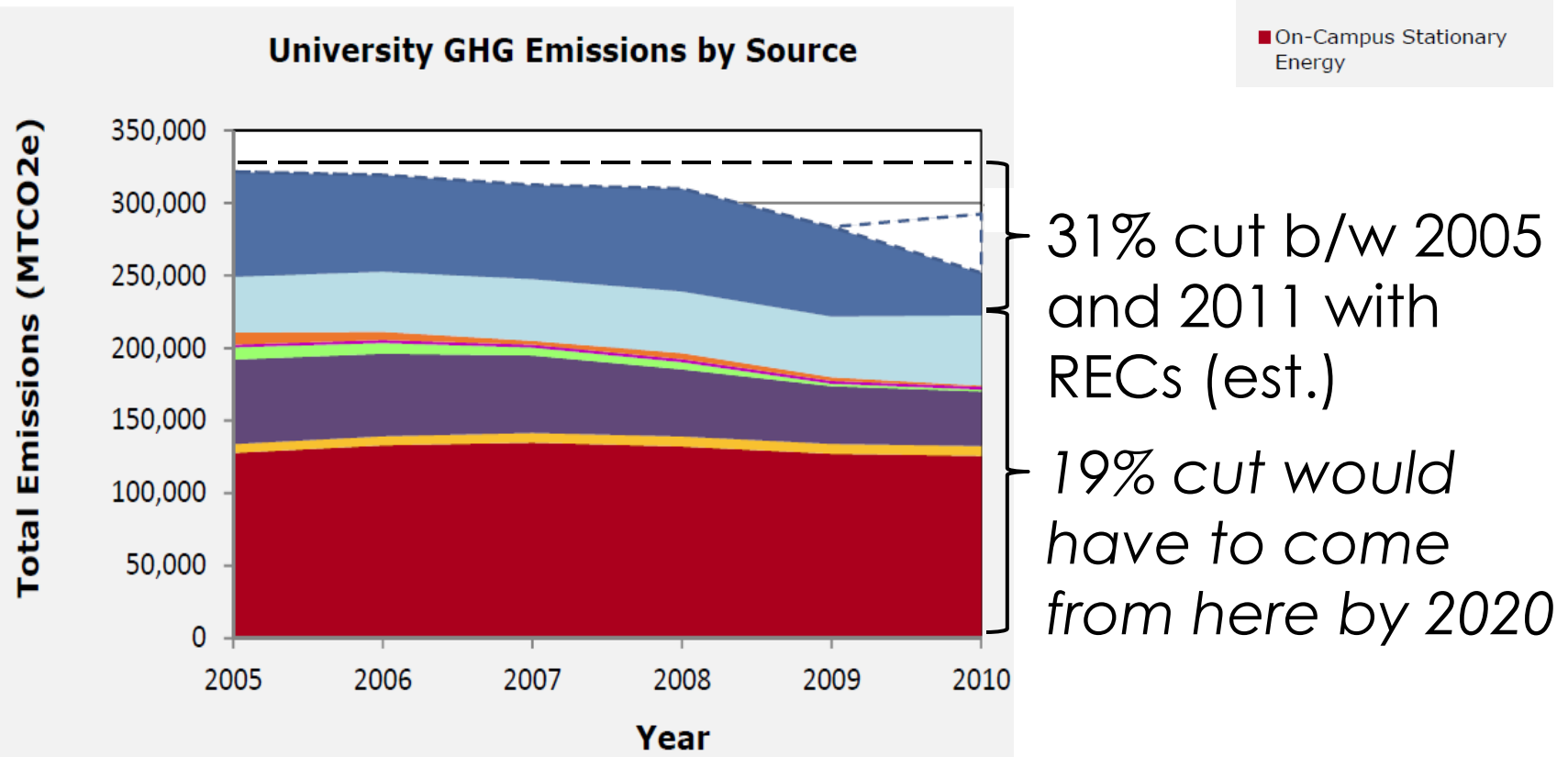
22% cut b/w 2005 and 2010 with RECs

RECs and CAP

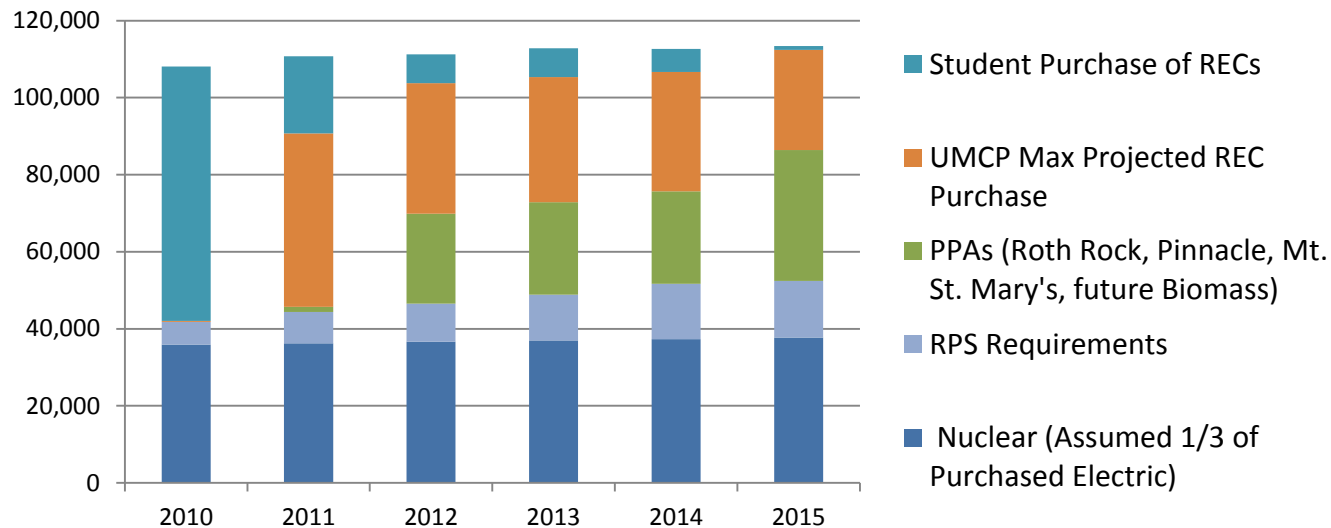


31% cut b/w 2005 and 2011 with RECs (est.)

RECs and CAP



Proposal: Eliminate scope 2 emissions



Year	UMD Min.	Students	City	UMD Max.	Total (UMD+Stu.)
2011	20,000 / \$35k	20,000 / \$35k	5,000	45,000 / \$79k	65,000 / \$114k
2012	20,000 / \$40k	7,500 / \$15k	5,000	33,828 / \$68k	41,328 / \$83k
2013	20,000 / \$45k	7,500 / \$17k	5,000	32,500 / \$73k	40,000 / \$90k
2014	20,000 / \$50k	6,000 / \$15k	5,000	31,000 / \$78k	37,000 / \$93k
2015	20,000 / \$55k	1,000 / \$3k	5,000	26,000 / \$72k	27,000 / \$74k

Funding Sources

- UMD Portion – Utilities Budget
- Student Portion – Sustainability Fund

Pros

- ◉ Carbon footprint reduction
 - ◉ RECs are recognized by:
 - ◉ US EPA
 - ◉ State of Maryland
 - ◉ Presidents' Climate Commitment
 - ◉ STARS
 - ◉ Etc.

Pros

- Carbon footprint reduction
- UMD's status as a Sustainability Leader



Pros

- ◉ Carbon footprint reduction
- ◉ UMD's status as a Sustainability Leader
- ◉ Community Partnership
 - ◉ College Park is seeking US EPA recognition as a Green Power Community
 - ◉ City Gov't already buying RECs for 100% of electricity consumption
 - ◉ College Park cannot achieve recognition without UMD RECs

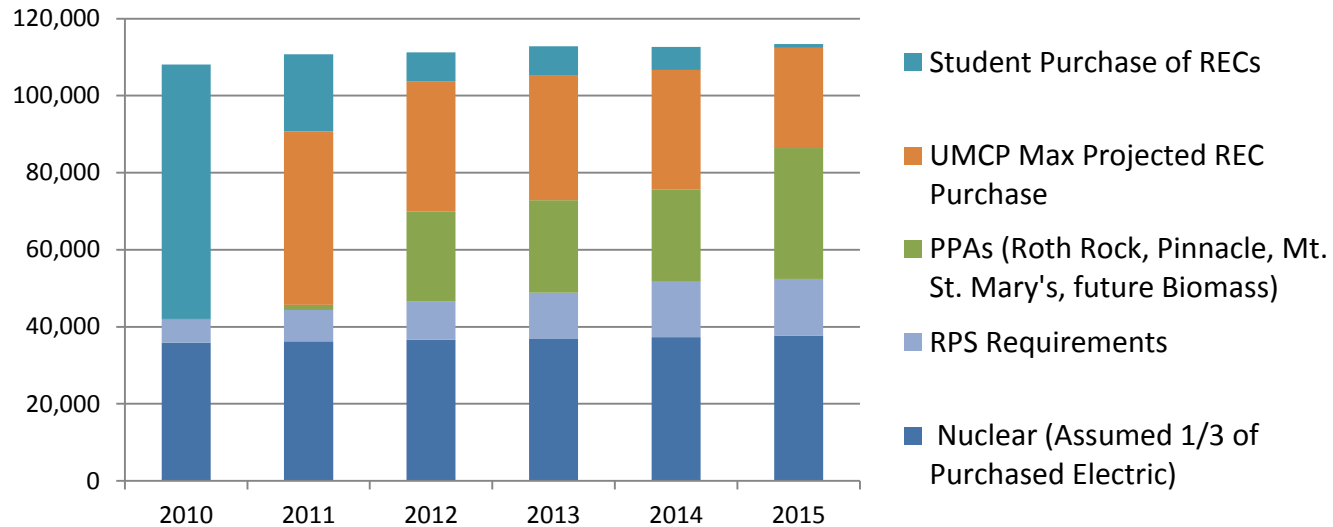
Pros

- ◉ Carbon footprint reduction
- ◉ UMD's status as a Sustainability Leader
- ◉ Community Partnership
- ◉ LEED Points
 - ◉ RECs are routinely purchased to achieve LEED certification

Cons

- Annual REC purchases do not reduce global emissions, they promote the construction of future renewable energy projects. Long term commitments send a stronger signal to the markets.
- Average annual cost is \$90k

QUESTIONS?



Year	UMD Min.	Students	City	UMD Max.	Total (UMD+Stu.)
2011	20,000 / \$35k	20,000 / \$35k	5,000	45,000 / \$79k	65,000 / \$114k
2012	20,000 / \$40k	7,500 / \$15k	5,000	33,828 / \$68k	41,328 / \$83k
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2015	20,000 / \$55k	1,000 / \$3k	5,000	26,000 / \$72k	27,000 / \$74k