University of Maryland sustainability council

Meeting Summary
October 10, 2019

Council Members Present:

Carlo Colella, Vice President for Administration and Finance (Chair)
John Zacker, Interim Vice President for Student Affairs
Scott Lupin, Assoc. Dir., Environmental Safety, Sustainability & Risk, and Director, Office of Sustainability
MaryAnn Ibeziako, Director, Engineering and Energy, Facilities Management
Bryan Quinn, Director of Technical Operation, Department of Electrical & Computer Engineering
David Cooper, Assistant Director of Operations, Division of IT
Joe Sullivan, Professor, Plant Science and Landscape Architecture
Jelena Srebric, Professor, Mechanical Engineering
Candela Cerpa, Undergraduate Student Representative
Aditi Dubey, Graduate Student Representative

Meeting start time: 10:00am

Meeting Highlights

Welcome and Introductions

Carlo Colella welcomed the Council members and called the meeting to order. Council members introduced themselves since some were newly appointed.

Progress Report Summary

Sally DeLeon reported on the university's progress toward the UMD Sustainability Goals, how those goals correspond with the United Nations' Sustainable Development Goals, and UMD's performance on the Sustainability, Tracking, Assessment, & Rating System (STARS). [Appendix A-D]

Key findings/updates include:

- Transitioning from a static report to an interactive data warehouse, driven by Tableau, similar to Harvard's Sustainability Progress Report
- (Est.) 51% reduction in UMD's net reported greenhouse gas emissions between 2005 and 2018
- Investing in domestic and international carbon offset projects
- 100% renewable purchased electricity in 2020
- 10% reduction in source energy and 6% reduction in site energy consumption between 2015 and 2018
- Sustainability Studies Minor enrollment increased overall but slipped to 2nd largest minor (after Technology Entrepreneurship)
- Water and Waste goals may need to be updated

DRAFT

    - Water Consumption is relatively flat from 2005 baseline to 2018
    - 96% construction and demolition (C&D) waste diversion rate; 50% Individual recycling rate
- University of Maryland received AASHE STARS Gold Ranking in February 2019
    - Bottom quartile in both Transportation and Energy Credits
    - Path to Platinum – biggest gains in Curriculum, Water, and Energy
    - UMD's EUI is higher than all Big 10 and other humid-region schools

Key Recommendations:

- Consider establishing a Revolving Loan Fund for Energy and Water Conservation Measures
- Engage new O&M Director early and explore conservation opportunities
- Explore all viable options for Biogas/RNG
- Consider Sustainability Learning Outcomes as part of General Education requirements
- Consider appointment of an Academic Coordinator for Sustainability in the Curriculum
- Consider hosting USM Sustainability Investment and Finance Discussion

Sustainability Fund Annual Review

Mark Stewart provided an overview of FY19 expenses from the Sustainability Fund and Sustainability Mini-Grant. [Appendix E]

Open Forum Topics

- Scott Lupin informed the council that Lee-Ellen Myles now holds a joint position with the Office of Sustainability, UMD Dining, and the Department of Fraternity and Sorority Life.
- The Council discussed action items from the Progress Report summary including:
    - Jelena Srebric recommended convening a task force to focus on improving performance on the Curriculum credits to make progress toward STARS Platinum.
    - Carlo Colella said the Council needs to learn more about biogas opportunities.
- Candela Cerpa shared the "UMD Climate Strike Letter to the Administration" [Appendix F] with the Council and asked for updates on the itemized requests.

Adjourn 12:00

DRAFT

Appendix of Meeting Handouts and Attachments:

Appendix A: SustainableUMD Progress Report 2019

Appendix B: Progress Report 5-Year Summary 2019

Appendix C: Sustainability Progress Report Highlights

Appendix D: Research Highlights (New Progress Report Section) 2019

Appendix E: University Sustainability Fund Annual Report 2019

Appendix F: UMD Climate Strike – Letter to the Administration

SustainableUMD Progress Report

Performance Metrics and Changes

2017-2019

Goals for Progress in Six Key Areas

Sustainability Council Endorsed

Fall 2014 (five years ago)

- Carbon Neutrality
- Education for Sustainability
- Local and Global Impact
- Smart Growth
- Sustainable Water Use
- Waste Minimization

Climate Action Progress

Energy Efficiency & Conservation

Renewable Power

GHG Emissions Reductions

Carbon Neutrality Initiatives

2018 Verified Carbon Credits

- Metered projects
- Pass Additionality Tests
- 2017 and 2018 vintage years
- Methane Capture
  - Local Landfill gas to Electricity
  - Natural Unmined Coal Beds
- Clean Power (outside of US)

Carbon Credit Co-Benefits

- Financial and Service Support of Chesapeake Bay Foundation
- Tree plantings in Maryland

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- Support for Tribal Nation (aligns with ReAct Solar Decathlon House)

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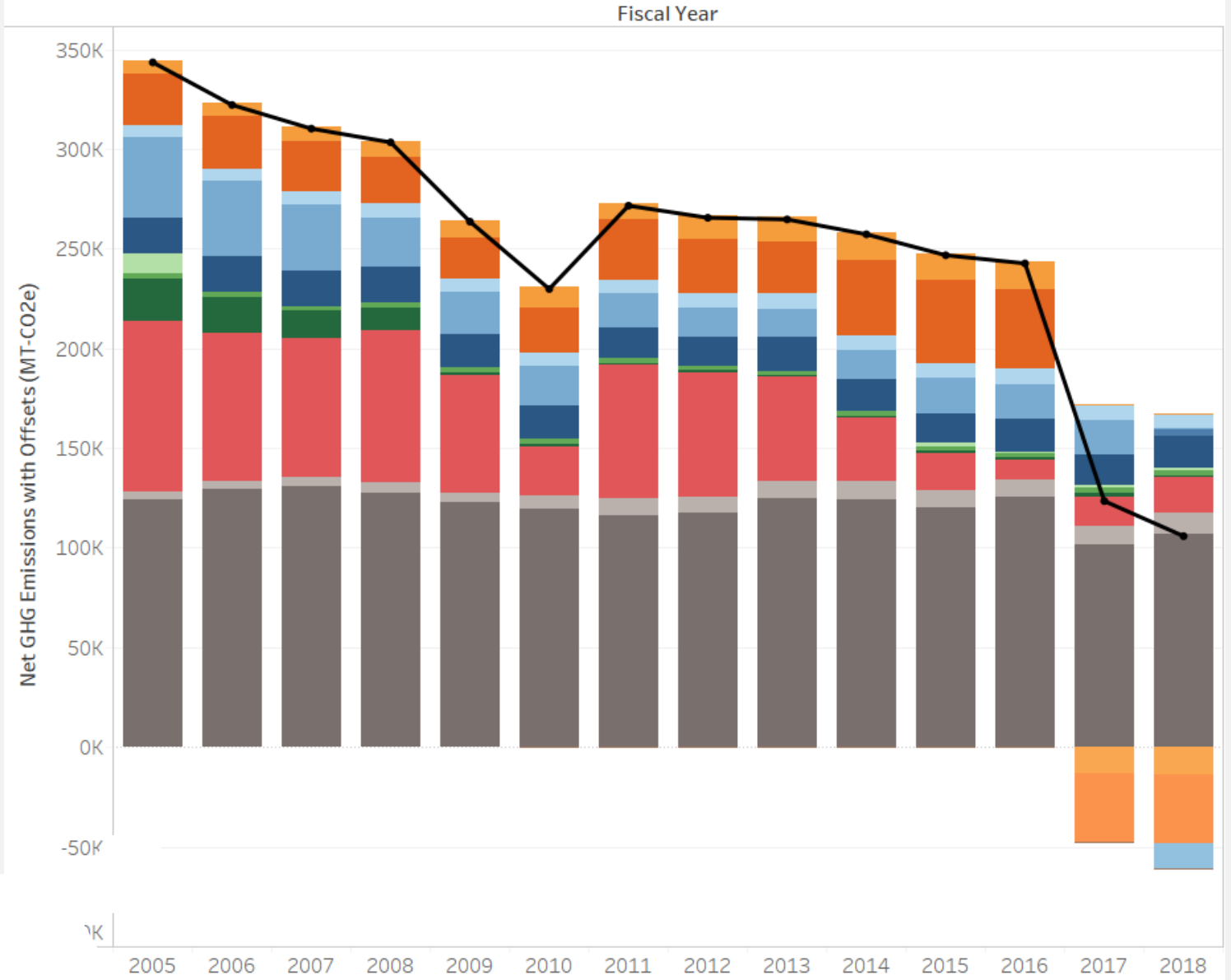
- Tree plantings in Maryland
- Support for Tribal government (aligns with ReAct Solar Decathlon House)
- Climate Justice link (Energy Poverty)

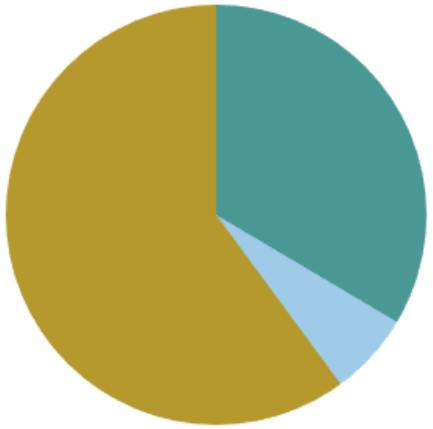
University of Maryland Greenhouse Gas Emissions (MT-CO2e)



...ds of sum of Net GHG MTCDE (w/ Offsets) and sum of Net GHG MTCDE (w/ Offsets) for Fiscal Year. For pane Sum of Net ...TCDE (w/ Offsets): Color shows details about Source. The data is filtered on Type of Emission Source, which keeps Energy, Offsets, Operations/Waste and Transportation.

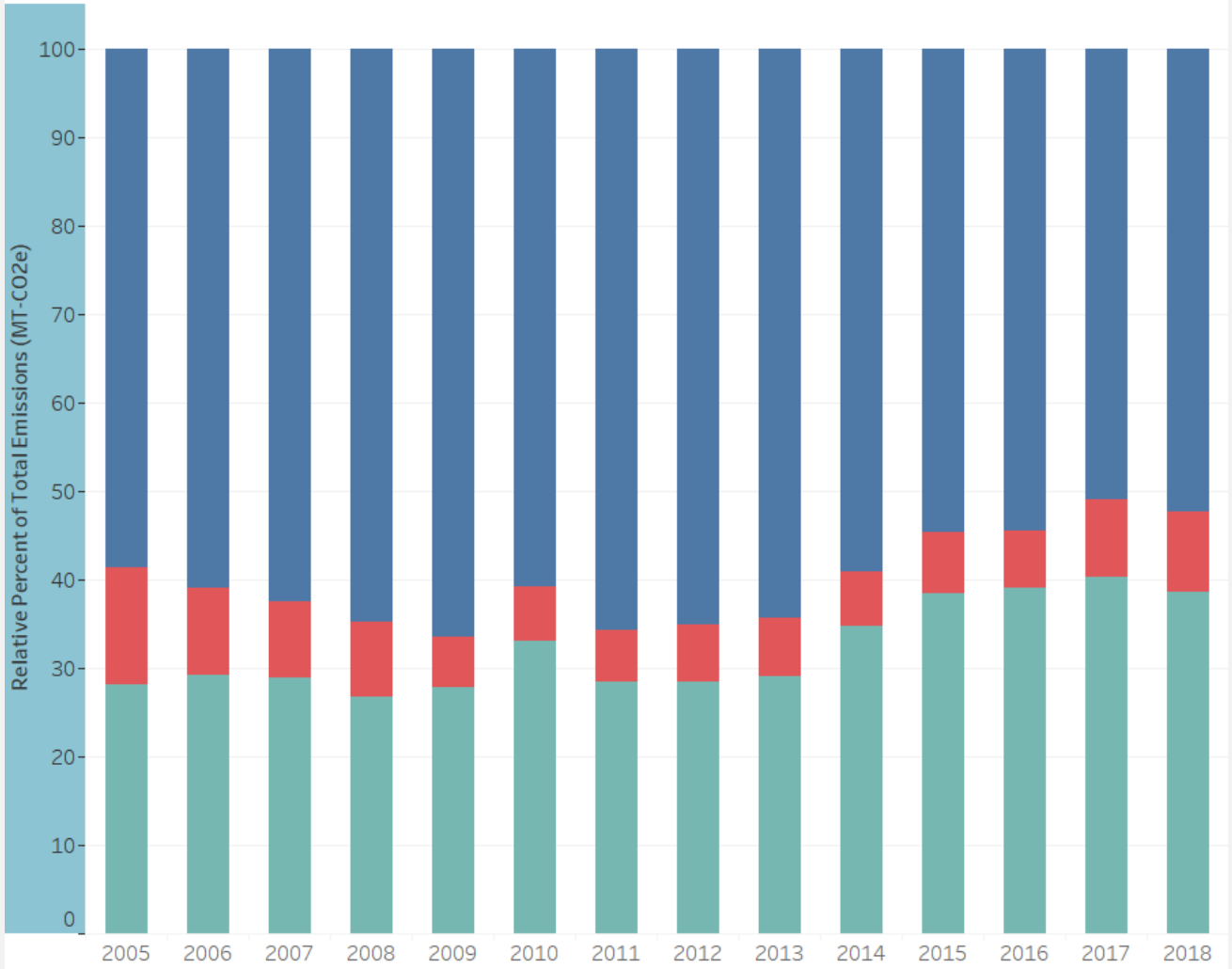
Source
- Study Abroad Air Travel
- Directly Financed Air Travel
- Campus Fleet
- Undergraduate Student Commuting
- Graduate Student Commuting
- Faculty/Staff Commuting
- Refrigerants & Chemicals
- Fertilizer & Animals
- Solid Waste
- T&D Losses
- Purchased Electricity
- Other On-Campus Stationary
- Co-gen Steam
- Compost Offset
- Student Commuting Offset
- Directly Finance Air Travel Offset
- Study Abroad Air Travel Offset

2005 Transportation Emissions:
96,662.21 MT-CO2e



Air Travel: 32,387.91 MT-CO2e
Campus Fleet: 6,191.88 MT-CO2e
Single-Occupancy (Commuting) Vehicles: 58,072.52 MT-CO2e

Relative Percent of Total Emissions: Transportation, Energy, and Operations/Waste Management

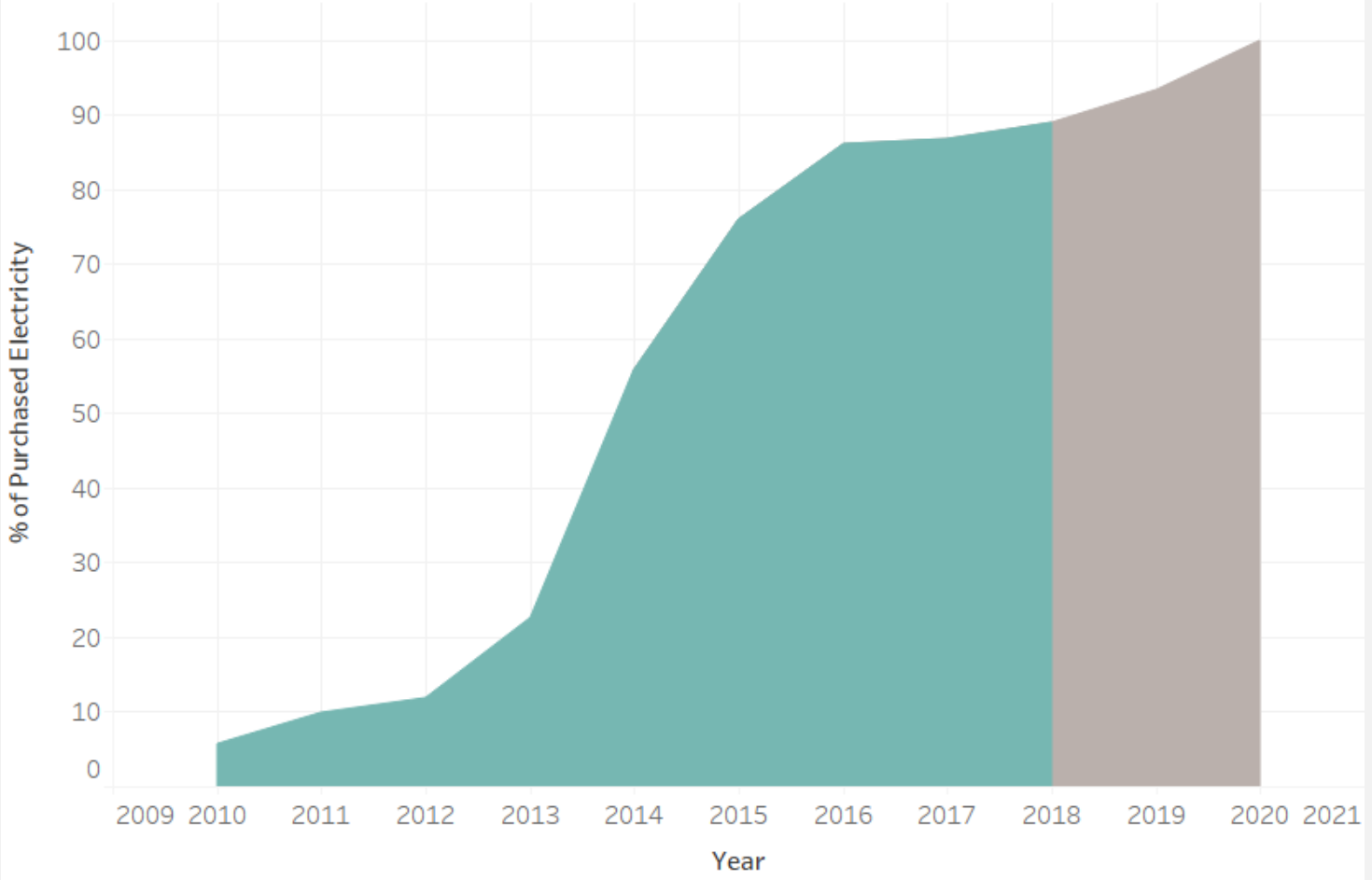


Sum of Percent (as whole number) of Annual GHG MTCDE Total for each Calendar Year. Color shows details about Type of Emission Source. The view is filtered on Type of Emission Source, which keeps Energy, Operations/Waste and Transportation.

Type of Emission Source

- Energy
- Operations/Waste
- Transportation

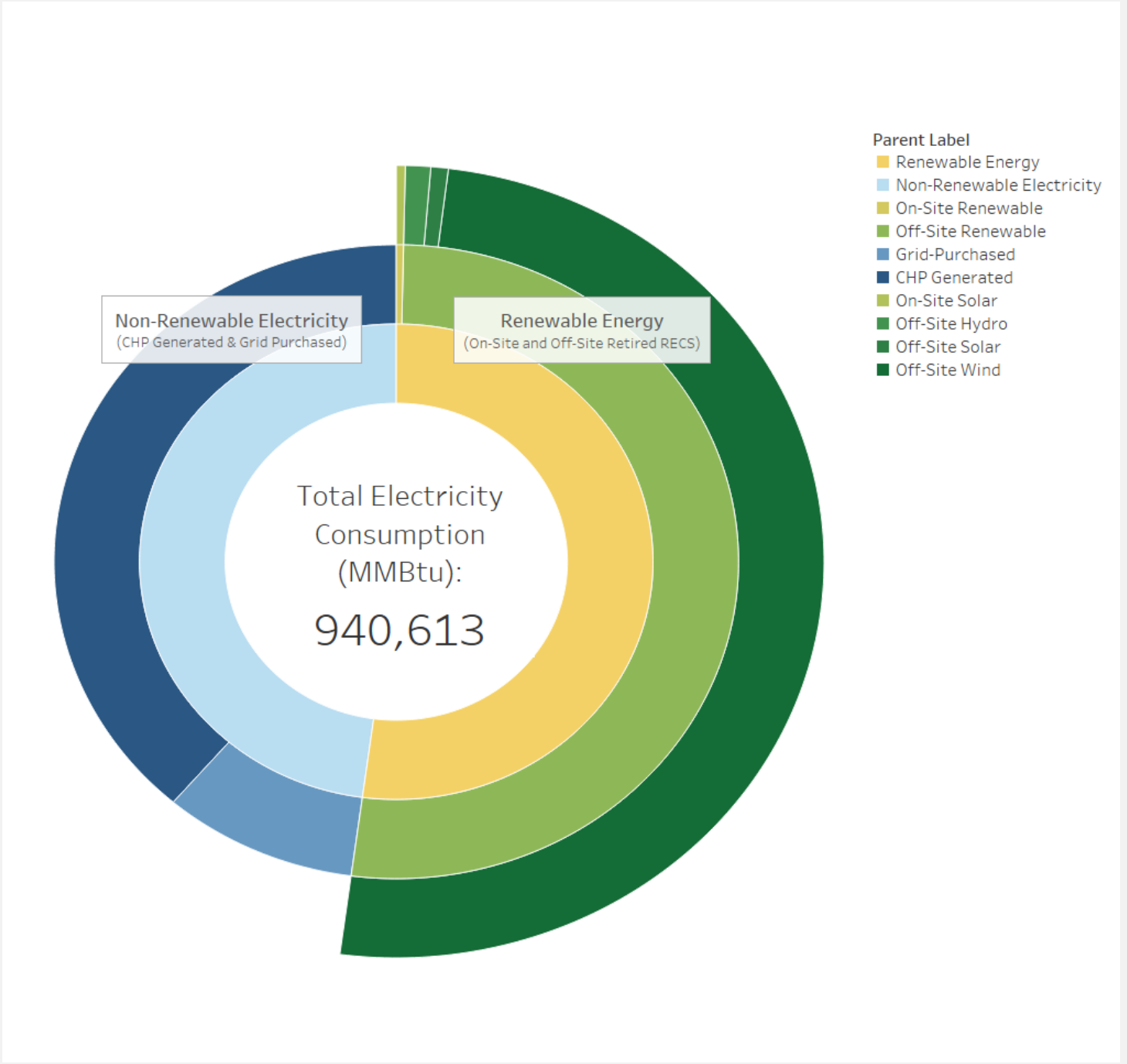
Renewable Electricty Purchasing: Past and Projected



The plots of % Renewable and Projected % Renewable for Year. Color shows details about % Renewable and Projected % Renewable. The view is filtered on Year, which ranges from 2010 to 2020.

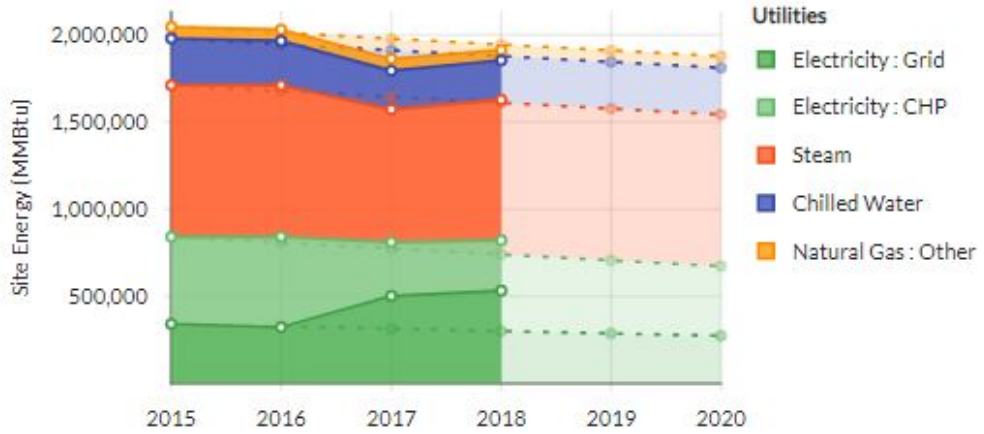
Measure Names

- % Renewable
- Projected % Renewable


Non-Renewable Electricity
(CHP Generated & Grid Purchased)
Renewable Energy
(On-Site and Off-Site Retired RECS)
Total Electricity Consumption (MMBtu):
940,613
Parent Label
Renewable Energy
Non-Renewable Electricity
On-Site Renewable
Off-Site Renewable
Grid-Purchased
CHP Generated
On-Site Solar
Off-Site Hydro
Off-Site Solar
Off-Site Wind

Campus Site Energy Consumption

Energy delivered to buildings comes from Utilities (PEPCO, WSSC) and the campus's CHP Plant.



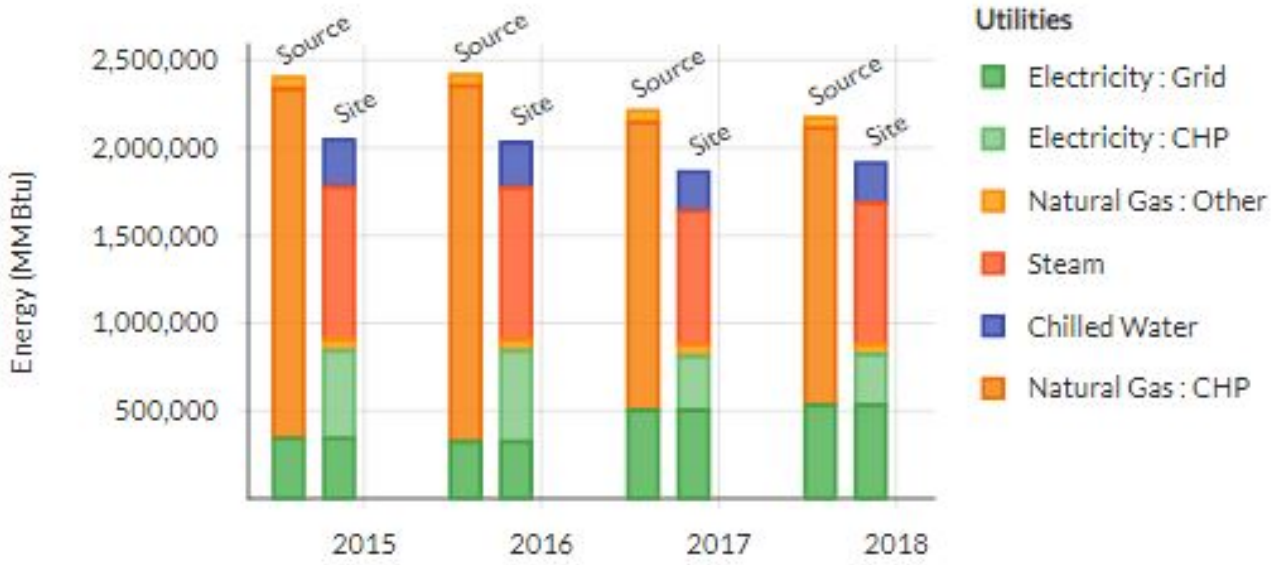
Type	2015	2016	2017	2018
Electricity : Grid	100,254,000 kWh -	94,573,000 kWh ˅ 6%	147,142,754 kWh ˄ 47%	156,091,295 kWh ˄ 56%
Electricity : CHP	146,285,269 kWh -	152,301,758 kWh ˄ 4%	90,480,777 kWh ˅ 38%	84,717,894 kWh ˅ 42%
Electricity : Total	*246,539,269 kWh* -	*246,874,758 kWh* ˄ *0%*	*237,623,531 kWh* ˅ *4%*	*240,809,189 kWh* ˅ *2%*
Steam	731,492,000 lbs -	729,568,000 lbs ˅ 0%	639,771,000 lbs ˅ 13%	677,454,000 lbs ˅ 7%
Natural Gas : Other	664,776 Therms -	644,150 Therms ˅ 3%	676,217 Therms ˄ 2%	589,974 Therms ˅ 11%
Chilled Water	22,320,695 TonHrs -	21,298,802 TonHrs ˅ 5%	18,556,733 TonHrs ˅ 17%	18,890,573 TonHrs ˅ 15%
Total Energy : Site	***2,046,012,436 kBtu*** -	***2,030,542,789 kBtu*** ˅ ***1%***	***1,862,418,968 kBtu*** ˅ ***9%***	***1,913,515,495 kBtu*** ˅ ***6%***

Percent (%) changes noted by ˄ and ˅, are the percent (%) difference as compared to 2015.

terpfootprints.umd.edu

Campus Site versus Source Energy Consumption

The differences between total delivered energy and aggregated site energy can be accounted for in distribution losses and unmetered energy consumption.



Type	2015	2016	2017	2018
Total Energy : Source	*2,403,403,673 kBtu* -	*2,417,882,601 kBtu* ^ *1%*	*2,212,430,743 kBtu* v *8%*	*2,171,042,326 kBtu* v *10%*
Total Energy : Site	*2,046,012,436 kBtu* -	*2,030,542,789 kBtu* v *1%*	*1,862,418,968 kBtu* v *9%*	*1,913,515,495 kBtu* v *6%*

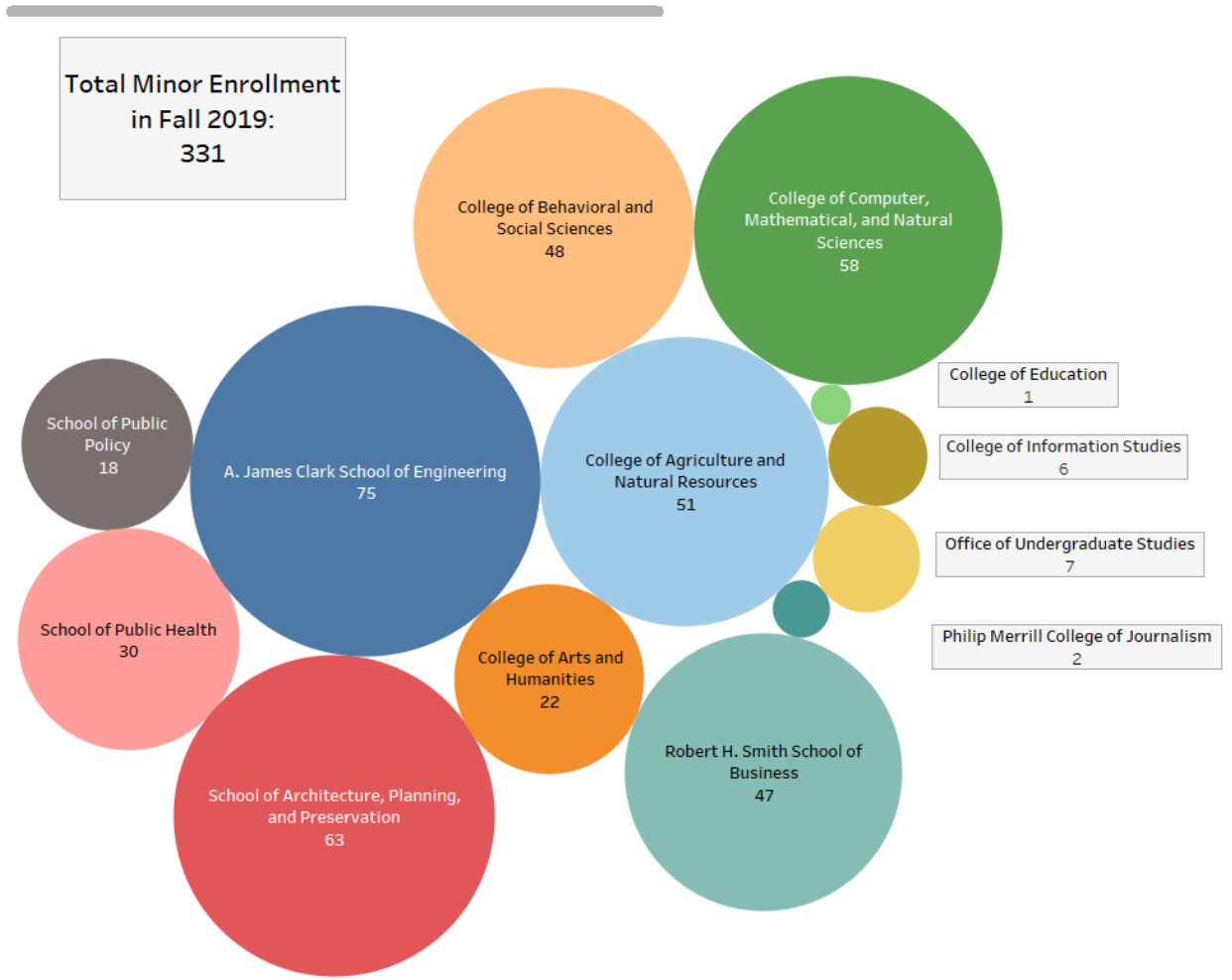
Percent (%) changes noted by ^ and v, are the percent (%) difference as compared to 2015.

terpfootprints.umd.edu

Education for Sustainability

Sustainability Studies Minor

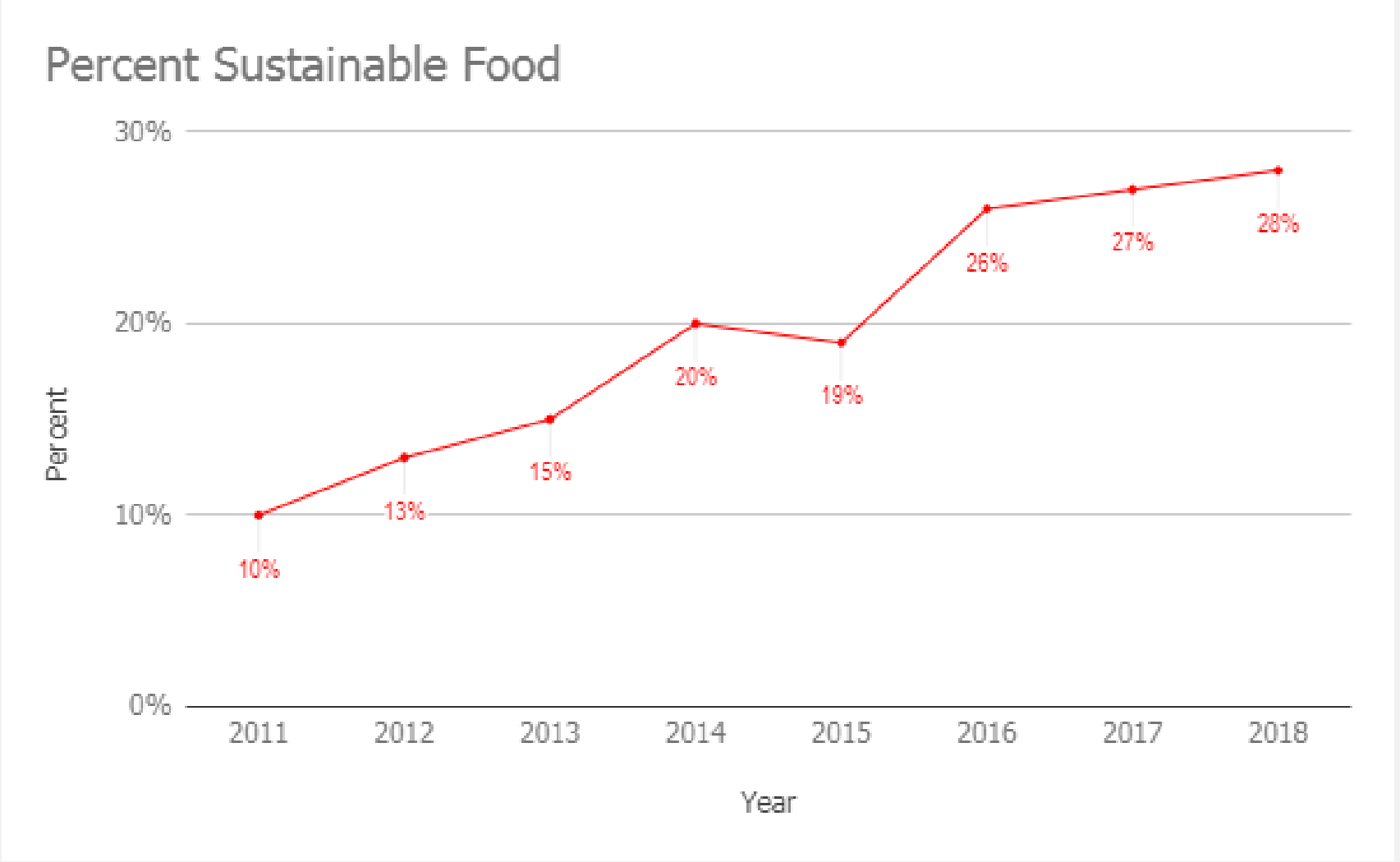
Jointly Hosted by the College of Agriculture and Natural Resources & the School of Public Policy



Local and Global Impact

2019 Sustainable Food Purchasing Report

(courtesy of Dining Services)



RESEARCH ROUNDUP

The latest research news from the University of Maryland

Smart Growth

The Office of Sustainability is planning to incorporate a Tableau-based Data Warehouse into the Progress Section of their website this year to replace to old Progress Report format (sustainability.umd.edu). Following are a couple of examples of Tableau dashboards that they will incorporate.

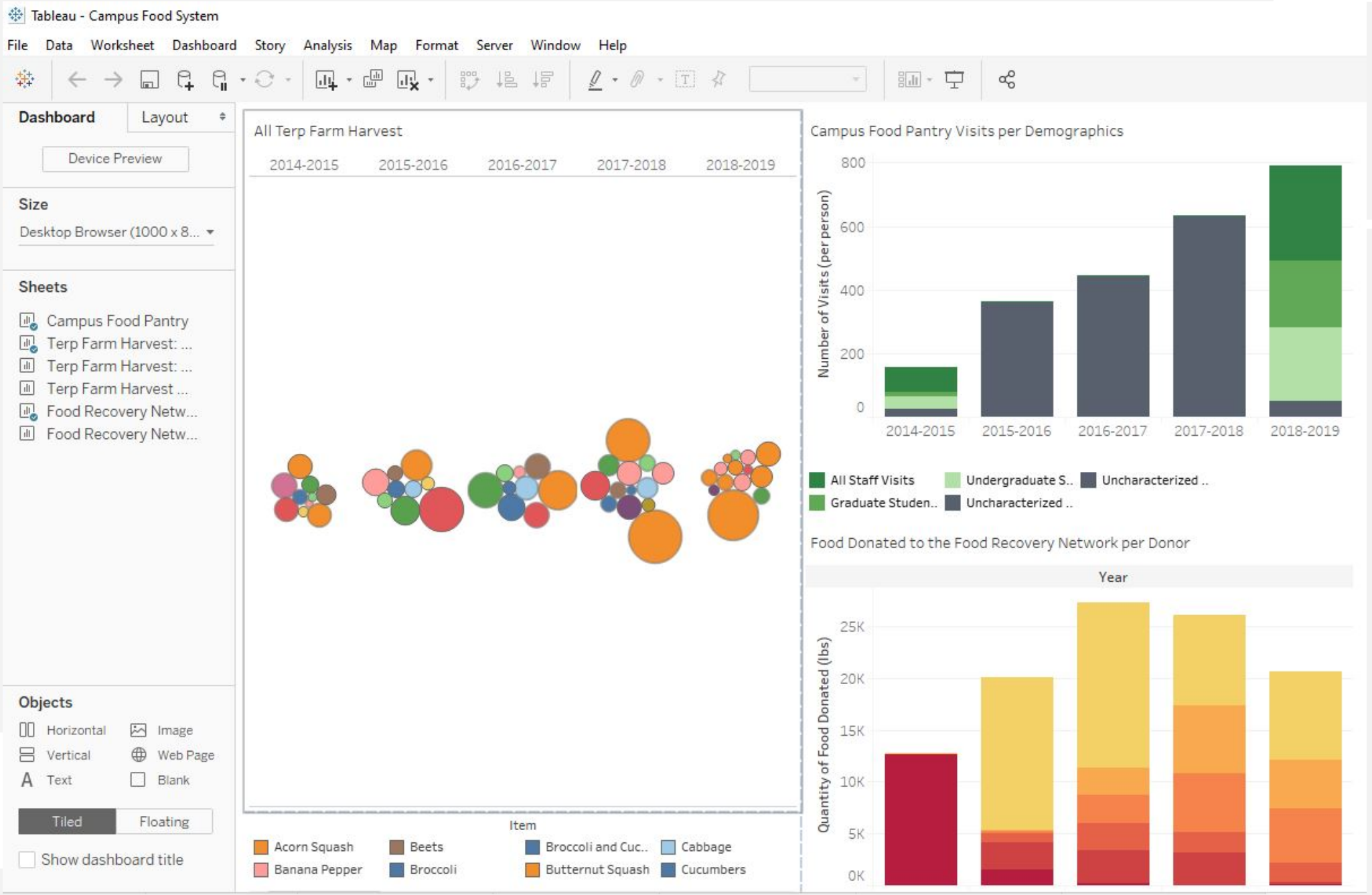


Tableau - Campus Food System
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Dashboard
Layout
Device Preview
Size
Desktop Browser (1000 x 8...
Sheets
Campus Food Pantry
Terp Farm Harvest: ...
Terp Farm Harvest: ...
Terp Farm Harvest ...
Food Recovery Netw...
Food Recovery Netw...
Objects
Horizontal
Image
Vertical
Web Page
Text
Blank
Tiled
Floating
Show dashboard title
All Terp Farm Harvest
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
Item
Acorn Squash
Beets
Broccoli and Cuc..
Cabbage
Banana Pepper
Broccoli
Butternut Squash
Cucumbers
Campus Food Pantry Visits per Demographics
Number of Visits (per person)
800
600
400
200
0
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
All Staff Visits
Undergraduate S..
Uncharacterized ..
Graduate Studen..
Uncharacterized ..
Food Donated to the Food Recovery Network per Donor
Year
Quantity of Food Donated (lbs)
25K
20K
15K
10K
5K
0K

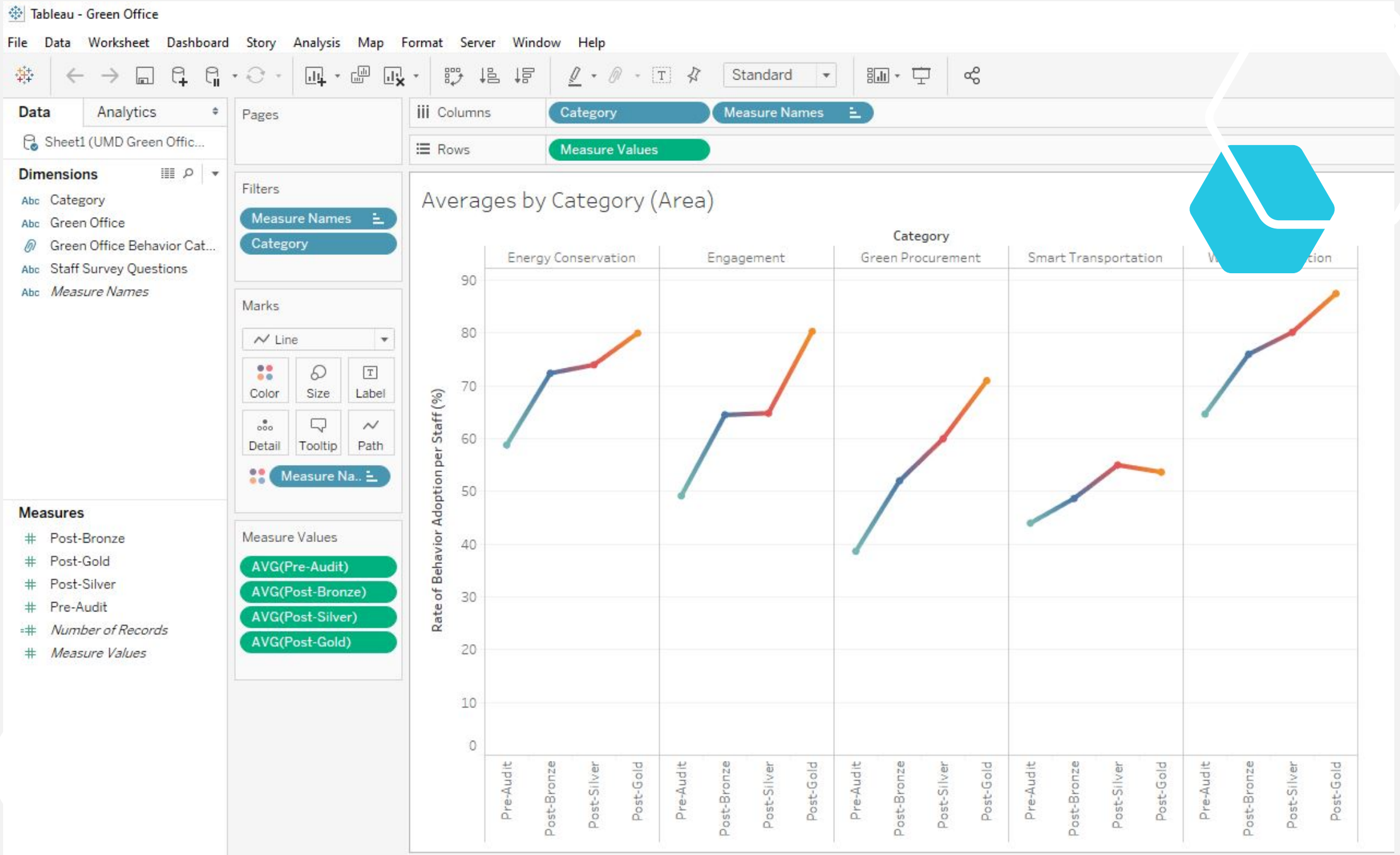
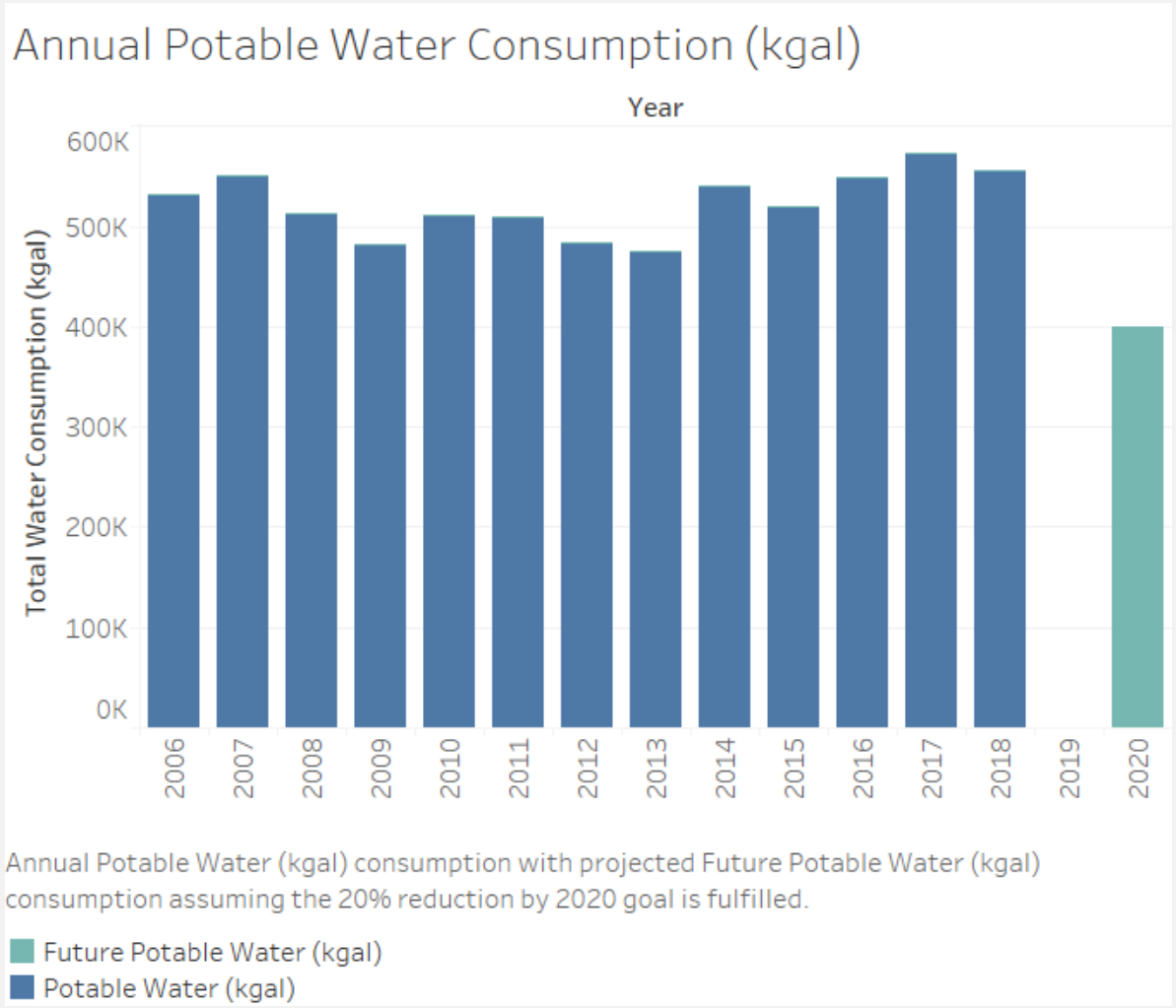
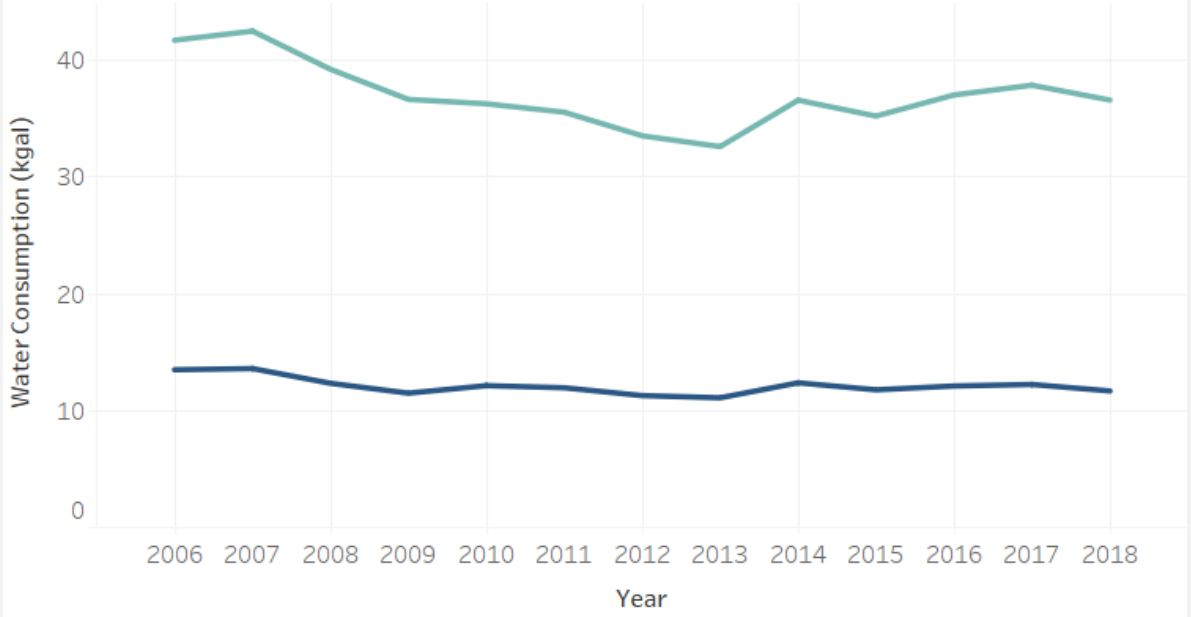


Tableau - Green Office
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Standard
Data
Analytics
Sheet1 (UMD Green Offic...
Dimensions
Abc Category
Abc Green Office
Green Office Behavior Cat...
Abc Staff Survey Questions
Abc Measure Names
Measures
Post-Bronze
Post-Gold
Post-Silver
Pre-Audit
Number of Records
Measure Values
Pages
Filters
Measure Names
Category
Marks
Line
Color
Size
Label
Detail
Tooltip
Path
Measure Na..
Measure Values
AVG(Pre-Audit)
AVG(Post-Bronze)
AVG(Post-Silver)
AVG(Post-Gold)
Columns
Category
Measure Names
Rows
Measure Values
Averages by Category (Area)
Category
Energy Conservation
Engagement
Green Procurement
Smart Transportation
Rate of Behavior Adoption per Staff (%)
0
10
20
30
40
50
60
70
80
90
Pre-Audit
Post-Bronze
Post-Silver
Post-Gold

Sustainable Water Use


Annual Potable Water Consumption (kgal)
Year
Total Water Consumption (kgal)
600K
500K
400K
300K
200K
100K
0K
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Annual Potable Water (kgal) consumption with projected Future Potable Water (kgal) consumption assuming the 20% reduction by 2020 goal is fulfilled.
Future Potable Water (kgal)
Potable Water (kgal)

Water Consumption Per Capita (kgal/FTE) and Per Building Space (kgal/sqft)



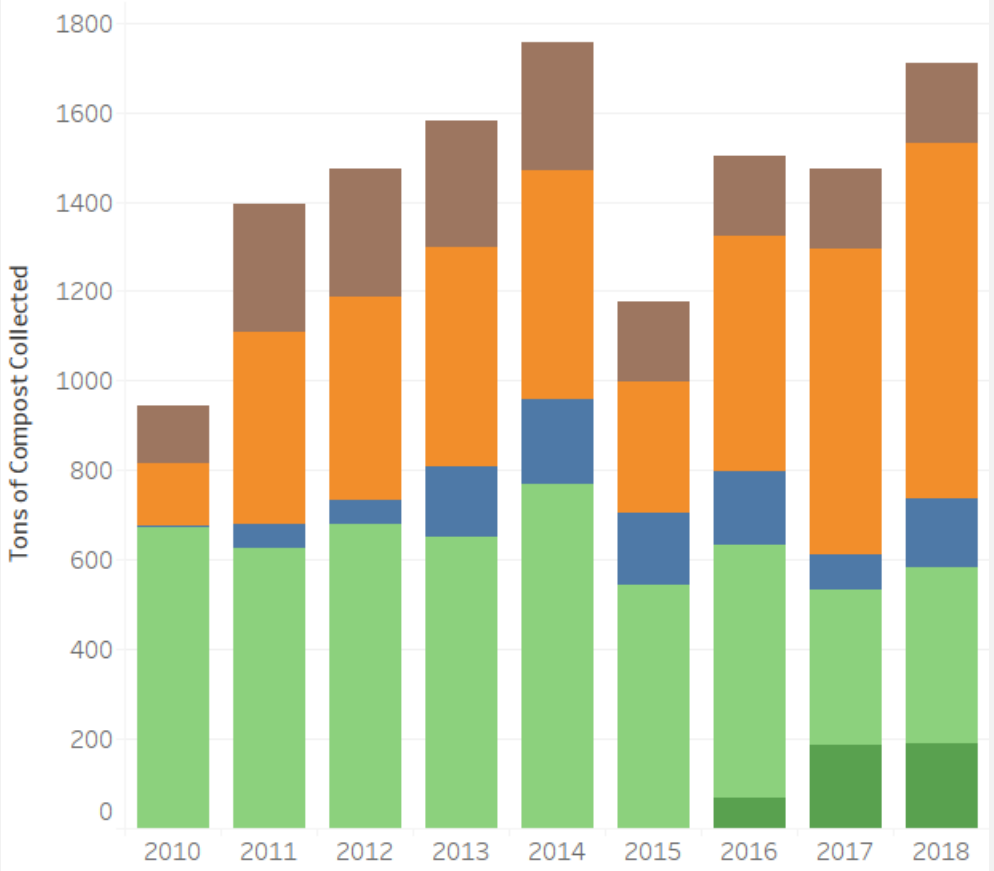
The annual consumption trends of Water Use per Building Space (conditioned and unconditioned) (kgal/sqft of total building space) and Water Use Per Community Member (kgal/person).

Measure Names

- Water Use per Building Space (conditioned and unconditioned) (kgal/sqft of total building space)
- Water Use Per Community Member (kgal/person)

Waste Minimization

Annual Compost Recovery Rates



Campus Barn, Dining Halls, Stamp, Landscaping and Other Buildings for each Year. Color shows details about Campus Barn, Dining Halls, Stamp, Landscaping and Other Buildings.

Measure Names
- Campus Barn
- Dining Halls
- Stamp
- Landscaping
- Other Buildings

Key Takeaways

- OS Building Data Warehouse with Tableau Based Visualizations
- Engineering & Energy reporting on Progress in Dashboard

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- Engineering & Energy reporting on Progress in Dashboard

- Water and Waste Goals may need to be updated
- Campus thermal load presents carbon neutrality challenge
- Stay tuned for Fleet and Commuting Work Group Reports

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- Engineering & Energy reporting on Progress in Dashboard

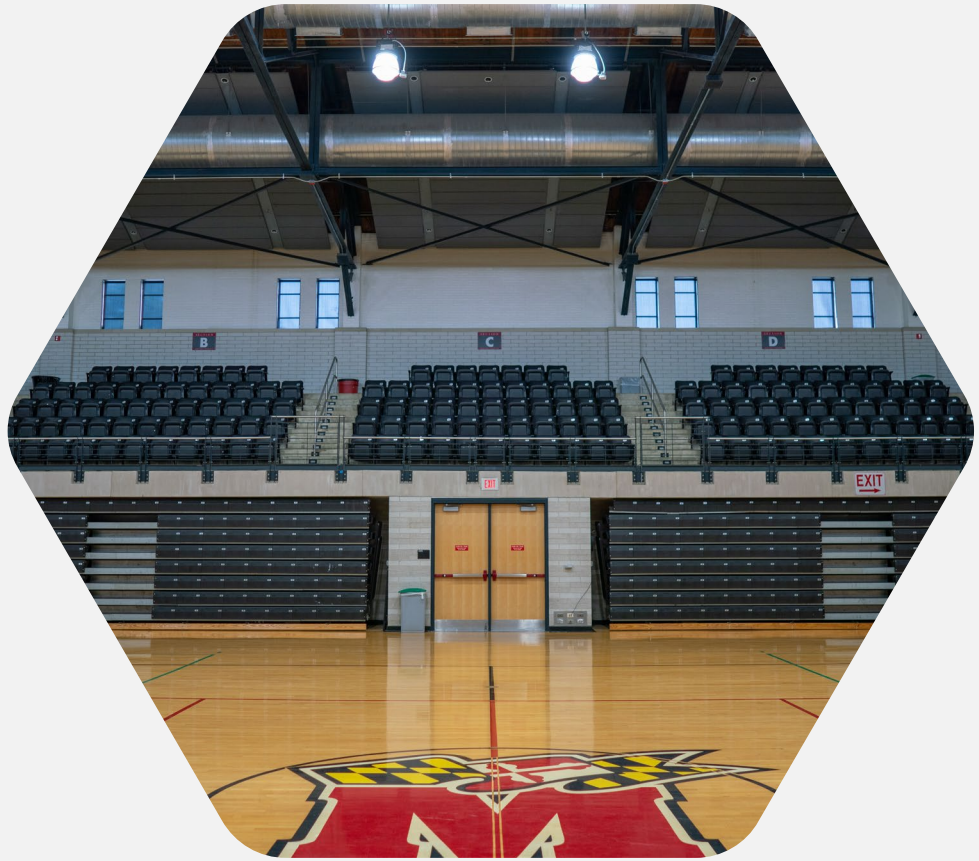
- Water and Waste Goals may need to be updated
- Campus thermal load presents carbon neutrality challenge
- Stay tuned for Fleet and Commuting Work Group Reports

- New Climate Change Research Highlights
- Highlights from past four years will be available online with new Tableau based Data Warehouse
- Progress Summary will also still be available

SUSTAINABLE DEVELOPMENT GOALS

SUSTAINABLE DEVELOPMENT GOALS

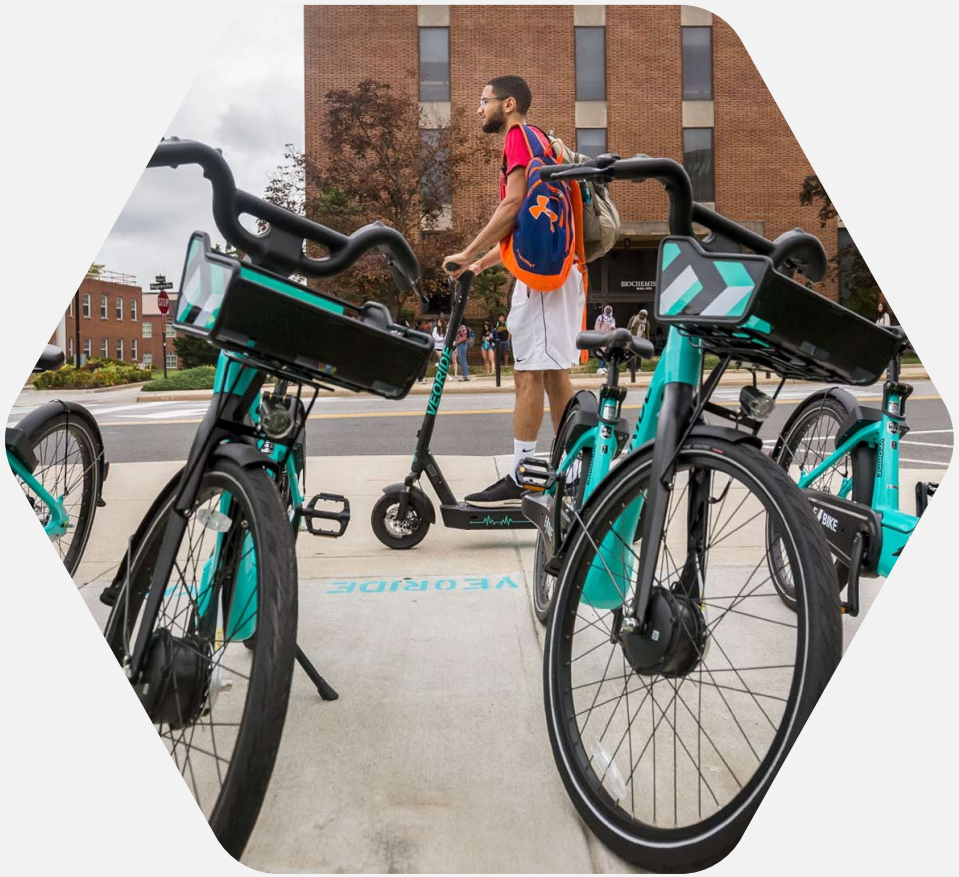
Carbon Neutrality – climateplan.umd.edu



Education for Sustainability

Local and Global Impact

Smart Growth



Sustainable Water Use

Waste Minimization

SUSTAINABLE DEVELOPMENT GOALS

Four UN Promoted Goals that are not included in UMD's Sustainability Goals

Only mentioned in Local and Global Partnerships

SUSTAINABILITY TRACKING, ASSESSMENT & RATING SYSTEM
stars
a program of aashe
GOLD
®

UMD earned a **Gold** STARS Rating

- Public Report and Rating valid for three years
- Submitted for Publication in February 2019
- Review by Association for Advancement of Sustainability in Higher Education (AASHE) completed in May 2019

Other Public Reports from STARS Data

Princeton Review's Green College Honor Roll

- UMD was included with 25 other schools

Sierra Magazine's Ranking of America's "Cool Schools"

- UMD was Ranked 38th out of 282 Schools

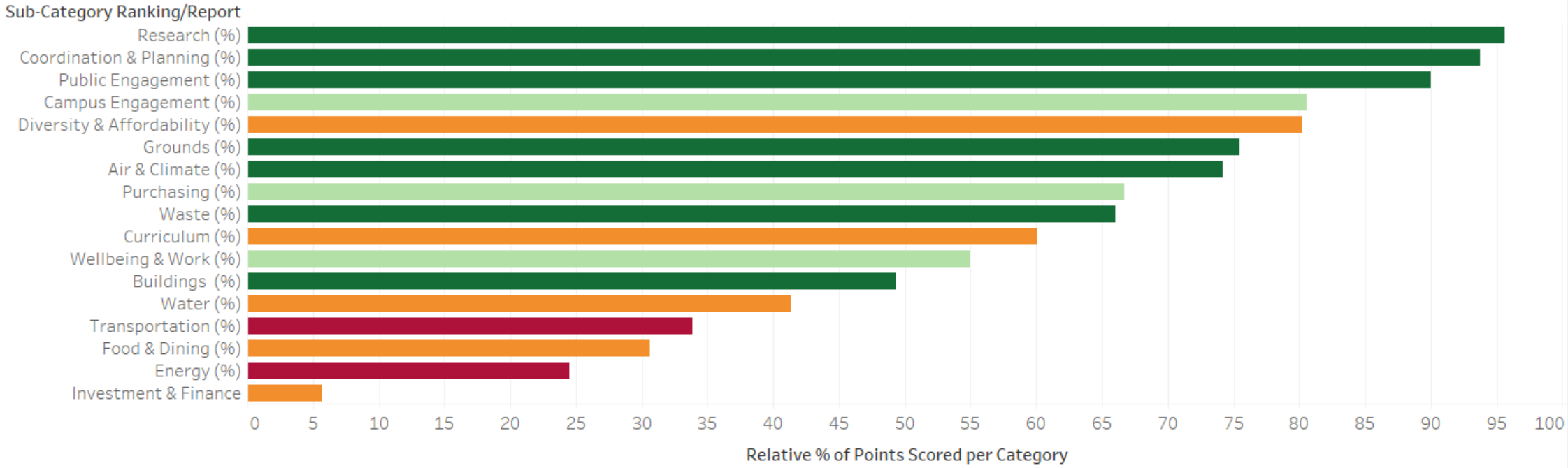
AASHE Sustainable Campus Index

- UMD was not in the top ten schools for any of the featured categories or credits in 2019

stars.aashe.org

University of Maryland, College Park: Gold; Feb. 2019 (2.1)

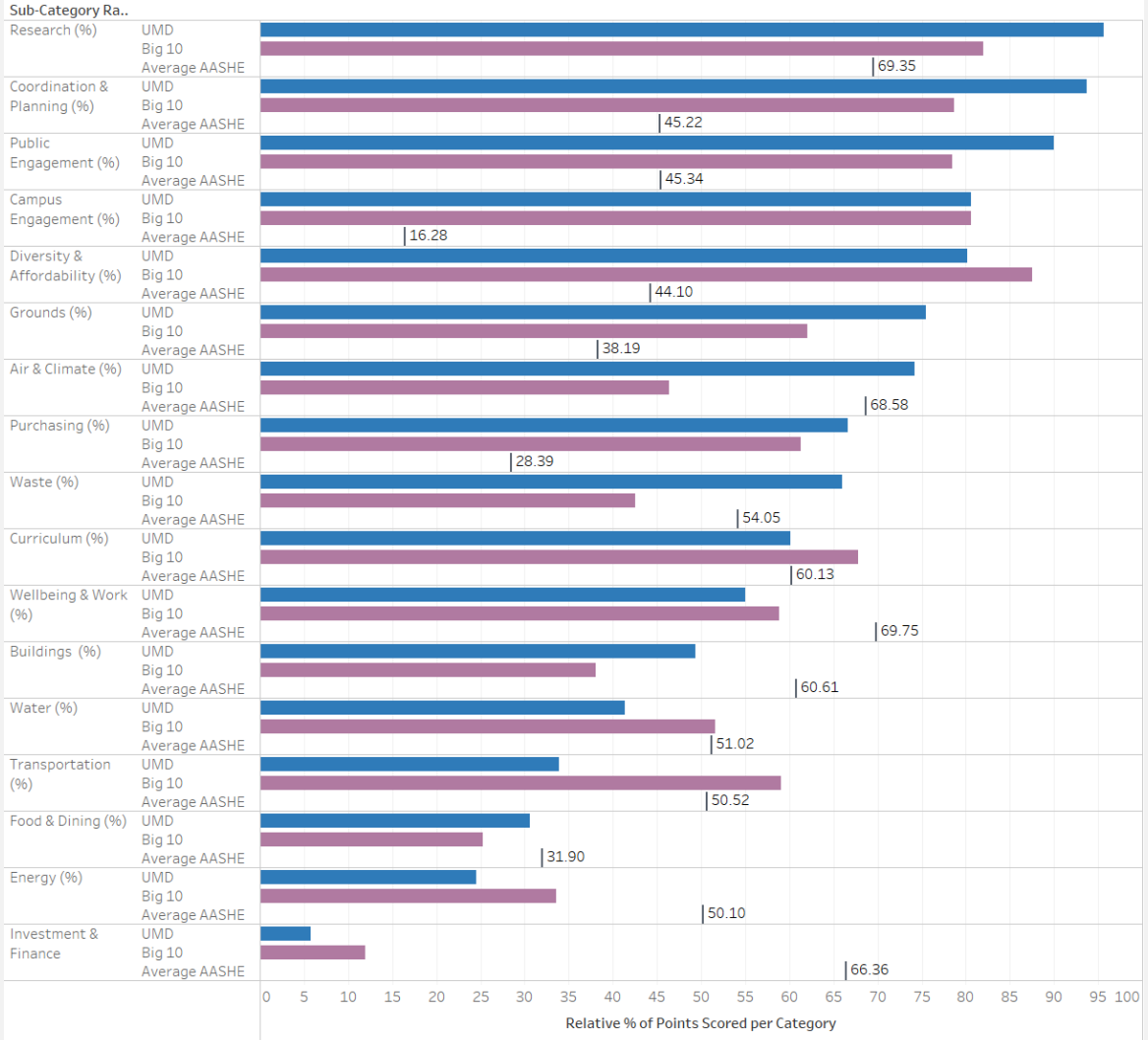
AASHE Stars Report Relative % of Points Awarded per Category



Sum of University of Maryland, College Park Gold: Feb 2019 (2.1) for each Sub-Category Ranking/Report. Color shows details about Sub-Category Ranking/Report. The view is filtered on Sub-Category Ranking/Report, which excludes Overall Score (%).

In February 2019, **University of Maryland, College Park**, submitted its second AASHE Stars Report and was certified **Gold**. The above graph illustrates the relative percent of points scored per category (ex., Research, Investment & Finance).
Color coordinated by quartile ranking, dark green indicages top quartile (top score), light green indicates third quartile (below top score but above median), orange indicates second quartile (below the median), and red indicates the lowest quartile. The quartiles are established by the average relative percent of points scored by all participating AASHE Stars institutions.

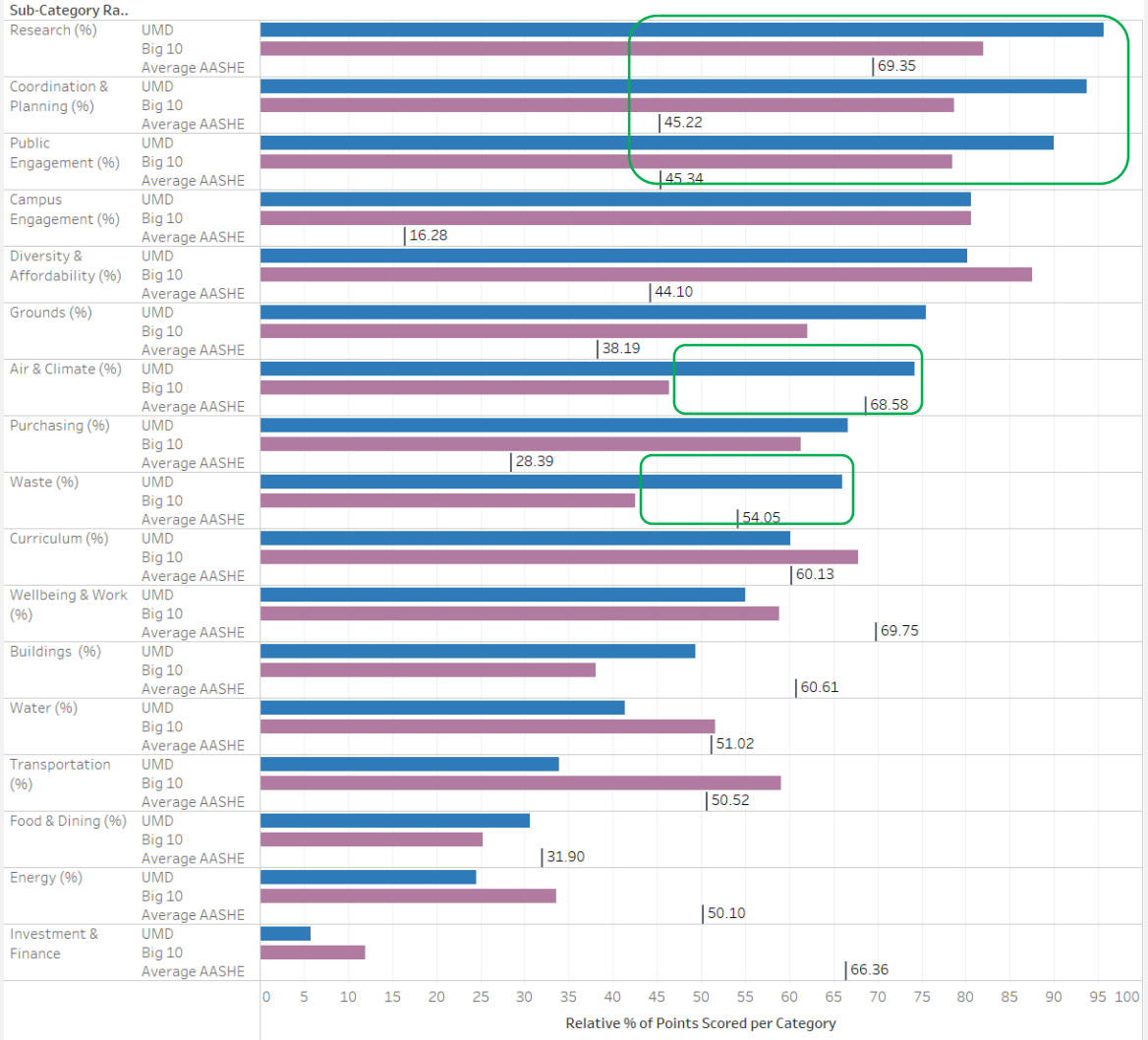
Comparing **University of Maryland, College Park,** Relative % Score per Category to the **Big 10 Institutions** and **AASHE Star** Averages Relative % Score per Category



The University of Maryland, College Park, frequently uses the Big 10 Institutions as benchmarking universities. Of the thirteen institutions (excluding UMD), ten participate in AASHE Stars Reporting: University of Illinois, Indiana University, University of Iowa, University of Michigan, Michigan State University, University of Minnesota, University of Nebraska, Northwestern University, Ohio State University, and Penn State University.
The above graph compares UMD's relative percent of points scored per category to the *average* relative percent of points scored per category of all AASHE participating Big 10 Institutions. The average (or aggregate) was calculated using AASHE's Benchmarking Tool, available on their website. Both UMD and the average Big 10 Institution scores are compared to the average AASHE score (calculated from the relative percent of points scored by all participating AASHE institutions).
Color coordinated, UMD is represented by blue, Big 10 by purple and AASHE by the thin gray bar. The numeric value on the graph indicates the average AASHE relative percent of points scored per category.

Measure Names
- UMD
- Big 10
- Average AASHE

Comparing **University of Maryland, College Park,** Relative % Score per Category to the **Big 10 Institutions** and **AASHE Star** Averages Relative % Score per Category



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Measure Names
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- Big 10
- Average AASHE

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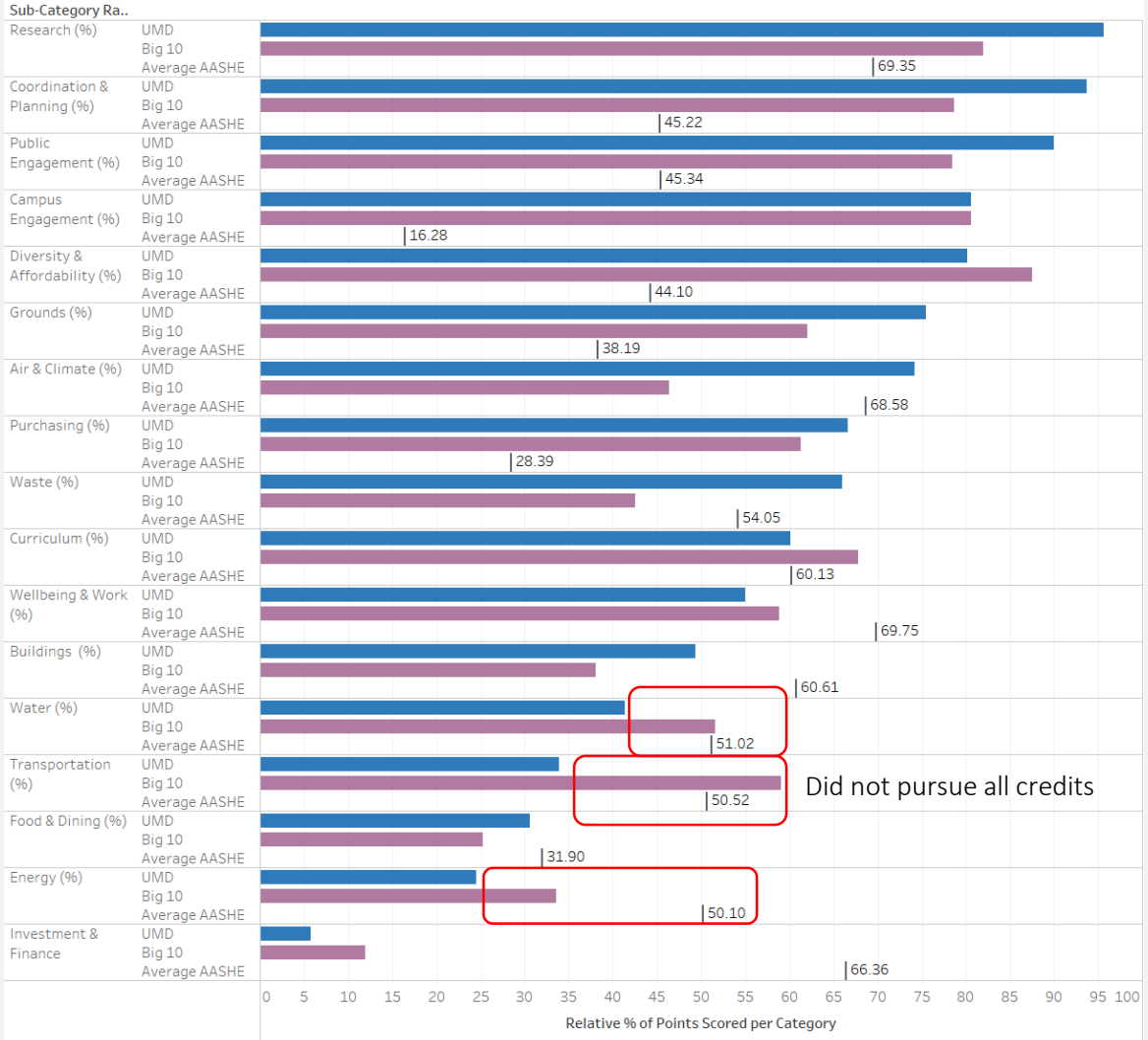

The University of Maryland, College Park, frequently uses the Big 10 Institutions as benchmarking universities. Of the thirteen institutions (excluding UMD), ten participate in AASHE Stars Reporting: University of Illinois, Indiana University, University of Iowa, University of Michigan, Michigan State University, University of Minnesota, University of Nebraska, Northwestern University, Ohio State University, and Penn State University.
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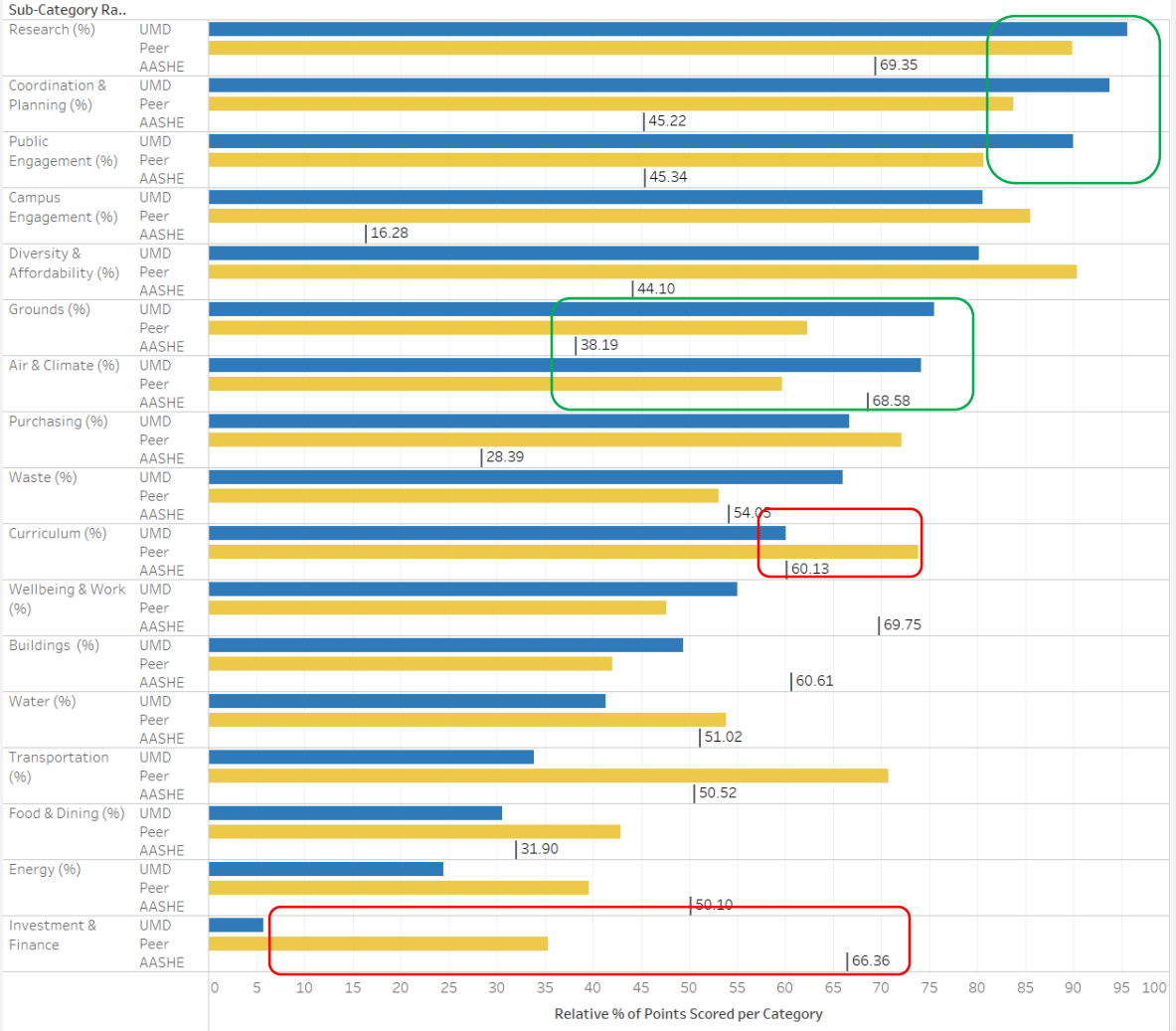
Color coordinated, UMD is represented by blue, Big 10 by purple and AASHE by the thin gray bar. The numeric value on the graph indicates the average AASHE relative percent of points scored per category.

Measure Names
- UMD
- Big 10
- Average AASHE

Comparing **University of Maryland, College Park,** Relative % Score per Category to **Sustainability Peer Institutions** and **AASHE Star** Averages Relative % Score per Category



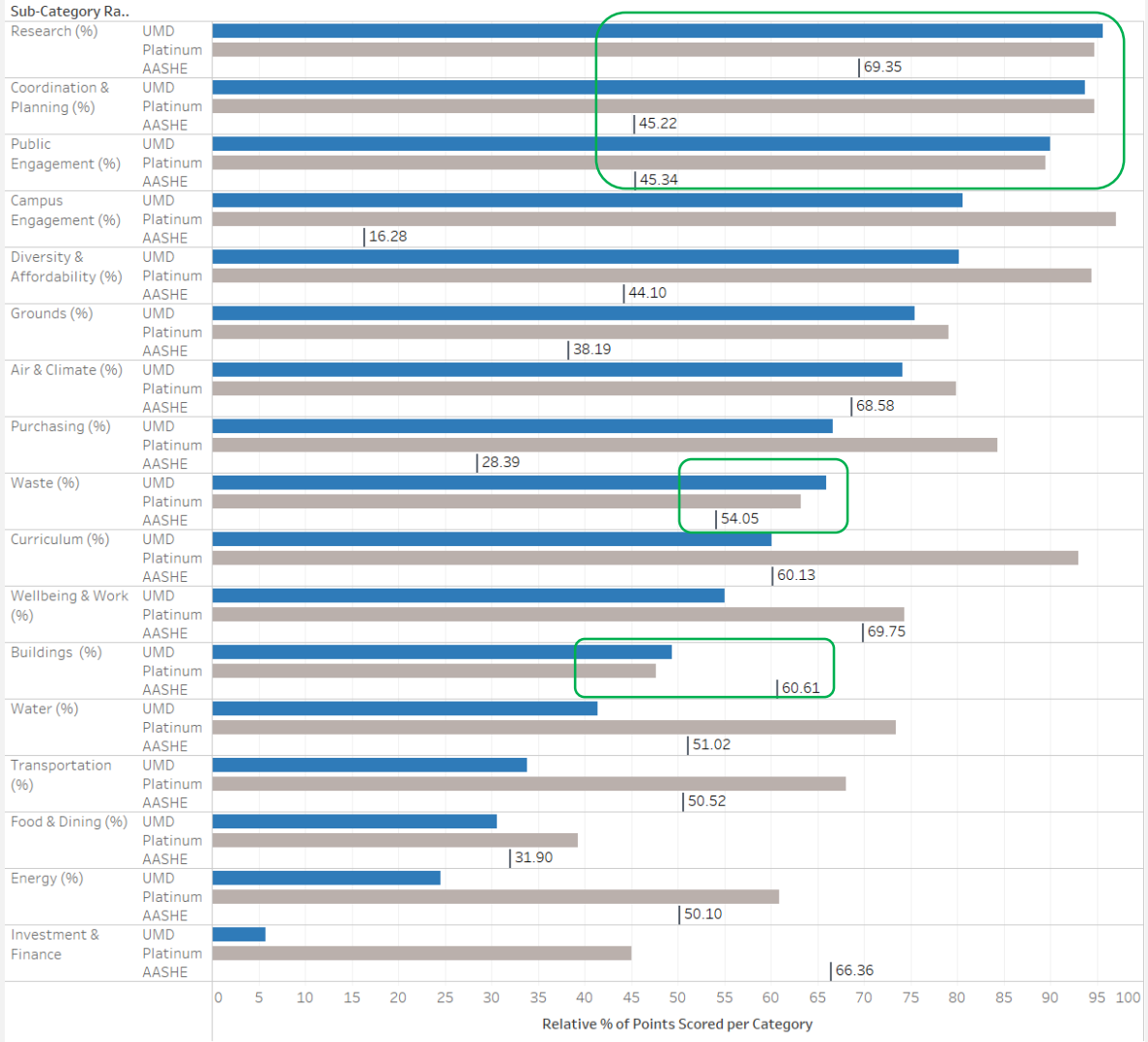
The University of Maryland, College Park, frequently uses department-specific Peer Institutions as benchmarking universities.The Office of Sustainability identified Arizona State University, University of Massachusetts, Amherst, University of Texas, Austin, University of California, Berkeley, Yale University, University of Connecticut, George Washington University, Columbia University, Cornell University, and Emory University. These universities each host sustainability programs within the scope of UMD's current and future efforts. There is a range of endowments, private/public, and FTE populations across this selection of universities

The above graph compares UMD's relative percent of points scored per category to the *average* relative percent of points scored per category of the above Peer Institutions. The average (or aggregate) was calculated using AASHE's Benchmarking Tool, available on their website. Both UMD and the average Peer Institution scores are compared to the average AASHE score (calculated from the relative percent of points scored by all participating AASHE institutions).

Color coordinated, UMD is represented by blue, Peer by yellow and AASHE by the thin gray bar. The numeric value on the graph indicates the average AASHE relative percent of points scored per category.

Measure Names
- UMD
- Peer
- AASHE

Comparing **University of Maryland, College Park,** Relative % Score per Category to the **Platinum-Ranked AASHE Institutions** and **AASHE Star** Averages Relative % Score per Category



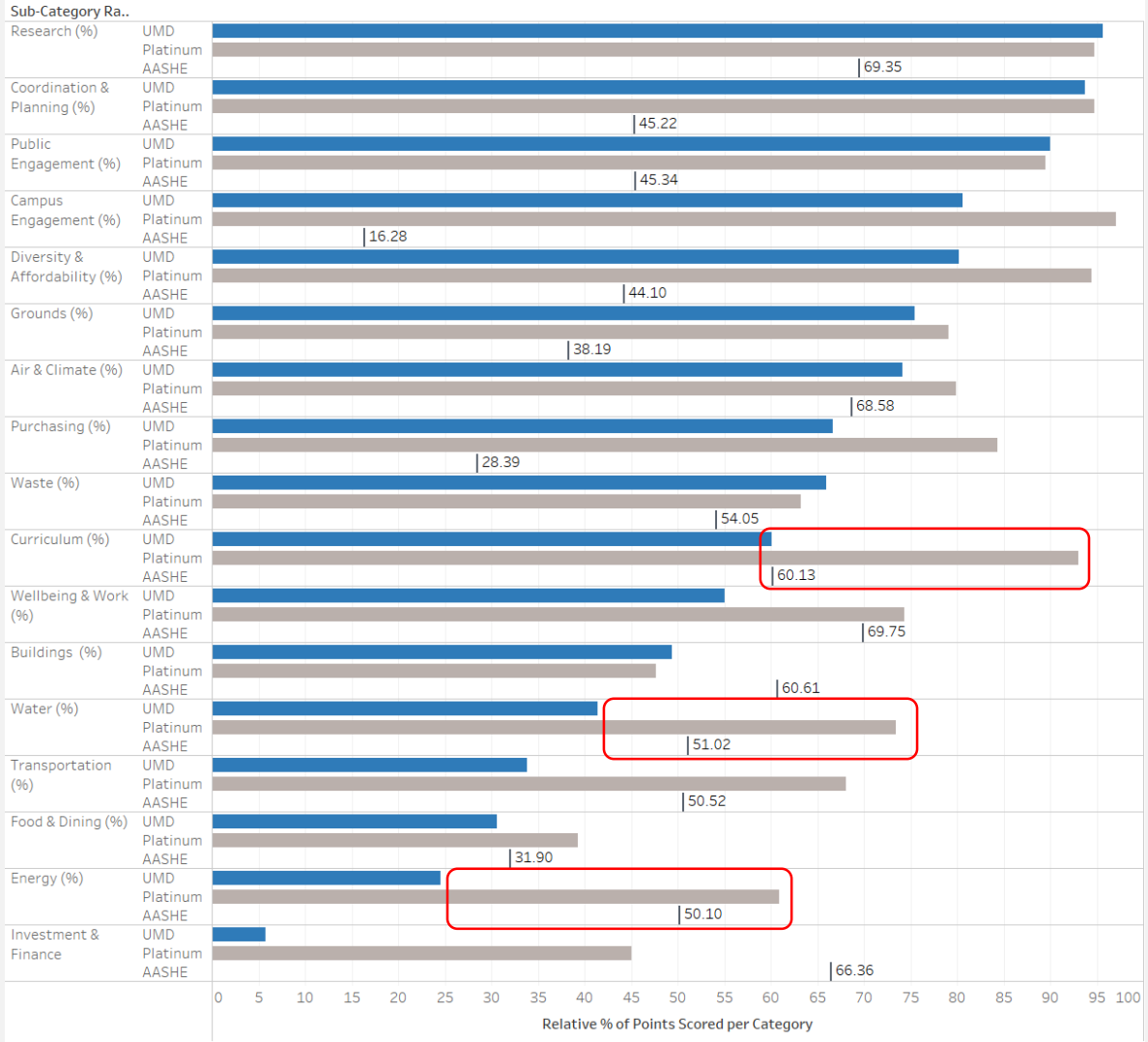
The University of Maryland, College Park, frequently uses the AASHE Stars Report and respective rankings in sustainability benchmarking. AASHE offers five rankings: Participant, Bronze, Silver, Gold, and Platinum. Only six universities have scored Platinum on the AASHE Stars Report: UC Irvine, Colby College, Stanford University, Colorado State University, Thompson Rivers University, and the University of New Hampshire.

The above graph compares UMD's relative percent of points scored per category to the *average* relative percent of points scored per category of all AASHE Platinum-ranked institutions. The average (or aggregate) was calculated using AASHE's Benchmarking Tool, available on their website. Both UMD and the average Platinum Institution scores are compared to the average AASHE score (calculated from the relative percent of points scored by all participating AASHE institutions).

Color coordinated, UMD is represented by blue, Platinum by gray and AASHE by the thin gray bar. The numeric value on the graph indicates the average AASHE relative percent of points scored per category.

Measure Names
- UMD
- Platinum
- AASHE

Comparing **University of Maryland, College Park,** Relative % Score per Category to the **Platinum-Ranked AASHE Institutions** and **AASHE Star** Averages Relative % Score per Category



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Measure Names
- UMD
- Platinum
- AASHE

Building Energy Consumption

UMD used 2017 data for the Performance Year and 2010 data for the Baseline Year

Source Energy Use Intensity Reduction

- Full points awarded for reduction of 50% (or more)
  - Partial Points are relative to reduction achieved
  - UMD received 0% of available points
    - Historical data based on natural gas, propane, fuel oil and purchased electricity consumption showed a small increase in source EUI between 2010 and 2017

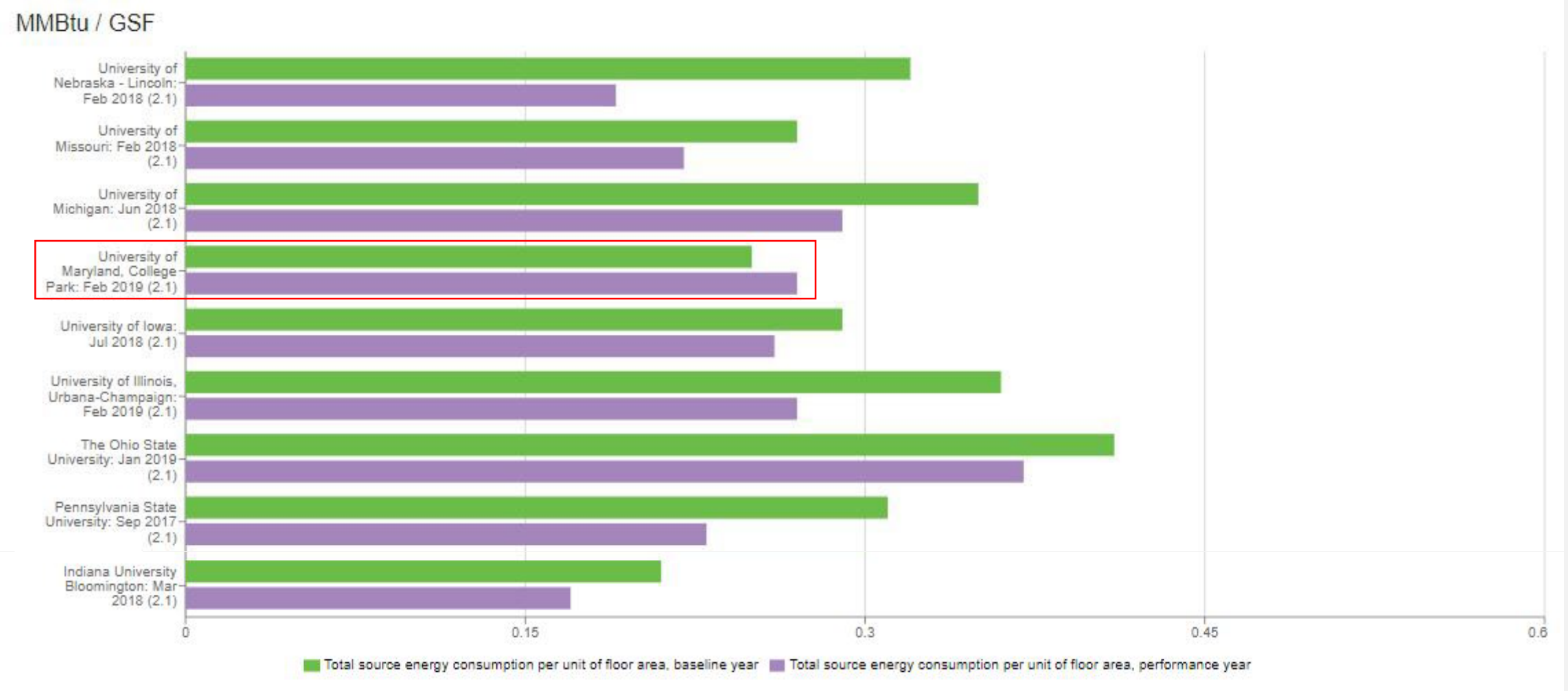
Minimum Performance Threshold

- Full points awarded when annual building energy consumption is 90% or more below threshold
  - 65 Btu per gross square foot per Fahrenheit degree day
  - UMD average of 31.43 Btu/GSF/Degree-Day (F)
  - UMD received 57% of available points

Building Energy Consumption

UMD used 2017 data for the Performance Year and 2010 data for the Baseline Year

Source Energy Use Intensity Reduction



Building Energy Consumption

UMD used 2017 data for the Performance Year and 2010 data for the Baseline Year

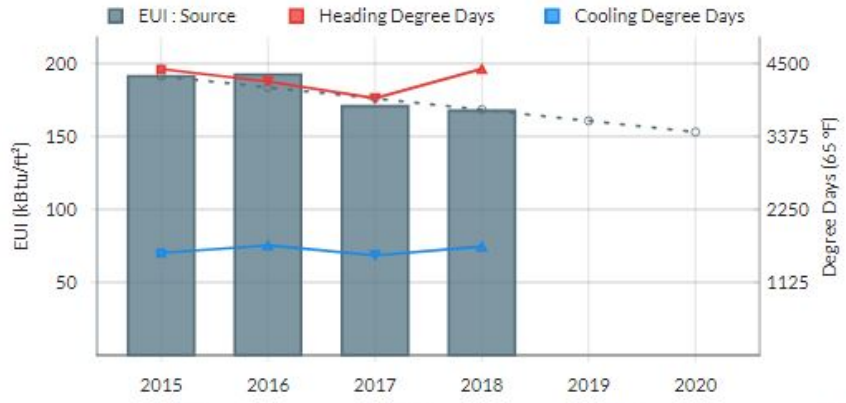
Source Energy Use Intensity Reduction

- Full points awarded for reduction of 50% (or more)
  - Partial Points are relative to reduction achieved
  - **Newer data from Campus Energy Dashboard shows UMD could potentially earn 24% of the points with 2018 performance year and 2015 baseline year**
  - However, this data may be missing fuel oil burned in the CHP and other equipment on campus, and does not encompass propane and other fuels burned for energy at MFRI and AGNR sites across the state.

Campus Source Energy Use Intensity

The lower EUI in 2017 can be partly attributed to milder weather conditions.

Overall campus purchased energy has decreased 12% vs 2015 while the footprint has grown 3%.



Type	2015	2016	2017	2018
EUI : Source	191 kBtu/ft² -	192 kBtu/ft² ^ 1%	171 kBtu/ft² v 11%	168 kBtu/ft² v 12%
EUI : Site	163 kBtu/ft² -	162 kBtu/ft² v 1%	144 kBtu/ft² v 12%	148 kBtu/ft² v 9%
Area : Campus	12,561,065 ft² -	12,561,065 ft² -	12,952,015 ft² ^ 3%	12,952,015 ft² ^ 3%
Area : Total	*14,177,973 ft² -*	*14,179,938 ft² ^ 0%*	*14,236,156 ft² ^ 0%*	*14,627,106 ft² ^ 3%*
Cooling Degree Days	1,576 -	1,695 ^ 8%	1,538 v 2%	1,676 ^ 6%
Heading Degree Days	4,414 -	4,222 v 4%	3,965 v 10%	4,417 ^ 0%
EUI : Source	***191 kBtu/ft² -***	***192 kBtu/ft² ^ 1%***	***171 kBtu/ft² v 11%***	***168 kBtu/ft² v 12%***

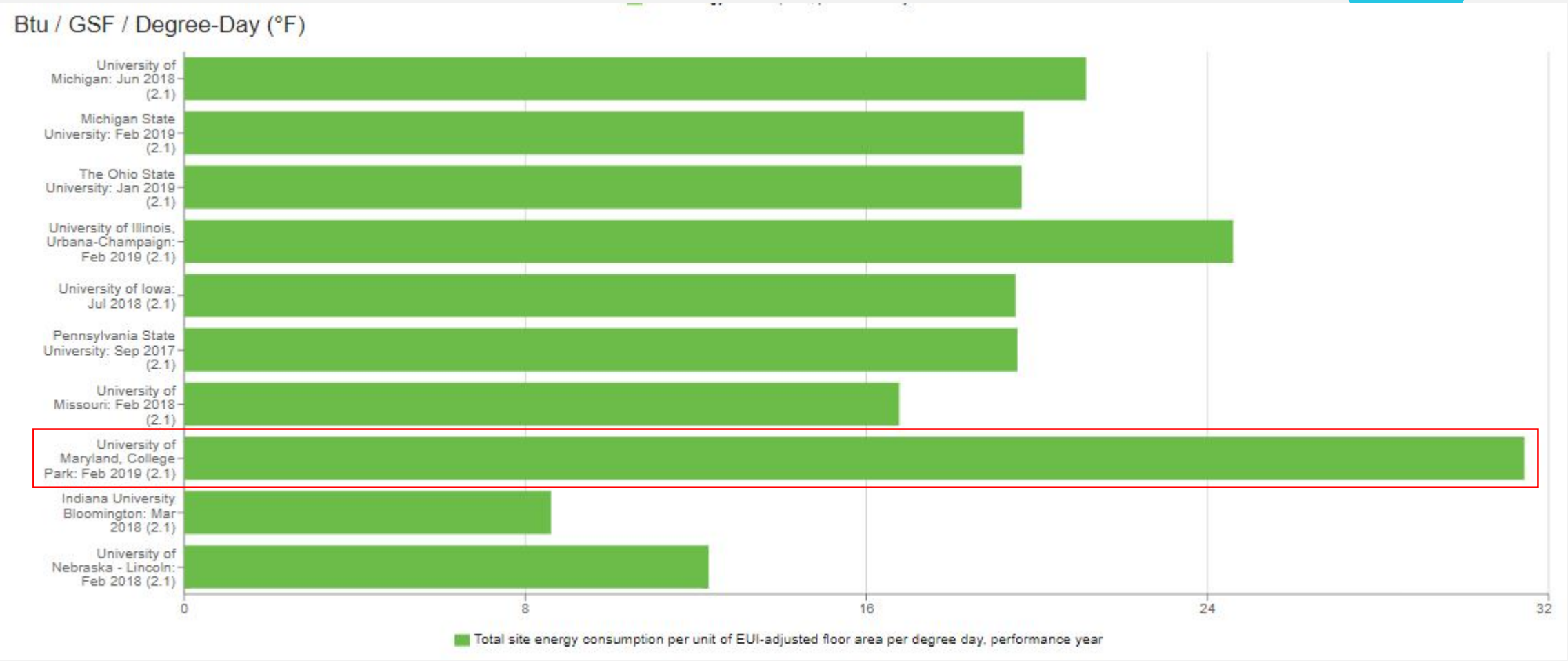
Percent (%) changes noted by ^ and v, are the percent (%) difference as compared to 2015.

Building Energy Consumption

Minimum Performance Threshold for Site EUI

Below 65 Btu per gross square foot per Fahrenheit degree day

UMD average of 31.43 Btu/GSF/Degree-Day (F)



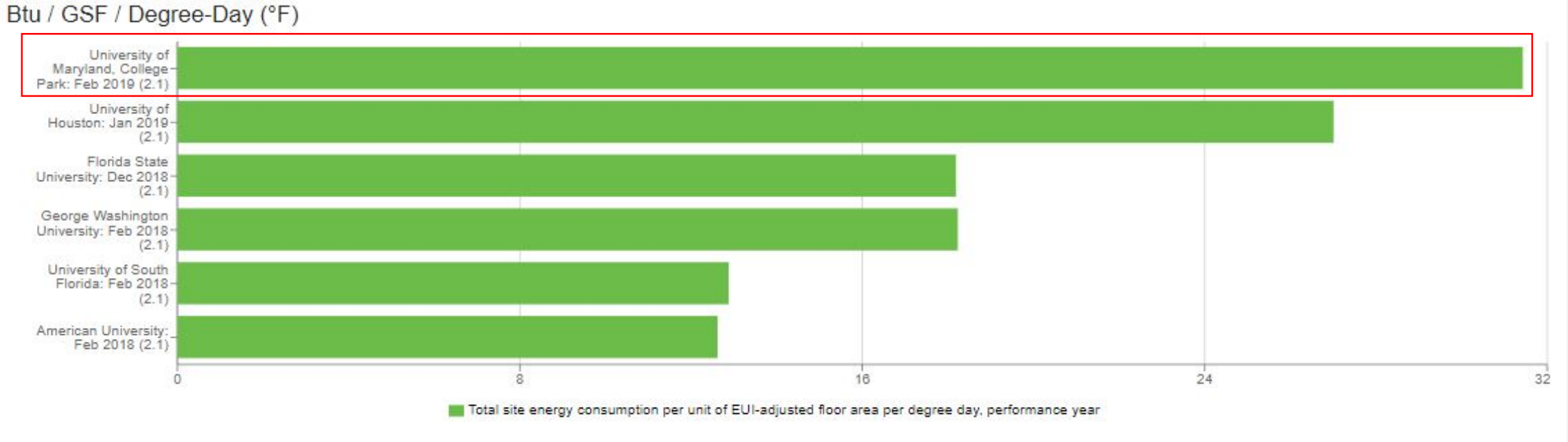
Building Energy Consumption

Minimum Performance Threshold

Below 65 Btu per gross square foot per Fahrenheit degree day

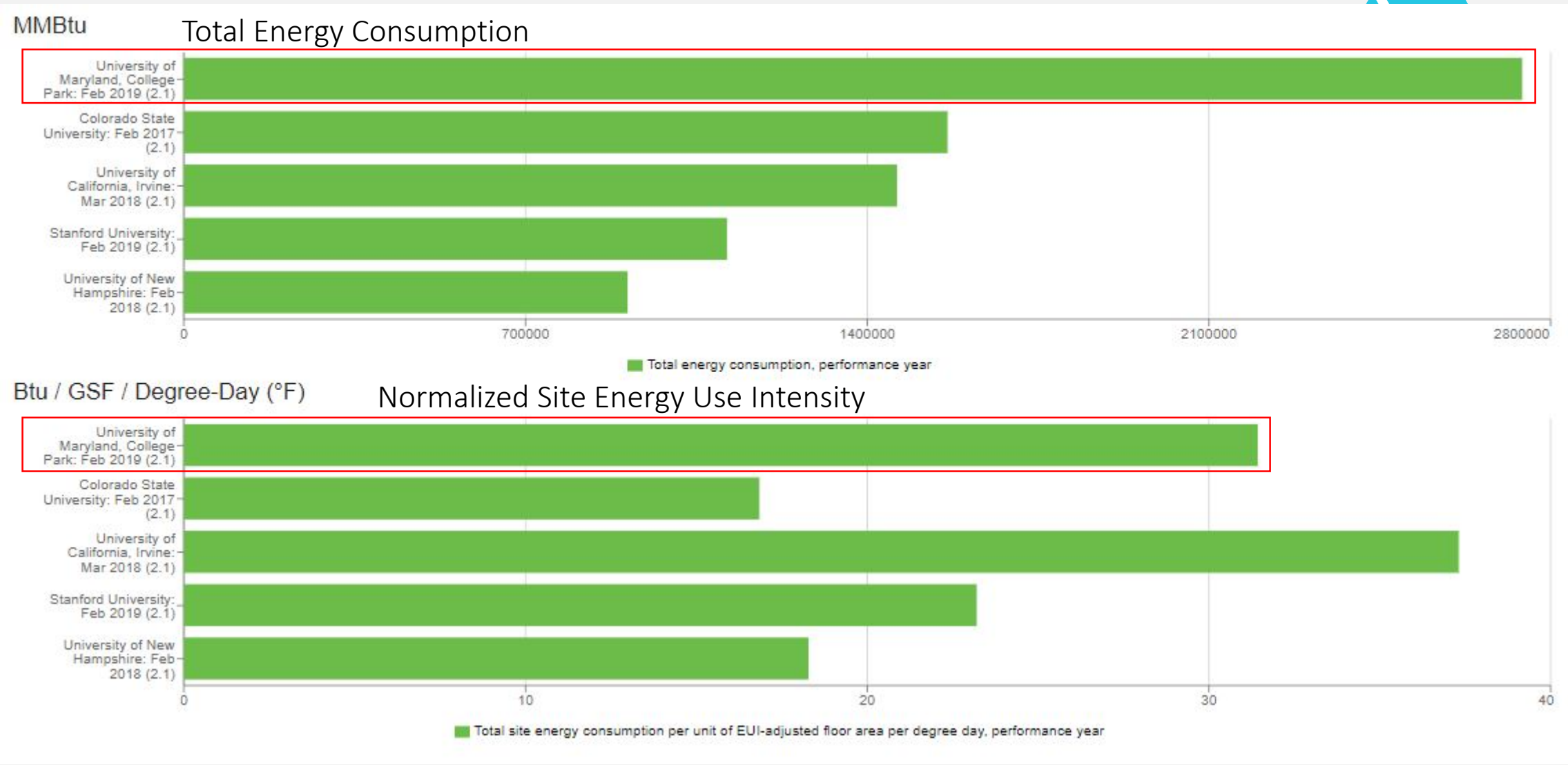
UMD average of 31.43 Btu/GSF/Degree-Day (F)

Perhaps hot-humid summers are a key factor UMD's high consumption? Benchmarking shows that UMD can do better.



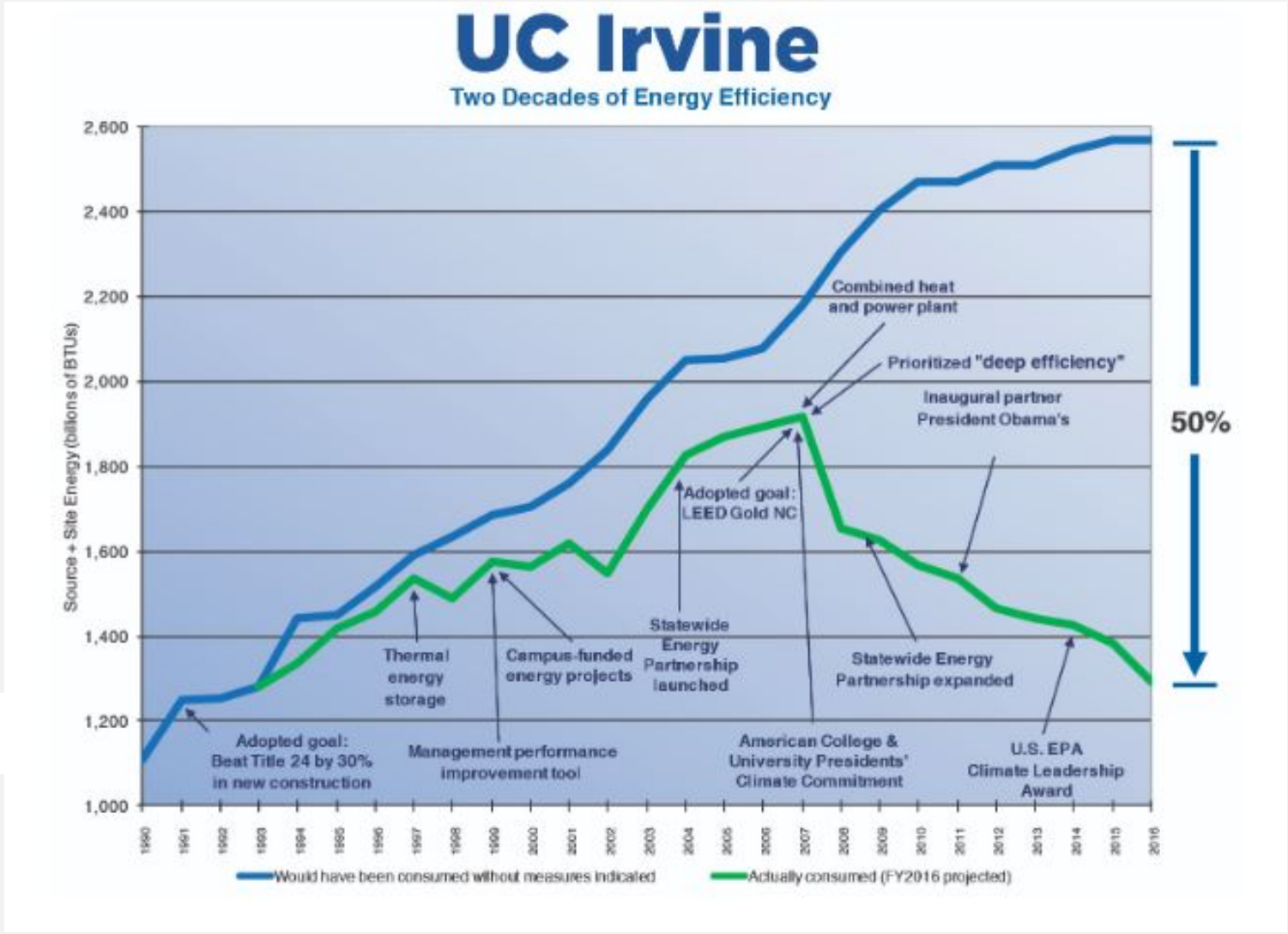
Building Energy Consumption

Platinum Rated Doctorate Research Institutions and UMD



Building Energy Consumption

Platinum Rated Doctorate Research Institutions and UMD



Building Energy Consumption

Platinum Rated Doctorate Research Institutions and UMD

BILLION DOLLAR GREEN CHALLENGE

- About
- The Challenge
- Participants
- Resources
- News
- GRITS
- Contact

PARTICIPATION

58 Institutions
$122 Million Committed

Join our mailing list

Participants /

University of New Hampshire

UNIVERSITY of NEW HAMPSHIRE

FOUNDING CIRCLE

LOCATION
Durham, New Hampshire

GREEN REVOLVING FUND SIZE
$1,200,000

ESTABLISHED
October 2009

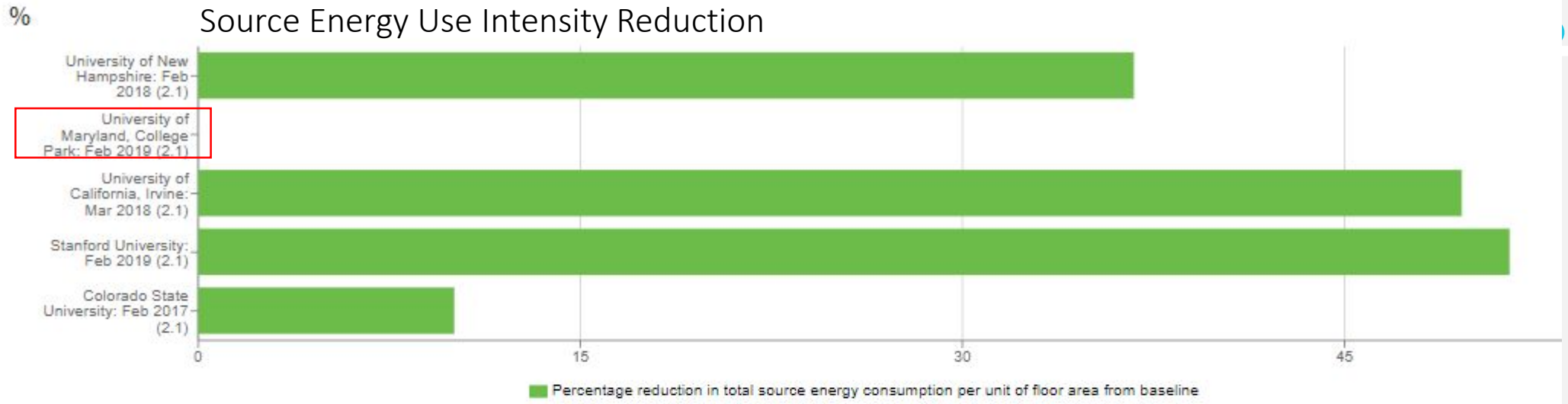
LIAISON
Tom Kelly
Chief Sustainability Officer

UNH ENERGY EFFICIENCY FUND

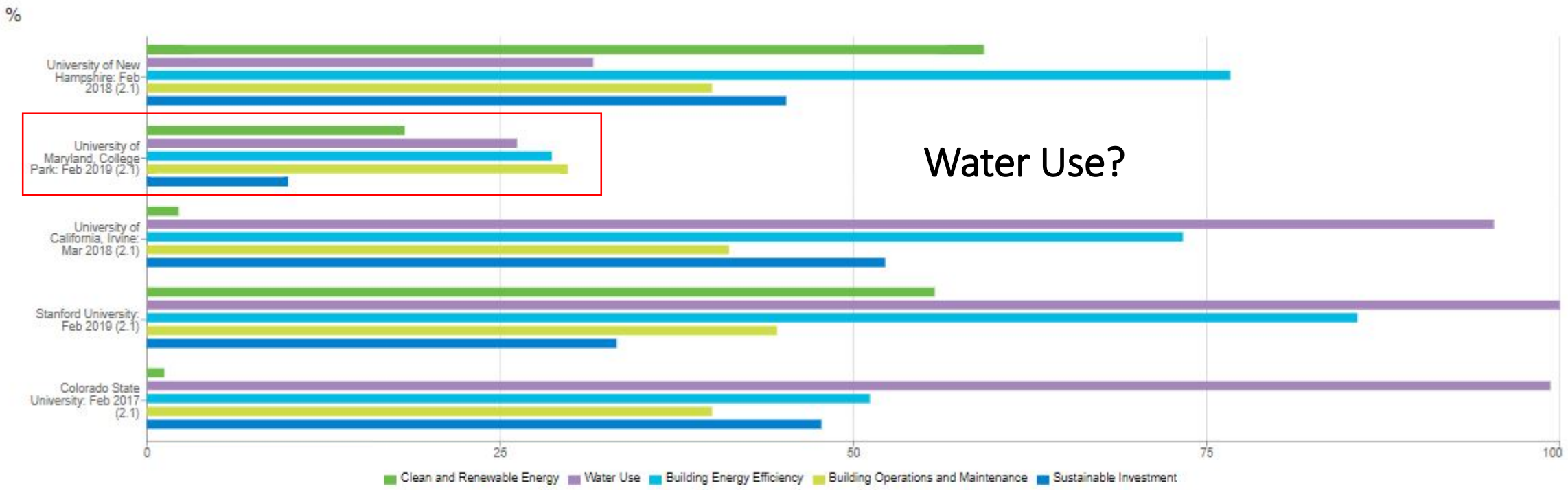
Prospective projects are vetted through UNH's Energy Task Force, which is comprised of all campus stakeholders (with a Foundation Board member and staff person added). The fund's target is to average a 5-year payback on all projects funded. The fund's goal is to be cost neutral to the campus as all measured savings are transparent through extensive metering, in order to ensure that the campus sees no impact on its utility costs.

Building Energy Consumption

Platinum Rated Doctorate Research Institutions Schools and UMD



Report ↑	Percentage reduc... (%)
University of New Hampshire Platinum: Feb 2018 (2.1)	36.73
University of Maryland, College Park Gold: Feb 2019 (2.1)	0
University of California, Irvine Platinum: Mar 2018 (2.1)	49.6
Stanford University Platinum: Feb 2019 (2.1)	51.48
Colorado State University Platinum: Feb 2017 (2.1)	10.05



Water Use?

Report	Clean and Renewa... (%)	Water Use (%)	Building Energy ... (%)	Building Operati... (%)	Sustainable Inve... (%)
University of New Hampshire Platinum: Feb 2018 (2.1)	59.25	31.6	76.67	40	45.25
University of Maryland, College Park Gold: Feb 2019 (2.1)	18.25	26.2	28.67	29.8	10
University of California, Irvine Platinum: Mar 2018 (2.1)	2.25	95.33	73.33	41.2	52.25
Stanford University Platinum: Feb 2019 (2.1)	55.75	100	85.67	44.6	33.25
Colorado State University Platinum: Feb 2017 (2.1)	1.25	99.33	51.17	40	47.75

Water Use

UMD used 2015-2017 average data for the Performance Year and 2007 data for the Baseline Year

Full points awarded for reduction of 30% (or more) in all three categories

Potable Water Consumption

Percentage Reduction in use per user

UMD achieved a 10.29% reduction

Percentage Reduction in use per GSF

UMD achieved a 12.98% reduction

Total Water Use for Irrigation

Percentage Reduction in use per acre of vegetated grounds

UMD achieved a 0.27% reduction

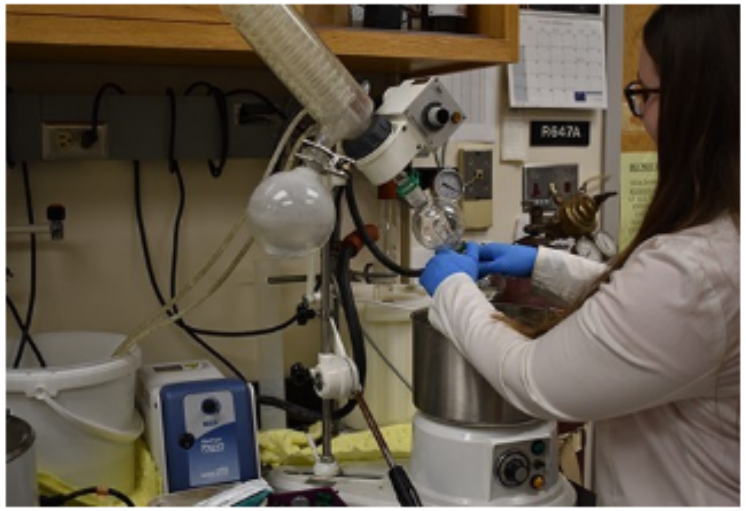
Incomplete data available for non-potable water use

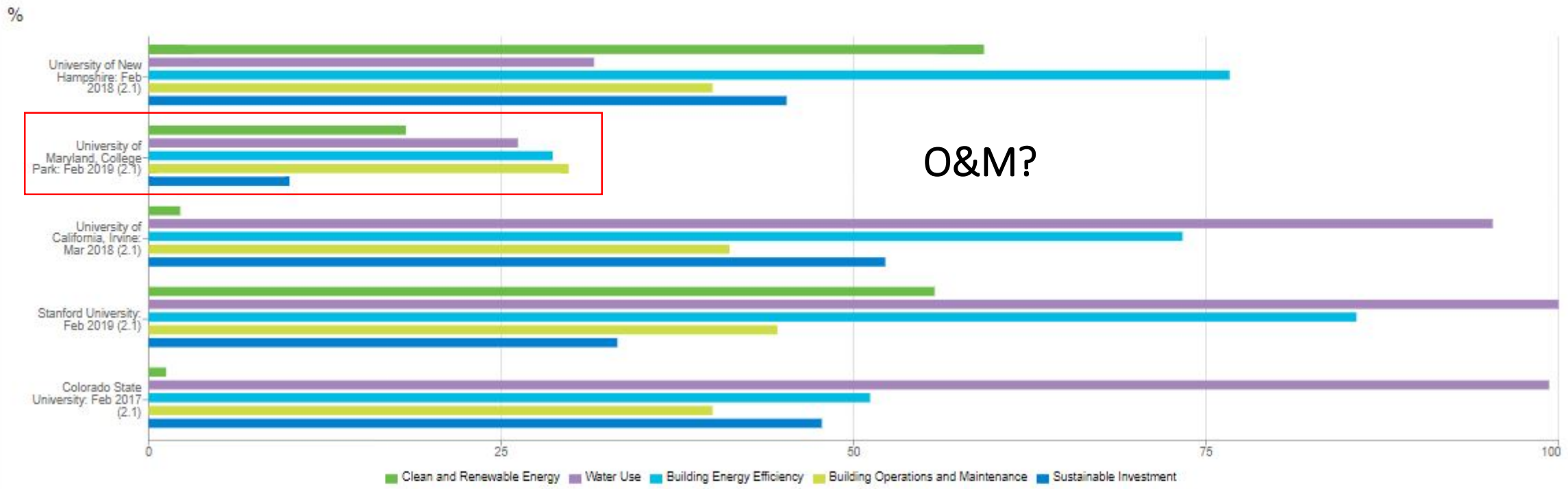
In the News: Improving Water Conservation Efforts

May 9, 2019

Ohio State aims to reduce potable water consumption by 5 percent, per person, every five years as part of its university-wide sustainability goals. Read more about how Facilities Operations and Development and the College of Pharmacy have teamed up to conserve water by changing lab equipment for annual water savings of 16 million gallons.

Read the full story on the Sustainability Institute website.





O&M?

Report	Clean and Renewa... (%)	Water Use (%)	Building Energy ... (%)	Building Operati... (%)	Sustainable Inve... (%)
University of New Hampshire Platinum: Feb 2018 (2.1)	59.25	31.6	76.67	40	45.25
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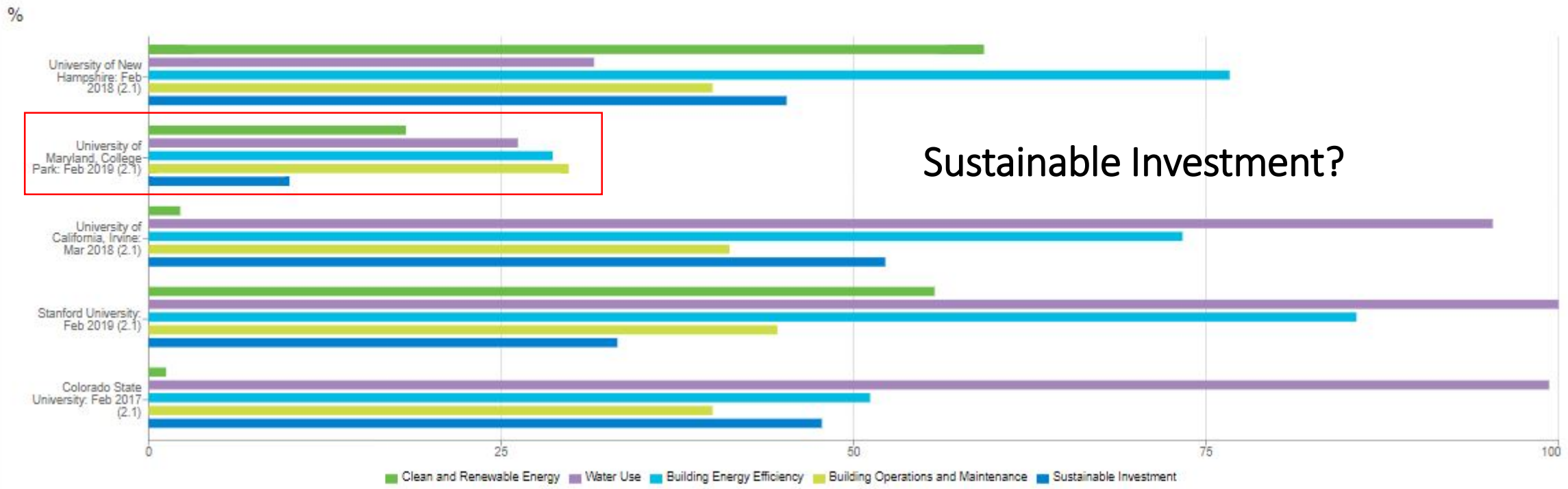
- LEED Certification for Existing Buildings Operations & Maintenance
  - UC Irvine
- Home-grown LEED Equivalency Rating System for Existing Buildings
  - Stanford
- Clearer Documentation of Indoor Air Quality Management Plan
  - UNH



Sustainable Investment?

Report	Clean and Renewa... (%)	Water Use (%)	Building Energy ... (%)	Building Operati... (%)	Sustainable Inve... (%)
University of New Hampshire Platinum: Feb 2018 (2.1)	59.25	31.6	76.67	40	45.25
University of Maryland, College Park Gold: Feb 2019 (2.1)	18.25	26.2	28.67	29.8	10
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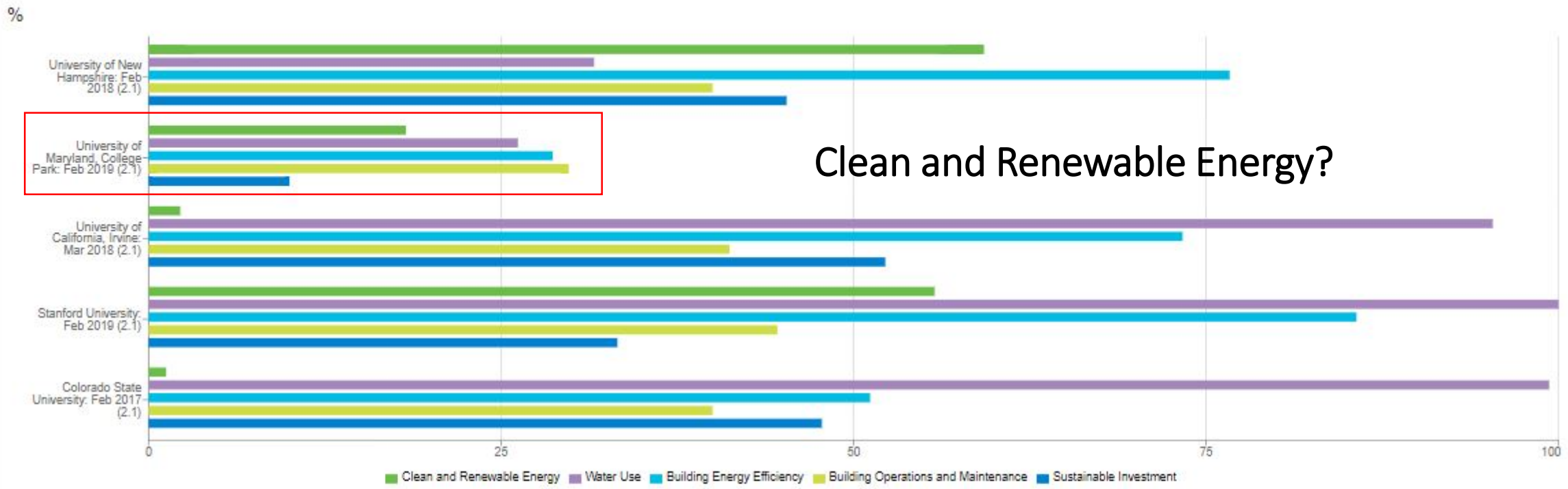
Request Dialogue between Regents, USM Foundation and University of California System Investment Officer

"It is imperative that the University of California consider sustainability within the context of the financial goals for our community stakeholders. I believe the Office of the Chief Investment Officer of the Regents, in their work with the UC Board Of Regents, has created a balanced approach that marries together sustainability risks and concerns that are emerging in the local and global economy with a strong due diligence evaluation process that is consistent with fiduciary duty."
John A. Pérez
Regent, University of California Board of Regents



Clean and Renewable Energy?

Report	Clean and Renewa... (%)	Water Use (%)	Building Energy ... (%)	Building Operati... (%)	Sustainable Inve... (%)
University of New Hampshire Platinum: Feb 2018 (2.1)	59.25	31.6	76.67	40	45.25
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Biogas and RNG in Canada

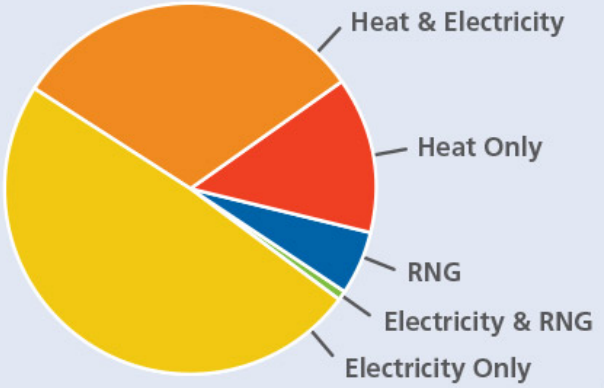
Biogas and RNG Energy Capacity

Operational and initiated projects generate:

Greater than
196 MW

& Greater than
400,000 GJ
from RNG

Biogas Energy Utilization



Operating Biogas and RNG Projects in Canada

Agricultural & Food Waste Digesters

Wastewater Treatment Facilities

Landfill Gas Projects

Sustainability in the Academic Curriculum

UMD used CY 2016 data for Academic Courses and FY 2017 data for Learning Outcomes

Courses with Sustainability Focus/Component

- Full points awarded for 20% of courses (or more) and 90% of departments (or more)
  - Partial Points are relative to percentage of courses and departments that offer sustainability courses
  - UMD received 63% of available points
  - 90% of departments offer sustainability courses
  - 7.17% or all courses identified as sustainability courses
    - Keyword search of registrar course titles and descriptions followed by manual assessment (Office of Sustainability)
    - Sustainability-studies minor approved courses
    - Partnership for Action Learning courses
    - Courses submitted by Sustainable Teaching Fellows

Sustainability Learning Outcomes for Grads

- Full points awarded when 100% of students graduate from programs that have adopted at least one sustainability learning outcome
  - 14.59% of UMD students graduated from programs with clear sustainability learning outcomes

Sustainability learning outcomes are

statements that outline the specific sustainability knowledge and skills that a student is expected to have gained and demonstrated by the successful completion of a unit, course, or program.

Learning outcomes do not necessarily have to use the term “sustainability” to count as long as they collectively address sustainability as an **integrated concept having social, economic, and environmental dimensions.**

Sustainability learning outcomes

may be specified at:

- Institution level (e.g. covering all students)
- Division level (e.g. covering one or more schools or colleges within the institution)
- Program level
- Course level (if successful completion of the course is required to complete a degree program)

Sustainability learning outcomes

(UMD examples)

Agricultural and Resource Economics:
Knowledge of policies and institutional arrangements relevant to agricultural, environmental, and resource economics

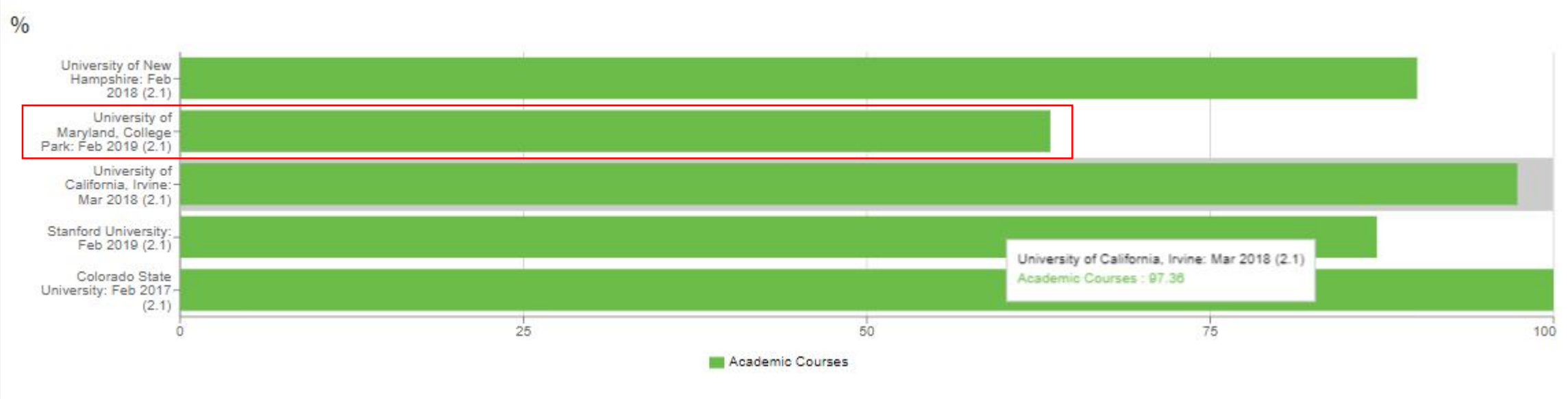
Aerospace Engineering:
Understanding of the impact of engineering solutions in a global, societal, environmental, and economic context

Bioengineering:
An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainabililty.

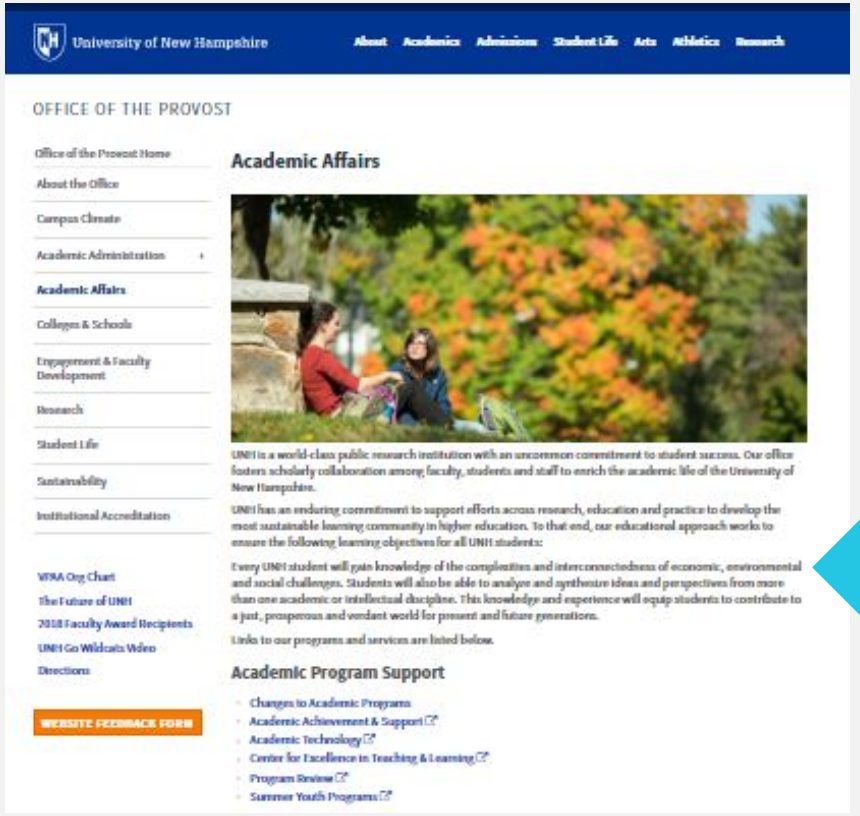
Family Science:
Students will demonstrate the principles of cultural competence that shape the experiences and disparities of vulnerable families and populations.

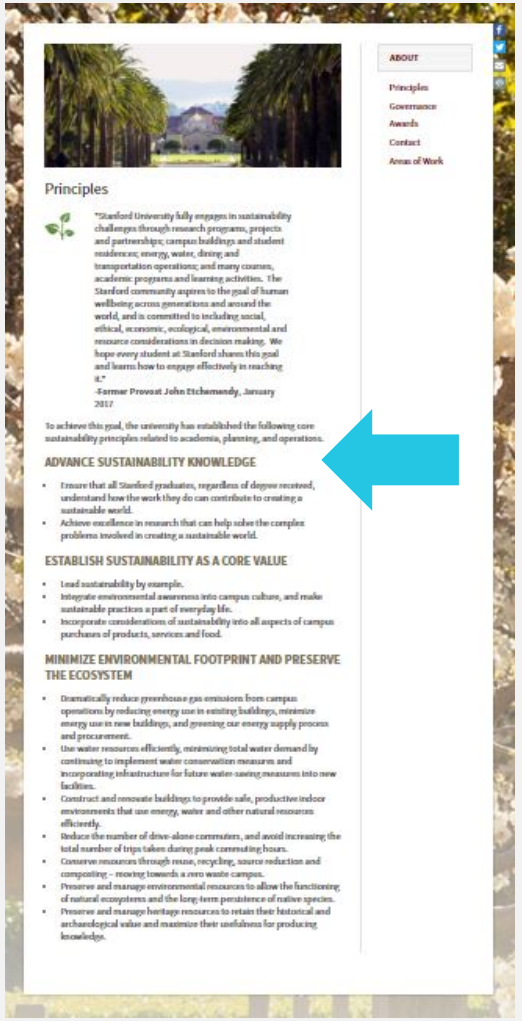
Sustainability in the Curriculum

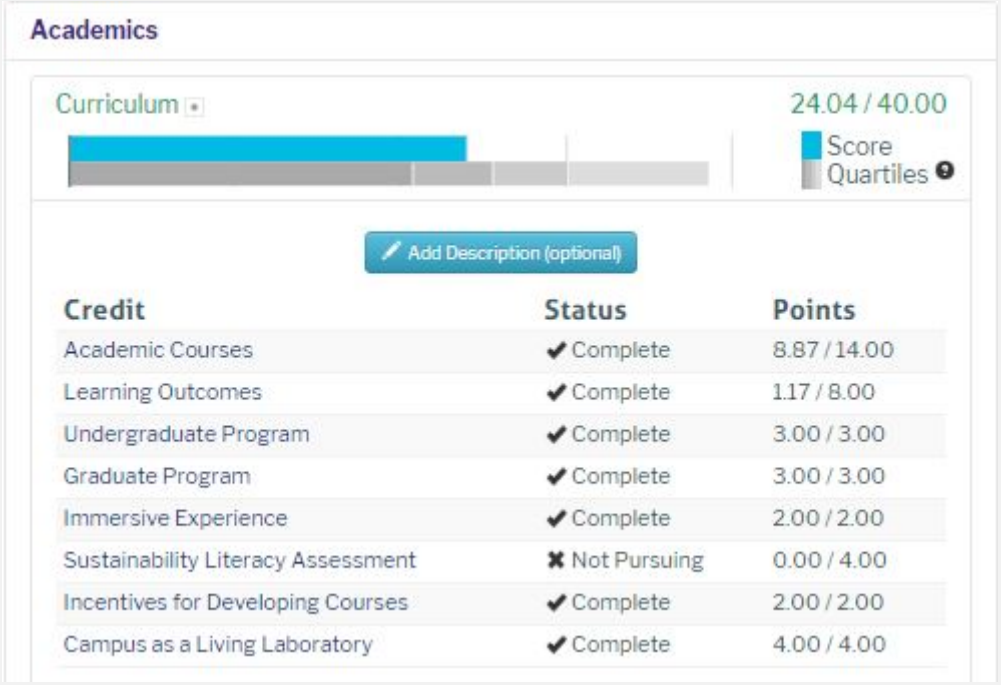
Platinum Rated Doctorate Research Institutions Schools and UMD



Overarching Learning Outcomes (examples)







Institution conducts an assessment of the sustainability literacy of its students. The sustainability literacy assessment focuses on knowledge of sustainability topics and challenges

Maximum of 4 points available for this credit by administering a pre- and post-assessment to the entire student body or, at minimum, to the institution's predominant student body (e.g. all undergraduate students), directly or by representative sample.

Key Recommendations

- Revolving Loan Fund for Energy and Water Conservation Measures
- Explore All Viable Options for Biogas and RNG
- Establish Sustainability Learning Outcomes as part of Gen Ed
- Appoint Academic Coordinator for Sustainability in the Curriculum
- Engage new O&M Director early and explore opportunities
- Perhaps Host USM Sustainable Investment & Finance Discussion

Key Recommendations

- Revolving Loan Fund for Energy and Water Conservation Measures
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- Establish Sustainability Learning Outcomes as part of Gen Ed
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- Engage new O&M Director early and explore opportunities
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- **Other thoughts and ideas?**
- **Discussion and questions**

(Progress Report 5-Year Summary)

Indicator	Units	2015-2016	2016-2017	2017-2018	2018-2019	FY/CY	Trend
CARBON NEUTRALITY							
Net Campus-wide Greenhouse Gas Emissions	MT-CO2e	244,788	244,213	172,066	167,493	CY	
Net Greenhouse Gas Emissions per Capita	MT-CO2e/FTE person	5.6	5.4	3.7	3.5	CY	
Net Greenhouse Gas Emissions per Area	MT-CO2e/1000 sq. ft.	16.6	16.5	11.4	11.1	CY	
Overall Greenhouse Gas Emissions Reduction	% since 2005	-28%	-28%	-49%	-51%	CY	
Power Greenhouse Gas Emissions Reduction	% since 2005	-28%	-32%	-41%	-36%	CY	
Transportation Greenhouse Gas Emissions Mitigation	% since 2005	-8%	-4%	-58%	-72%	CY	
Campus Site Energy Consumption	million BTU	2,046,012	2,030,543	1,862,419	1,913,515	CY	
Steam Production	MLbs	757,724	729,569	642,433	677,454	CY	
Electricity Consumption	MWh	276,044	281,149	275,678	278,539	CY	
Renewable Energy Purchased	MWh	87,164	96,919	146,559	183,971	CY	
Student Commuter Parking Purchases	percent of students	23.3%	22.1%	22.6%	21.8%	CY	
Faculty and Staff Commuter Parking Purchases	percent of employees	65.3%	64.7%	65.4%	65.1%	CY	
EDUCATION FOR SUSTAINABILITY							
First Year Sustainability Education	percent of students	60%	61%	63%	62%	FY	
Sustainability Studies Minor Students	count of students	297	309	295	337	FY	
Sustainability Teaching Fellows Participation	count of faculty	185	185	210	210	FY	
Sustainability Outreach Team Impact	students reached	1,122	1,350	2,799	2,856	FY	
Green Housing Programs Participation	count of students	n/a	518	1,561	2,448	FY	
LOCAL AND GLOBAL IMPACT							
Office Paper Purchasing	reams	92,982	95,662	84,617	78,851	FY	
Green Cleaning Product Purchasing	percent of budget	77%	75%	77%	79%	FY	
Sustainable Food in Dining Halls	percent of budget	19%	26%	27%	28%	FY	
Partnership for Action Learning in Sustainability (PALS)	count of projects	21	55	16	38	CY	
Sustainable Maryland Certified Municipalities	count	30	36	39	35	FY	
SMART GROWTH							
Shuttle-UM Ridership	millon rides	3,494,518	3,414,672	3,349,256	3,287,431	FY	
Bike Parking Spaces on Campus	count	4,634	4,680	4,652	5,684	FY	
Bikeshare Members	count	433	1,914	3,336	4,511	FY	
On Campus Beds for Students	count	13,412	13,623	13,619	13,757	FY	
Local Off Campus Beds for Students	count	5,568	7,068	6,969	7,312	FY	
UMD-affiliated Apartments for Graduate Students	count	476	476	476	476	FY	
Undergraduate Students Living on and Near Campus	percent of students	49%	48%	46%	45%	FY	
Participating Green Offices (Certifications increasing)	count	148	120	127	140	FY	
SUSTAINABLE WATER USE							
Campus-wide Water Consumption	kgal	519,473	548,688	573,415	556,176	CY	
Water Consumption per capita	kgal/FTE person	11.8	12.1	12.3	11.7	CY	
Stormwater Management Facilities	count	110	113	115	123	FY	
WASTE MINIMIZATION							
Institutional Diversion Rate	percent of solid waste	83%	84%	81%	79%	CY	
Individual Recycling Rate	percent of solid waste	47%	51%	53%	50%	CY	
Solid Waste Landfilled	tons	4,174	5,267	7,131	3,705	CY	
Solid Waste Generation *	tons	14,958	10,530	9,933	8,142	CY	
Composted Food, Paper, & Disposable Products	tons	452	755	948	1,134	CY	
Disposable Water Bottle Savings from Filling Stations	count of bottles	1,194,044	1,704,989	1,477,118	n/a	FY	
* Not including construction & demolition waste that was recycled or sod and soil that was composted							

This Year's Highlights

Leading in Key Factors of Sustainability in Higher Education

UMD earned a **Gold rating** from the Association for the Advancement of Sustainability in Higher Education and is one of only **26 schools** that made the *Princeton Review's* **2020 Green College Honor Roll**. Faculty and students across all colleges and schools are engaged in research related to the **17 Sustainable Development Goals** adopted by the United Nations. Terps are rated as national leaders in research, public engagement on sustainability, mitigation of greenhouse gas emissions, recycling and composting.

Carbon Neutral Undergraduate Commuting

Photo courtesy of DOTS

The **UMD Student Government Association Legislature** unanimously voted to begin using funds annually from the University Sustainability Fee to neutralize carbon emissions from undergraduate student commuting. The university purchased carbon credits to offset **100% of estimated emissions** from undergraduate commuting in 2018 and will continue to do so annually.

Energy-Efficiency in the Age of Information

Information storage and organization are critical to facilitate innovative research and education. The **Department of Engineering & Energy in Facilities Management** partners with academic facility managers to reduce the energy and carbon intensity of information by financing and implementing key energy efficiency projects. This year, UMD's campus data center in **AV Williams and McKeldin Library achieved 40% and 52% reductions** in annual electricity use.

Making Dining Choices to Protect the Planet

Eating with the planet in mind is part of UMD's culture. In 2019, **Dining Services** launched several new initiatives to reduce plastic waste and slash food-related greenhouse gas emissions. UMD was the first university in the world to join the **Cool Food Pledge** which aims to bolster low carbon intensive food purchasing and eating habits. Dining Services also won an award of **$150,000** from the University Sustainability Fund to create an **Ocean Friendly Campus** by replacing single-use disposable plastic items with better alternatives.

Students' Personal Actions on Sustainability

In the Fall of 2018, **83% of new first-year students** agreed or strongly agreed that it is important to reduce environmental impacts and reported that they try to reduce their own footprints. In the 2018-2019 academic year **2,448 students** registered to participate in the **Green Terp and Green Chapter** programs, committing to take personal action on sustainability. **1,075 students** became certified as Green Terps by completing **18,466 environmental lifestyle actions** like regularly using natural daylight instead of electric lights during the day and carrying and using reusable water bottles.

Embodying Biodiversity through the Campus Arboretum

The University of Maryland campus reached the highest level of accreditation for an arboretum and is now publicly recognized among the ranks of **28 world-renowned institutions** that focus on trees. The UMD arboretum staff's collaboration to emphasize science, maintenance of diverse collections of tree species, and advocacy in the **Global Trees Campaign** earned UMD this honor from the ArbNet Arboretum Accreditation Program.

Photo courtesy of Sam Bahr

PROGRESS REPORT: RESEARCH HIGHLIGHTS 2019

Climate Change Related Research (Separate Highlights Sheet to be rolled out later this year as a new aspect of our Progress webpage)

UMD Faculty and students from every school and college are engaged in world-class research to support climate action. Here are few key examples from 2019:

- Faculty and students from the College of Agriculture and Natural Resources and the School of Public Health are working together to build people's resilience to flooding across the state—from urban greenspaces to rural farming areas.
- UMD's Howard Center for Investigative Journalism collaborated with NPR and other local news organizations to measure detailed climatic data in Baltimore's neighborhoods, document and report on life on the streets and inside residents' homes during the long, hot summer or 2019.
- Through the Joint Global Carbon Cycle Center, a team of geographical sciences faculty are working closely with NASA on a two-year mission of the Global Ecosystem Dynamics Investigation (GEDI) to better understand how the earth's ecosystems are managing carbon as the climate changes as well as impacts to global habitats and biodiversity.
- Faculty from the Department of Art collaborate with NOAA to design and deploy buoy enclosures housing environmental sensors that measure changes in Arctic Sea Ice and visualize the resulting data for the general public.
- Researchers in the Program for Society and the Environment are working to better understand climate politics and characterize the growth of grassroots climate activism in the USA.
- Center for Global Sustainability researchers are presenting their work with America's Pledge at UN climate-related meetings to accelerate cumulative US State, local, private and civil society commitments to reduce carbon emissions.
- Faculty and students of the Maryland Energy Innovation Institute continue to generate new technologies to transform modern infrastructure and develop solutions to global and local energy problem
- Faculty at the Center for Sustainability in the Built Environment (City@UMD) and their colleagues in Facilities Management's Energy and Engineering group developed a data analytics platform to track energy and water consumption—and estimate associated carbon emissions—for buildings on UMD's main campus and at the Institute for Bioscience and Biotechnology Research

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University Sustainability Fund

Annual Report for FY2019

Fiscal year 2019 (July 2018–June 2019) was the ninth year of the University Sustainability Fund, which is administered by the Office of Sustainability with oversight and funding authority by the University Sustainability Council. All revenue comes from undergraduate students in the form of a Student Sustainability Fee, which was $12 per fulltime student per year in FY19 and has been fixed at that rate since FY14. A student-majority Sustainability Fund Review Committee reviews proposals and recommends grant awards to the Sustainability Council. University of Maryland students, faculty, and staff can submit proposals by October 15 (priority deadline) or January 15 (final deadline).

The Student Government Association's Sustainability Committee administered the Sustainability Mini-Grant program for its fifth year in FY19. The Mini-Grant program is funded by the Sustainability Fund and offers smaller grants (up to $2,000 per grant) on a shorter timeline than the Sustainability Fund can offer. A summary of Mini-Grant activities is included at the end of this report.

Sustainability Fund Activities in FY19

Funds available:	$480,037
Proposals received:	37
Funds requested:	$1,285,455
Grants awarded:	17
Funds awarded:	$450,633
Average award:	$26,508

Sustainability Fund Activities since Year 1 (FY11-FY19)

Proposals received:	303
Funds requested:	$9,149,127
Grants awarded:	137
Funds awarded:	$2,593,872
Average award:	$18,933

Sustainability Fund Grant Awardees in FY19

Ocean Friendly Campus: UMD Plastic Waste Reduction, Phase 2

RECIPIENT: Dining Services

GRANT: $150,000

Dining Services will replace 1.3 million plastic bags, utensils, and straws in Dining Services cafes with compostable or recyclable alternatives while aiming to reduce purchasing of single-use items by 25% to 75%. This grant helps cover some costs of that transition and provides a reusable bag for each student who lives on campus.

Algal Terp Scrubber

RECIPIENT: Environmental Science and Technology

GRANT: $61,570 *(Contingent on project approval)*

The Algal "Terp" Scrubber is an algae-based water filtration device designed by undergraduate students that aims to enhance sustainable stormwater management practices on campus. This Sustainability Fund grant is contingent on the project receiving approval by the Facilities Council.

Eliminating the Climate Impact of Undergraduate Student Commuting Emissions

RECIPIENT: Student Government Association

GRANT: $50,000

Undergraduate student commuting produces roughly 12,000 metric tons of carbon dioxide equivalent (MTCO2e) each year. A new Carbon Neutral Undergraduate Commuters program will use a portion of the Sustainability Fund money each year to purchase carbon offsets to neutralize 100% of greenhouse gas emissions associated with undergraduate student commuting. These funds could spawn new environmental projects in or around Maryland, creating opportunities for students to learn about carbon mitigation technologies and possibly creating jobs for students who graduate with the skills to develop these sort of projects. Offsetting undergraduate student commuting emissions also assists UMD in achieving its carbon neutrality goal.

A Smart, Connected, and Sustainable Campus Community

RECIPIENT: National Center for Smart Growth

GRANT: $42,710

Faculty from the National Center for Smart Growth will install sensors to monitor stormwater characteristics on campus and provide critical data to help improve stormwater management practices. The project will provide real-time data that can inform both short term responses and longer-term adaptations to stormwater surface runoff.

Net Zero Energy Retrofit Initiative

RECIPIENT: School of Architecture, Planning and Preservation

GRANT: $29,000

Net zero energy (NZE) buildings – those that produce as much energy as they use over the course of a year - stand to transform how energy is generated, used and conserved in the built environment. The Net Zero Energy Retrofit Initiative is a research, design and implementation program that will provide a holistic and comprehensive framework for optimal net zero energy retrofits on existing UMD buildings. The team will partner with Facilities Management and provide two full building case-studies over two years to produce a set of practical renovation strategies to achieve net zero energy.

Weather Technology HVAC Strategy for Stamp

RECIPIENT: Stamp Student Union

GRANT: $25,000

Stamp Facilities, UMD Energy and Engineering, and UMD researchers are partnering in a continued effort to meet sustainability goals and improve building efficiency. This project will implement a novel technology to adjust HVAC scheduling based on weather forecasting to reduce energy consumption in the Stamp Student Union.

Pro Moss Treatment of ERC Cooling Tower, Cold Water & Hot Water Loops

RECIPIENT: Recreation & Wellness

GRANT: $24,000

This project will install sphagnum moss in the Eppley Recreation Center cooling towers, combined with an additional implementation into the buildings cold and hot water loops. The proposers anticipate removal of dispersants, removal of anti-corrosion additives, an increase in blowdown settings to save water, less cleaning/service of scale in cooling tower, and reduced levels of scale and corrosion in chillers and throughout the pipes within cold and hot water loops.

Terps vs. Pros Sustainable Food Challenge

RECIPIENT: Nutrition and Food Science

GRANT: $20,000

This project will produce a student-created educational web series and cooking competition aimed to help UMD students to develop sustainable behaviors and skills to decrease food waste, promote better use of campus resources, and increase food security.

Lewisdale Elementary School Flooding Prevention and Courtyard Restoration

RECIPIENT: Maryland Sustainability Engineering

GRANT: $13,500 *(Contingent on project approval)*

Maryland Sustainability Engineering (MDSE) Local Project Team is proposing to solve two problems at Lewisdale Elementary School in Prince George's County: (1) address flooding in the Lewisdale facility by implementing a storm-water management device and (2) restore an existing courtyard at Lewisdale into an outdoor classroom space that can be used to educate Lewisdale students about sustainability and environmental science. This Sustainability Fund grant is contingent on the project receiving approval by Prince George's County Public Schools.

Maryland Food Collective Dishwasher

RECIPIENT: Maryland Food Collective

GRANT: $6,206 *(Grant cancelled because the Maryland Food Collective ended its lease)*

This project would purchase an energy-efficient commercial dishwasher for the Maryland Food Collective's kitchen. The addition of a dishwasher would provide a sustainable alternative to the hand-washing method used in the kitchen, which uses excessive amounts of water, electricity and labor. This grant was awarded but not transferred to the recipient because the Maryland Food Collective ended its lease in Stamp Student Union in May 2019.

Hydraze

RECIPIENT: Mechanical Engineering

GRANT: $5,000

Hydraze (formerly FlushX) is a sustainability driven social venture that aims to save buildings, universities, and cities millions of gallons of water every year by eliminating unnecessary "phantom flushes" from automatic toilet sensors, thus reducing water waste and improving facility maintenance.

Creating a UMD Sustainability Video

RECIPIENT: Office of Sustainability and Strategic Communications

GRANT: $5,000

The Office of Sustainability and Strategic Communications will create a campus sustainability video that will further tell the story of our sustainability successes as a university. The video will highlight efforts in all areas of campus life: education, research, operations, community, and culture.

South Hill Exterior Water Bottle Fill Station

RECIPIENT: Residential Facilities

GRANT: $5,000

This project will add an outdoor water bottle fill station to the Washington Quad, to provide an easily accessible space for students to refill a water bottle as students come and go from their residence hall, and allow anyone using the Quad area for study, volleyball, grilling, etc. to refill their water bottles.

Gemstone Team NO SALT

RECIPIENT: Gemstone Team NO SALT

GRANT: $3,722

Current methods of desalination used in commercial seawater desalination plants are energy intensive and therefore, expensive. Gemstone Team NOSALT is a team of eight undergraduate students researching biological alternatives to traditional desalination in order to decrease energy requirements and thereby reduce cost.

Bicycle Recycle Program

RECIPIENT: Transportation Services

GRANT: $3,500

This project will refurbish and redistribute abandoned bikes on campus to UMD students to foster a culture of donation and to reduce the environmental waste associated with abandoned property. Refurbished bikes would be sold at the Transportation Fair.

Banners to Bags

RECIPIENT: Strategic Communications

GRANT: $3,000

The project involves repurposing retired campus light pole banners to create promotional grocery tote bags. The bags can be used for any type of University outreach purposes and promote a culture of bringing your own reusable bag in order to decrease plastic bag consumption.

Using Macro Algae to Remove Heavy Metals from Water

RECIPIENT: Gemstone Team CYCLE

GRANT: $855

This project will support 4-year research project research to improve water quality through the removal of excess nutrients and heavy metals from aquatic effluents with the use of macroalgae harvested from on-campus sources.

Sustainability Mini-Grant Awardees in FY19

Funds available:	$20,000
Grants awarded:	26
Funds awarded:	$19,999.15 (awarded); $15,257.26 (transferred)
Carry-forward to FY20:	$0.85 (based on awards); $4,742.74 (based on transfers)

Animal Sciences Courtyard Green Wall *(Project site moved to LEAFhouse in summer 2019)*

RECIPIENT: UMD American Ecological Engineering Society (AEES)

GRANT: $2,000

Funding was requested to construct and maintain a "green wall" in the UMD Animal Sciences Courtyard. This green wall would be covered in native plants to provide a habitat for native insects, powered using solar panels, and utilize hydroponic systems. An educational mural would be located near the wall depicting the internal systems of the wall and its ecological benefits. This project was funded in full.

The UMD Kite Energy Project

RECIPIENT: UMD Kite Energy Club

GRANT: $2,000 *(Project leader did not provide a KFS #)*

This project aims to develop a prototype Airborne Wind Energy System (AWES), which uses autonomous high-altitude kites to harvest energy from the wind. Funding for the supplies required for research was provided in full.

Beekeeping Club Expansion

RECIPIENT: UMD Beekeeping Club

GRANT: $1,860

The Beekeeping Club at UMD maintains over half a dozen hives on campus and provides a way for students to learn more about the process of beekeeping. Funding was requested to purchase a new storage shed at the location of the hives and extra beekeeping suits to accommodate a surge of new members. Funding was provided in full.

Hydroponic Facility Redevelopment

RECIPIENT: GreenRoots

GRANT: $1,689

This project will be used to add new hydroponic systems to increase the yield per square foot in the existing hydroponic grow room on campus. The items funded will be used to create systems for growing produce and then equipment for distributing it to the campus community. This project was funded in full.

Low Heat Lab Takoma Park

RECIPIENT: School of Architecture, Planning & Preservation

GRANT: $1,299.40

Funding was requested to give 15 UMD students the opportunity to explore how using agricultural byproducts such as corn husks or invasive bamboo could be used to make woven mats. Such mats could be used as a mulch to keep the seeds of invasive plants from sprouting. Students would work with the Takoma Park Office of Planning to install a mat like this and monitor its effectiveness over a semester. Partial funding was provided.

Reusable Glassware for the Kombucha Kegorator at the Maryland Co-op

RECIPIENT: Maryland Food Cooperative

GRANT: $1,200 *(Grant cancelled because the Maryland Food Collective ended its lease)*

This project aimed to provide reusable glasses for use at the Maryland Food Co-op instead of single use non-recyclable cups. Funding would be used to purchase glasses and tank deposits. This project was partially funded.

"The Sustenance of Sustainability"

RECIPIENT: School of Architecture, Planning & Preservation

GRANT: $1,100

Funding was requested to repurpose UMD's Kibel Gallery into a space that could be utilized for discussing and learning more about sustainability. This project was partially funded and the Sustainability gallery was implemented throughout the Spring semester.

IMIS (Intelligent Mobile Irrigation System)

RECIPIENT: FIRE Research Program

GRANT: $971

This research project aims to design a system that can alleviate water scarcity by applying water as needed to each plant's unique needs. The funding request was to provide the ability to design a small scale IMIS to evaluate its capabilities. This project was funded in full.

Graywater Filtration for Use in Household Environment

RECIPIENT: Gemstone Team PURIFY

GRANT: $960

This research project aims to develop a sustainable method for purifying greywater. This project was funded in full.

The Living Studio

RECIPIENT: Living Artists Cooperative

GRANT: $950

Funding was requested to help create The Living Studio: a retail space, a gallery, an art lounge, and a venue for workshops, small shops, community forums, and other events, run by students and community members who are passionate about holding space for the arts and sharing this work. This project was funded in full to provide funding for sustainable lighting for the location. The Living Studio is now on display on Baltimore Avenue near College Park City Hall.

Greenfest 2019

RECIPIENT: Resident Life

GRANT: $800

GreenFest 2019 is an annual sustainability festival that is open to all University of Maryland students. Sustainability-oriented student and community organizations host information booths about their mission and initiatives. In addition, there is live music, local and organic food from Green Dining, upcycling crafts, plant giveaways, and therapy dogs. Funding was provided in full to create reusable bags that could be distributed as promotional material leading up to and during the festival.

Sustainable Ocean Alliance Clean-up Project

RECIPIENT: Sustainable Ocean Alliance at UMD

GRANT: $725

The Sustainable Ocean Alliance organizes stream clean-ups around the College Park area semesterly. They requested funding to help this process by providing clean up bags, gloves, and coral reef-safe sunscreen. Funding was provided in full.

Demeter's Abacus

RECIPIENT: Individual Student Project

GRANT: $625

This project aims to develop a quick way to measure the algae-growing capacity of a water sample to streamline the process of choosing a location to utilize algal turf scrubbers. These scrubbers mitigate stormwater nutrient runoff while performing carbon capture and creating a commercially available fertilizer. This project was fully funded.

Lower Campus Creek Stream Bank Restoration

RECIPIENT: Environmental Science and Technology

GRANT: $600

The goal of this project is to provide erosion control and bank stability on a small scale along Campus Creek between Regents Drive and Paint Branch Drive by way of removal of invasive species, planting of native plants, and placement of barriers made of hay and bio-friendly mats along undercut banks. This project was funded in full.

Tiny Books Initiative

RECIPIENT: ROOTS Africa

GRANT: $507.40 *(Project leader did not provide a KFS #)*

The Tiny Book Project is an innovative method of creating scaled-down textbooks that allow for the mass production and distribution of knowledge concerning sustainable agriculture. ROOTS Africa will host a "book drive" in which the participants would help create these tiny books to be sent to Liberia. This project was funded in full.

Campus Pantry Reusable Bags

RECIPIENT: UMD Campus Pantry

GRANT: $500

The Campus Pantry is an on-campus option for students without consistent food security. This project was implemented by the pantry to transition from using plastic bags to reusable bags. In an update, we have learned that all of the bags were purchased and implemented into the Pantry.

Community Learning Garden Self-Guided Tour

RECIPIENT: Community Learning Garden

GRANT: $468.94

The Community Learning Garden hosts over 1,000 students for hands-on learning every year during weekly volunteer hours, for class tours and projects, as a research site, and more. The self-guided tour project requested funds to implement the ability for students passing by the garden at any time of day to learn more about how it is operated and how they can become involved. In an update we have learned that the tour has been fully implemented as of Maryland Day 2019.

Climate Justice in the Bay

RECIPIENT: 17 for Peace and Justice

GRANT: $378.88 *(Project leader rejected grant because project wasn't funded in full)*

This project aims to train three Climate Justice Riverkeepers to conduct water quality sampling research along the Anacostia River. Partial funding was provided to cover the cost of supplies and transportation.

Pen & Marker Recycling

RECIPIENT: UMD Library Sustainability Committee

GRANT: $288

Pens, pencils, and markers are not recyclable through the campus' single stream recycling. As a result, funding was requested to place "zero waste boxes" in each library on the UMD campus to allow collection of these commonly used items for recycling. Partial funding was provided.

Home Scale Algal Turf Scrubber

RECIPIENT: UMD American Ecological Engineering Society (AEES)

GRANT: $260

Funding was requested to develop an algal turf scrubber that could be utilized at a home-scale for many of the benefits discussed in the project above. This project was fully funded.

Grow the Maryland Food Collective

RECIPIENT: Maryland Food Collective

GRANT: $250 *(Grant cancelled because the Maryland Food Collective ended its lease)*

Funding was requested to provide grow lights and other utilities to allow the Maryland Food Collective to decorate the interior with houseplants. A plan for transferring the grow lights and other utilities to somewhere they could be utilized if the Maryland Food Collective stopped operating at the end of the semester (which did eventually occur) was also implemented. This project was fully funded.

LEAFHouse Planter Rejuvenation

RECIPIENT: Individual Student Project

GRANT: $196.61 *(Project leader did not provide a KFS #)*

Funding was requested to rejuvenate planters at the LEAFHouse by providing planter boxes. The goal was to implement examples of urban agriculture. This project was funded in full.

Sustainability Cooperative Interactive Website

RECIPIENT: UMD Sustainability Cooperative (SCoop)

GRANT: $105.92

The Sustainability Cooperative is a joint coalition of all of the sustainability-minded organizations on campus. Funding was requested to help set up the new website for this cooperative. Partial funding was provided to cover the costs of domain registration.

Buy a Kid a Birdhouse

RECIPIENT: Individual Student Project

GRANT: $64 *(Project leader did not provide a KFS #)*

Funding was provided to purchase birdhouses that local elementary school students would be able to paint with non-toxic paints. Once painted, the birdhouses would be hung in Paint Branch Park or other local areas that would be helpful for native birds. Partial funding was provided.

Earth Month with Fossil Free UMD

RECIPIENT: MaryPIRG

GRANT: $55

During earth month, the Fossil Free UMD campaign aimed to collect student support for the university to adopt clean energy by collecting sticky notes and petitions from students, and holding interactive tables during earthwork to demonstrate sustainable habits and to teach students about sustainability and environmental justice. They also aimed to record events and interview students in order to take a comprehensive look at the work being completed, and leave behind a blueprint for future students. Funding was provided in full.

TO: Wallace D. Loh, University of Maryland President; Carlo Colella, Vice President of Administration and Finance; Mary Ann Rankin, Senior Vice President and Provost; John Zacker, Vice President of Student Affairs (Acting); Robert Caret, Chancellor, University System of Maryland; Scott Lupin, Director, Office of Sustainability
FROM: Students, Faculty and Staff at the University of Maryland, College Park
DATE: September 23, 2019
RE: Climate Action at the University of Maryland (UMD)

As President Loh once said in a speech, "we are the first generation to feel the full effects of climate change and the last generation that can do anything about it." Climate scientists here at UMD and around the world have warned that we must all take immediate action to dramatically reduce greenhouse gas emissions, otherwise the future of civilization itself is at risk. On the 20th of September, 2019, over 200 University of Maryland students marched from campus to the Global Climate Strike in Washington, DC to press for that action.

The University of Maryland must finally do what it should have done decades ago, and accelerate its action to combat climate change. We must:

1. **Teach all students how to not destroy our life support systems**. Human activity is causing a mass extinction of life on our planet. We have lost 83 percent of all wild animals and 50 percent of all plants globally. As Professor David Orr once said, "As we destroy nature, we will be destroyed in the process. There's no escaping that conclusion."

Avoiding planetary collapse, a mission more gently coined "sustainability," must be pervasive throughout education. The immense scale of the climate crisis demands that all young people be adequately informed about climate change and complex environmental systems. Most students outside of environmental majors or minors never learn the basic ecology, environmental systems, sustainable technologies or policy designs needed to ensure sustained climate action. An understanding of how to rapidly shift from unsustainable to sustainable systems must be part of every student's education. UMD must join the scores of other universities that have made sustainability a general education requirement. To not do so is irresponsible and inexcusable.

UMD must commit to a sustainability education requirement for all incoming students. As a leading higher education institution, the University should incorporate environmental sustainability into its general education requirements starting in 2020, and as such, should invest in additional sustainability courses, faculty, and campus programming.

2. **End our direct use of fossil fuels**. Our campus power plant uses half of the natural gas consumed by the entire Maryland government, including all 12 USM institutions and 31 state agencies/entities, making it a major source of greenhouse gas emissions. The life cycle emissions of natural gas from methane leaks, transport and refinement make it an unjustifiable energy

source for a leading research university. Instead of relying on carbon offsets, which do little to improve our campus performance, UMD should end its use of natural gas and construct a new thermal energy system that can be completely powered by renewable electricity/fuel. Additionally, UMD should commit to only purchasing zero emissions vehicles from this point forward, to reduce the thousands of gallons of gasoline and diesel fuel annually in its fleet vehicles.

3. **Divest from any direct and indirect holdings in the fossil fuel industry**. UMD, via the University System of Maryland Foundation, currently makes financial contributions to fossil fuel companies through its investment funds. UMD must divest from companies that extract, refine, or distribute fossil fuels including coal, petroleum and natural gas, and from mutual funds that invest in such companies. Hypocritically, we continue to profit from destructive natural gas extraction and indirectly off of coal and oil use, all of which threaten the way of life of University community members and pose an indefensible risk to our natural environment. Our investments should support the companies that are making our world more livable, not the companies that threaten our survival.

As a campus that strives for technology innovation and that claims a commitment to environmental sustainability, UMD must implement these actions as soon as possible.

Please consider our requests and send your response to the presidents of the Student Government Association and the Graduate Student Government Association for publication to the student body.

With our greatest sincerity,

The first generation to feel the full effects of climate change--and the last generation that can do anything about it.