

Council Members Present:

Carlo Colella, Vice President for Administration and Finance (Chair)
Linda Clement, Vice President for Student Affairs
David Cronrath, Associate Provost for Planning and Special Projects
Maureen Kotlas, Executive Director, Department of Environmental Safety, Sustainability & Risk
Scott Lupin, Assoc. Dir., Environmental Safety, Sustainability & Risk, and Director, Office of Sustainability
MaryAnn Ibeziako, Director, Engineering and Energy, Facilities Management
Eric Wachsmann, Professor, Materials Science and Engineering and Director, Energy Research Center
Bryan Quinn, Director of Technical Operation, Department of Electrical & Computer Engineering
Joe Sullivan, Professor, Plant Science and Landscape Architecture
Amelia Avis, Undergraduate Student, Government and Politics and Policy

Meeting start time: 9:30am

Meeting Highlights

Welcome and Review of November 12, 2018 Meeting Minutes

Carlo Colella welcomed the Council members and called the meeting to order. Meeting summary from November 12, 2018 approved.

Undergraduate Commuting Emissions

Scott Lupin provided an overview of the Sustainability Fund application and carbon offset purchase process for the Undergraduate Commuting Emissions proposal. The overview can be viewed as Appendix A.

Carbon Neutral Commuting and Fleet Workgroup

Scott Lupin provided an update about the need to create two new workgroups for Carbon Neutral Commuting and the university Fleet. An overview can be viewed as Appendix B.

NextGen Program and Current Energy Performance Contract

MaryAnn Ibeziako updated the Council about the NextGen program and the current energy performance contract. Information about the projects are available as Appendix C.

Open Forum Topics

Eric Wachsman shared that Engineering Sustainability Day will take place on Monday, April 22.

Amelia Avis shared that campus sustainability groups have formed SCOOP (sustainability co-op) as a forum for student groups to coordinate and plan events.

Adjourn 11:30am

University Sustainability Council

Establishing a Permanent Allocation from the University Sustainability Fund to Offset Greenhouse Gas Emissions from Undergraduate Student Commuting

Purpose

The purpose of this document is to establish guidelines for using revenue from the University Sustainability Fund, wholly supported through a mandatory fee paid by full-time undergraduate students, to purchase verified carbon offsets in order to achieve carbon neutrality for undergraduate student commuting in every year beginning with 2019.

Background

On October 15, 2018, leaders of the University of Maryland (UMD) Student Government Association (SGA) submitted a University Sustainability Fund proposal called *Eliminating the Climate Impact of Undergraduate Student Commuting*, which requests to use a portion of the University Sustainability Fund to offset greenhouse gas emissions associated with undergraduate students commuting to and from the UMD campus in personal vehicles.

On October 31, 2018, the SGA Legislature unanimously approved *An Act Supporting the 2018 University Sustainability Fund Proposal "Eliminating the Climate Impact of Undergraduate Student Commuting"* (SGA legislative document F 18-10-17 D). The Act requests that "the Office of Sustainability present a yearly report to the [SGA] Sustainability Committee on the carbon impact and cost of the program, and requests that the project is placed forward for formal review by the [SGA] Sustainability Committee every three academic years."

On November 2, 2018, the University Sustainability Council's Sustainability Fund Review Committee voted in favor of forwarding the proposal to the University Sustainability Council with the following recommendations:

1. Issue a University Sustainability Fund grant of \$50,000 in the current fiscal year to offset undergraduate student commuting emissions for calendar year 2018.
2. Reserve approximately \$50,000 each year from the University Sustainability Fund to maintain the program annually. The Sustainability Fund Review Committee should review the program and projected costs annually to determine the need for more or less funding and to form any recommendation to modify the established program cap.

On November 12, 2018, the University Sustainability Council voted in favor of issuing a University Sustainability Fund grant of \$50,000 to offset undergraduate student commuting emissions for calendar year 2018. The Council requested further details regarding a permanent, annual allocation from the University Sustainability Fund including mechanisms for reporting, monitoring, and assigning allocations from the University Sustainability Fund.

Schedule

The Office of Sustainability (OS), with oversight by the University Sustainability Council and UMD's Vice President for Administration & Finance, has established a schedule for purchasing verified carbon offsets for other UMD initiatives (Carbon Neutral Air Travel and Carbon Neutral New Development). Offset purchases for Carbon Neutral Commuting, including this program, will align with existing purchasing activities and conform to the following schedule each year beginning in 2019:

- Sep. OS estimates the quantity and cost of carbon offsets to neutralize greenhouse gas emissions associated with undergraduate student commuting for the current calendar year.
- Oct. OS presents, to the Sustainability Fund Review Committee and the SGA Sustainability Committee, the estimated number of undergraduate commuter miles, number of carbon offsets, and cost of offsets to neutralize greenhouse gas emissions from undergraduate commuting. If the estimate is below the authorized program cap, OS is authorized to proceed with transferring the estimated funds from the University Sustainability Fund to the university's Greenhouse Gas Reduction Fund. If the estimated cost is expected to exceed the program cap, the Sustainability Fund Review Committee may recommend to the University Sustainability Council an amount to cover the 100% estimated cost of offsets; or elect to not to request additional funding for that year.
- Oct./Nov. OS presents a Carbon Offset Report to the University Sustainability Council. The report will include the type and number of verified carbon offsets purchased to neutralize emissions from the preceding year and the estimated number of carbon offsets required to negate all commuting emissions for the current calendar year. The report will break down the carbon offsets into undergraduate commuting; graduate commuting; and faculty staff commuting. The projected cost to purchase carbon offsets will also be provided. Any recommendation from the Sustainability Fund Review Committee to authorize additional funding to mitigate undergraduate commuting emissions for the current year will be presented. The University Sustainability Council may approve or disapprove additional University Sustainability Fund money to cover the anticipated budget shortfall for the current year.
- Jan. OS issues a Request for Proposals to purchase verified carbon offsets.
- Feb. Department of Transportation Services (DOTS) sends parking registration data to OS including make, model, and year of vehicle; home zip code; and faculty/staff/graduate student/undergraduate student designation for each parking registrant included in DOTS' parking registration system for the previous year.
- May OS purchases verified carbon offsets to neutralize up to 100% of the greenhouse gas emissions associated with undergraduate student commuting from the previous year based on DOTS' parking registration data and commuting miles.

Jul./Aug. OS works with offset providers to retire verified carbon offsets. Reductions in net greenhouse gas emissions will be reflected on UMD's official greenhouse gas inventory and sustainability reports.

Program Cap

Costs for this program will be contained with an annual cap on expenditures. The cap will be \$65,000 per year unless modified by the University Sustainability Council. OS is authorized to transfer funds from the University Sustainability Fund to the Greenhouse Gas Reduction Fund account to cover annual costs of this program up to the cap amount. The University Sustainability Council, with advice from the Sustainability Fund Review Committee, may elect to adjust the cap; authorize an annual expenditure above the cap; and/or terminate the program.

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Appendix B

University Sustainability Council

Carbon Neutral Commuting and Fleet Work Group

University Sustainability Council Work Groups

The University Strategic Plan established the goal for the University of Maryland to “become a national model for a Green University.” UMD is making significant progress toward that goal, but much work remains to integrate sustainability into the core of campus operations, teaching, and service. The University Sustainability Council exists to advise the President, the Office of Sustainability, and the campus community on strategies for achieving UMD’s sustainability objectives.

The University Sustainability Council annually reviews general progress on the University’s Climate Action Plan (CAP), trends in selected campus sustainability metrics, and UMD’s recent performance on the Sustainability Tracking, Assessment, and Rating System (STARS). This review and assessment process reveals priority areas where leadership and focused work is needed. The Council, currently chaired by Carlo Colella, Vice President for Administration and Finance, created the following campus-wide work groups to address Buildings and Energy Goals, plans, and strategies:

- Sustainable Water Use and Watershed Protection
- Education for Sustainability
- Carbon Offsets

Carbon Neutral Commuting and Fleet Background

UMD is making progress toward its goal of carbon neutrality. Between 2005 and 2017, UMD reduced its greenhouse gas emissions by 49%, almost meeting its 2020 goal (50% reduction) three years ahead of schedule. The university’s remaining greenhouse gas emissions essentially come from just three sources: on-campus heat and power generation, commuter vehicles, and the UMD fleet.

Building on UMD’s progress, the UMD Student Government Association (SGA) recently called on the university to accelerate climate action and requested specific changes including:

- 1) Asking to use revenue from the Student Sustainability Fee, a mandatory fee paid by fulltime undergraduate students, to purchase verified carbon offsets to neutralize 100% of undergraduate student commuting emissions. This request received unanimous support from the SGA Legislature and was approved by the University Sustainability Council. UMD will begin offsetting undergraduate commuting emissions for 2018.
- 2) Asking the University Sustainability Council to create a work group to recommend options for achieving carbon neutral faculty, staff, and graduate student commuting by 2025.

- 3) Asking the University Sustainability Council to create a work group to recommend options for achieving carbon neutrality for the UMD fleet by 2025.
- 4) Asking the University President and Sustainability Council to move UMD's carbon neutrality target from 2050 to 2025 to align with recommendations from the climate science community.

UMD is currently exploring options for reducing emissions from on-campus heat and power generation. As UMD works toward these solutions, it must also develop a carbon neutral solution for commuting and fleet in order to achieve its goal.

As of 2017, UMD's total commuter carbon footprint was 33,160 metric tons of carbon dioxide equivalent (MTCO₂e). The breakdown per commuter group is estimated to be:

- Faculty/Staff Commuters: 15,553 MTCO₂e
- Undergraduate Student Commuters: 11,570 MTCO₂e
- Graduate Student Commuters: 5,893 MTCO₂e

CAP 2.0 established several strategies for reducing commuting emissions. These include improving fuel efficiency of commuter vehicles (estimated 8,404 MTCO₂e reduction by 2025), increasing the use of carpools and vanpools (estimated 1,595 MTCO₂e reduction by 2025), and encouraging ridership on the Purple Line commuter light rail (estimated 425 MTCO₂e reduction by 2025). However, UMD has not yet identified strategies for achieving carbon neutrality for commuting (by 2025 or 2050).

As for the UMD fleet, specific strategies for reducing emissions have not been identified. CAP 2.0 sets a goal to reduce grounds and landscaping emissions incrementally and achieve carbon neutrality for landscape maintenance by 2050. However, UMD has not yet identified strategies for reducing emissions from its fleet of 1200+ vehicles and 200+ mowers, loaders, leaf blowers, and other fossil fuel powered equipment. As of 2017, UMD fleet emissions equaled 7,891 MTCO₂e.

Work Group Objectives

A Carbon Neutral Commuting and Fleet Work Group should develop recommendations for the University Sustainability Council that meet the following objectives:

Commuting Subgroup Objectives

Objective 1: Develop strategies for achieving carbon neutrality (net zero greenhouse gas emissions) for faculty, staff, undergraduate, and graduate student commuting.

Objective 2: Differentiate strategies and estimate costs for achieving carbon neutral commuting in 2020, 2025, and 2050.

Objective 3: Recommend funding sources for each cost.

Objective 4: Consider how to shift costs associated with carbon neutral commuting for undergraduate students from the University Sustainability Fund (Student Sustainability Fee) to another funding source.

Objective 5: Allow for carbon offsetting to be part of the strategy for achieving carbon neutral commuting.

Fleet Subgroup Objectives

Objective 1: Develop strategies for achieving carbon neutrality (net zero greenhouse gas emissions) for the UMD fleet.

Objective 2: Differentiate strategies and estimate costs for achieving carbon neutral fleet operations in 2020, 2025, and 2050.

Objective 3: Recommend funding sources for each cost.

Objective 4: Allow for carbon offsetting to be part of the strategy for achieving carbon neutral fleet operations.

Potential Work Group Members

Commuting Subgroup

David Allen, Executive Director, Department of Transportation Services

Anna McLaughlin, Assistant Director, Department of Transportation Services

Scott Lupin, Director, Office of Sustainability

Mark Stewart, Manager, Office of Sustainability

Sally DeLeon, Senior Project Manager, Office of Sustainability

Amelia Avis, Undergraduate Student Representative, University Sustainability Council

Tim Reedy, Graduate Student Representative, University Sustainability Council

TBD, Faculty Representative, University Sustainability Council

Fleet Subgroup

David Allen, Executive Director, Department of Transportation Services

Scott Lupin, Director, Office of Sustainability

Mark Stewart, Manager, Office of Sustainability

Sally DeLeon, Senior Project Manager, Office of Sustainability

Sue Nash, Interim Director, Business Services

Leigh Remz, Manager, Motor Transportation Services



NextGen Energy System Program 2.0 Overview and Discussion December 11, 2018



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Agenda



Project Team



Background and NextGen Goals



Process to Date



Next Steps

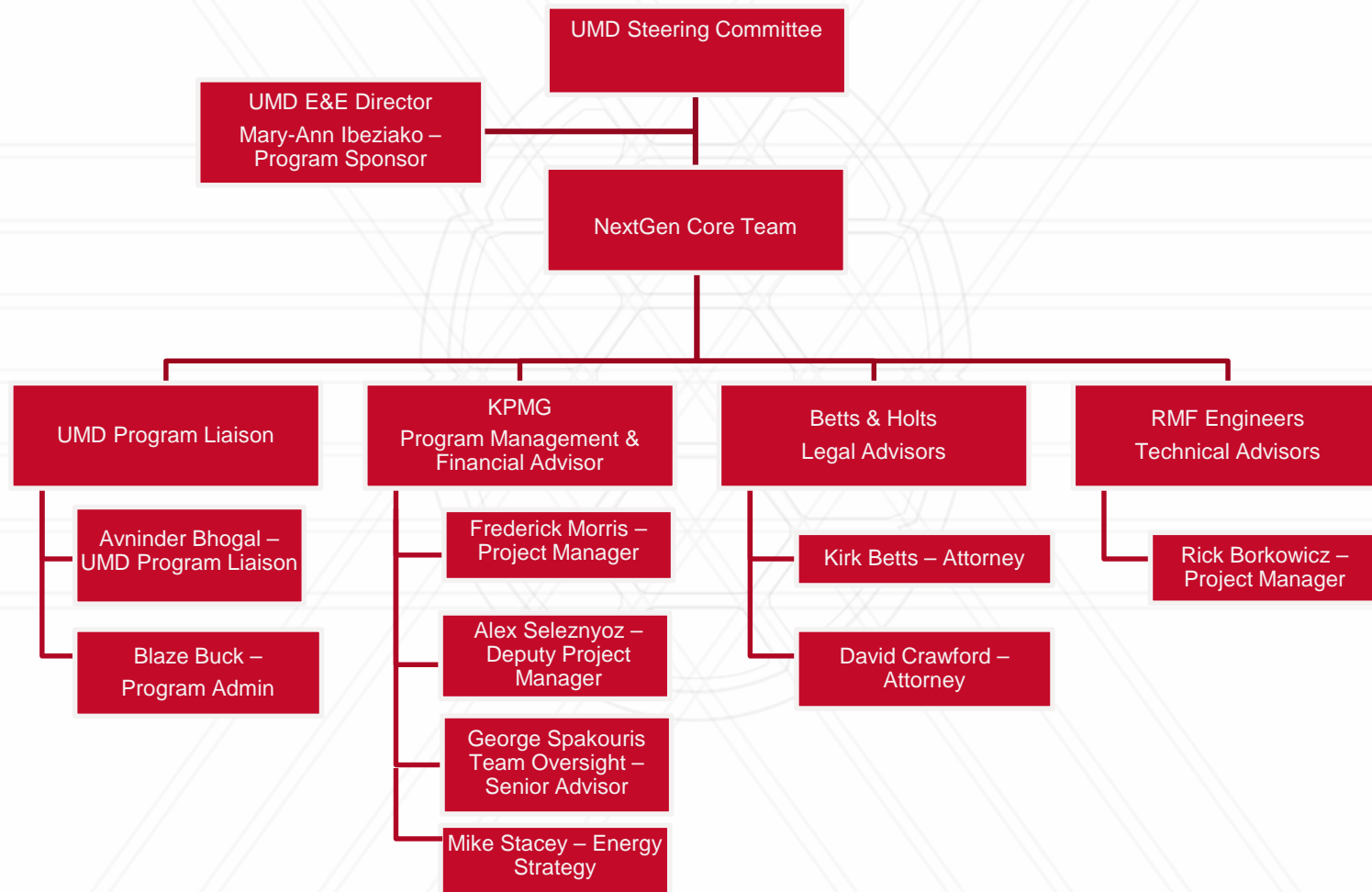
Program Team Overview



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Program Team Overview

Advisors in support of UMD for the NextGen project include KPMG (Financial and Program Management), Betts & Holt (Legal) and RMF Engineers (Technical)



Background and Goals



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NextGen Program Context

NextGen was established to ensure that the University provides reliable, efficient and affordable energy services over the next 30 years; while also serving as a platform to meet University-wide sustainability goals

Catalysts for NextGen

- Components of UMD's energy system are aging and approaching their useful life
- Deferred maintenance, particularly with the steam distribution system, has impacted the system's overall operating efficiency and associated costs
- The Central Energy Plant ("CEP") has had issues with the two combustion turbines, which require frequent servicing and have contributed to suboptimal plant efficiency
- The existing third-party operations and maintenance contract for the energy system will expire on August 31, 2019
- There has been an increased focus on sustainability within the university, leading to the establishment of targeted goals on carbon reduction and energy efficiency through 2050

NextGen encompasses a holistic strategy based on a careful evaluation of the operational profile of existing energy assets, mechanisms to improve day-to-day management and operations of these assets, and budget neutral funding options

NextGen Program Objectives

A variety of technology, operational and infrastructure investments comprise NextGen's project goals



Repower Cogen Plant

- Upgrade of plant controls & equipment and condensate return system

Renew Piping Systems

- The Steam Distribution network is a key source of efficiency loss to UMD's system, with 29% system loss compared to peer benchmarks of 10-15%

Engage a World-Class Plant Maintenance Operator

- Engage a world-class third party operating partner for operations and maintenance
- Optimize Satellite Central Utility Buildings (SCUB) and Chiller Plant Operations

Improve resiliency and implement renewable energy systems

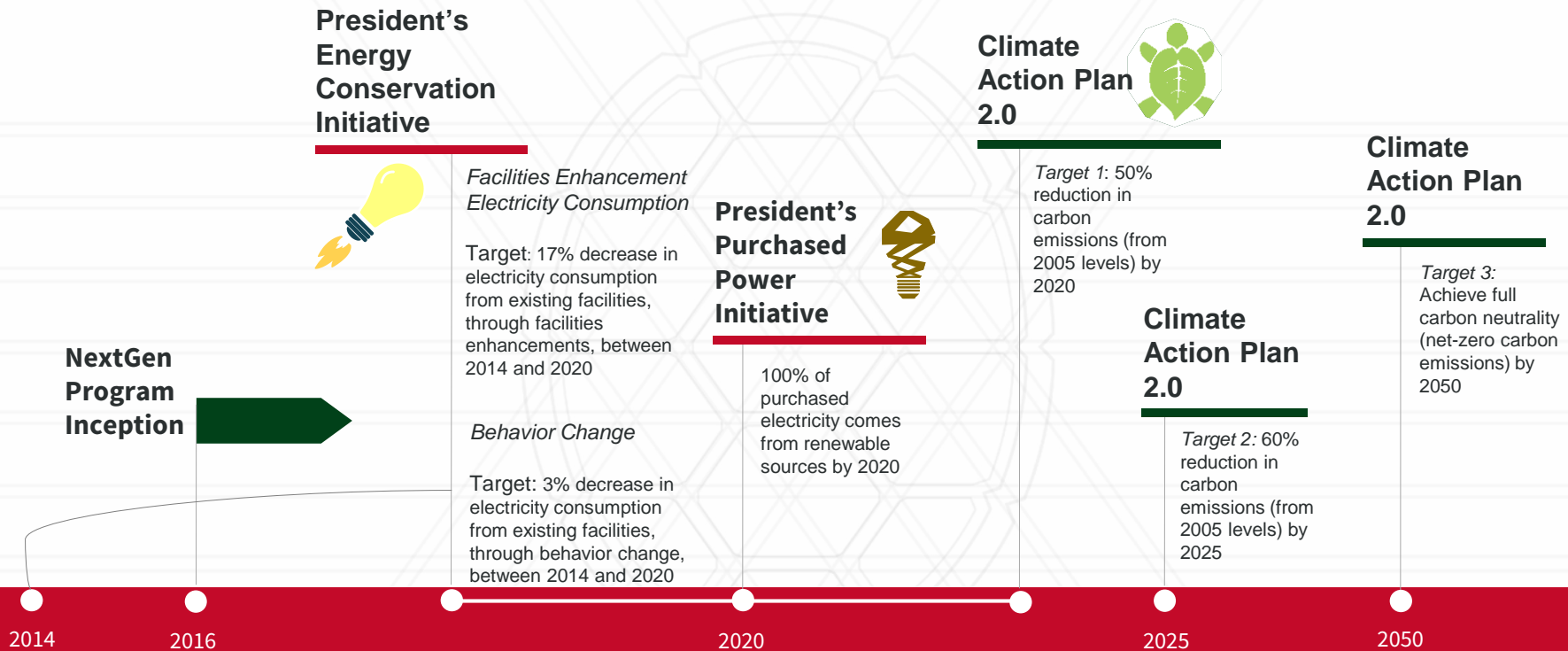
- Consider micro grid technology, hot water districts and renewable energy systems
- Strengthen energy performance data collection to improve operations and preventive maintenance

Ensure Budget Neutrality

- Pursue a commercial structures that maximize value for money

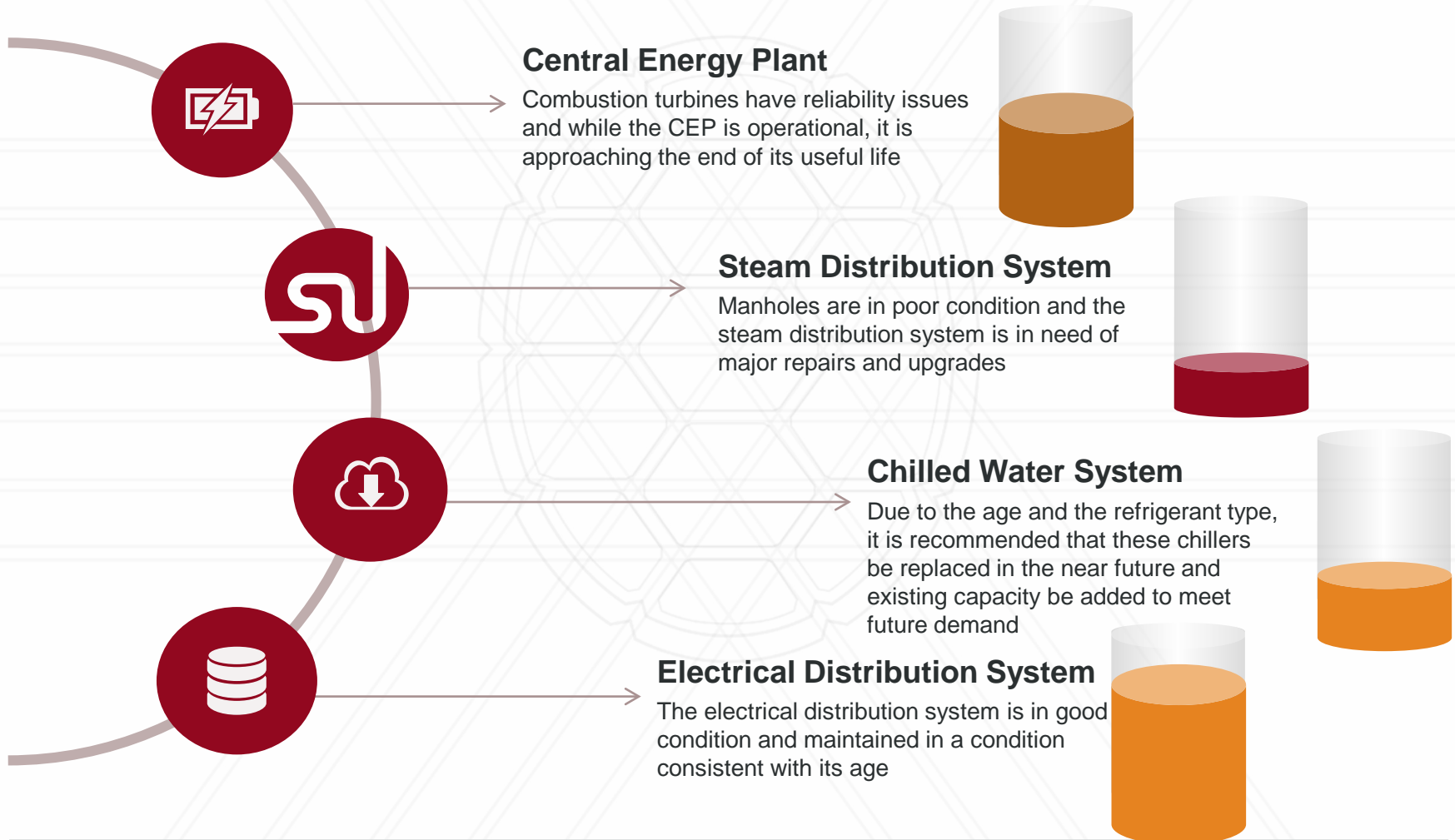
Strategic Goals & Sustainability Commitments

The NextGen Program also serves as a platform to realize President's Energy Initiatives (PEI) and Climate Action Plan 2.0 commitments



Driving Factors for NextGen

While UMD College Park's energy system is able to satisfy load requirements, signs of an aging system are beginning to surface, presenting a threat to reliability



Potential Areas of Efficiency

System efficiency losses are suboptimal, and if addressed, could result in significant cost savings

Focus Area	Potential Savings	Source
Repower Central Energy Plant	<ul style="list-style-type: none"> Improved equipment efficiency, and increases in electrical generation leading savings from reductions in power purchases from the grid 	<i>October 2018 Utility Condition Assessment Update*</i>
Renew Steam Distribution System	<ul style="list-style-type: none"> Savings from the reduction in make-up water purchases and treatment costs Fuel cost savings as a result of reducing system losses from 29% to a more the 10%-15% range seen at Peer* Universities 	<i>Interview with RMF on 9/4/18 and Page 1-3 - Utility Condition Assessment</i>

SAVINGS ESTIMATES TO BE EVALUATED BASED ON UPDATED TECHNICAL ASSESSMENT AND A REVIEW OF DETAILED BUDGET FORECASTS

*Peer University estimates were provided by RMF and include the University of Chicago, Emory University and UMass Amherst

Existing Energy System Agreement (ESA)

While the ESA was an innovative procurement strategy when implemented in 1999, lessons learned will be critical to the structuring of the NextGen project

Agreement	Expiration	Description
Ground & Equipment Lease Agreement (GEL)	June 2029	Ground & Equipment Lease between UMD & MEDCO provides for MEDCO to manage, operate & maintain the University owned utility system, equipment and property
Easement Agreement (EA)	June 2029	Easement Agreement between UMD & MEDCO provides access to MEDCO systems
Energy Services Agreement (ESA)	August 2019	ESA provides terms and conditions for the physical interconnection of the MEDCO Systems and the University Energy Systems; operation of MEDCO and University Energy Systems to convert University-provided fuel oil, natural gas, and water into electricity, steam, and chilled water and deliver them to the University; and to deliver Supplemental Electricity to the University
Management, Operations and Maintenance Agreement (MOMA)	August 2019	Management, Operations and Maintenance Agreement defines the rights and obligations of the Parties to manage, operate, and maintain the MEDCO Systems throughout the 20-year term

Interim Energy Bridging Program Overview (1 of 2)

While the details of NextGen are being formalized, an Interim Agreement with a duration of up to five years has been negotiated which generally shifts the majority of operating risks back to UMD

<ul style="list-style-type: none"> • Duration 	<ul style="list-style-type: none"> • Operations Starts 8/31/2019 • Initial term expires 6/30/2024
<ul style="list-style-type: none"> • Contract Type 	<ul style="list-style-type: none"> • Interim Energy System Services Agreement: Inter-Agency Agreement • Interim Management Operations & Maintenance Agreement
<ul style="list-style-type: none"> • Services Provided 	<ul style="list-style-type: none"> • IESSA: Retain Current Operator for MEDCO Systems • IMOMA: Management, operations and maintenance services of MEDCO Systems
<ul style="list-style-type: none"> • Allocation of Risk 	<ul style="list-style-type: none"> • Primarily borne by UMD

Interim Energy Bridging Program Overview (2 of 2)

The agreement includes a provision allowing for flexibility regarding termination, i.e. with 6 months notice

Agreement	Expiration	Description
Ground & Equipment Lease Agreement (GEL)	June 2029	GEL and EA between UMD and MEDCO to continue to June 2029
Easement Agreement (EA)	June 2029	
Interim Energy Systems Services Agreement (IESSA)	June 2024	Interim Energy Services Agreement provides terms and conditions for the continued operation of UMD's energy systems from August 2019 to June 2024
Interim Management, Operations and Maintenance Agreement (IMOMA)	June 2024	Management, Operations and Maintenance Agreement defines the rights and obligations of the Parties to manage, operate, and maintain the MEDCO Systems throughout the 5-year term

Process to Date

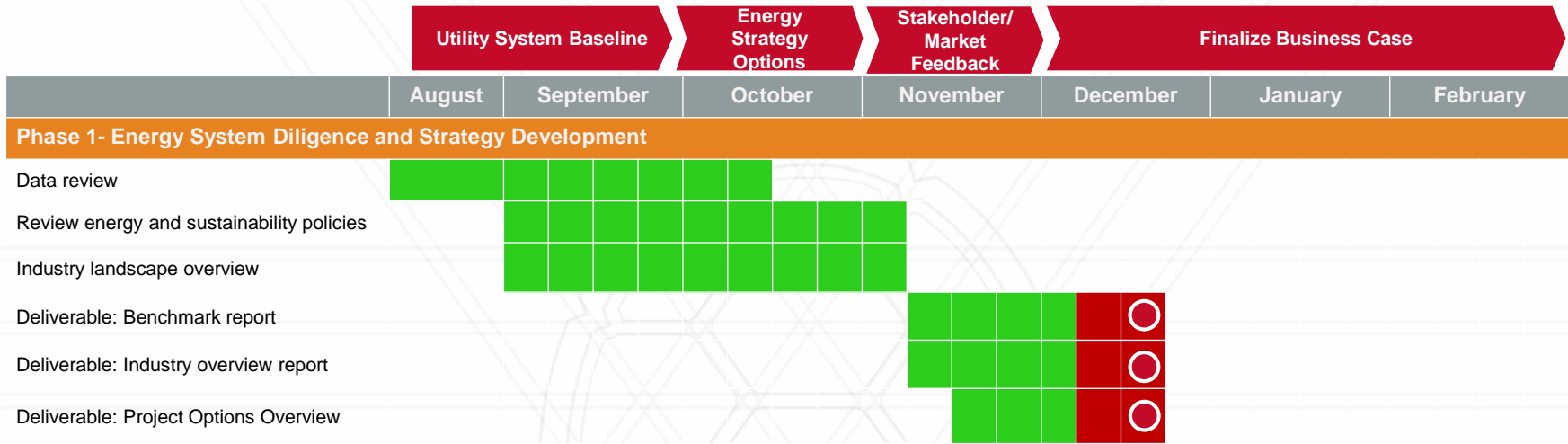


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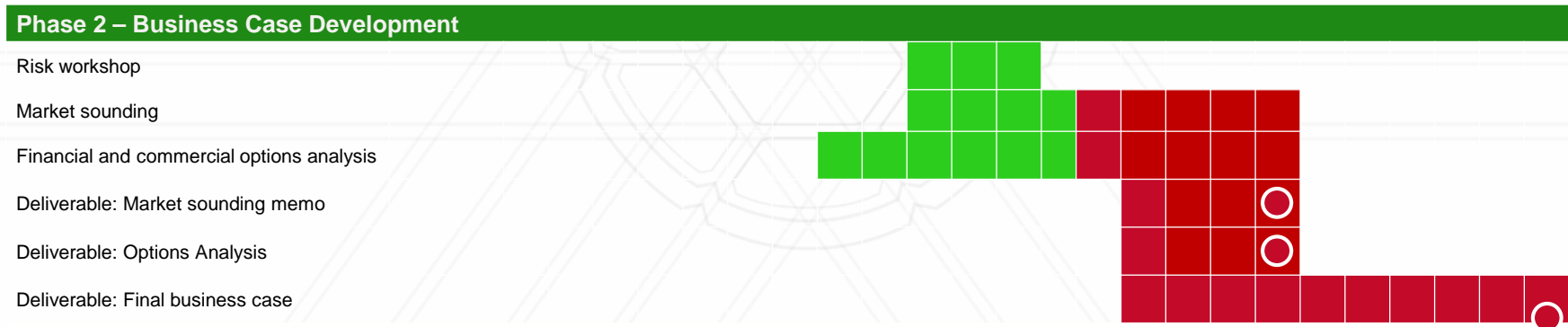
Project Timeline

Legend

● = Deliverable Submission Date



Outcome: Identification and assessment of NextGen’s available project options that align with UMD’s energy needs, strategic and sustainability goals



Outcome: Development of a commercial structure that aligns with UMD’s risk appetite, market interest, affordability constraints, and stakeholder concerns









Advisor Meeting Summary- December, 2018

During October and November, UMD Advisors met to discuss the various technical, financial and legal considerations for Project NextGen

Meeting	Topic	Date
RMF/KPMG/Betts & Holt/UMD Utilities	Stakeholder Meeting	10/17/2018
RMF/KPMG	Legal considerations of business structures	10/18/2018
RMF/UMD Utilities	IEBP PM Plan Discussion	10/26/2018
RMF/KPMG/Betts & Holt	Preliminary Report Discussion	11/14/2018
RMF/UMD Utilities	IEBP Negotiations	November 5, 6, 12, 16, 20, 26, 27, 28
RMF/KPMG/Office of Sustainability	Air Emissions and Permitting for NextGen	12/6/2018
UMD	BOR Finance Committee Meeting	12/7/2018

NextGen Project Delivery Options Overview

The 4 contractual structures offer key differences along variables such as the level of control retained by the University, risk transferred to the private entity, innovation brought to the project and cost of funds used

Evaluation Criteria	Self-Invest and Operate	MEDCO structure	Availability Payment Structure	Power or Steam Purchase Agreement
1) Control: The degree to which the University retains control over business/facilities operations and management and capital renewal				
2) Risk Transfer: The degree to which project integration, commercial and operational risks are transferred to a private entity across the appropriate aspects of the project				
3) Lifecycle Costs: The total cost of ownership to UMD over the life of the energy assets, including planning, design, construction, financing, operation and maintenance.	TBD	TBD	TBD	TBD

 Higher  Lower

Questions?



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